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The Range Extension of the Critically Endangered, *Poecilotheria smithi* in Sri Lanka, with Notes on its Sociality

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***Poecilotheria smithi* is a Critically Endangered Theraposid known only from the type locality Haragama in the Kandy District, Sri Lanka. It was thought to be distribution specific to Haragama. During a survey on the genus *Poecilotheria*, which was initiated in 2011 by the authors, *P. smithi* was recorded, the first confirmed observation of *P. smithi* outside of its type locality from the Matale district about 31.42 Km in aerial distance northwest of the type locality. Distribution of this species extended in Sri Lanka by this novel record. *P. smithi* displays the social behaviour of sharing same microhabitat with few individuals. As demonstrated for *P. smithi*, we suggest the large group size and social behaviour observed was in response to unavailability of suitable micro habitat for the mature individuals.**

Key words: Tiger Spiders, Matale, Type locality, Tree hollow, Distribution, Social behaviour

INTRODUCTION

Distribution limits for *Poecilotheria* in Sri Lanka remains relatively poorly known because only widely scattered sites have been subjected to through surveys. This fact is underscored by the high pace of discovery of new taxa and new distributional records by arachnologist in Sri Lanka (Benjamin *et al*., 2012; Nanayakkara *et al*., 2012a, Nanayakkara *et al*., 2012b). Gaps in our distributional knowledge for majority of species of Spiders are exacerbated by the difficulty in accessing appropriate habitats, which are often fragmented and widely dispersed across rugged landscapes.

Poecilotheria smithi is a highly threatened Theraposid known only from the type locality Haragama in the Kandy District. It was thought to be distribution specific to Haragama. Surprisingly few records have been reported since it's description by Kirk in 1996. Though several studies were under taken on the genus and on the species itself between 2002-2005, it did not yield any specimens of *P. smithi*. However, in April 2005 a single freshly moulted female was discovered in Haragama (Gabriel *et al*., 2005), further two adult females and four Spiderlings were observed in July 2005 (Gabriel *et al*., 2005) from the type locality. Subsequently, a study in 2005 on the island wide distribution of the genus, did not record any specimens of *P. smithi* (Samarawickrama *et al*., 2005).

P. smithi is categorized as Critically Endangered by MOE (2012), due to it being endemic to Sri Lanka, intrinsically low population density, narrow estimated niche breath and its distribution specific type locality. Further, the Haragama forest is severely impacted by several anthropogenic factors, which combine to cause severe habitat loss and prevent of forest regeneration. *P. smithi* is generally considered solitary, and only encountered in numbers when the female is met with spiderlings. However, anecdotal reports state that sighting of up to five mature individual, using the same tree is not uncommon. Additionally, there are no known reports of *Poecilotheria* group composition.

Here the authors present the first documented record of *P. smithi*, outside its type locality (Haragama), with information on habits and social behaviour.

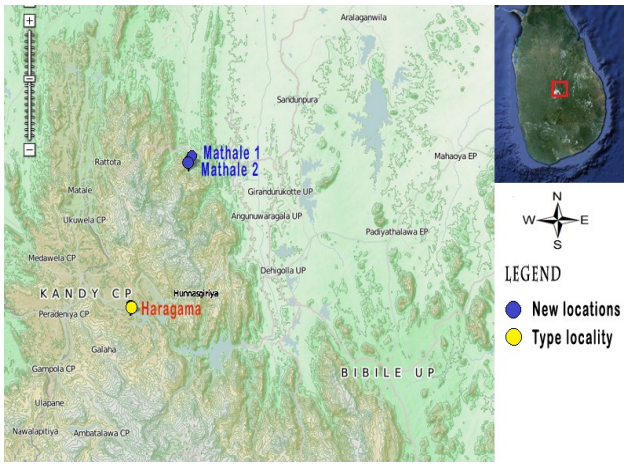

Figure 1. New distribution records of *Poecilotheria smithi*

OBSERVATION

The observation was made during an Island wide survey on the genus *Poecilotheria*, which was initiated in 2011.

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The nominated species was observed on 25th of January 2013, a female specimen was observed on a fig tree (*Ficus sp.*) about 31.42 km (aerial distance) northwest of the current distribution in the Matale district (Figure 1). Further, a colony of adults and sub adults were observed in hollow of a coconut tree (*Cocos nusifera*) and several other individuals were observed in a fig tree (*Ficus sp.*) within a radius of 5 km from the new recorded site. The female was first observed at 2000 hrs and remained near the entrance of the hollow until 2115 hrs, when it move a little away from the hollow, and stayed there (Figure 2). However, when it was disturbed it quickly retreated into the hollow and remained there. The main activity was the movement to and from the tree hollow. With the other individuals recorded, no aggression was recorded; feeding, movement to and from the hollow, in all individuals. The juveniles were considerably more active than adults.

P. smithi is clearly set apart from the congeners by the coxa, trochanter and femur being velvety black with a very thin white band on the distal edge of the femur and also the patella of *P. smithi* is mostly white with a thick distal black band (Figure 3). The observation occurred in a Coconut tree situated in heavily disturbed Pepper cultivation (*Piper nigrum*) (Figure 4) and a fig tree adjoining a paddy field (*Oryza sativa*) (Figure 5). The area is heavily used by local villagers, as the fig tree boards a forest footpath.

Figure 2. *Poecilotheria smithi* in its natural Micro-habitat.

This record represents the first confirmed observation of *P. smithi* outside its type locality and extends the reported distribution of the species in Sri Lanka. Distribution is extending to the new point, indicating a wider island-wide distribution of *P. smithi* in Sri Lanka than hitherto assumed. There are several additional areas of comparable forest within this potential distribution also connected with the central hill country that represent potential habitat for this species. Several of these potentially suitable areas fall under protected area, thus conservation measures can be put in place for the species. But the major challenge will be to establish the extent of continuity of its distribution between these geographically scattered records. Hence, Additional surveys are suggested to document the specie's geographic distribution and abundance, evaluate conservation status, and improve our understanding of its ecological and social behaviour.

Figure 3. Ventral aspect of *Poecilotheria smithi.*

There has been very little documented evidence on the social behavior of the genus *Poecilotheria*, both in India and Sri Lanka. As demonstrated for *P. smithi*, we suggest the large group size and social behaviour observed was in response to unavailability of suitable micro habitat for the individuals, as these species prefer old well established trees with naturally occurring hollows etc. However, the spiderlings found with the female is the norm, as this behavior has been recorded from the congeners. Little is known about the effects of timber harvesting and agriculture production or human disturbance on the population of the new record. However, these have to be further analyzed to get an understanding of conservation need to be implemented for the furtherance of the species.

Figure 4. Coconut tree situated in heavily disturbed Pepper cultivation.

Moreover, the high demand for this rare species in the international pet trade could affect the population,

as the illegal over harvesting could have dire consequence for the species as a whole. As such, stringent measure must be taken to curb, the illegal collecting of this species from the wild. As it has been highlighted for other species of *Poecilotheria* both in India and Sri Lanka. Necessary measure must be taken to educate local villagers and law enforcement officers, of the importance and identification of these endangered species.

Figure 5. Fig tree (*Ficus sp.*) adjoining a paddy field.

CONCLUSION

In summary, the observations reported here suggest that much more survey work is required to understand the conservation status of *Poecilotheria* and its habitat preference. These species tend to have peculiar habitat requirements that increase their potential susceptibility to climate change and habitat destruction.

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