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SHORT COMMUNICATION

STUDY OF THE DISTRIBUTION OF THE GENUS *POECILOTHERIA* OF THE FAMILY THERAPHOSIDAE IN SRI LANKA

V. A. M. P. K. Samarawckrama[1*], M. D. B. G. Jananda[1], K. B. Ranawana[1], and Andrew Smith[2]
[1]Department of Zoology, Faculty of Science, University of Peradeniya, Peradeniya, Sri Lanka. [2] Natural History Museum, London,United Kingdom.

ABSTRACT

A two year survey conducted during 2003 – 2005 on Theraphosid spiders in Sri Lanka yielded in recording four different species of the genus *Poecilotheria* from differnt parts of the country. The most preferred microhabitats of all the species of *Poecilotheria* are tree holes which provide ideal habitats for their mode of life. The low number of individuals being recorded for all the species suggests that their populations might be relatively small. They are also faced with the problem of habitat destruction and fragmentation.

INTRODUCTION

The theraphosid spiders belong to the family Theraphosidae of the order Araneae, class Arachnida. The genus *Poecilotheria* is made up of arboreal species, which can be found in India and Sri Lanka. The genus name, *Poecilotheria*, was first proposed in 1885 by the French arachnologist Eugene Simon, when he discovered that the existing name *Scurria* C.L. Koch, 1850 was use for a mollusc genus (Smith, 2004). These theraphosid spiders are medium-sized or very large Mygalomorphae, differing from the Barychelidae in having the apical segment of the posterior spinners cylindrical and at least as long as the second segment, and in the absence of the rostellum. Eyes always aggregated on the distinct tubercle. Most species are fossorial. But they never close the aperture of the burrow with the movable lid. Few species live under stones, in tree holes or in a shelter of any natural crevices (Smith and Kirk, 2002).

Six theraphosid subfamilies are listed in the literature as being present in India and Sri Lanka (Smith and Kirk, 2002). The Genus *Poecilotheria*, which comes under the Sub Family Selenocosmiinae were selected for this study as very few studies have been carried out on the distribution of this genus in Sri Lanka. Members of *Poecilotheria* are very large, variegated spiders within a flattish carapace (Smith and Kirk, 2002).

There are sixteen species of theraphosid spiders recorded from the Indian Sub-continent. Among them, eleven are endemic to India (Smith and Kirk, 2002) while the remaining five species are endemic to Sri Lanka. The first species of *Poecilotheria* recorded from Sri Lanka was described in 1804 by Latreille (Pocock, 1990). Kirk (1996, 2002) has described two more new species of *Poecilotheria* from Sri Lanka. The other comprehensive work on Sri Lankan *Poecilotheria* was done by Smith and Kirk (2002).

METHODOLOGY

Information on the distribution of *Poecilotheria* spp. in Sri Lanka was gathered during the field visits made to various parts of the island from 2003 to 2005. The microhabitat (A small area that has different environmental conditions from those of the surrounding area) of each species in different regions of the country was recorded and the specimens were photographed on the site. Identifications were done by observing features of live specimens captured from the field.

Captured live specimens were released to the same site soon after the confirmation of the identity of the species and photographing them. Sampling was carried out during day and night. Spiders were collected using hand nets. Hand

*Corresponding author E.mail: madurapk@yahoo.com

lenses were used to observe their fine body structures.

An attempt was made to introduce Sinhala and English names for the Sri Lankan species, as there were no Sinhala and English names for these species in Sri Lanka. The names were designed by considering the morphological characters of the spiders. Such as body color, hair, pattern of carapace, etc.

