

PETITION TO LIST  
11 Tarantulas in the Genus *Poecilotheria*  
UNDER THE U.S. ENDANGERED SPECIES ACT



Photo of *Poecilotheria hanumavilasumica* © Manju Siliwal

**Petition Submitted to the U.S. Secretary of Interior, Acting through the U.S. Fish and  
Wildlife Service**

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October 29, 2010



## Introduction

Spiders in the genus *Poecilotheria* are suffering from habitat degradation, collection for the pet trade, intentional killing and other perils. These forest-dwelling spiders are very large, colorful, and ornate. They are restricted to southern and central Sri Lanka and southern and northeastern India, where native forests are rapidly diminishing (Sri Lanka et al. 2000; Molur and Siliwal 2004). The United States recognized the plight of these species, referred to as “tarantulas” – and the particular threat of collection for trade - when it joined Sri Lanka and India in 2000, attempting to obtain listing of the genus under the Convention on International Trade in Endangered Species (CITES). While that effort was unsuccessful, the U.S Secretary of Interior, acting through the Fish and Wildlife Service (FWS) has authority to list these tarantulas under the U.S. Endangered Species Act (ESA), thereby prohibiting their trade by U.S. entities and individuals.

Most of the tarantulas in this genus are considered to be at risk by the International Union for Conservation of Nature (IUCN) or have been identified as endangered by scientists:

1. *Poecilotheria fasciata*
2. *Poecilotheria formosa*
3. *Poecilotheria hanumavilasumica*
4. *Poecilotheria metallica*
5. *Poecilotheria miranda*
6. *Poecilotheria ornata*
7. *Poecilotheria pedersenii*
8. *Poecilotheria rufilata*
9. *Poecilotheria smithi*
10. *Poecilotheria striata*
11. *Poecilotheria subfusca*

Prompt listing of these species under the ESA will reduce the threat from trade and increase their chances of survival. Accordingly, WildEarth Guardians hereby petitions the Secretary of Interior and FWS to list, and thereby protect, 11 tarantulas in the genus *Poecilotheria* as endangered or threatened species under the ESA.

## Applicability of the Endangered Species Act

In light of their imperilment, Petitioner requests listing of these tarantulas under the ESA as either threatened or endangered, throughout their historic and current range. Taxa eligible for ESA listing include “any subspecies of fish or wildlife or plants, and any distinct population segment of any species of vertebrate fish or wildlife which interbreeds when mature” (16 U.S.C. § 1532(16)).<sup>1</sup> Both the statute (16 U.S.C. § 1532) and regulations implementing the Endangered Species Act (50 C.F.R. § 424) are applicable to this petition. Subsections that concern the formal listing of these tarantulas as Endangered or Threatened species are:

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<sup>1</sup>The sole exclusion is for “a species of the Class Insecta determined by the Secretary to constitute a pest whose protection... would present an overwhelming and overriding risk to man.” 16 U.S.C. § 1532(6). It is difficult to imagine an insect so imperiled as to warrant ESA protection that presents a grave risk to humans.

“*Endangered species* means a species that is in danger of extinction throughout all or a significant portion of its range.”... (k) “species” includes any species or subspecies that interbreeds when mature. See 16 U.S.C § 1532(6), 50 C.F.R. § 424.02(e).

“*Threatened species* means any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.” See also 16 U.S.C § 1532(20), 50 C.F.R. § 424.02(m).

This Petition demonstrates that these tarantulas are imperiled to the extent that they warrant listing as either Endangered or Threatened under the ESA.

ESA Section 4 (16 U.S.C. § 1533(a)(1)) sets forth listing factors under which a species can qualify for ESA protection (see also 50 C.F.R. § 424.11(c)):

- A. The present or threatened destruction, modification, or curtailment of habitat or range;
- B. Overutilization for commercial, recreational, scientific, or educational purposes;
- C. Disease or predation;
- D. The inadequacy of existing regulatory mechanisms; and
- E. Other natural or manmade factors affecting its continued existence.

Multiple factors set forth in ESA Section 4 (16 U.S.C. § 1533(a)(1)) and in 50 C.F.R. § 424.11(c) have resulted in the continued decline of these tarantulas and are causing these species to face extinction or endangerment in the foreseeable future. These tarantulas are all threatened by destruction of their forest habitats in India. Collection for the pet trade is another threat, as is intentional killing. Additionally, there are inadequate existing regulatory mechanisms in place to ensure these species’ survival. Lastly, some of these tarantulas may be further imperiled by small population size and other demographic factors. A taxon needs to meet only one of the listing factors outlined in the ESA to qualify for federal listing.

### **Description of Petitioner**

WildEarth Guardians is a non-profit environmental organization with over 12,500 members and supporters throughout the United States. WildEarth Guardians has an active endangered species protection campaign. As part of this campaign, Guardians works to obtain ESA protection for a wide variety of imperiled wildlife and plants and the ecosystems on which they depend.

### **Classification and Nomenclature**

**Common Name:** Species in the genus *Poecilotheria* are commonly known as “parachute” or “ornamental” spiders or tarantulas. They are also known as “tiger spiders” (Samarawckrama et al. 2005). Throughout the petition, we refer to these species as tarantulas, as that is what they are generally called in the United States (Molur and Siliwal 2004).

**Taxonomy:** We delineate the genus below and provide taxonomic classification in Table 1. The high degree of specialization within this genus was noted almost a century ago (Gravely 1915). Siliwal and Molur (2007) report that there are 15 species in the genus *Poecilotheria*, 8 in India and 7 in Sri Lanka. Valid species in this genus are (petitioned species are in bold):

1. ***Poecilotheria fasciata*** Latreille, 1804 (Sri Lanka)
2. ***Poecilotheria formosa*** Pocock, 1899 (India)
3. ***Poecilotheria hanumavilasumica*** Smith and Carpenter, 2004 (India)
4. ***Poecilotheria metallica*** Pocock, 1899 (India)
5. ***Poecilotheria miranda*** Pocock, 1900 (India)
6. ***Poecilotheria ornata*** Pocock, 1899 (Sri Lanka)
7. ***Poecilotheria pedersenii*** Kirk, 2001 (Sri Lanka)
8. *Poecilotheria pococki* Charpentier, 1996 (Sri Lanka)<sup>2</sup>
9. *Poecilotheria regalis* Pocock, 1899 (India)
10. ***Poecilotheria rufilata*** Pocock, 1899 (India)
11. ***Poecilotheria smithi*** Kirk, 1996 (Sri Lanka)
12. ***Poecilotheria striata*** Pocock, 1895 (India)
13. ***Poecilotheria subfusca*** Pocock, 1895 (Sri Lanka)
14. *Poecilotheria tigrinawesseli* Smith, 2006 (India)
15. *Poecilotheria uniformis* Strand, 1913 (Sri Lanka)

Samarawckrama et al. (2005) state that there are 16 species in this genus: 11 from India and 5 from Sri Lanka. A newly discovered species in this genus is *Poecilotheria nallamalaiensis* Rao, Bastawade, Javed & Ramakrishna, 2007. An additional proposed species in this genus is *Poecilotheria hillyardi* (Sri Lanka et al. 2000).

**Table 1. Taxonomy of *Poecilotheria* species.**

Phylum	Arthropoda
Class	Arachnida
Order	Araneae
Family	Theraphosidae
Genus	<i>Poecilotheria</i>

Molur and Siliwal (2004: 1658) refer to these spiders “parachute spiders” after their distinctive behavior:

When the males are disturbed on a tree or on a wall, they tend to jump either to the neighbouring tree, or more often just sail down like a leaf to the ground, after which their excellent camouflaging colours make them nearly invisible. We have observed these spiders to ‘parachute’ down in the wild, hence we propose the name ‘Parachute spiders’.

<sup>2</sup>Sri Lanka et al. (2000) consider *P. pococki* Charpentier, 1996 (“Pocock’s Parachute Spider”) to be a synonym of *P. smithi*. Molur and Siliwal (2004) describe *P. pococki* as known only from Sri Lanka, its exact locality is unclear. Siliwal and Molur (2007) consider *P. pococki* to be a valid species.

*Poecilotheria fasciata* is also known as “Banded Parachute Spider” (Molur and Siliwal 2004) “Sri Lankan Ornamental Tarantula” (Sri Lanka et al. 2000), “Lemon-legged Tiger Spider,” and “Thada kaha iri padethi Divimakuluwa” (Samarawckrama et al. 2005).

*Poecilotheria formosa* is also known as “Beautiful Parachute Spider,” “Finely Formed Parachute Spider” (Molur and Siliwal 2004; Molur et al. 2008b), and “Salem Ornamental Tarantula” (Sri Lanka et al. 2000). According to the IUCN, “The description of the species is based only on female specimens and the male is yet to be discovered and described. Taxonomy of this species is not very clear due to lack of information from recent reports” (Molur et al. 2008b).

