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Two new species of the genus *Temnaspis* Lacordaire, 1845, (Coleoptera: Chrysomeloidea: Megalopodidae) from China and Myanmar, with notes on the biology of the genus

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Abstract

Two new species of the genus *Temnaspis* Lacordaire, 1845, family Megalopodidae, are described from China and Myanmar: *Temnaspis puae* Li & H.B. Liang, **sp. nov.**, *Temnaspis syringa* Li & H.B. Liang, **sp. nov.** Biological notes are provided for *Temnaspis syringa*. *Temnaspis flavicornis* Jacoby, 1892 is redescribed and a lectotype designated. A key to species of the genus *Temnaspis* with black elytra in China and adjacent areas is provided.

Key words: Megalopodidae, taxonomy, larva, host plant, parasitoid

Introduction

The family Megalopodidae is an ancient and relatively small family in Chrysomeloidea (Crowson 1960; Suzuki 1988, 1994, 2003; Reid 1995, 2000; Gómez-Zurita *et al.* 2007, 2008; Marvaldi *et al.* 2009). In China, 54 species of Megalopodidae have been recorded, including 22 species of the genus *Temnaspis* Lacordaire, 1845 (Gressitt & Kimoto 1961; Chen & Pu 1962; Chen 1974; Kimoto & Gressitt 1979; Tan *et al.* 1980; Medvedev & Sprecher-Uebersax 1997; Medvedev 2002, 2010; Yu & Liang 2002; Silfverberg 2010). Four species of *Temnaspis* have been recorded in neighbouring Myanmar (Kimoto 2005).

In the insect collection of the Institute of Zoology (Beijing), we found a *Temnaspis* specimen with black elytra, which had been determined as *T. nigriceps* Baly, 1859. But after careful comparison with type material and original descriptions, we conclude that it represents a new species of *Temnaspis*, which is described below, with additional material from Myanmar. A key to species of the genus *Temnaspis* with black elytra in China and adjacent areas is presented.

Two other *Temnaspis* specimens with yellowish-brown elytra, collected from Beijing, have been sent to us by Mr D.K. Zhou. At first we thought they were *T. japonica* Baly, 1873, which was wrongly recorded from China (Yu & Liang 2002). However our examination of Japanese material of *T. japonica* shows that this Beijing species is also new. In spring 2012, many adults and larvae were collected in two localities in Beijing, and their biological features were observed in the field. This species is also described below.

Material and methods

All measurements were made using a Nikon SMZ1500 stereoscopic dissecting microscope with an ocular micrometer. Body length (BL) = the linear distance along the midline from the anterior margin of labrum to the apex of elytra; body width (BW) = elytra width (EW) = the maximum linear distance across elytra; pronotum

few specimens (hind tibiae more or less yellow, apex of femora yellow in *T. japonica*); labrum and clypeus only yellow at apical margin (all yellow in *T. japonica*); subapical portion of median lobe thin in lateral view (Fig. 58), gradually narrowed to apex (thick, abruptly narrowed in *T. japonica*; Fig. 107); apical lamella of media lobe (Fig. 58) long (short in *T. japonica*; Fig. 107); granulated area of EdpS (Fig. 62) long (granulated area short in *T. japonica*; Fig. 111). Furthermore, the host plant of *T. syringa* is *Syringa pubescens*, while the host plant of *T. japonica* in Japan is *Fraxinus sieboldiana*, *Ligustrum japonicum*, and *L. obtusifolium* (Chûjô & Kimoto, 1961)

Temnaspis syringa is also similar to *T. nankinea*, a specimen of which is illustrated here (Figs 113–114, 117–118). *Temnaspis syringa* differs by having: pronotum, scutellum and elytra brown, metaventricle more or less yellow (pronotum and scutellum black, elytra yellowish-brown, metaventricle black in *T. nankinea*; Figs 113–114); median lobe blunt at apex (median lobe sharp at apex in *T. nankinea*; Figs 117–118).

Temnaspis syringa can be distinguished from *T. fraxini* by having pronotum brown, prosternum and metepisternum black (pronotum with black area, prosternum and metepisternum yellow in *T. fraxini*), and apical lamella long (apical lamella short in *T. fraxini*, Figs 115–116, 120–122).

