

New records of terebrantian and tubuliferan thrips (Insecta: Thysanoptera) from Kyoto Prefecture

Keiichiro YAMAMOTO*, Masami MASUMOTO** and Shiro NAKAO*

Abstract : Sixteen thrips species were newly recorded from Kyoto Prefecture, based on specimens collected from 1990 to 2019. Three of them were firstly found in western Japan.

(Received August 7, 2020)

Key words : Ayabe City, Kyotango City, Kyoto City, Maizuru City, Miyazu City, First records

Introduction

Thrips is a minute insect belonging to the order Thysanoptera. In Japan, 405 species of thrips have been recorded (Masumoto, 2016): 213 species in the suborder Terebrantia and 235 species in the other suborder Tubulifera (Masumoto, unpublished data). Thrips contain phytophagous, predacious, and omnivorous species, and spore- and fungus feeders; thus, they have diversified throughout various habitats. In the present report, we added 16 species of thrips to the current Thysanopteran fauna list (32 spp.) in Kyoto Prefecture (Kyoto Prefecture, 2015). As a result, a total of 55 species were recorded from Kyoto Prefecture (Kyoto Prefecture, 2015; Nakao and Masumoto, 2017; Fujimoto et al., 2019; the present report).

Terebrantia

Subfamily Sericothripinae

(1) *Hydatothrips abdominalis* (Kurosawa)

Material examined. 1 ♀ 1 ♂, Maizuru City, Joya, on *Pueraria lobata*, 30-VIII-2016, S. Nakao leg.; 8 ♀ 1 ♂, Kyoto City, Shimogamo, on *Pueraria lobata*, 3-VII-2018, S. Nakao leg.;

This thrips has been found on various Fabaceous plants in Japan (Masumoto, 2016), but has not been recorded in Kyoto Prefecture. This species has not been known as an agricultural pest.

Subfamily Thripinae

(2) *Bolacothrips yasukii* Masumoto et Okajima

Material examined. 4 ♀, Kyoto City, Katsura, Katsura Takigawa-cho, lower reaches of the Katsuragawa river, on *Miscanthus sacchariflorus*, 23-VIII-1998, S. Nakao leg.

This is a species that is endemic to Honshu Island, and has been recorded in Ibaraki, Chiba and Fukushima Prefectures (Masumoto and Okajima, 2002). The present report is the first record from the western part of Honshu. *Bolacothrips* is a genus of Thripidae, and all members in Japan (3 spp.) are related to Poaceae (Masumoto and Okajima, 2002). In Kyoto, we captured adults on the plant *Miscanthus sacchariflorus*.

*Graduate School of Life and Environmental Sciences, Kyoto Prefectural University

**Tokyo University of Agriculture

(3) *Ernothrips lobatus* (Bhatti)

Material examined. 5 ♀ 2 ♂, Kyoto City, Kamigamo, on flowers of *Dioscorea japonica*, 23-VIII-2017, S. Nakao leg.; 5 ♀ 2 ♂, Kyoto City, Kamigamo, on flowers of *Dioscorea tokoro*, 23-VIII-2017, S. Nakao leg.

This species was discovered in Kyoto City (Inoue et al., 2005), but has not been included in the current list of Thysanoperan fauna of Kyoto Prefecture (Kyoto Prefecture, 2015). This minute thrips seems to be a pollinator of *D. japonica* (Inoue et al., 2005). In China, this thrips is reported to be a pollinator of *Dioscorea* spp. (Li et al., 2014).

(4) *Megalurothrips distalis* (Karny)

Material examined. 9 ♀, Kyoto City, Shimogamo, on water pan traps (white colored), 9-IX-1994, S. Nakao leg.; 5 ♀ 2 ♂, Kyotango City, Kotohikihama, on flowers of *Cirsium japonicum*, 1-VI-2018, S. Nakao leg.

This thrips is found on the flower heads of various plants, but has not been recorded as an agricultural pest in Kyoto Prefecture.

(5) *Scolothrips takahashii* Priesner

Material examined. 1 ♀, Kyoto City, Mukaijima, on *Chrysanthemum moriflorum*, 11-VI-1990, S. Nakao leg.

This is one of three species of *Scolothrips* in Japan (Masumoto et al., 2012). This common predaceous thrips feeds on spider mites. From 1992 to 1994, it abundantly occurred on *Glycine max* and *Allium cepa* plants in the University Farm of Kyoto Prefectural University at Shimogamo.

Tubulifera

Subfamily Idolothripinae

(1) *Ethirothrips virgulae* (Chen)

Material examined. 1 ♀, Maizuru City, Nishikanzaki, 30-VIII-2016, S. Nakao leg.

This species is widely distributed in Japan, feeds fungus, and occurs on dead leaves and branches (Okajima, 2006). A variation in tube length can be seen within species (Okajima, 2006). The sample in the present report was collected by sweeping vegetation (including living plants and dry-deteriorating plants) at sand dunes in a sea shower area.

