



Review of the genus *Tachytes* Panzer (Hymenoptera: Crabronidae: Crabroninae) of South Korea, with description of one new species

YEONG-BIN BACK¹ & JEONG-KYU KIM^{2,3}

¹Biodiversity Institute, Hanseo University, Seosan-si, Chungcheongnam-do, 356-706 Korea

²Korean Bio-resources Research Center, Seosuwon-ro 607-303, Gweonseon-gu, Suwon-si, Gyeonggi-do, 441-746 Korea

³Corresponding author. E-mail: hymjkk@naver.com

Abstract

Korean species of the genus *Tachytes* Panzer are reviewed. Four previously known species are confirmed, and one new species, *Tachytes gyusanus* is described. The new species is very similar to *T. modestus*, but it differs critically in the form of male genitalic capsule. A revised key to South Korean species, a description of the new species, and digital images and line drawings of diagnostic characteristics are provided.

Key words: *Tachytes*, Crabronidae, sphecid wasps, new species, South Korea

Introduction

The genus *Tachytes* Panzer is one of fifteen genera in the cosmopolitan tribe Larrini (Hymenoptera: Crabronidae: Crabroninae) and comprises about 296 species (Pulawski, 2014). The members of the genus are medium to large size wasps easily recognized by very elongated ocellar scars, comma-like in shape (Bohart & Menke, 1976). They are solitary, ground-nesting predators mainly provisioning orthopterans for young (Iwata, 1971; O'Neil, 2001).

Six Far Eastern species of *Tachytes* including four from Korea are known (Tsuneki, 1964a, 1964b; Kim, 1970, 1980; Tsuneki, 1974; Bohart & Menke, 1976; Nemkov *et al.*, 1995; Li *et al.*, 2008; Terayama, 2008; Nemkov, 2009; Pulawski, 2014). In the course of our recent examination of South Korean material of this genus, we discovered an unusual taxon which was very similar to *Tachytes modestus*, but clearly different by several external features and the male genitalia. We consider it to be an undescribed species.

In the present study, we provide a revised key to South Korean *Tachytes* species, a description of the new species, diagnoses for previously known species, and digital images and line drawings of diagnostic characters.

Material and methods

Morphological terminology follows Bohart & Menke (1976), Pulawski & Prentice (2008) and Tsuneki (1964a). All measurements were taken as the maximal length of the part being considered.

For previously described species, reference to the original publication of the valid name is provided, together with type information. The rest of the synonymic list includes only the references indicating justifiable Korean occurrence.

Holotype and two paratypes will be deposited at the Insect collection in National Institute of Biological Resources (NIBR), Incheon Metropolitan City, Korea. The remaining paratypes and examined material are housed at Insect collection of Korean Bio-resources Research Center (KBRC), Suwon, Korea.

Acronyms for type depositories are as follows: [BMNH] The Natural History Museum, formerly British Museum of Natural History, London, Great Britain; [ZIN] Zoological Institute, Russian Academy of Science, St. Petersburg, Russia; [MNHAH] The Museum of Nature and Human Activities, Hyogo, Japan. Acronyms for

Acknowledgements

We are grateful to two reviewers, Dr. WJ Pulawski and Dr. D Bennett, for comments and suggestions that helped to improve this article. Some of specimens used herein were gifted to us by Prof. HY Han (Yonsei Univ., Korea), emeritus Prof. JS Park (Gyeongsang Univ., Korea) and Prof. Sk Yamane (Kagoshima Univ., Japan). Mr. Oh-Chang Kwon (Hanseu Univ., Korea) was very helpful in making digital images. This work was supported by a grant from the National Institute of Biological Resources (NIBR), funded by the Ministry of Environment (MOE) of the Republic of Korea (NIBR No. 2013-02-001).