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References

- Baly, J.S. (1859) Descriptions of new species of phytophagous beetles. *The Annals and Magazine of Natural History Series 3*, 3, 195–209.
- Baly, J.S. (1873) Catalogue of the phytophagous Coleoptera of Japan, with descriptions of the species new to science. *The Transactions of the Entomological Society of London*, 1873, 69–99.
<http://dx.doi.org/10.1111/j.1365-2311.1873.tb00637.x>
- Chen, S.X. (1974) New Chrysomelid Beetles from West China. *Acta Entomologica Sinica*, 17 (1), 43–45, 47–48.
- Chen, S.X. & Pu, F.J. (1962) Notes on Chinese Megalopodinae. *Acta Entomologica Sinica*, 11 (Supplement), 114–118.
- Chûjô, M. (1952) Taxonomic study on the Chrysomelidae (Insecta-Coleoptera) from Formosa. Part IV subfamily Zeugophorinae. *The Technical Bulletin of the Kagawa Agricultural College*, 3 (3), 166–183.
- Chûjô, M. (1953) A taxonomic study on the Chrysomelidae with special reference to the fauna of Formosa. *The Technical Bulletin of the Kagawa Agricultural College*, 5 (2), 121–136.
- Chûjô, M. & Kimoto, S. (1961) Systematic catalog of Japanese Chrysomelidae (Coleoptera). *Pacific Insects*, 3 (1), 117–202.
- Crowson, R.A. (1960) The phylogeny of Coleoptera. *Annual Review of Entomology*, 5, 111–134.
<http://dx.doi.org/10.1146/annurev.en.05.010160.000551>
- Gómez-Zurita, J., Hunt, T., Kopliku, F. & Vogler, A.P. (2007) Recalibrated tree of leaf beetles (Chrysomelidae) indicates independent diversification of angiosperms and their insect herbivores. *PLoS ONE*, 2 (4), 1–8.
<http://dx.doi.org/10.1371/journal.pone.0000360>
- Gómez-Zurita, J., Hunt, T. & Vogler, A.P. (2008) Multilocus ribosomal RNA phylogeny of the leaf beetles (Chrysomelidae). *Cladistics*, 24, 34–50.
<http://dx.doi.org/10.1111/j.1096-0031.2007.00167.x>
- Gressitt, J.L. (1942) Plant-beetles from south and west China. I. Sagrinae, Donaciinae, Orsodacninae and Megalopodinae (Coleoptera). *Lingnan Science Journal*, 20, 2–4.
- Gressitt, J.L. & Kimoto, S. (1961) The Chrysomelidae (Coleopt.) of China and Korea, Part 1. *Pacific Insects Monograph*, 1A, 1–299.