(2) *Nesothrips brevicollis* (Bagnall)

Material examined. 4 ♀, Kyoto City, Katsura Takigawa-cho, 18-VII-1998, S. Nakao leg.

This species is widely distributed in Japan, and feeds fungus and occurs on grass (Okajima, 2006). The adults reported here were found on *Miscanthus sacchariflorus* on the riverbed of Katsuragawa River.

Subfamily Phlaeothripinae

(3) *Apelaunothrips medioflavus* (Karny)

Material examined. 1 ♀, Kyoto City, Mukaijima, Ujigawa river side, 31-VII-1998, S. Nakao leg.; 1 ♀, Kyoto City, the same, 22-VIII-1998, S. Nakao leg.

This species is a fungus feeder that occurs on grass tussocks or bamboo leaf-litter, and is widely distributed in Southeast Asian regions such as the Philippines, China, and Japan (Okajima, 2006). The record of this species in Honshu Island was only identified in Okayama Prefecture in 1998 (Okajima, 2006).

(4) *Apterygothrips semiflavus* Okajima

Material examined. 1 ♀, Kyoto City, Kamigamo, 17-VIII-2019, K. Yamamoto leg.

This species is widely distributed in the temperate region of Japan and is often found on dead branches and leaf-litter (Okajima, 2006). Its food habits are unknown. This genus may be polyphyletic in the *Haplothrips* lineage and this species is related to the genus *Karnyothrips* which includes fungus feeders and scale insect feeders (Okajima, 2006).

(5) *Bagnalliella yuccae* (Hinds)

Material examined. 3 ♀ 1 ♂, Kyoto City, Shimogamo, 3-IX-2019, K. Yamamoto leg.

This species has been widely distributed around the world with cultivated *Yucca* species. Nine species belong to the genus *Bagnalliella* (Hoddle et al., 2012). Only one species has been recorded in Japan as an invasive species (Okajima, 2006). This genus is very similar to the genus *Haplothrips*, but it is distinguished from this genus via morphological and ecological distinctions (Okajima, 2006).

(6) *Ecacanthothrips inarmatus* Kurosawa

Material examined. 4 ♀, Miyazu City, Mannen, 11-V-2019, Y. Kuroda leg.

This species is widely distributed in the temperate region of Japan and one of the common fungus-feeding species found on dead leaves and dead branches. This genus belongs to the *Phlaeothrips* lineage and is closely related to the *Hoplandrothrips* (Okajima, 2006).

(7) *Haplothrips krudjumovi* Karny

Material examined. 2 ♀, Kyoto City, Shimogamo, on flower heads of *Tagetes patula*, 15-VIII-2013, K. Fujimoto leg.

This is an omnivorous species that feeds on pollen and minute insects in the Holarctic region (Okajima, 2006; Nakao, unpublished data), and is well known as a natural enemy of mites and Lepidoptera in orchards in Canada, though it had been reported as *Haplothrips faurei* Hood (Putman, 1965). This species is closely related to the European species, *Haplothrips subtilissimus* (Haliday) (Okajima, 2006). The males of this species are known only from Europe (Okajima, 2006).

(8) *Haplothrips nipponicus* Okajima

Material examined. 4 ♀ 2 ♂, Kyoto City, Kamigamo, on flowers of *Dioscorea japonica*, 10-VIII-2017, S. Nakao leg.; 5 ♀ 2 ♂, Kyoto City, Kamigamo, on flowers of *Dioscorea tokoro*, 23-VII-2017, S. Nakao leg.

This species was described in 2006 and is known as the most common species in *Haplothrips* in Japan (Okajima, 2006). It is an omnivorous species that feeds on pollen and minute insects. Previously, Inoue et al. (2005) had reported this species on flowers of *Dioscorea japonica* as *H. gowdeyi*. Currently, *Haplothrips gowdeyi* has not been found in Kyoto Prefecture (Okajima, 2006). The Japanese records of *H. gowdeyi* are from Okinawa Prefecture and Yoron Island (Kikumura, personal comm.), Kanoya City in Kagoshima Prefecture on Kyushu Island (Tsutsumi, personal comm.), and from Minato-ku in Tokyo on Honshu Island (Yasuoka, 2019). *Haplothrips gowdeyi* can be easily distinguished from other members of Japanese *Haplothrips* species through larval coloration (Nakao, unpublished data).

(9) *Hoplothrips tua* Okajima

Material examined. 3 ♀ 1 ♂, Kyoto City, Kamigamo, 12-VIII-2019, K. Yamamoto leg.

This species is an endemic species of Honshu Island, and has only been recorded from Tokyo (Okajima, 2006). The present report is the first record from the western part of Honshu: this species was only found once under the bark of a dead *Castanopsis* trunk in Tokyo. The specimens in the present collection were found on the dead branches of a broad-leaved tree. *Hoplothrips* is a relatively large fungus-feeding group in Phlaeothripinae, and most species in this genus display sexual dimorphism (Mound et al, 2020).