RESULTS

Four species of theraphosid spiders (Figure 1 and 2) of the genus *Poecilotheria* were encountered in six districts (Figure 3) of the country during the study. Three individuals of *P. pedersoni* were recorded from the Bundala National Park in Hambanthota District. Three more individuals of the same species were recorded from the Madunagala Sanctuary. Three individuals of the species, *P. fasiata* were recorded; one from Kurunagala and two from Naula. A total of six individuals of *P. ornata* were recorded during the study. Two of them were recorded from Udamaliboda, Deraniyagala, one from Kitulgala forest reserve and three from Sinharaja World Heritage Site. Twenty individuals of *P.subfusca,* eighteen from the Gannoruwa forest and one each from Dotulugala MAB reserve and Gannoruwa village, Kandy were recorded during the study (Table 1).The most preferred microhabitat of all the species of *Poecilotheria* is tree holes. *P. pedersoni* shows special preference for Palu (*Manilkara hexandra*) tree bark with 33.33% of the specimens being recorded in this microhabitat. It also has a preference for dark places of walls of houses in the dry zone of Sri Lanka. A small percentage of *P. pedersoni* is also found in tree holes. Apart from being found in tree holes, the most preferred habitat of *P. ornata* is tree bark with recording of 50% occurrence. The most preferred microhabitat of *P. subfusca* is tree bark with 85% occurrence. It is also found in small percentages on house walls and in tree holes. *P. fasciata* shows equal preference for tree holes, banana fruit combs and tree bark (Figure 4)

The highest number of individuals was recorded from the species *P.subfusca*. Presence of juveniles was observed from this species only. Among the total of six individuals observed from *P. ornata*, five were females (Figure 5).

DISCUSSION

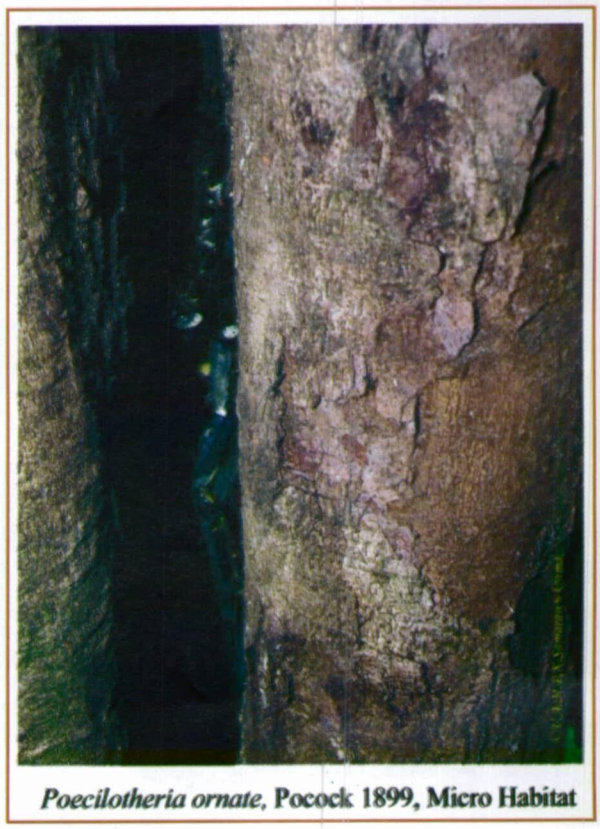
Of the five species of *Poecilotheria* found in Sri Lanka, four species were recorded during this study. All of the spiders were found in well protected dark microhabitats, where they can remain fairly inconspicuous. Namely these include tree holes, tree trunks, tree barks, and house walls. These types of habitats are ideal for their mode of life. Unlike other spiders, Poecilotherian spiders do not use webs to capture prey. Instead they are active predators, attacking prey from their hiding places and injecting venom to immobilize them. During our field observations, seven adults were found in tree holes and five were on tree barks. Since these spiders are not web dwelling, they may choose trees as suitable microhabitats where they can hunt effectively while remaining well camouflaged.

All these recorded five species of spiders are endemic to Sri Lanka and can be considered as endangered due to many reasons. The low number of individuals being recorded for all the species suggests that their populations might be relatively small. They are also faced with the problem of habitat destruction and fragmentation due to human activities (Anonymous, 2000). Since they are closely associated with their microhabitat for protection and camouflage, destruction of suitable natural microhabitats such as tree holes and tree barks would invariably have a detrimental effect on the survival of these secretive spiders. Apart from the threat of habitat destruction, these spiders are threatened because of their aesthetic value as well. Theraphosid spiders are known for their beauty and size and are traded as pets in the international market. There has been a recent spurt of collection of theraphosid spiders from India and Sri Lanka, which end up in European and American markets. Initial findings suggest that many theraphosids are restricted in their distribution and many more are not described till date. Habitat degradation is a common threat with many species being susceptible to changes in quality of habitat.

Poecilotheria fasciata (Latreille 1804) Male.

Poecilotheria fasciata (Latreille 1804) Female.