*Poecilotheria hanumavilasumica* is also known as “Rameshwaram Parachute Spider” (Molur and Siliwal 2004) and “Rameshwaram Ornamental” (Siliwal et al. 2008a). This species was discovered by Andrew Smith at a sacred grove of the Hanumavilasum Temple on Rameshwaram Island, India. *Id.* The species had previously been misidentified as *P. fasciata* and *P. striata*. *Id.*

*Poecilotheria metallica* is also known as “Peacock Parachute Spider” (Molur and Siliwal 2004; Molur et al. 2008a), “Gooty Ornamental Tarantula” (Sri Lanka et al. 2000), “Gooty Tarantula,” “Metallic Tarantula,” “Peacock Tarantula,” and “Salepurgu” (Molur et al. 2008a).

*Poecilotheria miranda* is also known as “Wonderful Parachute Spider” or “Red Parachute Spider” (Molur and Siliwal 2004).

*Poecilotheria ornata* is also known as “Ornate Parachute Spider” (Molur and Siliwal 2004), “Fringed Ornamental Tarantula” (Sri Lanka et al. 2000), “Yellow-legged Tiger Spider,” and “Kaha iri padethi Divimakuluwa” (Samarawckrama et al. 2005).

*Poecilotheria pedersenii* is also known as “Hambantota Parachute Spider” (Molur and Siliwal 2004), “Pedersenii’s Tiger Spider,” and “Pedersenii Divimakuluwa” (Samarawckrama et al. 2005).

*Poecilotheria rufilata* is also known as “Reddish Parachute Spider,” “Rufus Parachute Spider” (Molur and Siliwal 2004), and “Redslate Ornamental Tarantula” (Sri Lanka et al. 2000).

*Poecilotheria smithi* is also known as “Kandy Parachute Spider” (Molur and Siliwal 2004) and “Smith’s Tiger Spider,” and “Smithge Divimakuluwa” (Samarawckrama et al. 2005).

*Poecilotheria striata* is also known as “Striped Parachute Spider,” “Striated Parachute Spider” (Molur and Siliwal 2004), and “Mysore Ornamental Tarantula” (Sri Lanka et al. 2000).

*Poecilotheria subfusca* is also known as “Brown Parachute Spider” (Molur and Siliwal 2004), “Ivory Ornamental Tarantula” (Sri Lanka et al. 2000), “Ivory bird-eating spider,” and “Eth dala peha iri padethi Divimakuluwa” (Samarawckrama et al. 2005).

Molur and Siliwal (2004) note the prevalence within the U.S. of the term “tarantula” to describe *Poecilotheria* species. Collectors and traders in the U.S. often refer to *Poecilotheria* spiders as

“tarantulas.” While technically inaccurate, Petitioners use this term because the aim of this petition is to reduce the threat of commercial exploitation, particularly by U.S. entities or individuals, to these species.

### Description



**Figure 1: Photo of *Poecilotheria metallica* © Sanjay Molur.**

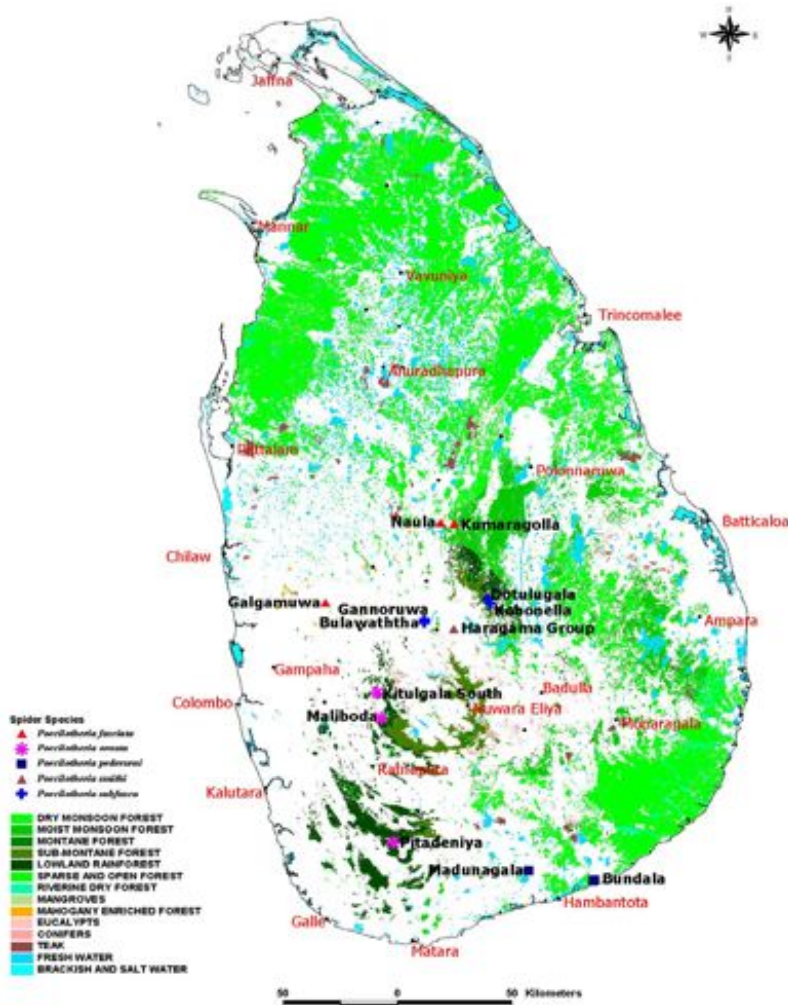
*Poecilotheria* spiders are colorful, ornate, and very large. They have a flattish carapace and are variegated (Samarawckrama et al. 2005). Pocock (1900: 188) provided this description of the genus:

Very large, variegated Spiders with the carapace flattish; fovea small, straight; ocular tubercle low; ocular area more than twice as long as wide; eyes of anterior line nearly equidistant, procurved, centres of the laterals slightly in front of the anterior edge of the medians. Mandible furnished externally in its lower half with many short spines. Maxilla with its bacilliform spines few in number, arranged in a single row, and accompanied by one or more black tooth-like tubercles; between the row of bacilli and the suture there is a thick fringe of hairs. Legs without spines; scopulae of the anterior pairs very thick. Palpal organ of female piriform, the spine thick, short, and strongly and spirally crested.

### Geographic Distribution: Historic and Current

Species in the *Poecilotheria* genus occur within central and southern Sri Lanka and northeastern and southern India (Sri Lanka et al. 2000; Siliwal et al. 2005). Sri Lanka has a high degree of faunal endemism and a high rate of habitat loss (Bambaradeniya 2006). It is therefore one of 25 global biodiversity “hotspots” (Benjamin and Bambaradeniya 2006). There are 501 known spiders in Sri Lanka within 45 families, many of which occur only in this country and are confined to native forests in the southwest and central highlands regions. *Id.* There may be as many as 4,000 species, however. *Id.* Indeed, little is known about Sri Lanka’s spiders, and they may go extinct unless more conservation attention is paid to these diverse creatures.

Among Sri Lanka’s varied spider fauna are 21 “tarantulas,” 10 of which are in the Theraphosidae family, which includes the *Poecilotheria* genus. *Id.* A study of Theraphosids in southwestern Sri Lanka is underway. *Id.* See distribution of Sri Lanka *Poecilotheria* species in Figure 2.



**Figure 2: Distribution of *Poecilotheria* species in Sri Lanka.**  
 Source: Samarawckrama et al. 2005.

*Poecilotheria fasciata* is known from central Sri Lanka, from the following areas: Trincomalee, Kandy, Punduloya, Ambakele, Andigama, Anuradhapura, Wilpattu, Habarana (Pocock 1900; Sri Lanka et al. 2000; Smith and Kirk 2001; Molur and Siliwal 2004). In surveys conducted in 2003-2005, this species was found in Kurunagala and Naula (Samarawckrama et al. 2005). See Figure 2 and map in Appendix A.

*Poecilotheria formosa* is known only from southern India, from three sites within southern Eastern Ghats in southern India between Tirupathi and Salem (Mullapuram, Kadiampatti, Renigunta station) (Pocock 1900; Sri Lanka et al. 2000; Smith and Kirk 2001; Molur and Siliwal 2004; Siliwal et al. 2005; Molur et al. 2008b). It occurs at altitudes of less than 1,000 m. Its total range is less than 5,000 sq. km. and it may occupy less than 100 sq. km. (Molur et al. 2008b). Scientists describe “past and continuing decline in extent, area and quality of habitat.” *Id.* See map in Appendix A.

*Poecilotheria hanumavilasumica* is known only from India, on Pamben Island and Mandapam (Smith 2004; Molur and Siliwal 2004; Siliwal et al. 2005, 2008a). It is endemic to the Ramanthapuram district (Siliwal et al. 2008a). See map in Appendix A.