(10) *Liothrips rohdeae* Okajima

Material examined. 2 ♀, Ayabe City, Mitsuno, on *Rohdea japonica*, 31-III-2018, S. Nakao leg.

This phytophagous thrips is an endemic species of Honshu Island and was described in Okajima (2006). This thrips has been recorded in Kanagawa and Chiba Prefectures (Okajima, 2006). The present report is the first record from the western part of Honshu. Based on mtDNA sequences, this species appears to be a sister species of *L. wasabiae* (Nakao and Toda, unpublished data).

(11) *Plectrothrips brevitubus* Okajima

Material examined. 1 ♀, Kyoto City, Kamigamo, 6-VIII-2019, K. Yamamoto leg.

This species occurs on dead wood and feeds fungus (Okajima, 2006). This species has only been recorded on Honshu Island (Kanagawa, Hyogo, and Fukui Prefectures) of Japan (Okajima, 2006; Shibata, 2017). The present sample was captured in the dead wood of a broad-leaved tree (under the bark) in forest stands.

Acknowledgements

We wish to thank Dr. Tadaaki Tsutsumi (Fukushima University) for providing information on habitats of *Haplothrips nipponicus* and *Ernothrips lobatus* in Kyoto City, Mr. Yuzo Kuroda (Maizuru City) and Mr. Kenji Fujimoto (Kyoto Prefectural University) for collecting and providing materials, Miss Shizuka Noda (Wakayama University) for mounting some specimens on glass slides, and Mrs. Tomoko Kikumura (Okinawa Prefecture) for giving us information and samples from Okinawa and Yoron Islands. A part of this work was supported by JSPS KAKENHI Grant Number JP17K07681.

References

- Fujimoto, K., Tsutsumi, T., Toda, S. and S. Nakao (2019) First records of two invasive species of thrips (Insecta: Thysanoptera) from Kyoto and Wakayama Prefectures. *Scientific reports of Kyoto Prefectural University, Life and Environmental Sciences* (71): 1-2.
- Hoddle, M. S., Mound, L. A., and D. L. Paris (2012) Thrips of California. CBIT Publishing, Queensland.
- Inoue, M., Osawa, N. and T. Tsutsumi (2005) Thrips (Thysanoptera: Thripidae) on the flowers of a dioecious plant, *Dioscorea japonica* (Dioscoreaceae). *The Canadian Entomologist* 137: 712-715.
- Kyoto Prefecture (2015) Faunal list of Thysanoptera. <https://www.pref.kyoto.jp/kankyomokuroku/bio/insect.html#azamiyama>.
- Li, M. M., Yan, Q. Q., Sum, A. Q., Zhao, Y. M., Zhou, Y. F. and Y. Y. Hang (2014) A preliminary study on pollination biology of three species in *Dioscorea* (Dioscoreaceae). *Life Science Journal* 11: 436-444.
- Masumoto, M. (2016) Thysanoptera. In: the Editorial Committee of Catalogue of the Insects of Japan ed. Catalogue of the Insects of Japan. Vol. 4. Paraneoptera. Touka Shobo, Fukuoka, p. 44-85.
- Masumoto, M. and S. Okajima (2002) Two *Bolacothrips* species (Thysanoptera, Thripidae) from Japan. *Special Bulletin of Japanese Society of Coleopterology* (5): 119-127.
- Masumoto, M., Ohno, S., Ganaha-Kikumura, T. and A. Miyagi (2012) Review of the genus *Scolothrips* (Insecta, Thysanoptera, Thripidae) from Japan. *Zootaxa* 3183: 36-48.
- Mound, L. A., Wang, J., and D. J. Tree (2020) The genus *Hoplothrips* in Australia (Thysanoptera, Phlaeothripinae), with eleven new species. *Zootaxa* 4718: 301-323.
- Nakao, S. and M. Masumoto (2017) Records of thrips on bamboo, take and sasa (Poaceae: Bambusoideae) in the Kyoto Botanical Garden, with special reference to ovoviviparity in Phlaeothripinae (Insecta: Thysanoptera). *Scientific reports of Kyoto Prefectural University, Life and Environmental Sciences* (69): 9-13.
- Okajima, S. (2006) The Insects of Japan: The Suborder Tubulifera (Thysanoptera). Touka Shobo Co. Ltd. Fukuoka.
- Putman, W. L. (1965) The predacious thrips *Haplothrips faurei* Hood (Thysanoptera: Phlaeothripidae) in Ontario peach orchards. *The Canadian Entomologist* 97: 1208-1221.
- Shibata, T. (2017) Thrips around Asuwa three mountains. *Bulletin of the Fukui City Museum of Natural*

History (64): 63-68. (In Japanese)

Yasuoka, T. (2019) Biology of *Haplothrips robustus* Bagnall (Thysanoptera: Phlaeothripidae) and impact on lettuce and asparagus. *Research Bulletin of the Plant Protection Service Japan* 55: 31-36. (In Japanese)

