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Ground Truthing of iNaturalist Submissions Confirms the Presence of Asian Needle Ants, *Brachyponera chinensis* (Emery) (Hymenoptera: Formicidae), in Louisiana, A New State Record

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ABSTRACT

Based on submissions to iNaturalist from citizen scientists, the presence of the Asian needle ant (*Brachyponera chinensis*), was confirmed for Louisiana in East Baton Rouge Parish. Use of citizen scientist platforms for sources of invertebrate taxa distributions is a powerful tool but requires caution because the records are typically not validated by physical voucher specimens that have been deposited in publicly accessible museums, and identification of many species is not possible by images alone. To demonstrate the usefulness of citizen scientist programs like iNaturalist, possible collection sites for Asian needle ant specimens were located. Specimens were collected, identified, and vouchers were deposited in the Louisiana State Arthropod Museum. The case study serves as an example of validation of the occurrence of non-native invasive species in new areas using citizen scientist observations on social media platforms.

Keywords: Asian needle ant, Ponerinae, invasive species, iNaturalist, citizen science, voucher specimens

INTRODUCTION

Asian needle ant (ANA), *Brachyponera chinensis* (Emery), is a medically important invasive species in the United States that is native to southeastern Asia (China, Japan, Thailand, North Korea, South Korea, etc.). The species was discovered in the US in 1934 as a byproduct of research on Argentine ants, *Linepithema humile* (Mayr) in Georgia (Smith 1934). Although ANA is not known to be highly defensive in response to disturbance, their stings are described as painful and can induce anaphylactic shock in individuals sensitive to hymenopteron venoms (Nelder at al. 2003). Probably only a small percentage of individuals are hypersensitive in the US, based on previous allergy studies conducted in Asia (Cho et al. 2002). Additionally, ANA can outcompete native ants, displacing them and/or preying on them, which results in loss of local insect and plant diversity (Guenard and Dunn 2010). A number of online programs such as iNaturalist and EDDmapS are useful for mapping the location of native organisms and the spread of invasive species (EDDmapS 2025, iNaturalist 2025,

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Skvarla and Fisher 2023). While these programs are effective, they can have variable levels of accuracy (Skvarla and Fisher 2023) because most insect species cannot be identified accurately using photos.

Given the potential human health and species diversity impacts of ANA as well as recent news of its spread in nearby states, Louisiana State University urban entomologists and Louisiana State University Arthropod Museum taxonomists sought to ground truth iNaturalist (2025) observations of ANA within Louisiana, as its presence had not been previously documented. ANA has been reported in states surrounding Louisiana, suggesting its likely presence in the state. Two iNaturalist posts of ANA were submitted for one location in the Baton Rouge area during February and June 2025. We validated these observations through specimen collections, identification using a dichotomous key, and confirmed the iNaturalist submissions, thus documenting the presence of ANA in Louisiana and demonstrating the power of citizen scientist tools when ground truthed.

METHODS AND MATERIALS

On 17 June 2025, authors ARA and GGM visited the Waddill Wildlife Refuge (Lat. 30°29'31.1"N; Long. 91°01'45.6"W), in Baton Rouge, LA. ARA has prior experience with ANA and located infested wood with GGM along the forest edge by searching for wet wood with evidence of termite damage. Suspected ANA and a small propagule of termites were found. Termites were not identified due to the lack of soldiers and alates. The ants were transferred to a bucket and returned to the Louisiana State University Arthropod Museum (LSAM). CEC identified the ants as *Brachyponera chinensis* using the ponerine section dichotomous key in MacGown (2003). Presented characters aligned with those in the key, particularly the glabrous vs pubescent mesopleuron described in the terminal couplet (8b). Ants were observed at 40 – 60X using an Olympus SZX 16 stereomicroscope. Ant specimens were mounted and deposited in the Louisiana State Arthropod Museum.

RESULTS AND DISCUSSION

Citizen scientist observations on social media platforms are becoming increasingly important for documenting the introduction and spread of non-native species and for filling distributional gaps for native species (Skvarla and Fisher 2023). Using citizen scientist platforms such as iNaturalist as sources of invertebrate taxa distributions requires caution because the records are typically not validated by physical voucher specimens deposited in publicly accessible museums and identification of many species is not possible by habitus images alone. We here confirm that the observations of ANA by iNaturalist users Sean Golden and Michael Thaibinh are valid via identification of physical specimens, reinforcing the usefulness of citizen scientist photo sharing programs in locating invasive species in new locations. Our physical confirmation of these iNaturalist submissions emphasizes the broad usefulness of these programs in establishing the spread of invasive species as demonstrated by other researchers.

Individuals will undoubtably be curious if they have ANA in their yards or workplaces, especially if they have the potential to encounter colonies while working with wet wood or digging in the soil and are hypersensitive to insect venom. Given the potential for the general public to misidentify insects, and misuse pesticides, species confirmations of ANA should be performed by an insect taxonomist, entomology diagnostician, or submitted to university extension specialists. This will ensure that appropriate pest management measures can be taken if warranted.

ANA may be more widespread in Louisiana than is currently known. No comprehensive ant surveys have been performed in Louisiana since Shawn Dash's thesis work (Dash 2005), so whether the ANA has gone undetected for some time or arrived recently is unknown given the cryptic nature and low aggression of the species (Guénard and Dunn 2010). ANA has since been found in Livingston Parish, LA, indicating it may have a wider distribution in Louisiana. Other invasive ants in the state can

potentially suppress ANA populations. Genetic sequencing of samples from around the state may provide more information as to how the ant was introduced if it proves to be more widespread. Future surveys within Louisiana and Southern US should be conducted to further understand the distribution and impacts of ANA.

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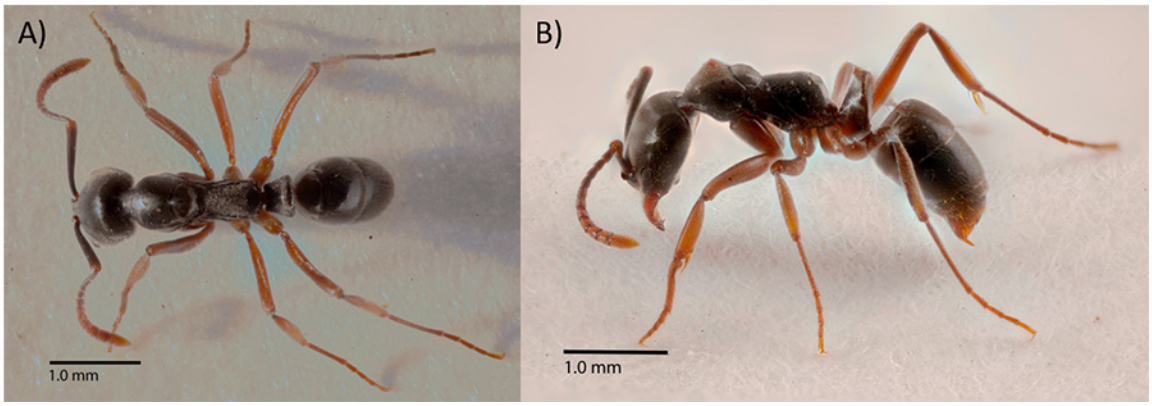

Figure 1. A. Dorsal view and B. Lateral view of Asian needle ant (*Brachyponera chinensis*) worker.