J. Entomol. Res. Soc., 27(2): 247-254, 2025
Doi: 10.51963/jers.v27i2.2783

Research Article
Online ISSN:2651-3579

First Record of *Neoascia anassa* Reemer and Hippa, 2005 (Diptera: Syrphidae) from China with Description of Previously Unknown Female

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ABSTRACT

Neoascia anassa Reemer & Hippa, 2005, previously described from Vietnam based on a single male, is newly recorded from the Oriental Region of China, Yunnan Province. The first description of the unknown female and detailed figures of female and male are provided.

Keywords: Country record, Oriental Region, Syrphidae, Taxonomy, Yunnan Province.

Bashir, N. H., Naeem, M., Hassan, M.A., van Steenis, J., Li, X., & Chen, H. (2025). First record of *Neoascia anassa* Reemer and Hippa, 2005 (Diptera: Syrphidae) from China with description of previously unknown female. *Journal of the Entomological Research Society*, 27(2), 247-254.

Received: November 22, 2024 *Accepted: April 11, 2025*

INTRODUCTION

The genus *Neoascia* Williston, 1886, is commonly classified in the tribe Chrysogasterini, which belongs to the subfamily Eristalinae (Thompson, 1972; Hippa & Ståhls, 2005). The members of the genus *Neoascia* are slender-bodied, having a small size of 3.5-7.8 mm long, and usually have a waisted abdomen (Reemer & Hippa, 2005). As a result of the semiaquatic nature of the larvae, adults can often be found near wet surroundings (Burgio & Sommaggio, 2002). To date, 30 species are known worldwide, of which only two species are described from the Oriental Region (Claussen & Hayat, 1997; Hippa & Ståhls, 2005; Reemer & Hippa, 2005; Skevington, Young, Locke, & Moran, 2019). In 2005, *Neoascia anassa* Reemer & Hippa, 2005 and *N. nana* Reemer & Hippa, 2005, were described in the Oriental region based on single male specimen from Vietnam and Burma, respectively (Reemer & Hippa, 2005). In China, only two species of this genus, *N. dispar* (Meigen, 1822) (Inner Mongolia) and *N. podagrica* (Fabricius, 1775) (Heilongjiang) were reported (Yang, Wang, & Li, 2020).

Neoascia is closely related to the genus *Sphegina* Meigen, 1822 and allied genus can be distinguished from *Neoascia* by the following differential characters: face nearly straight, oblique, pilose (laterally); basoflagellomere elongate; arista bare, katepisternum pilose; and Rs vein without setae (Hippa & Ståhls, 2005; Hippa, van Steenis, & Mutin, 2015). *Neoascia* can be distinguished from other genera by the following characteristics: head dichoptic, without facial tubercle; face nearly straight and slightly oblique, pilose laterally, mala produced; katepisternum pilose; postpedicel usually elongate, arista bare; metapleuron with spinae, laterally; crossvein r-m positioned at proximal half of cell dm, cell r_{4+5} and cell dm with posterolateral corners more or less straight or weakly rounded, vein M_1 meets vein R_{4+5} at a right angle; metafemur with rows of spinae, ventrally, distinctly incrassate (Reemer & Hippa, 2005; Hippa, van Steenis, & Mutin, 2015).

This study reports a new geographical record for *N. anassa* outside the type locality in the Oriental region of China, and describes the previously unknown female *N. anassa*.

MATERIAL AND METHODS

The specimens were collected from Lijiang city, Yunnan Province, China (Fig. 1), using yellow pan and Malaise traps. The specimens were preserved in small bottles with 90% ethanol. Before pinning the specimens, we removed them from ethanol using the AXA procedure suggested by Van Achterberg (2009) to prevent potential shrinkage. To study the male genitalia, we carefully removed the entire abdomen and heated it in a 10% KOH solution at 85°C for 5-10 minutes (Gilasian, van Steenis, & Parchami-Araghi, 2022). The specimens were identified using Reemer & Hippa (2005), following the terminologies established by van Steenis, Miranda, Tot, Mengual, & Skevington (2023). A Nikon microscope (SMZ745) with an ocular micrometer was used to examine the specimens.

