



New distribution record of the abandoned-web orb-weaver, *Paravixia dehaani* (Doleschall, 1859) (Araneae: Araneidae) from the wet zone of Sri Lanka

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ABSTRACT

The orb weavers are a highly diversified group of spiders with Family Araneidae having the highest number of species. The distribution records of many of the orb-weaver species in Sri Lanka are scanty, and there is little published information on the descriptions of their morphological features. The current paper reports a new distribution record of *Paravixia dehaani*, the only orb weaver spider of this genus recorded in Sri Lanka. The present record of the spider is from Keeragala and Indikada Mukalana, both located in the South Western wet zone of the country. The only previous record of this species is from Trincomalee in the North Eastern coast of Sri Lanka, documented 117 years ago. In this paper we also describe the morphometric characteristics, habitats and behavior of this spider found in the newly documented locations.

1. INTRODUCTION

The orb web spiders are diversified and consist of numerous taxa represented by several families including Araneidae, Nephilidae, Tetragnathidae and Uloboridae. Of these, the family Araneidae comprises the highest diversity, with 169 genera and around 3100 known species worldwide [1]. In Sri Lanka, about 47 species from 24 genera are recorded from this family alone with seven of the species being endemic [2]. The population status of as many as 27 of these spiders including that of the abandoned-web orb-weaver, *Paravixia dehaani*, has not been assessed due to the paucity of information and are hence categorized as Data Deficient (DD) in the national red list of threatened species (MOE) [2]. Therefore, studies reporting the distribution of these species are of paramount importance for purposes of conservation.

The abandoned-web orb-weaver, *Paravixia dehaani* has been recorded from India and several other countries such as Pakistan, Indonesia, New Guinea and Australia [1, 3, 4]. The only recorded report in Sri Lanka is from Trincomalee which is in the dry zone along the North Eastern coast of the island [5]. No published information is available on this species since this record which was published 116 years ago. There is also no documentation of its morphology, behavior and habitat

characteristics within the island. The current work reports the new distribution records of the species and documents its general morphological characteristics, habitat features and behavior of the specimens found in the wet zone of Sri Lanka.

2. MATERIALS AND METHODS

2.1 Species identification

Specimens suspected to be of the species *Paravixia dehaani* were observed in two locations i.e. Indikada Mukalana, a rainforest reserve, and in a home garden in Keeragala, both located in the South Western wet zone of Sri Lanka. Species identification was done using morphological identification keys given by Pocock [5] and Tikader [6, 7] which are based on external morphological characters.

2.2 Morphological measurements

Morphological measurements were taken only from the specimen observed in Keeragala, Sri Lanka. The spider was gently removed from its resting place in the vegetation adjacent to the web and the following measurements were taken using a digital vernier caliper: total length of the specimen, length and width of the carapace, length and width of the abdomen.

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2.3 The behavior

The behavior of the spiders were observed extensively both in the forest and home garden over several days, covering both during the day and night.

3. RESULTS AND DISCUSSION

3.1 New distribution records

Parawixia dehaani was recorded from two new locations namely, the Indikada Mukalana Reserve, Colombo District, Sri Lanka (6.891812° N, 80.166170 E) and Keeragala, Ratnapura District, Sri Lanka (6.790745° N, 80.349706° E). These two locations are shown in Fig. 1. With respect to distribution, extensive surveys conducted on orb-weaver spiders in the wet zone resulted in the discovery of *P. dehaani* only from these two locations.



Fig.1 A map of Sri Lanka showing the two new locations (red dots) and the previously reported location (black dot) of *Parawixia dehaani*

One female spider was observed from each location while no males were seen during the study. The posterior row of eyes of the observed individuals were re-curved, while the lateral eyes were sub-equal, thus confirming that the specimens belong to the sub-family Araneinae. The abdomen of the specimens was also longer than wide, but the length was less than twice the width (Table 1). The cephalic region is not elevated above the thoracic region, and the abdomen consists of tubercles (Fig. 2.A). The ocular region is not situated on any projection and the lateral eyes are situated close to each other, but do not touch, as seen in Fig. 2.B. The carapace does not have a U shaped junction between

the cephalic and thoracic regions. The cephalic region of the carapace bulges behind the ocular area (Fig. 2.B), and the anterior row of eyes are pro-curved. These characters confirm that the observed specimens belong to the genus *Parawixia*. In both specimens the cephalothorax and the legs are reddish brown and the abdomen dark brown (Fig. 2.C). These characters and the general proportions of the specimens as shown in Table 1 confirm that the specimens are of *Parawixia dehaani*. This is the only species reported from the genus *Parawixia* recorded in Sri Lanka so far. surface of the abdomen, **B**. Dorsal surface of the cephalothorax, **C**. Complete specimen showing leg and body colors.



Fig.2s External morphology of *Parawixia dehaani* (Doleschall, 1859) from Keeragala, Sri Lanka, A. Dorsal

Table.1. Some morphometric parameters of *Parawixia dehaani* recorded during the study.

Measurement (mm)	Keeragala (2016)	West Sikkim (Tikader 1970)
Total length	18.20	20.50
Carapace length	6.10	8.80
Carapace width	5.90	7.40
Abdomen length	14.15	13.70
Abdomen width	11.85	12.50
Abdomen length/ Abdomen width	1.194	1.096

3.2 Habitats

Although based on the reported observations *P. dehaani* appears to be rare, the locations in which it was observed shows its use of several habitats. For instance the first record in 1916 was from a coastal region in the dry zone (Trincomalee) whilst the two recent records

were from wet zone habitats. Also interestingly, the species was seen to be able to use rainforest habitats as well as human modified home gardens. The two latter habitats although in the same region of the country were very different in terms of vegetation characteristics.

3.3 Behaviour:

The abandoned-web orb weaver, *Parawixia dehaani* lives up to its name, by abandoning the web for most part of the day. None of the two observed individuals were found on the web during the day time, but were found among the vegetation in close proximity to the web, remaining hidden and well camouflaged on dried leaves or stems. The spiders remain so until a prey is caught on the web, when it emerges quickly on to the web to retrieve the prey. At night, however, the spiders move on to the web and reside at the hub of the web, which is likely to be a thermo regulatory adaptation. Unlike some of the other members in this family, *P. dehaani* does not build webs daily nor does it repair the webs regularly when damaged. Instead the web is used for a few days unless there is considerable damage, and then resorts to building a new orb web nearby. It does not consume the silk of the old web, as is reported for some other species of this family [8]. *Parawixia dehaani*, despite their wide distribution in the Asia Pacific region is one of the least studied spiders. Considering this scarcity of information, findings of the current study on its presence and distribution within the natural habitat is important to understand the ecology of the species. The unavailability of information on the distribution of this species so far has hampered the assessment of its threatened status within the island [2]. The rarity of the species in the wet zone, however, could mean that the spider is rare. Therefore, our study would provide valuable information to support future assessments of the conservation status of the species.

4. CONCLUSIONS

The abandoned-web orb weaver, *Parawixia dehaani* was recorded from two locations in the South Western wet zone of Sri Lanka, which differs from the only previous record of this species in the country documented over a century ago. The rarity of the species in the wet zone, however, may indicate its threatened status within the country.

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6. CONFLICTS OF INTERESTS

The authors declare that there are no conflicts of interests regarding the publication of this article.

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