*Poecilotheria metallica* is known only from southwestern India, near Gooty (Pocock 1900; Sri Lanka et al. 2000; Molur and Siliwal 2004; Siliwal et al. 2005). It is known only from its type locality (Molur and Siliwal 2004). Molur et al. (2008a) state that the type description incorrectly described this species' location as Gooty but it likely came from the Eastern Ghats and was rediscovered after 102 years in 2001 in a forest between Nadyal and Giddalur. See map in Appendix A.

*Poecilotheria miranda* is known only from northeastern India, in Chota Nagpur, Kharagpur Hills and Near Chaibassa in Singbhum District (Pocock 1900; Gravely 1915; Sri Lanka et al. 2000; Molur and Siliwal 2004; Siliwal et al. 2005, 2008b). See map in Appendix A.

*Poecilotheria ornata* is known only from southern Sri Lanka, in Ratnapura, Nuwara Eliya, Labungama, Deryaniyagala, Sinharaja (Pocock 1900; Sri Lanka et al. 2000; Smith and Kirk 2001; Molur and Siliwal 2004). In surveys conducted in 2003-2005, this species was found in Udamaliboda, Deraniyagala, Kitulgala Forest Reserve, and the Sinharaja World Heritage Site (Samarawckrama et al. 2005). See Figure 2.

*Poecilotheria pedersenii* is known only from Sri Lanka, in the region of Yala, Hambantota District (Sri Lanka et al. 2000; Smith and Kirk 2001; Molur and Siliwal 2004). It is known only from its type locality (Molur and Siliwal 2004). In surveys conducted in 2003-2005, this species was found at Bundala National Park in the Hambantota District and Madunagala Sanctuary (Samarawckrama et al. 2005). See Figure 2.

*Poecilotheria rufilata* is known only from southern Western Ghats in India, in Trivandrum in Travancore, Bandipur Forest, Karnataka, Kallar, Ponmudi, Peppara Dam, Agastyavalam Reserve (Pocock 1900; Sri Lanka et al. 2000; Smith and Kirk 2001; Molur and Siliwal 2004; Siliwal et al. 2005, 2008c). See map in Appendix A.

*Poecilotheria smithi* is known only from southcentral Sri Lanka, in Haragama and Kandy (Sri Lanka et al. 2000; Smith and Kirk 2001; Molur and Siliwal 2004; IUCN 2007). See Figure 2 and map in Appendix A.

*Poecilotheria striata* is known only from southern India, in Penang, Mysore, Trivandrum in Travancore, and Pamben on Rameshwaram Island (Pocock 1900; Gravely 1915; Sri Lanka et al. 2000; Molur and Siliwal 2004; Siliwal et al. 2005, 2008d). See map in Appendix A.

*Poecilotheria subfusca* is known only from southcentral Sri Lanka, in Peradenia, Pundaloya, Kandy, Sudugang in Matale, Dankanikota, Nuwara Eliya, and Gammaduwa (Pocock 1900; Gravely 1935; Sri Lanka et al. 2000; Smith and Kirk 2001; Molur and Siliwal 2004). In surveys conducted in 2003-2005, this species was found in Gannoruwa Forest, Dotulugala Reserve, and Gannoruwa Village (Kandy) (Samarawckrama et al. 2005). See Figure 2.



### **Habitat Requirements**

All species in the genus *Poecilotheria* are arboreal. They prefer wooded areas and tree holes in tropical and subtropical forests (Molur and Siliwal 2004; Samarawckrama et al. 2005). They are restricted to xeric or mesic montane forests within central and southern Sri Lanka and northeastern and southern India (Sri Lanka et al. 2000; Samarawckrama et al. 2005). These spiders live primarily under the bark or in natural cavities of dead or living trees (Charpentier 1996; Kirk 1996; Sri Lanka et al. 2000; Samarawckrama et al. 2005). They reside in “silken retreats” (Sri Lanka et al. 2000). *P. fasciata* and *P. regalis* occur in xeric montane forests. *Id.* All other species in this genus occur in mesic montane forests. *Id.* *P. metallica* requires deep crevices and cavities in old-growth forests (Molur et al. 2008a).

### **Life History**

Reproduction and Longevity. Known biological data for these genus are from captive specimens (Sri Lanka et al. 2000). *Poecilotheria* species have short lifespans, ranging from 12-15 months for male maturation and 14-18 months for female maturation. Average post-adult female age is 60-85 months. These species also experience high mortality rates prior to maturation and have low reproductive rates (averaging 100 eggs annually). *Id.*

For *P. hanumavilasumica*, the maximum number of spiderlings observed with a mother is 52 (Siliwal et al. 2008a). Mortality of young is high due to natural predation and cannibalism. *Id.* Males generally survive for just one breeding season after reaching maturity. *Id.* Adult females generally exhibit nest fidelity. *Id.*

Regarding *P. metallica*, Molur et al. (2008a) state that the lone captive male matured at 18 months and lived for 2 years, which appears to be the norm for the genus. If similar to other species in the genus, longevity of females may be 10-12 years, with maturation at 5-7 years. *Id.*

Diet. Members of this genus are large spiders that feed on insects (Sri Lanka et al. 2000). Many of their prey insects are harmful to crops and trees, and *Poecilotheria* species therefore play an important ecological and economic role. *Id.*

Behavior. While they are fossorial, these spiders never close the aperture of their burrow (Samarawckrama et al. 2005). They do not use webs to capture prey; rather, they attack prey from their hiding places (e.g., tree holes, tree trunks, tree barks), and inject venom to immobilize them. *Id.*

Sensitivity to ecological change. Spiders may respond rapidly to alterations in the environment, more rapidly than vertebrates and plants (Benjamin and Bambaradeniya 2006). They are therefore important barameters for ecosystem loss and could be used as a focal species in setting conservation priorities for at-risk habitats. *Id.*

### Historic and Current Population Status and Trends

While *Poecilotheria* responses to habitat changes can be somewhat variable, Sri Lanka et al. (2000) stated that some members of this genus may be extinct by 2005. *Id.*, citing Charpentier (1996). For *Poecilotheria* species in Sri Lanka, Samarawckrama et al. (2005: 75) state, “The low number of individuals being recorded for all the species suggests that their populations might be relatively small.”

*P. fasciata* is considered to be endangered by scientists (Samarawckrama et al. 2005). Only 3 individuals were recorded in surveys conducted in 2003-2005. *Id.*

*P. formosa* is ranked by the IUCN as Endangered (Molur et al. 2008b). This species is known from only three sites in two areas of Eastern Ghats (India). While population information is not available, scientists assume the species is in decline due to habitat destruction. *Id.* Molur et al. (2008b) state “Habitat loss and degradation are major threats in the reported and inferred localities of the species. It is likely that in many localities the species would have gone locally extinct due to complete deforestation, logging of wood, forest fire and development activities.”

*P. hanumavilasumica* is ranked by the IUCN as Critically Endangered (Siliwal et al. 2008a). It is restricted to “a few tamarind, casuarina and mixed dry deciduous tree and palm plantations on the island of Rameshwaram and on the mainland close to the island.” *Id.* It has a range of just 100 km<sup>2</sup> or less and occurs on a total area of less than 6 km<sup>2</sup>. *Id.* There are just eight subpopulations and 13 sites, all of which are highly fragmented. *Id.* Population sizes vary from 8-78 individuals. *Id.* Population densities are apparently highest in tamarind plantations. *Id.* One location was recently extirpated due to destruction of the tamarind plantation by construction. *Id.* In 2006, the habitats of two populations were razed and loggers killed the spiders. *Id.* The IUCN cites reasons for its biological status as restricted distribution, and continuing decline in in area occupied, habitat quality, and numbers of populations and mature individuals. *Id.*

*P. metallica* is ranked by the IUCN as Critically Endangered (Molur et al. 2008a). It is restricted to a range of less than 100 km<sup>2</sup>, occurs at only a single, highly fragmented location and suffers continuing declines in habitat quality. *Id.* It has been searched for, but not found, in areas adjacent to its sole occurrence. *Id.* Although population information is not available for this species, the IUCN considers its population to be decreasing due to habitat declines; it is considered “very rare”; and it occurs in just one, restricted location. *Id.*

*P. miranda* is ranked by the IUCN as Endangered (Siliwal et al. 2008b). It is endemic to the Chhota Nagpur region of eastern India. *Id.* Its range is less than 5,000 km<sup>2</sup> but it is recorded from only a few locations in this range. *Id.* Scientists consider the species rare, as it is found in less than 10 locations, some of which are very fragmented. *Id.* Although population information is not available for this species, the IUCN considers its population to be decreasing due to habitat declines. *Id.*

*P. ornata* is considered to be endangered by scientists (Samarawckrama et al. 2005). Only 6 individuals were recorded in surveys conducted in 2003-2005. *Id.*

*P. pedersenii* is considered to be endangered by scientists (Samarawckrama et al. 2005). Only 6 individuals were recorded in surveys conducted in 2003-2005. *Id.*

*P. rufilata* is ranked by the IUCN as Endangered (Siliwal et al. 2008c). It is endemic to the southern Western Ghats in India. *Id.* Its range is less than 5,000 km<sup>2</sup>, but it is limited to less than 5 fragmented locations. *Id.* Although population information is not available for this species, the IUCN considers its population to be decreasing due to habitat declines. *Id.*

*P. smithi* is ranked by the IUCN as Vulnerable because of continued declines and fluctuations in the numbers of mature individuals (IUCN 2007, 2010).