Poecilotheria ornata, Pocock 1899, Female



Poecilotheria ornate, Pocock 1899, Micro Habitat

Figure 1. photographs of the *Poecilotheria fasciata & P. ornata*

Poecilotheria subfusca, Pocock 1895, Female.

Poecilotheria subfusca, Pocock 1895, Juvenile.

Poecilotheria smithi, Kirk 1996, Female.

Poecilotheria pederseni, Kirk 2001, Male.

Figure 2. Photographs of *Poecilotheria subfusca, P. smithi & P. pederseni*

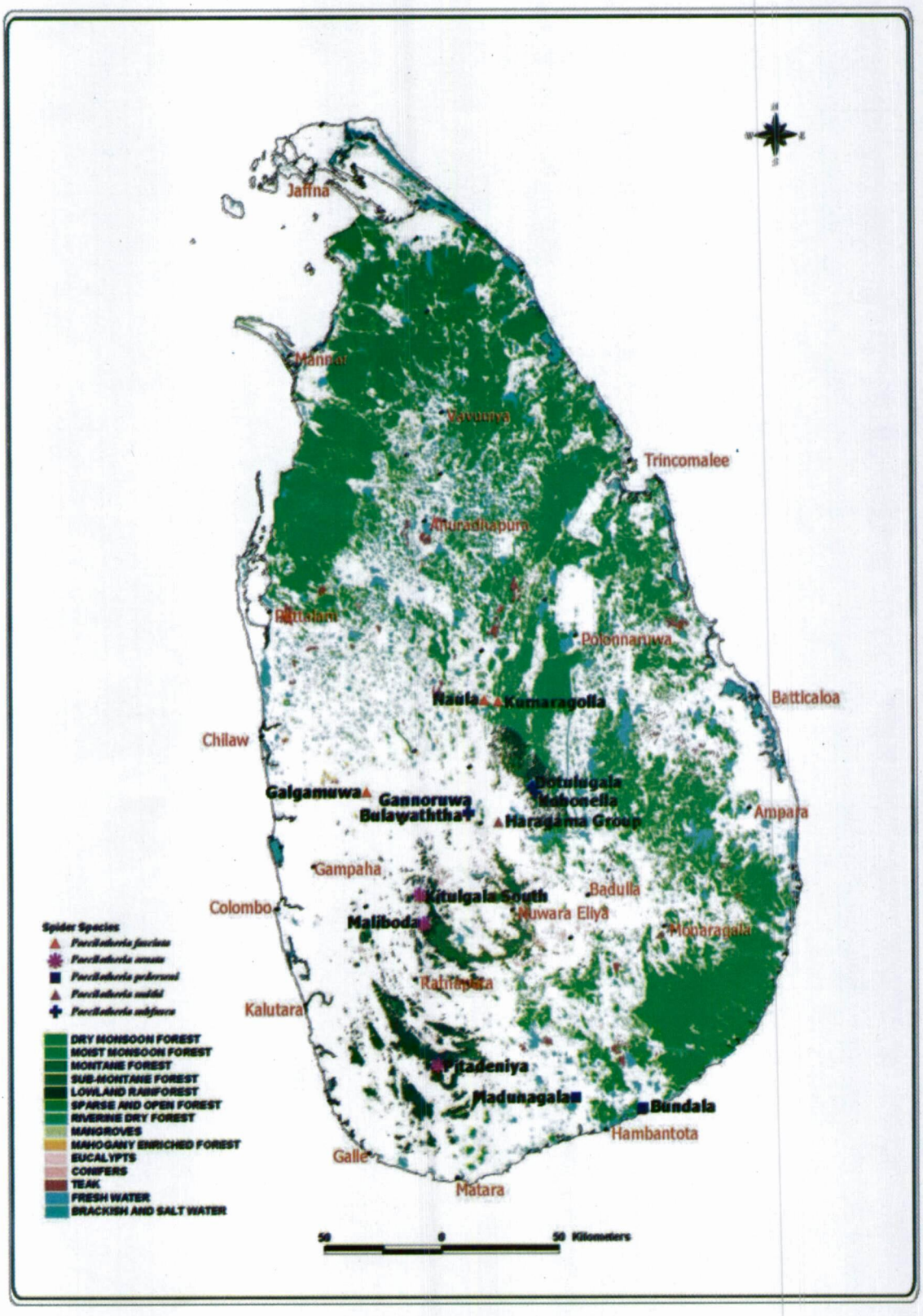


Figure 3. Distribution of *Poecilotheria* species in Sri Lanka

Table 1. Abundance, location, and microhabitats of different *Poecilotheria* species.