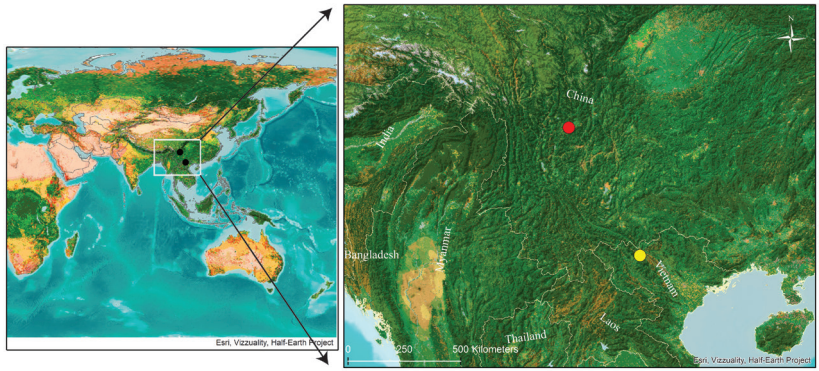

Figure 1. Distribution map of *Neoascia anassa*; yellow color showing type locality and red color showing first country record sampling site.

The images were taken with a 1600 × 1200 pixels camera on a Keyence VHX-5000 digital optical microscope. Images of male genitalia were captured with a computer-connected Leica (S8APO) stereoscopic microscope. All photographs were processed using Adobe Photoshop 8.0 and prepared into plates using Adobe Illustrator (2019). Each specimen was assigned a unique identifier following a year based sequential numbering system (2012-0001, 2012-0002) for proper documentation and tracking. The identified specimens are deposited in the Insect Collection of Qujing Normal University, Qujing City, Yunnan Province, China.

RESULTS

Family: Syrphidae Latreille, 1802

Subfamily: Eristalinae Newman, 1834

Genus: *Neoascia* Williston, 1886

Key to the species of genus *Neoascia* Williston from China

1. Abdominal tergite II with a large median yellow macula and tergite III basally yellow……..……*N. anassa*

- Abdominal tergites II and III black, without yellow macula…….....…….2

2. Abdominal tergites II and III with brown spots, laterally; fore and mid legs brown; antenna black…….....…. *N. podagrica*

- Abdominal tergites II and III black, without spots; legs black; antenna dark brown……..……..……... *N. dispar*

***Neoascia anassa* Reemer & Hippa, 2005 (**Figs. 2-5)

Type locality: Vietnam (Holotype 1♂, NW Vietnam: Tonkin: Hoang Lien, 1900 m, 22°21'N, 103°50'E).

Diagnosis (*N. anassa*): Body large (up to 7.8 mm long); wings infuscated basally; abdomen with large yellow markings on tergites 2 and 3; male genitalia with a slender hypandrium (Reemer & Hippa, 2005).

Description (Female) (Figs. 2-3)

Length: Body (n = 5) 6.5-7.0 mm long (average 6.8 mm), excluding antenna; wing 5.0-5.5 mm long (average 5.2 mm).

Head (Fig. 2a-c): Eyes bare, separated over a distance of about ½ of the width of the head in dorsal view. Face parallel-sided, about as wide as ½ of the wide of eyes, slightly wider at level of frontal prominence; frontal prominence weakly produced; mala strongly produced; frons shiny, rugose medially; weakly impressed vertical sulcus present between the base of the frontal prominence to the frontal ocellus. Frons, face, mala, and genae black; face and mala almost entirely covered with dense, white silvery pruinosity; parafacia and mala with yellow pile. Antenna brown, scape and pedicel brownish; postpedicel oval, ratio width: length = 1: 1.4, yellow ventrally; arista as long as length of whole antennae.

Thorax (Figs. 3, 2d): Scutum black, shiny, finely punctate, covered with short pale pile; postpronotum with white pruinosity; notopleuron shiny black; postalar callus brownish, with a few short pale pile; scutellum semicircular, shiny black, finely punctate, with pale pile. Pleuron shiny black, anterior anepisternum entirely covered with short white pruinosity, entire anepisternum and dorsal margin of katepisternum with long pale pile. Metasternum with pale pile.

Wing (Fig. 3a): Entirely microtrichose; basal 2/3 and posterior margin brownish infuscate; vein M_2 short, nearly as long as appendix of M_4; calypterae and halteres yellowish white.

Legs (Fig. 3b): Pro- and mesoleg yellow, coxa at proximal half, and tarsus posteriorly brownish yellow; metaleg with coxa and distal 2/3 of femur black, except apex yellow, tibia posteriorly at proximal half and apex yellow, tibia anteriorly and tarsus reddish brown; metafemur covered with long pale pile at proximal 2/3 black area, ventrally with two rows of long black spinae.

Abdomen (Figs. 2e, 3): Length ratio of terga I: II: III: IV: V = 1: 2.5: 2.0: 2.0: 0.6; tergum I black, tergum II black, except with a large median yellow macula; tergum III black, basally yellow with pattern as shown in Fig. 3a; tergum IV black; all terga with short pale pile. Sterna yellow, except sterna IV and V basally brown, covered with sparse, long pale pile.

