
RECENT RESEARCH ACTIVITIES

No evidence for presence of the red imported fire ant in Osaka Nanko area

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The red imported fire ants (hereafter refer to as the fire ant), *Solenopsis invicta*, one of the world's worst invasive ants, have been discovered in numerous container yards and in-land warehouses at a total of 12 prefectures in Japan since May 2017. Despite intensive survey within various port regions, it remains questionable if field population of the fire ant exists outside the survey perimeter, simply because little attempt has been made. As the invasion of fire ant is believed at very early stage, knowledge of this invasive ant such as geographic distribution in Japan is urgently needed as delimitation of an invasive species' distribution is key to eradication success. Supported by RISH Mission 1 research grant, my lab has conducted a detailed survey for the presence of fire ant within areas located in close proximity of the Osaka Nanko Port, one of the seaports with reported fire ant infestations. Here I reported results of the survey effort.

Why Nanko area, and how survey was carried out

Nanko area is of particular interest because two fire ant queens were once found in one of the container yards of this area during July 2017 (within a colony refuse pile where ant workers discard uneaten food and other wastes with corpses). This is believed as a sign indicative of the presence of a mature colony. A total of 15 sites around the port were selected for survey based on the known nesting preference of the fire ant, which includes park, school, lawns and fields. Two prevailing survey methods were utilized: a standard lure station (fixed amount of potato chip or hotdog slice in a 50cc centrifuge) and visual surveillance. The lure stations were separated by 10m interval and was placed for 40mins along the roadside. Stations were brought back to the lab, and ants found in the centrifuge tubes were subject to species identification under microscope.

No fire ant detected in our study sites in Nanko area

While virtually all lure stations were found positive with ants, none of them are fire ants. The top five dominant species discovered in the lure station include *Tetramorium tsushimae*, *Monomorium chinense*, *Pheidole noda* and *Formica japonica*. These five species generally are considered as dominant species in urban environment and share similar food preference (protein/lipid) as the fire ant (except *F. japonica*). A number of ant mounds were found during the visual inspection, with most of which belonging to either *F. japonica* or *Camponotus japonicas*. Conclusively, the survey results of this study suggest that no field population of fire ant, at least in our study sites, exists, a conclusion consistent to separate survey effort by Dr. Ueda at Osaka Prefecture University. Furthermore, biotic resistance seems to be a main contributing factor to prevent fire ant from establishment in this area where native ants are quite abundant and dominant.

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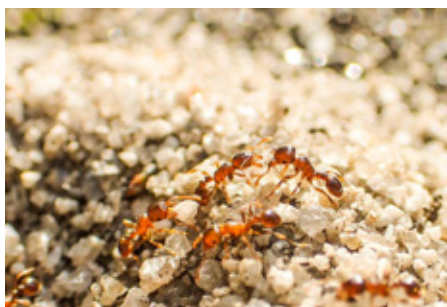


Figure 1. Workers of *Tetramorium tsushimae* nearby the nest opening.

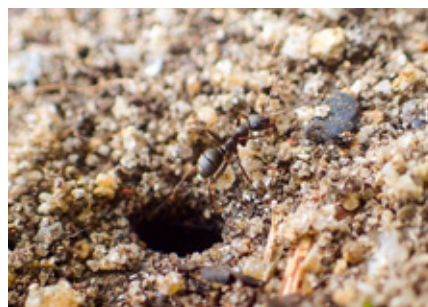


Figure 2. A worker of *Formica japonica* leaving the nest for foraging.