Species	Location	Abundance	Category	Habitat	Total
P.pedersoni	Bundala National Park (Hambanthota)	3	01 ♂, 02 ♀	01-Palu tree bark 02-House wall	6
	Madunagala Forest reserve (Hambanthota)	3	01 ♂, 02 ♀	01-Palu tree bark 02-Tree hole	
P.fasiata	Kurunagala (Galgamuwa)	1	♀	Tree hole	3
	Naula,Dabulla	1	♂	inside a banana comb, plantation	
	Kumaragolla Naula	1	♂	tree bark	
P.ornata	Udamaliboda Deraniyagolla	2	♀	1-House wall 1-Tree hole	6
	Kitulgala FR	1	♀	1-Tree hole	
	Sinharaja,Deniyaya	3	♀	3-Tree trunks	
P.smithi	Haragama	Not recorded	-	-	-
P.subfusca	Gannoruwa Kandy	18	03 ♀ 15-juveniles	01-tree hole 02-tree bark 15-juvenile, tree bark	
	Dothulugala reserve Knukles forest range	1	♀	tree hole	
	Gunnoruwa, Kandy	1	♂	House wall	20

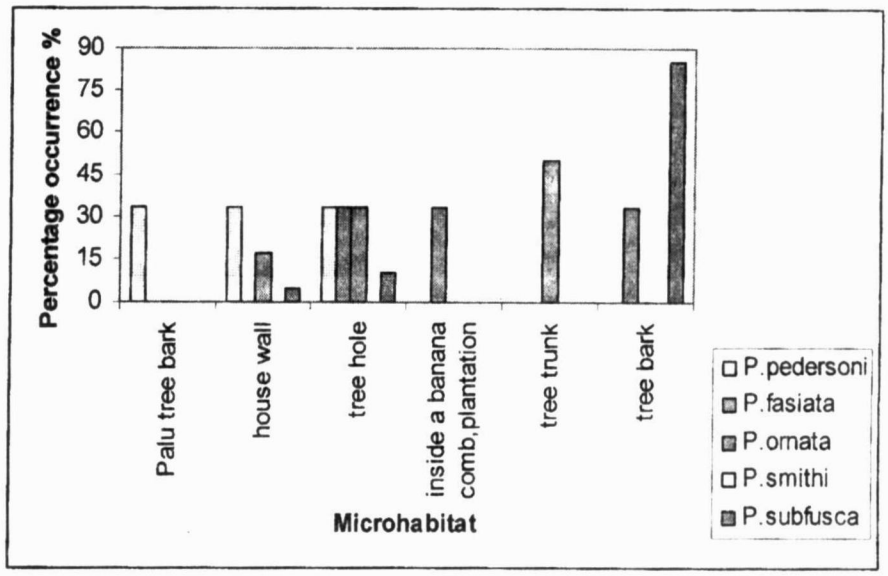


Figure 4. Percentage occurrence of each species in different microhabitats.

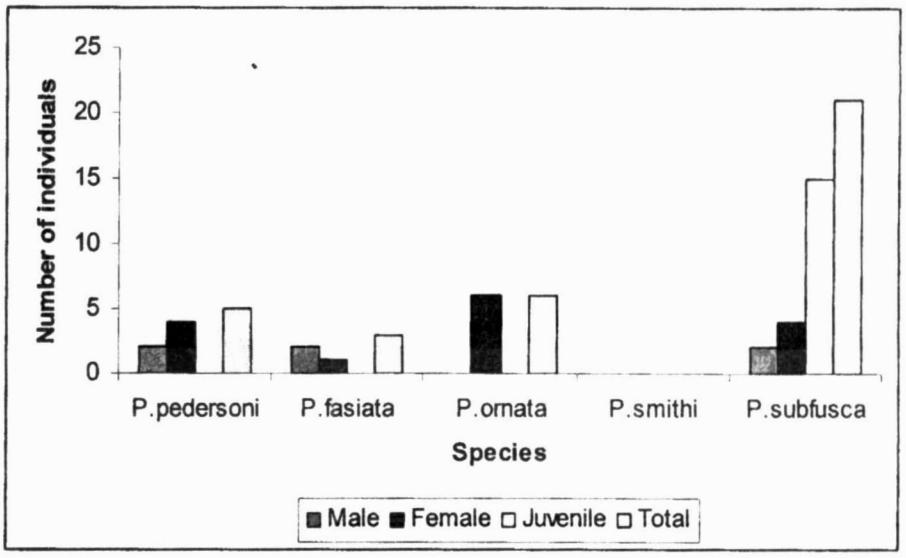


Figure 5. Abundance of each species of the genus *Poecilotheria*.