*P. striata* is ranked by the IUCN as Vulnerable (Siliwal et al. 2008d). It occurs near the Palghat gap of the Western Ghats at an altitude of 500 and 1,000 m. *Id.* It is found in fewer than 10 locations, which are fragmented. *Id.* Although population information is not available for this species, the IUCN considers its population to be decreasing due to habitat declines. *Id.*

*P. subfusca* is considered to be endangered by scientists (Samarawckrama et al. 2005). Only 20 individuals, 15 of which were juveniles, were recorded in surveys conducted in 2003-2005. *Id.*

### Similarity of Appearance

Data is lacking on biological information and threats to several of the members of the *Poecilotheria* genus, likely because of a lack of funded research or their recent discovery. However, some of the species with deficient data resemble other tarantulas whose imperilment has been substantiated or may go extinct before more research is funded. For example, scientists describe *Poecilotheria nallamalaiensis* (IUCN-ranked data deficient) as closely resembling *P. fasciata*, *P. formosa*, and *P. miranda* (Siliwal and Molur 2008). We therefore request that FWS consider listing tarantulas in these genus who may be confused with the Petitioned taxa, or protect the entire genus (as the U.S. proposed in 2000) in order to reduce the threat from trade in particular.

### Identified Threats to the Petitioned Species: Criteria for Listing

The Petitioned species meet at least four of the criteria for listing under the ESA (bolded):

- A. Present and threatened destruction, modification, and curtailment of habitat and range;**
- B. Overutilization for commercial and recreational purposes;**
- C. Disease or predation;
- D. The inadequacy of existing regulatory mechanisms; and**
- E. Other natural or manmade factors affecting its continued existence.**

Threats to species in this genus include habitat loss and degradation (Factor A), overutilization by collectors in the pet trade or intentional killing (Factor B), inadequate regulatory protections (Factor D), range restriction and rarity (Factor E), and the cumulation of these threats (Factor E).

**I. Present and Threatened Destruction, Modification, or Curtailment of Habitat or Range.**

A number of sources report that habitat loss and degradation is a primary threat to species in the *Poecilotheria* genus (Samarawckrama et al. 2005; Molur et al. 2008a, 2008b; Siliwal et al. 2008a, 2008b, 2008c, 2008d, 2008e). In its 2000 petition to add members of this genus to CITES Appendix II, Sri Lanka, India, and U.S. (2000) specifically pointed to the threat to dead trees from firewood collection. The extent of natural forest has declined dramatically in both Sri Lanka and India, with estimates of remaining native forests as low as 10-14%. *Id.* Sri Lanka et al. (2000) point to other threats to these spiders' forest habitat as well: "Forestry practices, agricultural development, expanding livestock and human encroachment, and a domestic need for firewood, are resulting in a decline of the amount of forested habitat in both India and Sri Lanka." *Id.* at p. 3.

In a report on Sri Lanka, Benjamin and Bambaradeniya (2006: 70) state,

The tropical rainforests in the south-west of Sri Lanka has been reduced to a great extent during the past five decades, and at present the near-primary forest cover accounts for less than 5% of the land area of the biodiversity-rich Wet Zone of the island. The existing forest patches of the wet zone are in a severely fragmented state.

Scientists consider habitat loss and degradation to be a threat for *P. formosa*: "Habitat loss and degradation are major threats in the reported and inferred localities of the species. It is likely that in many localities the species would have gone locally extinct due to complete deforestation, logging of wood, forest fire and development activities" (Molur et al. 2008b). Similarly, for *P. hanumavilasumica*, scientists state, "Loss of plantations due to developmental activities, small size of the habitat fragments, small population size, persecution and fragmentation are major threats" (Siliwal et al. 2008a). For *P. metallica*, Molur et al. (2008a) describe firewood collection and logging as threats: "The habitat is under intense pressure from the surrounding villages as well as from insurgents who use forest resources for their existence and operations." For *P. miranda*, Siliwal et al. (2008b) write, "Habitat loss and degradation are major threats." Regarding *P. rufilata*, Siliwal et al. (2008c) state, "As this species is highly restricted to the Western Ghats, if the habitat loss continues then it is likely that this species could go extinct." These researchers likewise state for *P. striata*, "Like other species of this group, it also is affected by habitat degradation and fragmentation" (Siliwal et al. 2008d). The IUCN ranks *P. smithi* as vulnerable due to habitat loss (IUCN 2007, 2010). For the other petitioned taxa (*P. fasciata*, *P. ornata*, *P. pedersenii*, and *P. subfusca*), Samarawckrama et al. (2005) report habitat loss and degradation as a significant threat.

## II. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

Pet trade. Scientists, the U.S., India, and Sri Lanka consider overutilization for the pet trade to be this a threat to *Poecilotheria* species (Sri Lanka et al. 2000; Samarawckrama et al. 2005; Molur et al. 2008a, 2008b; Siliwal et al. 2008a, 2008b, 2008c, 2008d, 2008e). While Sri Lanka prohibits commercial collection and exportation of these species, India does not (Sri Lanka et al. 2000). FWS reports that 2,694 *Poecilotheria* individuals were declared to be imported into the U.S. between 1995-1999 and 392 were declared as exports. *Id.* However, many imports and exports of these spiders are likely not reported. *Id.* The incentive to collect these species from the wild is high, as adults sell for U.S. \$250 or more. *Id.* Individuals or entities involved in the commercial pet trade of these species operate in the U.S., Canada, United Kingdom, Germany, Holland, Belgium, Switzerland, Sweden, Norway, Hong Kong, Greece, Italy, France, and Japan. *Id.* Samarawckrama et al. (2005: 76) report,

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.

For *P. hanumavilasumica*, Siliwal et al. (2008a) state, “Although not found extensively in pet trade, a few adult males and females along with subadults and juveniles were taken out of the country.” Regarding *P. formosa*, Molur et al. (2008b) describe additional threats to habitat destruction as collection for the pet trade and persecution. For *P. rufilata*, Siliwal et al. (2008c) report that pet traders collect this spider from forested areas near Trivandrum, and that these spiders are smuggled into Europe and the U.S. Siliwal et al. (2008d) describe *P. striata* as “...one of the more common ‘pokie’ species kept by pet traders and hobbyists. Trade in this species is common and it is one of the more commonly advertised species on the web.” For four of the petitioned taxa (*P. fasciata*, *P. ornata*, *P. pedersenii*, and *P. subfusca*), Samarawckrama et al. (2005) report the pet trade as a significant threat.

Molur et al. (2008a) likewise note this threat to the stunningly beautiful *P. metallica*:

An additional threat to the species is collection by international pet traders, which could have an impact on the population. The two threats in tandem could result in the species’ extinction from the known location in the near future. An incident of smuggling was recorded in 2002 when two Europeans took a few specimens out of the country and advertised them for sale on the internet. There are also reports available of other such incidents since then.

Indeed, the threat to *P. metallica* from trade may be especially severe. A U.S. website reads: “The Metallic Blue Ornamental Tree Spider is setting the spider hobby ablaze with excitement!” and “More and more of these spiders are trickling in from Europe. Hopefully, the price of this wonderful species will reach a level for all hobbyists to experience their incredible beauty”

(Animal World 2010). While some of these spiders may be captively bred, others may be collected from the wild. Another website reads: “Although not recommended for beginners, *Poecilotheria* spp. are a must in any serious collection” (Giantspiders 2010).

Listing of the *Brachypelma* genus of tarantulas under CITES Appendix II in 1994 has resulted in a shift from the listed genus to *Poecilotheria* species. *Id.* While this Petition requests listing of select species, FWS should consider whether it needs to list the entire *Poecilotheria* genus under the ESA so that the collection threat is not simply shifted to unlisted species. For example, the IUCN notes that for *Poecilotheria tigrinawesseli*:

Although the author provides information on the distribution and status (as not endangered), it is to be treated with caution as the species was collected by members of the international pet trade and the species is named after a well known tarantula trader.

See Siliwal et al. (2008e).

Intentional killing. Purposeful killing, likely motivated by fear, can also be a threat to the Petitioned species. State Samarawckrama et al. (2005: 85),

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...

Siliwal et al. (2008c) document this as a threat to *P. rufilata*: “In Kerala, the locals kill the wandering males that venture into homes and/or found on trees out of fear.” These researchers similarly state for *P. striata*, “This species is killed by locals when it enters human settlements situated in or close to its habitat” (Siliwal et al. 2008d).

### **III. Disease or Predation**

This factor is not known to imperil *Poecilotheria* species, but FWS should consider the issue more fully during an ESA status review.

