
A New Predatory Mite Species of the Genus *Neoseiulus* (Phytoseiidae: Acari) from Narowal, Pakistan

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Abstract Mites are minute arthropods and microscopic in size. They are present in wide range of habitat where life is possible. Mites belonging to the family phytoseiidae are well known predatory mites and used as bio-control agents for phytophagous mites and small soft bodied insects. A survey was conducted to explore the mite fauna of district Narowal of Punjab province (Pakistan). A new record of genus *Neoseiulus* was collected from different localities of district Narowal. The collection was made from different parts of plants and leaf litter by sieve collection and berlese's funnel extraction methods. The collected mites were preserved in vials containing 70% alcohol and few drops of glycerin. Specimens were mounted on the glass slides with help of hoyer's medium. The drawings of different body parts were prepared with the help of ocular grid in a high power microscope. These specimens were compared with already described species. The description and illustration of main body parts, host range and comparison remarks are also given.

Introduction

Mites are the microscopic and tiny creature belonging to order Acarina, subclass Acari of the class Arachnida. They are biologically the most diverse and dominant group which is worldwide in distribution (Chillar *et al.*, 2007). Mites belonging to the family Phytoseiidae are abundant in different types of habitat and are well known predators of phytophagous mites and small insects like thrips and whitefly (Kasap and Sekeroglu, 2004). Among different genera, *Neoseiulus* and *Euseius* are very important (Muma and Denmark, 1970) and very common in Pakistan (Chaudhri *et al.*, 1979; Chaudhri and Akbar, 1985).

Mite species of genus *Neoseiulus*, being predatory in nature, are considered important in biological control (Muma and Denmark, 1970; Hughes, 1948). This genus was erected in 1948, by Hughes and designated *Neoseiulus barkeri* Oudemans as its type species. In Pakistan, Chaudhri *et al.* (1979), Chaudhri and Akbar (1985), Ahmad and Chaudhri (1988), Hafiz *et al.* (1990)

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worked a lot on this genus. The present authors have collected and described one new species in this research paper. Ahmad and Chaudhri (1988) collected and described a new species of the genus *Neoseiulus* Hughes (Phytoseiidae) from Pakistan. Den and Castro (2008a) described and illustrated the original affiliation of the genus *Neoscirula* (Cunaxidae), and three new species of this genus *Neoscirula flechtmani*, *N. oliveirai* and *N. queirozi* were described. Zannou *et al.*, (2007) collected the phytoseiid mites from sub-Saharan Africa. Thirty-one phytoseiid species of the sub tribe Amblyseiina were reported. Ten of these species were described for the first time, 15 species were described and 6 are not evaluated in this study. Diagnosis - Female with 4 pairs dorsal setae, 3 pairs median setae, 8 pairs lateral setae, subequal in length, posterior setae slightly longer; 2 pairs subletral setae, on the membrane; sternal and ventrianal shield, each with 3 pairs setae. Chelicerae small in proportion to body size. Peritreme long, extending forward to seta j1 were noted. Ventrianal shield elongate, Macrosetae on leg I-II and III absent. Leg IV with macro setae on tarsus, but in some cases macrosetae may be present on tibia IV and Genu IV.

Materials and methods

Mites of the family Phytoseiidae collected from Narowal city from Mulberry (*Morus alba* L.). The collection was made from different parts of plant and leaf litter by sieve collection and Berlese's funnel extraction methods. The collected mites were preserved in vials containing 70% alcohol and few drops of glycerin. Specimens were mounted on the glass slides with help of Hoyer's medium.

Results

The drawings of different body parts were prepared with the help of ocular grid in a high power microscope. The identification of species was done with the help of existing keys and literature. Grandjean's system of terminology (1944) with modifications and additions made by Summers (1960) and Gonzalez (1965) has been used in this work. All measurements were made in micrometers (μm).

