First records of two invasive species of thrips (Insecta：Thysanoptera) from Kyoto and Wakayama Prefectures

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Abstract：Two invasive species of thrips were recorded from Kyoto and Wakayama Prefectures. Adults and larvae of *Haplothrips nigricornis* were collected on flower heads of *Tagetes patula* at the University Farm, Kyoto Prefectural University in Shimogamo, Kyoto City and on those of *Senecio madagascariensis* in Gobo City, Wakayama Prefecture. Some adults of *Tenothrips frici* were captured on flower heads of *Hypochaeris radicata* on roadsides in Minamiyamashiro-mura, Kyoto, and in Wakayama City, Wakayama. We noted *T. frici* found in Sapporo City, Hokkaido, as the most northern locality in Japan.

Key words：Asteraceae, flower head, invasive species, Thripidae, Phlaeothripidae

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Introduction

It is important to detect and monitor the phytophagous invasive species of Thysanoptera, including agricultural pests, for plant protection. In Japan, there has been serious damages to various crops, fruits, and vegetables mainly caused by invasive species of thrips, such as *Thrips palmi, Thrips tabaci, Frankliniella occidentalis, Scirtothrips dorsalis* strain C, etc. Recently, in Kyoto Prefecture, several invasive species of thrips were found on bamboo and sasa in the Kyoto Botanical Garden（Nakao & Masumoto, 2017）. In this paper, we reported two invasive species of thrips living on the flower heads of Asteraceae plants, which were first recorded from Kyoto and Wakayama Prefectures in western Japan.

Records

1) *Haplothrips nigricornis* (Bagnall)

This tubuliferan thrips seems to originate from Africa, and one of the present authors, SN, have recognized that this thrips has been the most common species on flower heads of the Madagascar ragwort, *Senecio madagascariensis*（Astereae）in Gobo City, Wakayama Prefecture, since 2012 or 2011. SN tried but failed to replicate generations of *H. nigricornis* fed on insect eggs at 23℃. Although the larvae of this thrips occasionally feed on insect eggs under controlled conditions, this thrips is likely to be phytophagous and pollen-feeding under natural conditions. However, we do not know whether it causes damages to crops or ornamental flowers in Japan. The following collection is the first record from Japan.

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Specimens examined. 2♀2♂, on the marigold *Tagetes patula*, Simogamo, Kyoto City, Kyoto Prefecture (35.05°N, 135.77°E), 17-IX-2013, K. Fujimoto; 4♀4♂, on *Senecio madagascariensis*, Nada, Gobo City, Wakayama Prefecture (33.84 °N, 135.18°E), 13-VIII-2017, S. Nakao.

2) *Tenothrips frici* (Uzel)

This terebrantian thrips is widespread throughout the world and is known as the Mediterranean dandelion flower thrips. It has been reported that *T. frici* in Niigata and Ibaraki Prefectures, as the first record from Japan (Masumoto et al., 2002). Because this thrips has multi-linages with different haplotypes of mtDNA (Toda, unpublished data) and is found on flowers not only of Asteraceae but also of Cucurbitaceae (Mirab-balou & Tong, 2013), we should monitor its host range, seasonal abundance, and population dynamics on various plants, including vegetables and ornamental flowers, in fields and greenhouses. In Japan, this thrips was reported to be distributed only in the eastern areas of Honshu island (Masumoto, 2016), but SN recently found several adult thrips in Hokkaido island.

Specimens examined. 1♀1♂, on the catsear *Hypochaeris radicata* (Hypochaeridinae), Minamiyamashiro-mura, Souraku-gun, Kyoto Prefecture (34.76°N, 136.03°E), 19-V-2018, S. Nakao; 5♀1♂Miyama, Wakayama City, Wakayama Prefecture (34.29°N, 135.08°E), 2-V-2018, S. Nakao ; 2♀, on *Hypochaeris radicata*, Sapporo City, Hokkaido (43.04° N, 141.36°E), 13-IX-2018, S. Nakao.

Closing Remarks

The two thrips species mentioned here could have been introduced into Kyoto and Wakayama Prefectures within the last 25 years. It is noteworthy that both the thrips are abundant on flowers of invasive plants. These findings suggest that the establishment of some invasive thrips may depend on the distribution and abundance of introduced plants. Further studies on changes in host utilization (move to native plants) and interaction between these invasive thrips and other arthropods having similar niche are needed to understand their ecological impacts on agricultural and wildlife ecosystems.

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