### **IV. The Inadequacy of Existing Regulatory Mechanisms**

#### *CITES*

Sri Lanka, India, and the United States proposed that species in the *Poecilotheria* genus be added to CITES Appendix II in April 2000 (Sri Lanka et al. 2000). The proposal was rejected (Samarawckrama et al. 2005). Molur et al. (2008b) support CITES listing for this genus, stating in the IUCN account for *P. formosa*, “It is also important that this species and all other *Poecilotheria* species from India and Sri Lanka are included under the CITES Appendix II to safeguard them from trade.” The 2000 CITES proposal indicated that Andrew Smith of the London Zoo and Peter Kirk of the British Tarantula Society supported adding this genus to CITES (Sri Lanka et al. 2000).

*IUCN*

The IUCN includes several of the petitioned tarantulas on its Red List:

- P. formosa* is ranked as Endangered. It is not reported from any protected areas (Molur et al. 2008b) and is therefore not protected from habitat destruction. Its more specific ranking of B1ab(i,ii,iii)+2ab(i,ii,iii) indicates that its range is less than 5,000 km<sup>2</sup>; it occupies less than 500 km<sup>2</sup>; it is severely fragmented or limited to 5 or fewer locations; and it is continuing to decline in extent of occurrence area of occupancy; and area, extent and/or quality of habitat (IUCN 2010).
- P. hanumavilasumica* is ranked as Critically Endangered (Siliwal et al. 2008a). It occurs only on private plantations and is not subject to any legal protection. *Id.* Its specific ranking is B1ab(ii,iii,iv,v)+2ab(ii,iii,iv,v), which indicates that its range is less than 100 km<sup>2</sup>; its area of occupancy is less than 10 km<sup>2</sup>; its populations are severely fragmented or it is restricted to one site; and its habitat and populations continued to decline (IUCN 2010).
- P. metallica* is ranked as Critically Endangered. It is now known to occur within any protected areas (Molur et al. 2008a) and is therefore not afford protections from habitat destruction. Its specific ranking of B1ab(iii) indicates that it occupies less than 100 km<sup>2</sup>; is severely fragmented or limited to one location; and has declined in quality or area of habitat (IUCN 2010).
- P. miranda* is ranked as Endangered. It may occur in Simlipal Tiger Reserve but confirmation is needed (Siliwal et al. 2008b). Its specific ranking of B1ab(iii) indicates that it occupies less than 5,000 km<sup>2</sup>; is severely fragmented or limited to one location; and has declined in quality or area of habitat (IUCN 2010).
- P. rufiliata* is ranked as Endangered. It is reported from the Agastyavanam Reserve, but rangewide, it is pressured by habitat loss, intentional killing, and the pet trade (Siliwal et al. 2008c). Its specific ranking of B1ab(ii,iii) indicates that it occupies less than 5,000 km<sup>2</sup>; is severely fragmented or limited to one location; has declined in area of occupancy; and has declined in quality or area of habitat (IUCN 2010).
- P. striata* is ranked as Vulnerable. It is reported from the Parambikulam Wildlife Sanctuary and may also occur in the adjacent Indira Gandhi Wildlife Sanctuary (Siliwal et al. 2008d). However, it also faces threats from habitat loss, pet trade, and intentional killing. *Id.* Its specific ranking is B1ab(ii,iii)+2ab(ii,iii), which indicates its range is less than 20,000 km<sup>2</sup>; its area of occupancy is less than 2,000 km<sup>2</sup>; it is severely fragmented or limited to 10 sites or less; and its habitat continues to decline (IUCN 2010).
- P. smithi* is ranked as Vulnerable (IUCN 2007). Its specific classification of B1bc(iv) indicates that its extent of occurrence is less than 20,000 km<sup>2</sup>; it has experienced continued declines; and extreme fluctuations in numbers of mature individuals (IUCN 2010).

While these designations do not provide any regulatory protections, they do indicate biological imperilment.

## V. Other Natural or Manmade Factors Affecting Its Continued Existence

Several other perils threaten the Petitioned species, including: small populations and rarity; and low reproductive rates and high mortality.

*Small populations and rarity.* As discussed above, some of the species in the *Poecilotheria* genus are characterized by small population size, which FWS should consider in the course of status review for this species. For *P. hanumavilasumica*, the IUCN considers populations of less than 5,000 individuals to have a high risk of extinction within the next 3-4 decades (Siliwal et al. 2008a). As discussed above, the Petitioned taxa have limited population numbers.

FWS has routinely recognized that small population size increases the likelihood of extinction.<sup>5</sup> For the Langford's Tree Snail (*Partula langfordi*), FWS states:

Even if the threats responsible for the decline of this species were controlled, the persistence of existing populations is hampered by the limited number of known individuals of this species. This circumstance makes the species more vulnerable to extinction due to a variety of natural processes. Small populations are particularly vulnerable to reduce reproductive vigor caused by inbreeding depression, and they may suffer a loss of genetic variability over time due to random genetic drift, resulting in decreased evolutionary and ability to cope with environmental change (Lande 1988; Primm et al. 1988; Center for Conservation Update 1994; Mangel and Tier 1994).<sup>6</sup>

Here FWS relies on citations not specific to *Partula langfordi* that indicate the threat to survival presented by limited population numbers, even without other known threats. The agency similarly notes for a snail called Sisi (*Ostodes strigatus*):

Even if the threats responsible for the decline of this species were controlled, the persistence of existing populations is hampered by the small number of extant populations and the small geographic range of the known populations.<sup>7</sup>

The limited range of some of the Petitioned taxa expose them to potential extirpation from isolated events, such as the massive tsunami Sri Lanka experienced in December 2004. For example, Smith (undated) expressed concern about how *Poecilotheria hanumavilasumica* fared after this catastrophic tsunami.

*Demographic factors.* As discussed above, these spiders have low reproductive rates, short lifespans, and high mortality rates (Sri Lanka et al. 2000), which FWS should consider a limiting parameter on their ability to avoid extinction.

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<sup>5</sup>See, e.g., FWS candidate assessment forms for *Doryopteris takeuchii*, *Huperzia stemmermanniae*, *Melicope hiiakae*, *Ostodes strigatus*, *Partula langfordi*, *Peperomia subpetiolata*, *Phyllostegia bracteata*, and *Tryonia circumstriata*. Accessible via FWS website at <http://www.fws.gov/Endangered> [Accessed August 2010].

<sup>6</sup> See 2009 Listing Form for *Partula langfordi* at: [http://ecos.fws.gov/docs/candforms\\_pdf/r1/G0AI\\_I01.pdf](http://ecos.fws.gov/docs/candforms_pdf/r1/G0AI_I01.pdf) [Accessed July 2010] at p. 5

<sup>7</sup>See 2009 Listing Form for *Ostodes strigatus* at: [http://ecos.fws.gov/docs/candforms\\_pdf/r1/G0A5\\_I01.pdf](http://ecos.fws.gov/docs/candforms_pdf/r1/G0A5_I01.pdf) [Accessed July 2010] at p. 4.



*Human population growth.* Rising human numbers should be considered a threat, or a driver of threats, to the Petitioned spiders. In a report on Sri Lanka's imperiled species, the IUCN (2007: 6) writes:

A burgeoning human population in the island [Sri Lanka] has propelled the loss of biodiversity, because of anthropogenic factors such as habitat degradation/modification, over-exploitation of species, spread of invasive alien species and pollution.

Indeed, human population numbers are growing in both Sri Lanka and India. Total fertility per woman in Sri Lanka is 2.3 and in India is 2.8, both well above replacement rates (UN 2007). Between 2010-2050, India is one of 9 countries expected to account for half of the global human population increase. In fact, India is the leading country in terms of adding to human population growth worldwide and is expected to have the largest population – surpassing China – by 2028 (UN 2009). India is projected to increase from 1.2 billion people in 2009 to 1.6 billion in 2050; and Sri Lanka from 20.2 million people in 2009 to 21.7 million by 2050. *Id.*

*Cumulative factors.* Multiple factors intersect to increase the risk of extinction to the Petitioned species. Sri Lanka et al. (2000) note that the spiders' demographic factors make them especially vulnerable to collection; and the destruction of their forest habitats further make them vulnerable to extinction as a result of collection. Similarly, regarding *P. formosa*, Molur et al. (2008b) note that collection is an additional pressure given threats to habitat and restricted distribution of this spider. Molur et al. (2008a) described the intersecting threats of habitat destruction and collection for the pet trade. Cumulative threats should be considered a peril to each of the Petitioned taxa.

### **Value of ESA Listing**

Federal listing of these tarantula species under the ESA would contribute to their conservation by, for example,

- Regulating import, export, or possession of these species by U.S. individuals and corporations; and
- Requiring consultation with U.S. agencies on federal permitting or funding of activities by U.S. and foreign entities that may jeopardize these species.