Female:- dorsum:dorsal shield smooth, 438 μm long, 300 μm wide, oval near R1, 1 pair visible pores (Fig.1A). Chelicerae 55 μm long moveable digit with 1 sub apical tooth, fixed digit with 6 sub apical teeth (Fig.1E). Dorsal shield with 19 pairs setae all setae smooth, shorter than distance between setae next in line. Dorsal setae j1 25 μm ; j4 20 μm , j5 23 μm ; j6 18 μm , j2 18 μm , j5 15 μm , j3 28 μm , z2 30 μm , z4 28 μm , s4 32 μm , S4 30 μm , S6 38 μm , z5 28

μm , Z4 35 μm , Z5 38 μm , r3 28 μm , R1 38 μm in length respectively. Peritreme extending beyond j3 is shown in (Fig.1A).

Venter: Sternal shield with 3 pairs setae approximately as long 85 μm and wide 75 μm (Fig.1B). Meta sternal setae on a separate platelet (Fig.1B). Genital and ventrianal shields adjacent with a membranous fold in between. Ventrianal shield, shield-shaped slightly concave laterally, striated, 3 pairs setae, 1 pair pores, 150 μm long, 113 μm wide, 4 pairs setae surrounding ventrianal shield including seta JV5, seta JV5 smooth, 40 μm long (Fig. 1B). Metapodal platelets 2 pairs primary 28 μm ; secondary 18 μm (Fig.1B). Spermatheca is shown in (Fig.1D).

Legs: Leg IV with 1 macro seta on basi tarsus, measuring 50 μm in length (Fig.1C).

ETHMOLOGY: This species is named on the locality name from where it was collected.

Male: Unknown.

Type:

Holo-type female, collected from Narowal city 17-09-07 (Zahid Mehmood) from Mulbery (*Morus alba* L.). Paratype 2 females same collection data. All deposited in the Acarology Research Lab. Deptt. Of Agri. Entomology, University of Agriculture, Faisalabad

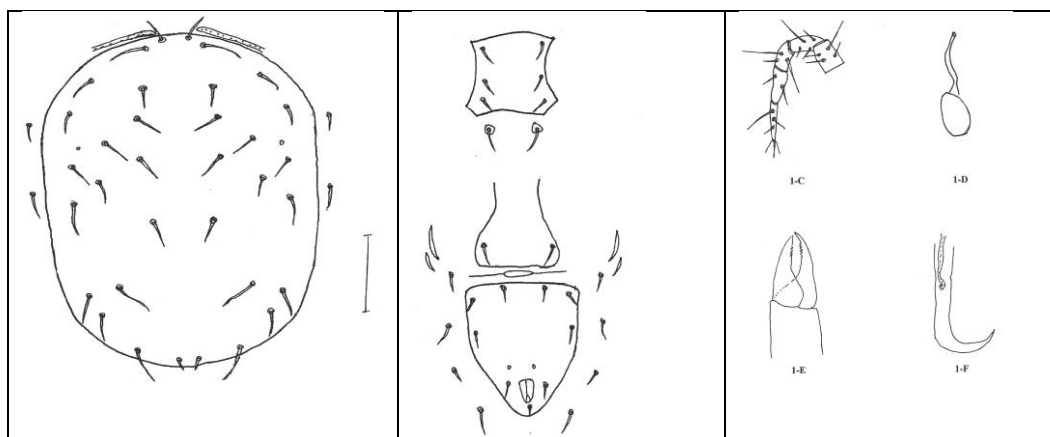


Figure 1. Characteristic drawings, A, B, C, D

This new species is closely resembles with *Neoseiulus caruncula* Chaudhri & Akbar, but following characters separate these two species. All setae are smooth in this new species but L8 is serrated in *Neoseiulus caruncula*. In this new species movable digit is without teeth but *Neoseiulus caruncula* has 1 tooth on its moveable digit. In this new species there is one pair of pores on

dorsal shield but in *Neoseiulus caruncula* two pairs of pores are presented. Latin diagnosis may possibly be written further and also reconfirmation by molecular phylogeny.

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