Male (Figs. 4, 5): Similar characters with female except body size (n = 4) 6.6-7.5 mm long (average 7.2 mm), excluding antenna; wing 5.4-6.7 mm long (average 6.2 mm); antennal ratio width: length = 1: 1.5; length ratio of terga I: II: III: IV = 1: 3.4: 2.6: 2.3; color pattern of terga II and III as shown in Fig. 4f; hypopygium as in Fig. 4g-ı.

Material examined: 15♀♀, China, Yunnan Province, Lijiang City, 27°00'N, 100°10'E, 8-20.VI-VIII.2012, 3235 m elev., Identifier No. 2012-0001 to 2012-0015, coll. Yanhui Zhao and Huanhuan Chen: 10♂♂; same data as females, except Identifier No. 2012-0016 to 2012-0026.

Distribution: Vietnam (Reemer & Hippa, 2005); China (first record).

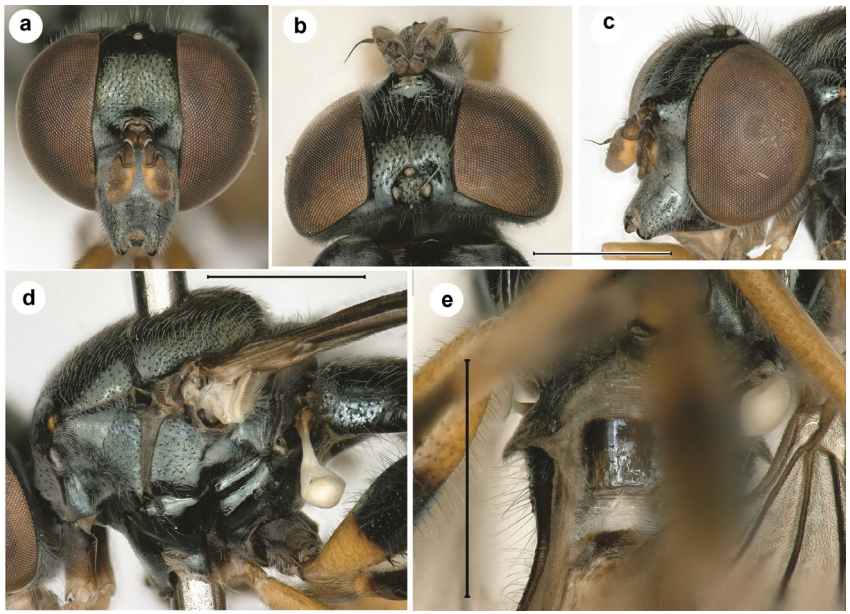

Figure 2. *Neoascia anassa* Reemer and Hippa, 2005 (female). a) Head, frontal view; b) Head, dorsal view; c) Head, lateral view; d) Thorax, lateral view; e) Metacoxal bridge. Scale bar: 1 mm.

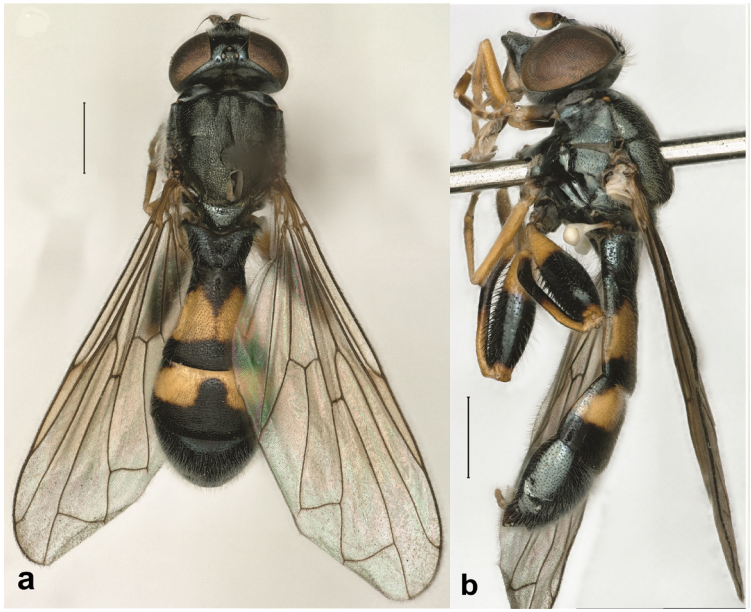

Figure 3. *Neoascia anassa* Reemer and Hippa, 2005 (female). a) Dorsal view; b) Lateral view. Scale bar: 1 mm.