- Jacoby, M. (1889) Viaggio di Leonardo Fea in Birmania e regioni vicine. – List of the phytophagous Coleoptera obtained by Signor L. Fea at Burma and Tenasserim, with descriptions of the new species. *Annali del Museo Civico di Storia Naturale di Genova*, 27, 147–237.
- Jacoby, M. (1892) Description of the new genera and species of the phytophagous Coleoptera obtained by Sign. L. Fea in Burma. *Annali del Museo Civico di Storia Naturale di Genova*, 32, 869–999.
- Kasap, H. & Crowson, R.A. (1985) The studies on the ovipositors and 8th abdominal segments of species of Bruchidae and Chrysomelidae (Coleoptera). *Türkiye Bitkiler koruma Dergisi*, 9 (3), 131–145.
- Kimoto, S. (2005) Systematic Catalog of the Chrysomelidae (Coleoptera) from Nepal and Bhutan. *Bulletin of the Kitakyushu Museum of Natural History and Human History Series A*, 3, 13–114.
- Kimoto, S. & Gressitt, J.L. (1979) Chrysomelidae (Coleoptera) of Thailand, Cambodia, Laos and Vietnam. 1. Sagrinae, Donaciinae, Zeugophorinae, Megalopodinae and Criocerinae. *Pacific Insects*, 20 (2–3), 191–256.
- Komiya, Y. (1986) Notes on the Taiwanese Megalopodinae with description of a new species (Coleoptera, Chrysomelidae). *Elytra, Tokyo*, 14 (1), 1–9.
- Lacordaire, T. (1845) Monographie des coléoptères subpentamères de la famille des phytophages. Tome I. *Mémoires de la Société Royale des Sciences de Liège*, 3 (1), xiii + 740 pp.
- Lawrence, J.F., Beutel, R.G., Leschen, R.A. & Slipinski, A. (2010) Glossary of morphological terms. In: Leschen, R.A., Beutel, R.G. & Lawrence, J.F. (Eds.), *Handbook of Zoology, Anthropoda: Insecta, Coleoptera, Beetles, Vol. 2. Morphology and Systematics (Elateroidea, Bostrichiformia, Cucujiformia partim)*. Walter de Gruyter, Berlin, pp. 9–20.
- Marvaldi, A.E., Duckett, C.N., Kier, K.M. & Gillespie, J.J. (2009) Structural alignment of 18S and 28rDNA sequences provides insights into phylogeny of Phytophaga (Coleoptera: Curculionoidea and Chrysomeloidea). *Zoologica Scripta*, 38, 63–77.
<http://dx.doi.org/10.1111/j.1463-6409.2008.00360.x>
- Medvedev, L.N. (2002) Jacoby's types of Chrysomelidae (Coleoptera) from Burma in the Museo Civico di Storia Naturale "Giacomo Doria", Genoa. Part 3. *Annali del Museo Civico di Storia Naturale "Giacomo Doria"*, 94, 249–264.
- Medvedev, L.N. (2010) Subfamily Megalopodinae Latreille, 1802. In: Löbl, I. & Smetana, A. (Eds.), *Catalogue of Palaearctic Coleoptera, Vol. 6*. Apollo Books, Stenstrup, pp. 336–337.
- Medvedev, L.N. & Sprecher-Uebersax, E. (1997) Chrysomelidae of Nepal and neighbouring regions. (Coleoptera: Chrysomelidae). *Coleoptera*, 1, 203–247.
- Pic, M. (1914) Nouveaux Coléoptères de diverses familles. *Mélanges Exotico-Entomologiques*, 10, 7–20.
- Pic, M. (1922) Nouveautés diverses. *Mélanges Exotico-Entomologiques*, 36, 1–32.
- Reid, C.A.M. (1995) A cladistic analysis of subfamilial relationships in the Chrysomelidae sensu lato (Chrysomeloidea). In: Pakaluk, J., Slipinski, S.A., (Eds.), *Biology, phylogeny and classification of Coleoptera: papers celebrating the 80th birthday of Roy A. Crowson*. Muzeum i Instytut Zoologii PAN, Warszawa, pp. 559–631.
- Reid, C.A.M. (2000) Spilopyrinae Chapuis: a new subfamily in the Chrysomelidae and its systematic placement (Coleoptera). *Invertebrate Taxonomy*, 14, 837–862.
- Silfverberg, H. (2010) Family Megalopodidae Latreille, 1802, subfamily Zeugophorinae Böving & Craighead, 1931. , In: Löbl, I. & Smetana, A. (Eds.), *Catalogue of Palaearctic Coleoptera, Vol. 6*. Apollo Books, Stenstrup, pp. 334–335.
- Snodgrass, R.E. (1935) *Principles of Insect Morphology*. McGraw-Hill Book Company, New York, 667 pp.
- Suzuki, K. (1988) Comparative morphology of the internal reproductive system of the Chrysomelidae (Coleoptera)., In: Jolivet, P., Petitpierre, E. & Hsiao, T.H. (Eds.), *Biology of Chrysomelidae*. Kluwer Academic Publishers, Dordrecht, pp. 317–355.
- Suzuki, K. (1994) Comparative morphology of the hindwing venation of the Chrysomelidae (Coleoptera). In: Jolivet, P., Cox, M.L. & Petitpierre, E. (Eds.), *Novel Aspects of the Biology of Chrysomelidae, Series Entomologica, Vol. 50*. Kluwer Academic Publishers, Dordrecht, pp. 337–354.
- Suzuki, K. (2003) Systematic position of the subfamilies Megalopodinae and Megascelinae (Chrysomelidae) based on the comparative morphology of internal reproductive system. *International Congress of Entomology Proceedings*, 21, 105–116.
- Tan, J.J., Yu, P.Y., Li, H.X., Wang, S.Y. & Jiang, S.Q. (1980) *Economic Insect Fauna of China, Coleoptera: Chrysomeloidea* (I). Science Press, Beijing, 213 pp.
- Yu, P.Y. (1977) On *Temnaspis nankinea* (Pic) (Megalopodinae: Chrysomeloidea), a new pest of *Fraxinus chinensis* Roxb. *Acta Entomologica Sinica*, 20 (4), 482–484.
- Yu, P.Y. & Yang, X.K. (1994) Biological studies on *Temnaspis nankinea* (Pic) (Chrysomelidae: Megalopodinae). In: Jolivet, P.H., Cox, M.L. & Petitpierre, E. (Eds.), *Novel Aspects of the Biology of Chrysomelidae, Series Entomologica, Vol. 50*. Kluwer Academic Publishers, Dordrecht, pp. 527–531.
- Yu, P.Y. & Liang, H.B. (2002) A check-list of the Chinese Megalopodinae (Coleoptera: Chrysomelidae). *Oriental Insects*, 36, 117–128.
<http://dx.doi.org/10.1080/00305316.2002.10417329>