### **Summary**

The 11 Petitioned tarantulas merit listing as Endangered or Threatened species under the Endangered Species Act (ESA). They are found only in low numbers, and their forest habitats have been greatly reduced and continue to be degraded. Collection for the pet trade and intentional killing are another pressure, as are low numbers, rarity, and the cumulation of these threats.

This petition is submitted with the hope that federal protection will be granted and will prevent these species' extinction. We believe ESA listing will help preserve these tarantulas.

### **Requested Designation**

WildEarth Guardians hereby petitions the U.S. Fish and Wildlife Service, within the Department of Interior, to list these 11 tarantulas as Endangered or Threatened species pursuant to the Endangered Species Act. These listing actions are warranted, given the threats these species face, as well as its decline in numbers. These tarantulas are threatened by at least four listing factors: habitat destruction; collection for the pet trade; the inadequacy of existing regulatory mechanisms; and other natural or manmade factors affecting its continued existence. ESA listing will permit the development of proactive regulations, including regulating the import, export, and trade of these tarantulas by U.S. entities and individuals.

References:

Animal World. 2010. Metallic Blue Ornamental Tree Spider. Online at: <http://animal-world.com/encyclo/reptiles/spiders/MetallicBlueOrnamentalTreeSpider.php> [Accessed October 2010]. **Attachment 1**

Bambaradeniya, C.N.B. (Editor), 2006. Fauna of Sri Lanka: Status of Taxonomy, Research and Conservation. The World Conservation Union, Colombo, Sri Lanka & Government of Sri Lanka. viii + 308pp. **Attachment 2**

Benjamin, S.P., and C.N.B. Bambaradeniya. 2006. Systematics and conservation of spiders in Sri Lanka: current status and future prospects. Pp. 70-76 In the Fauna of Sri Lanka ed. C.N.B. Bambaradeniya. IUCN Report. [Attached as Bambaradeniya 2006]

Giant Spiders. 2010. *Poecilotheria* spp. Online at: [http://giantspiders.com/Poecilotheria\\_species.html](http://giantspiders.com/Poecilotheria_species.html) [Accessed October 2010]. **Attachment 3**

Gravely, F.H. 1915. Notes on Indian Mygalomorph Spiders. Records of the Indian Museum (A Journal of Indian Zoology) Vol. XI: 257-287. **Attachment 4**

IUCN Standards and Petitions Subcommittee. 2010. Guidelines for Using the IUCN Red List Categories and Criteria. Version 8.1. Prepared by the Standards and Petitions Subcommittee in March 2010. Downloadable from <http://intranet.iucn.org/webfiles/doc/SSC/RedList/RedListGuidelines.pdf>. **Attachment 5**

IUCN Sri Lanka and the Ministry of Environment and Natural Resources. 2007. The 2007 Red List of Threatened Fauna and Flora of Sri Lanka, Colombo, Sri Lanka. xiii+148pp. **Attachment 6**

Molur, S. and M. Siliwal. 2004. Common names of South Asian Theraphosid Spiders (Araneae: Theraphosidae). Zoos' Print Journal 19(10): 1657-1662. **Attachment 7**

Molur, S., Daniel, B.A. & Siliwal, M. 2008a. *Poecilotheria metallica*. In: IUCN 2010. IUCN Red List of Threatened Species. Version 2010.3. <www.iucnredlist.org>. Downloaded on 20 October 2010. **Attachment 8**

Molur, S., Siliwal, M. & Daniel, B.A. 2008b. *Poecilotheria formosa*. In: IUCN 2010. IUCN Red List of Threatened Species. Version 2010.3. <www.iucnredlist.org>. Downloaded on 14 October 2010. **Attachment 9**

Pocock, R.I. 1900. The Fauna of British India including Ceylon and Burma: Arachnida. **Attachment 10**

Rao, T.K, Bastawade, D.B., Javed, S.M.M. & Ram Krishna, I.S. 2007. Description of two new species of spiders of the genus *Poecilotheria* Simon (Araneae: Theraphosidae) and *Tmarus* Simon (Araneae: Thomisidae) from Nallamalai hills, Eastern Ghats, Andhra Pradesh, India.

*Records of Zoological Survey of India* 106(1): 49-54.

Samarawckrama, V.A.M.P.K., Janananda, M.D.B.G., Ranawana, K.B., and A. Smith. 2005. Study of the distribution of the genus *Poecilotheria* of the family Theraphosidae in Sri Lanka. *Cey. J. Sci. (Bio. Sci.)* 34: 75-86. **Attachment 11**

Siliwal, M., Molur, S., and B.K. Biswas. 2005. Indian spiders (Arachnida: Araneae): Updated checklist 2005. *Zoos' Print Journal* 20(10); 1999-2049. **Attachment 12**

Siliwal, M., Molur, S. & Daniel, B.A. 2008a. *Poecilotheria hanumavilasumica*. In: IUCN 2010. IUCN Red List of Threatened Species. Version 2010.3. <[www.iucnredlist.org](http://www.iucnredlist.org)>. Downloaded on 14 October 2010. **Attachment 13**

Siliwal, M., Molur, S. & Daniel, B.A. 2008b. *Poecilotheria miranda*. In: IUCN 2010. IUCN Red List of Threatened Species. Version 2010.4. <[www.iucnredlist.org](http://www.iucnredlist.org)>. [Accessed October 2010]. **Attachment 14**

Siliwal, M., Molur, S. & Daniel, B.A. 2008c. *Poecilotheria rufilata*. In: IUCN 2010. IUCN Red List of Threatened Species. Version 2010.4. <[www.iucnredlist.org](http://www.iucnredlist.org)>. [Accessed October 2010]. **Attachment 15**

Siliwal, M., Molur, S. & Daniel, B.A. 2008d. *Poecilotheria striata*. In: IUCN 2010. IUCN Red List of Threatened Species. Version 2010.4. <[www.iucnredlist.org](http://www.iucnredlist.org)>. [Accessed October 2010]. **Attachment 16**

Siliwal, M., Molur, S. & Daniel, B.A. 2008e. *Poecilotheria tigrinawesseli*. In: IUCN 2010. IUCN Red List of Threatened Species. Version 2010.3. <[www.iucnredlist.org](http://www.iucnredlist.org)>. [Accessed October 2010]. **Attachment 17**

Siliwal, M. and S. Molur. 2007. Checklist of spiders (Arachnida: Araneae) of South Asia including the 2006 update of Indian spider checklist. *Zoos' Print Journal* 22(2): 2551-2597. **Attachment 18**

Siliwal, M. & Molur, S. 2008. *Poecilotheria nallamalaiensis*. In: IUCN 2010. IUCN Red List of Threatened Species. Version 2010.3. <[www.iucnredlist.org](http://www.iucnredlist.org)>. [Accessed October 2010]. **Attachment 19**

Smith, A. undated. The Hanumavilasum Tiger Sanctuary (website posting). Online at: <http://www.thebts.co.uk/poecilotheria.htm> [Accessed October 2010]. **Attachment 20**

Sri Lanka, India, and U.S. 2000. Proposal to include all species in the genus *Poecilotheria* under the Convention on International Trade in Endangered Species of Wild Flora and Fauna. Submitted during the Eleventh Meeting of the Conference of the Parties in Nairobi, Kenya, April 10-20, 2000. **Attachment 21**

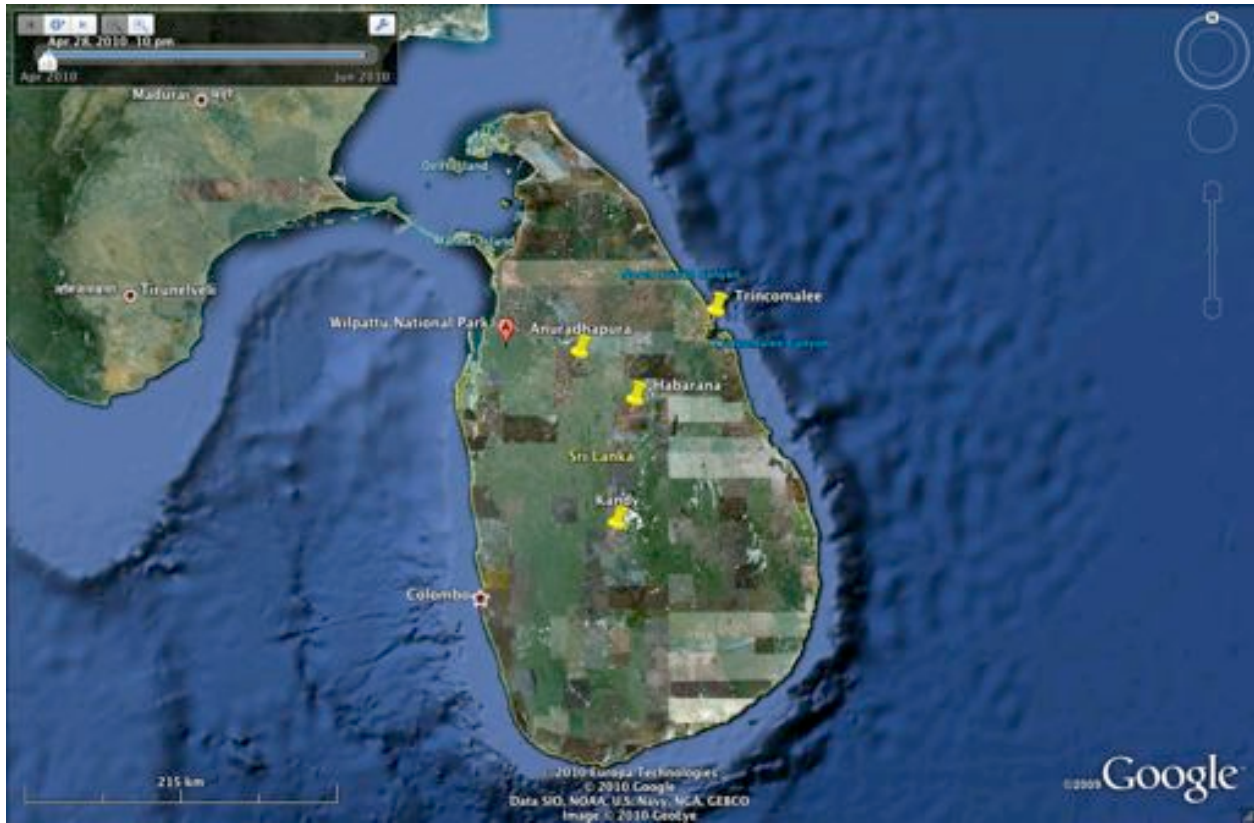
United Nations, Department of Economic and Social Affairs, Population Division. 2007. World