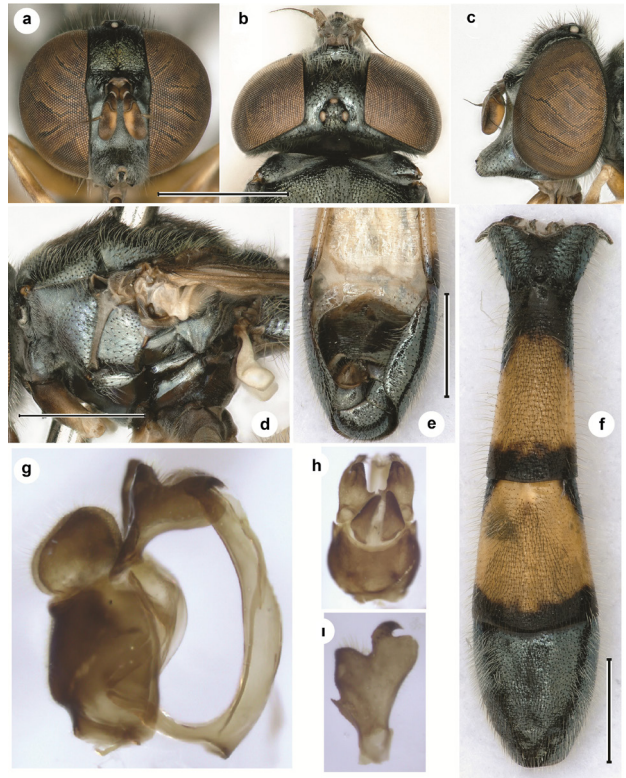

Figure 4. *Neoascia anassa* Reemer and Hippa, 2005 (male). a) Head, frontal view; b) Head, dorsal view; c) Head, lateral view; d) Thorax, lateral view; e) Abdomen posterior, ventral view; f) Abdomen, dorsal view; g) Male genitalia, lateral view; h) Male genitalia, ventral view; ı) Male genital part, lateral view. Scale bar: 1 mm.

Figure 5. Lateral view *Neoascia anassa* Reemer and Hippa, 2005 (male). Scale bar: 1 mm.

DISCUSSION

The genus *Neoascia* is rarely found in China. Of the 30 known species worldwide, only two (*N. podagrica* and *N. dispar*) have been documented in the Palearctic region of the country (Yang, Wang, & Li, 2020). *Neoascia anassa* was first identified as a new species based on a single male specimen from Vietnam (Reemer & Hippa, 2005). In this study, we report *N. anassa* for the first time in Yunnan Province, China, documenting both male and female specimens. Additionally, we provide the first description and illustration of the female.

The Yunnan Province is situated at the intersection of three global biodiversity hotspots namely, the mountains of Southwest China, the eastern Himalayas region, and the Indo-Burma region (Myers, Mittermeier, Mittermeier, Da Fonseca, & Kent, 2000; Li et al. 2021). This province accounts for more than half of the animal and plant species recorded in China (Yu et al. 2022). The Indo-Burmese-Chinese hotspot harbours many Syrphidae species as illustrated by the diversity of the genera *Cheilosia* Meigen, 1822 (29 species) (Barkalov & Ståhls, 2022), *Sphegina* Meigen, 1822 (43 species) (van Steenis, Hippa, & Mutin, 2018), and *Brachyopa* Meigen, 1822 (1 species) (van Steenis, 2015). Although some genera are well-documented, many others lack information, therefore many new species and/or geographical records are to be expected. The presence of *N. anassa* in Yunnan Province increases the number of known *Neoascia* species in China to three, highlighting that taxonomic studies, especially in Oriental Region, have the potential to reveal new species and country records of this genus.

ACKNOWLEDGEMENTS

The authors are grateful to the High-Level Talent Recruitment Plan of Yunnan Province (High-End Foreign Experts Program), the National Natural Science Foundation of China (Grant No. 31860620), the National Foreign Experts Individual Category Program (Grant No. Y20240138), the identification of International Science and Technology Commissioners (Huanhuan Chen) of Yunnan Province in 2024 (Grant No. 202403AK140027), the program for Innovative Research Team in Qujing Normal University, Yunnan Provincial Science and Technology Institute and Key Laboratory of Yunnan Provincial Department of Education of the Deep-Time Evolution on Biodiversity from the Origin of the Pearl River. We would like to express our gratitude to Professor Qiang Li and Professor Li Ma (Yunnan Agricultural University, Yunnan, China) for allowing us to use Keyence VHX-5000 digital optical microscope to capture high quality photographs.

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