References

- Bohart, R.M. & Menke, A.S. (1976) *Sphecid wasps of the world*. University of California Press, Berkeley, Los Angeles, London, 695 pp.
- Fabricius, J.C. (1793) *Entomologia systematica emendata et aucta. Secundum classes, ordines, genera, species adjectis synonymis, locis, observationibus, descriptionibus. Vol. 2*. Christ. Gottl. Proft, Hafniae, VIII + 519 pp.
- Fabricius, J.C. (1798) *Supplementum Entomologiae Systematicae*. C.G. Proft et Storch, Hafniae. [1–4] + 572 pp.
- Gussakovskij, V.V. (1932) Verzeichnis der von Herrn Dr. R. Malaise im Ussuri und Kamtschatka gesammelten aculeaten Hymenopteren. *Arkiv för Zoologi*, 10, 1–66.
- Iwata, K. (1971) *Evolution of Instinct: Comparative Ethology of Hymenoptera*. Mono-shoten, Kanagawa-ken, 503 pp.
- Li, T., Cai, W. & Li, Q. (2008) Two new species and five new records of the genus *Tachytes* Panzer (Hymenoptera, Crabronidae) from China, with a key to the Chinese species. *Deutsche Entomologische Zeitschrift*, 55, 153–159. <http://dx.doi.org/10.1002/mmnd.200800013>
- Kim, C.W. (1970) *Illustrated Encyclopedia of Fauna and Flora of Korea. Vol. 11. Insecta (III)*. Samhwasa, Seoul, Korea, 891 pp.
- Kim, C.W. (1980) *Distribution Atlas of Insects of Korea, ser. 3 Hymenoptera and Diptera*. Korea University Press, Seoul, Korea, [i–xxxix] + 356 pp.
- Nemkov, P.G. (2009) *Annotated Catalogue of Digger Wasps (Hymenoptera: Sphecidae, Crabronidae) of Asian Part of Russia*. Dalnauka, Vladivostok, 193 pp.
- Nemkov, P.G., Kazenas, V.L., Budrys, E.R. & Antropov, A.V. (1995) Family Sphecidae. In: Lehr, P.R. (Ed), *Key to the Insect of Russian Far East. Vol. 4. Neuroptera, Mecoptera, Hymenoptera. Part 1*. Nauka, St. Petersburg, pp. 368–480.
- O'Neill, K.M. (2001) *Solitary Wasps, Behavior and Natural History*. Cornell University Press, Ithaca and London, 406 pp.
- Paik, W.H. (1985) Key to the Sphecidae (Hymenoptera) of Korea. *Journal of the National Academy of Sciences Republic of Korea Natural Sciences Series*, 24, 189–231.
- Panzer, G.W.F. (1806) *Kritische Revision der Insektenfaune Deutschlands. Vol. 2*. Nürnberg, 271 pp.
- Pulawski, W.J. (1975) Synonymical notes on Larrinae and Astatinae (Hymenoptera: Sphecidae). *Journal of the Washington Academy of Sciences*, 64, 308–323.
- Pulawski, W.J. (2014) *Catalogue of Sphecidae sensu lato (= Apoidea excluding Apidae)*. Available from: http://research.calacademy.org/ent/catalog_sphecidae (accessed 24 March 2014)
- Pulawski, W.J. & Prentice, M.A. (2008) A revision of the wasp tribe Palarini Schrottky, 1909 (Hymenoptera: Apoidea: Crabronidae). *Proceedings of the California Academy of Sciences, Series 4*, 59, 307–479.
- Schrank, F.P. (1781) *Enumeratio Insectorum Austriae indigenorum*. Eberhardt Klett et Franck, Augustae Vindelicorum. [1–24], 548, [1–2] pp., pls. I–IV.
- Smith, F. (1856) *Catalogue of hymenopterous insects in the collection of the British Museum. Part IV. Sphegidae, Larridae and Crabronidae*. Taylor and Francis, London. pp. 207–497.
- Terayama, M. (2008) Taxonomic guide to the Japanese Aculeate wasps, 9. Family Crabronidae, Subfamily Larrinae: keys to the species in the Tribe Larrini. *Tsunekibachi*, 14, 1–22.
- Tsuneki, K. (1964a) The genus *Tachytes* Panzer of Japan and Korea (Hymenoptera, Sphecidae). *Etizenia*, 5, 1–11.
- Tsuneki, K. (1964b) A guide to the study of the Japanese Hymenoptera (21). (9). Larrinae occurring in Japan and Korea. *The Life Study (Fukui)*, 8, 61–63.
- Tsuneki, K. (1974) Sphecidae (Hymenoptera) from Korea. *Annales Historico-Naturales Musei Nationalis Hungarici*, 66, 359–387.
- Tsuneki, K. (1982) Sphecidae from North Korea (II) with the list of the species of the family known from the Korean Peninsula (Hymenoptera). *Special Publications of the Japan Hymenopterists Association*, 20, 1–22.
- Tsuneki, K. (1991) Sphecidae (Hymenoptera) from Korea. *Insecta Koreana*, Supplement 2, 198–203.