Captive breeding protocol for this group is still not effectively established. Myths about the effects of their poison abound among locals, which have a negative impact on their presence in and around houses in the forests (The Rufford Maurice Laing Foundation, 2005).

According to the U.S. Fish and Wild Life Service the 11 known species of Eastern Hemisphere tarantulas (*Poecilotheria*) occur only in the forests of southern India and Sri Lanka. They are threatened by habitat loss and collection for the commercial hobbyist trade. None of the species are currently listed under CITES (CITES 2001). The United States co-sponsored a proposal with India and Sri Lanka to list all of the Eastern Hemisphere tarantulas. Although the proposal received a simple majority of votes, it did not receive the two-thirds majority necessary for adoption. The U.S. Fish and Wild Life Service has mentioned that they take efforts to stop illegal collecting of tarantulas by foreign hobbyists and commercial collectors. And they are aware that the two range countries, India and Sri Lanka, may have interest in submitting a proposal, and they have offered their assistance to them in the preparation of such a proposal. However, given current uncertainties, the United States is undecided whether it will submit or co-sponsor a listing proposal for COP13 (CITES).

The greater proportion of spiders encountered during the study are females. This might be mainly due to the fact that females are the ones who are closely associated with nesting. Most of the microhabitats in which these spiders are found such as tree holes and tree trunks are ideal spots for laying eggs. Since these microhabitats are given special attention during sampling, it is possible that females are more frequently encountered in these potential nesting sites. This is especially evident in the case of one observation regarding the species *P. subfusca*, where fifteen juveniles were found in close proximity to a female.

In conclusion, this study was aimed at conducting a preliminary survey of the spiders of the genus *Poecilotheria* in Sri Lanka. From the findings of the study we were able to map the distribution of four of the five species found in Sri Lanka, except *P. smithi* which was not recorded during the study. Furthermore, we give a list of common English and Sinhala names (Table 2) for all five species so that this information can be used for more detailed studies of this lesser known group of *Poecilotheria* spiders in Sri Lanka.

Table 2. Proposed English and Sinhalese names for Sri Lankan *Poecilotheria*.

Scientific Name	English Name	Sinhala Name
Poecilotheria pederseni	Pedeserni's Tiger Spider	Pedeserni Divimakuluwa
Poecilotheria smithi	Smith's Tiger Spider	Smithge Divimakuluwa
Poecilotheria ornata	Yellow-legged Tiger Spider	Kaha iri padethi Divimakuluwa
Poecilotheria subfusca	Ivory bird-eating spider	Eth dala peha iri padethi Divimakuluwa
Poecilotheria fasciata	Lemon-legged Tiger Spider	Thada kaha iri padethi Divimakuluwa/ Yaksha Divimakuluwa

Characters that are useful in identification of the species are listed below:

P. pederseni, can be identified by the details of the ventral surface of legs. The coxa of the legs one and two are black and there is a very narrow black band on the proximal edge of the femur and a black band about ¾ of the lengths of the femur distally. There is a very pale band, almost white on the distal edge of the femur (Kirk, 2001). *P. fasciata* can be identified by the black band on femora being very narrow or often absent on femur of fourth leg. On the other hand *P. ornata* has very broad black bands on femora, especially on femur of third and fourth legs.

P. subfusca has a palp with yellow patch at apex of femur, base of patella, and base and apex of tibia beneath. In addition, patellae of legs are black in color on the basal half.

P.smithi can be distinguished from P.subfusca by the coxa, trochanter and femur being velvety black with a very thin white band on the distal edge of the femur. Also the patella of *P.smithi* is mostly white with a thin black band along the distal edge, where as in *P.subfusca*, the patella is ventrally black (Kirk, 1996).

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The Rufford Maurice Laing Foundation - http://www.rufford.org

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