Fertility Patterns 2007. **Attachment**

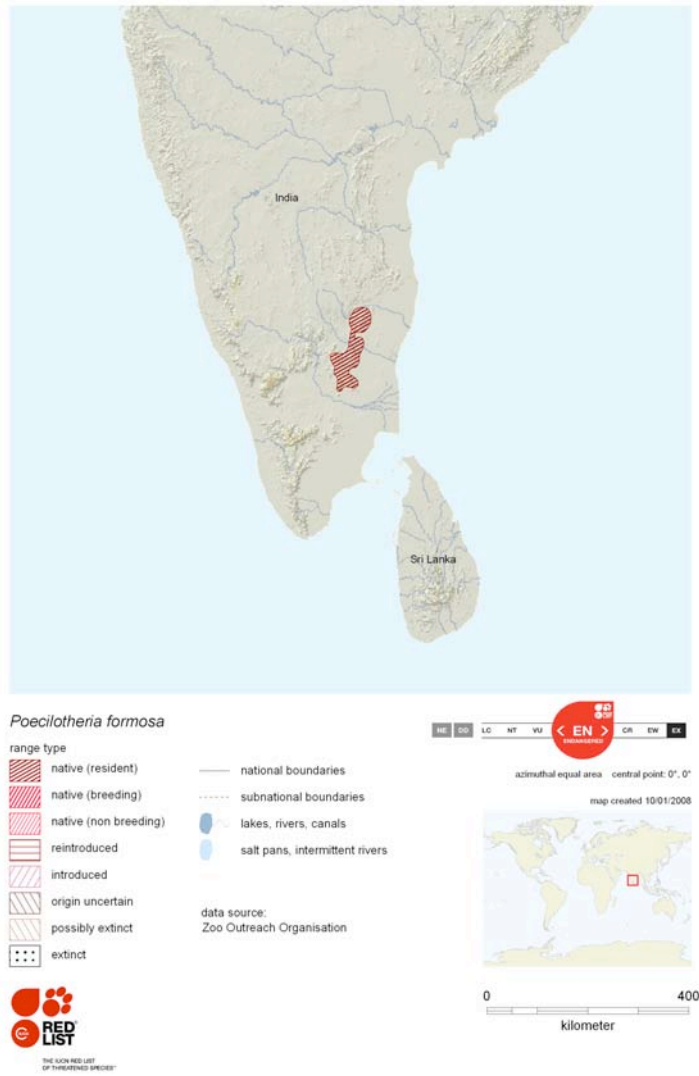
United Nations, Department of Economic and Social Affairs, Population Division. 2009. World Population Prospects: The 2008 Revision, Highlights, Working Paper No. ESA/P/WP.210.  
**Attachment**

**Appendix A: Range maps for select petitioned species (See Figure 2 for others)**

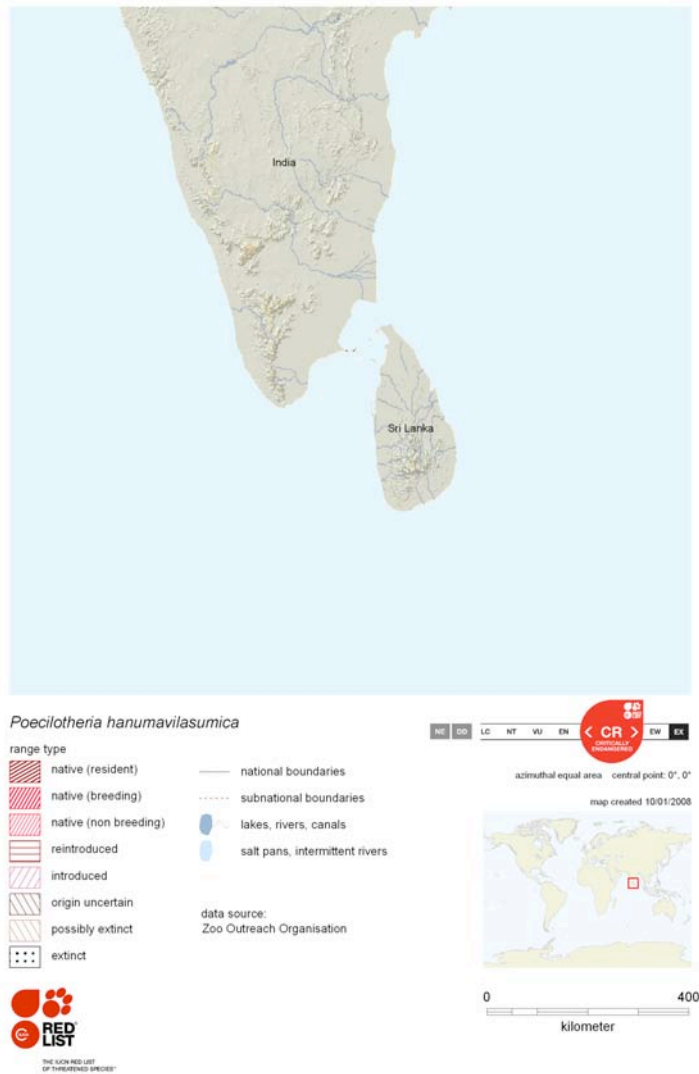
Google Earth Map for *Poecilotheria fasciata*: select localities marked



IUCN Map for *Poecilotheria formosa*

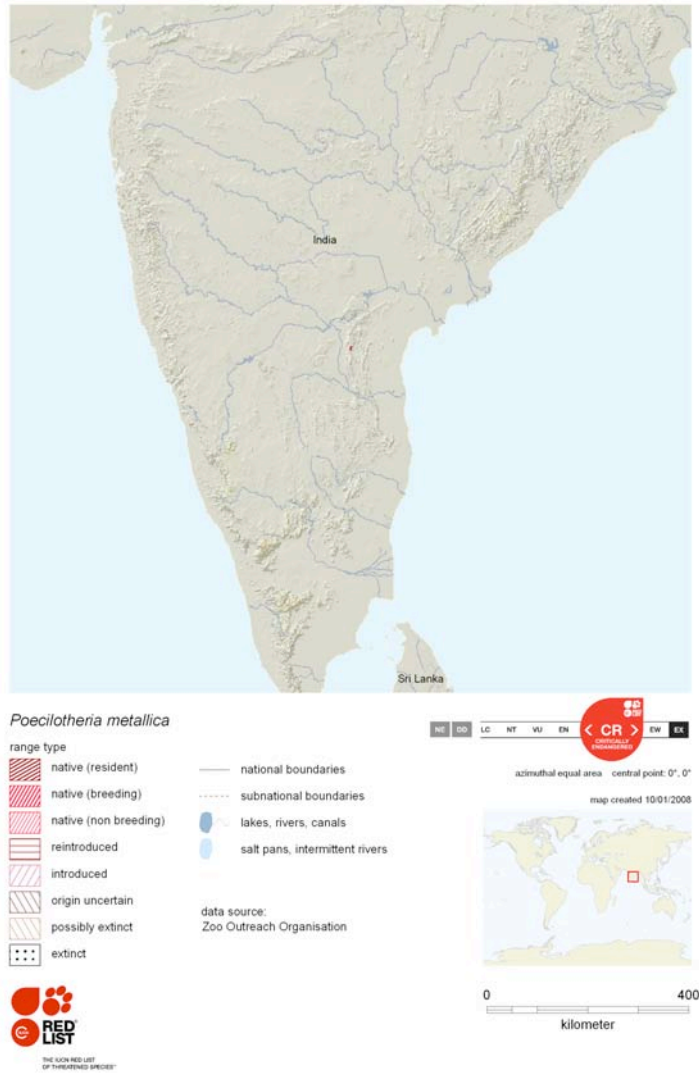


IUCN Map for *Poecilotheria hanumavilasumica*

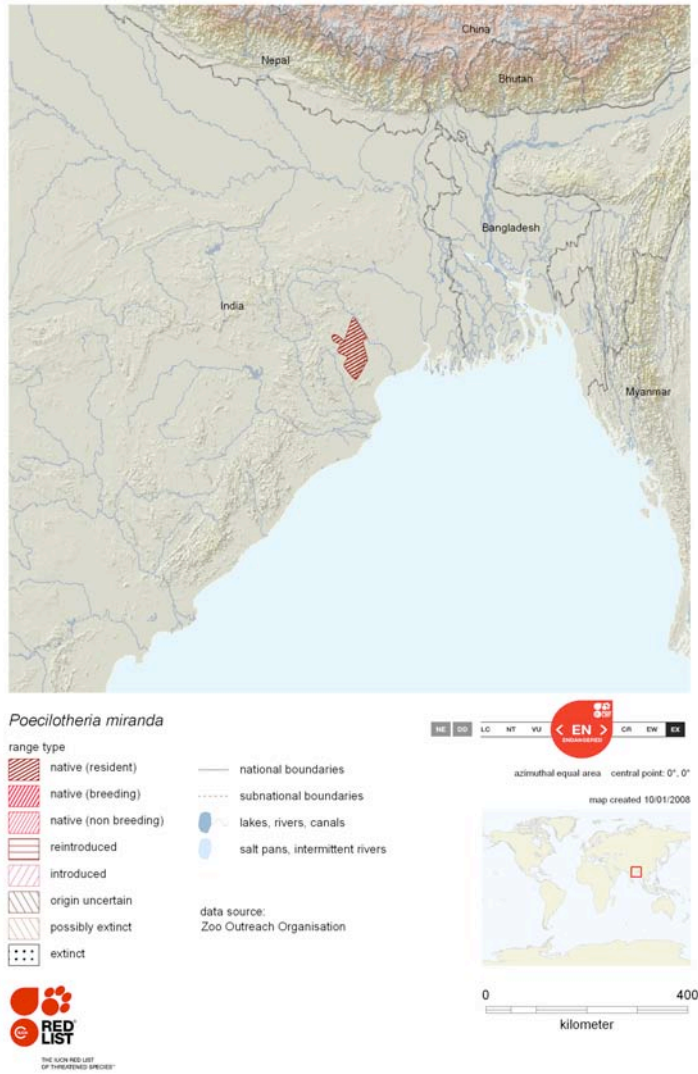




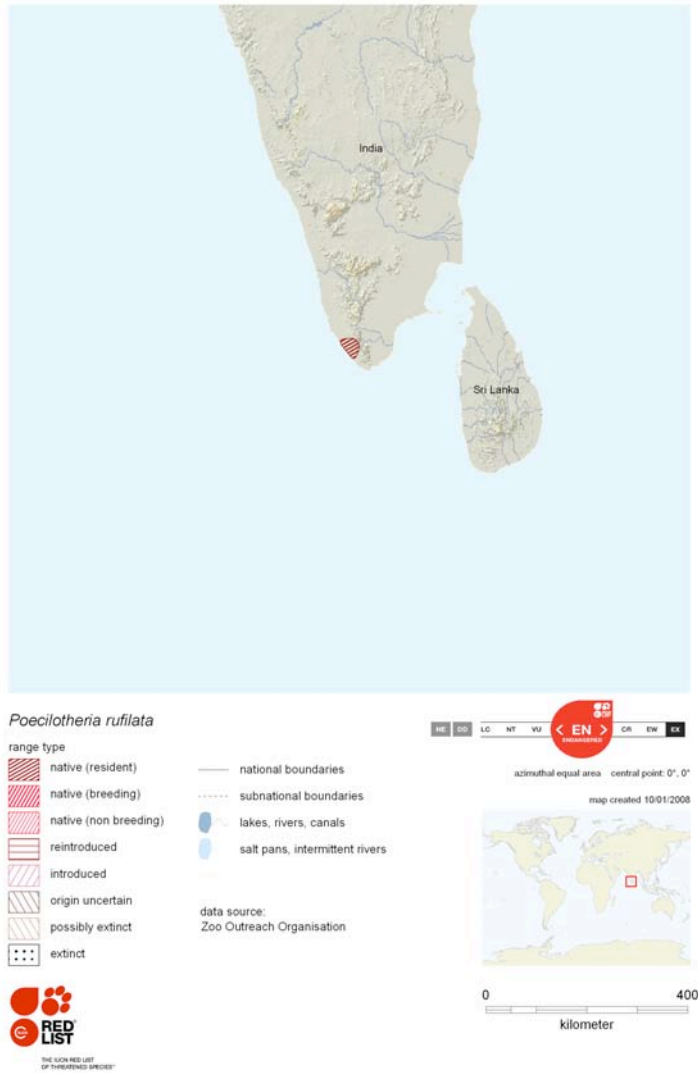
IUCN Map for *Poecilotheria metallica*



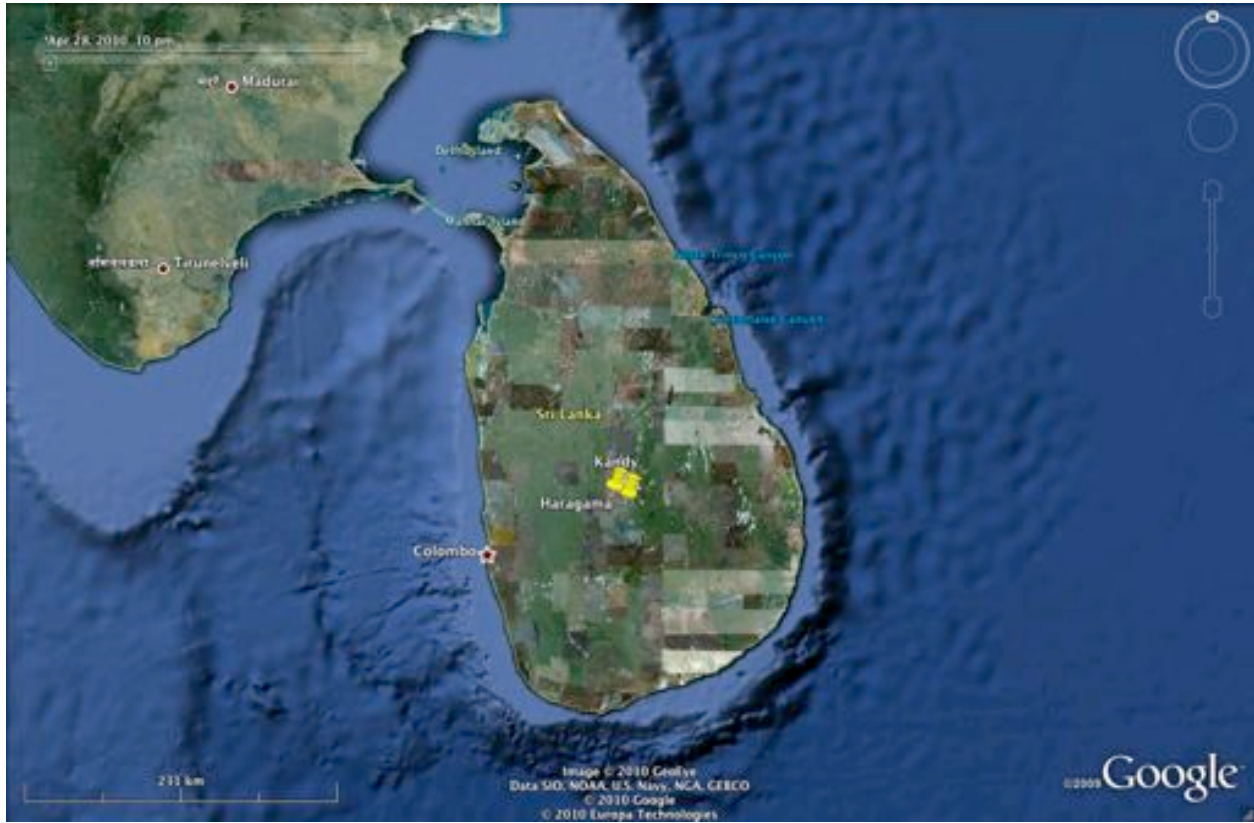
IUCN Map for *Poecilotheria miranda*



IUCN Map for *Poecilotheria rufilata*



Google Earth Map for *Poecilotheria smithi*: select localities marked



IUCN Map for *Poecilotheria striata*

