



World News of Natural Sciences

An International Scientific Journal

WNOFNS 35 (2021) 48-55

EISSN 2543-5426

Notes on the presence of *Phrynarachne ceylonica* (O. Pickard-Cambridge, 1884) from the Andaman and Nicobar Islands

Minakshi Dash* and **C. Sivaperuman**

Zoological Survey of India, Andaman and Nicobar Regional Centre,
Ministry of Environment, Forestry and Climate Change,
Haddo, Port Blair - 744 102, Andaman and Nicobar Islands, India

*E-mail address: minakshidash97@gmail.com

ABSTRACT

Description of *Phrynarachne ceylonica* (O. Pickard-Cambridge, 1884) female from Andaman and Nicobar islands after a long gap of 124 years has been provided through the collections of fresh specimen in and around these islands. The selection of habitat and the range expansion are discussed. The distribution records of the species are mapped.

Keywords: *Phrynarachne ceylonica*, Andaman and Nicobar Islands, Bird Dung Spider, Crab spider, India

1. INTRODUCTION

Genus *Phrynarachne* Thorell, 1869 is represented by 32 species [1] worldwide of which two are endemic to India [2], and the third species *Phrynarachne ceylonica* (O. Pickard-Cambridge, 1884) which was reported from India [3] dwindling on its verge until it was resurrected [4] by a single specimen from Kamrup, Assam. In their paper they have suggested an incline in the size of these across its distribution (largest in India and smallest in Japan) stating that the body size decreased with increasing latitude. However, we cannot verify this statement without figures (coefficient of correlation) that show the trend properly, these data have their values only when compared with the samples from other populations.

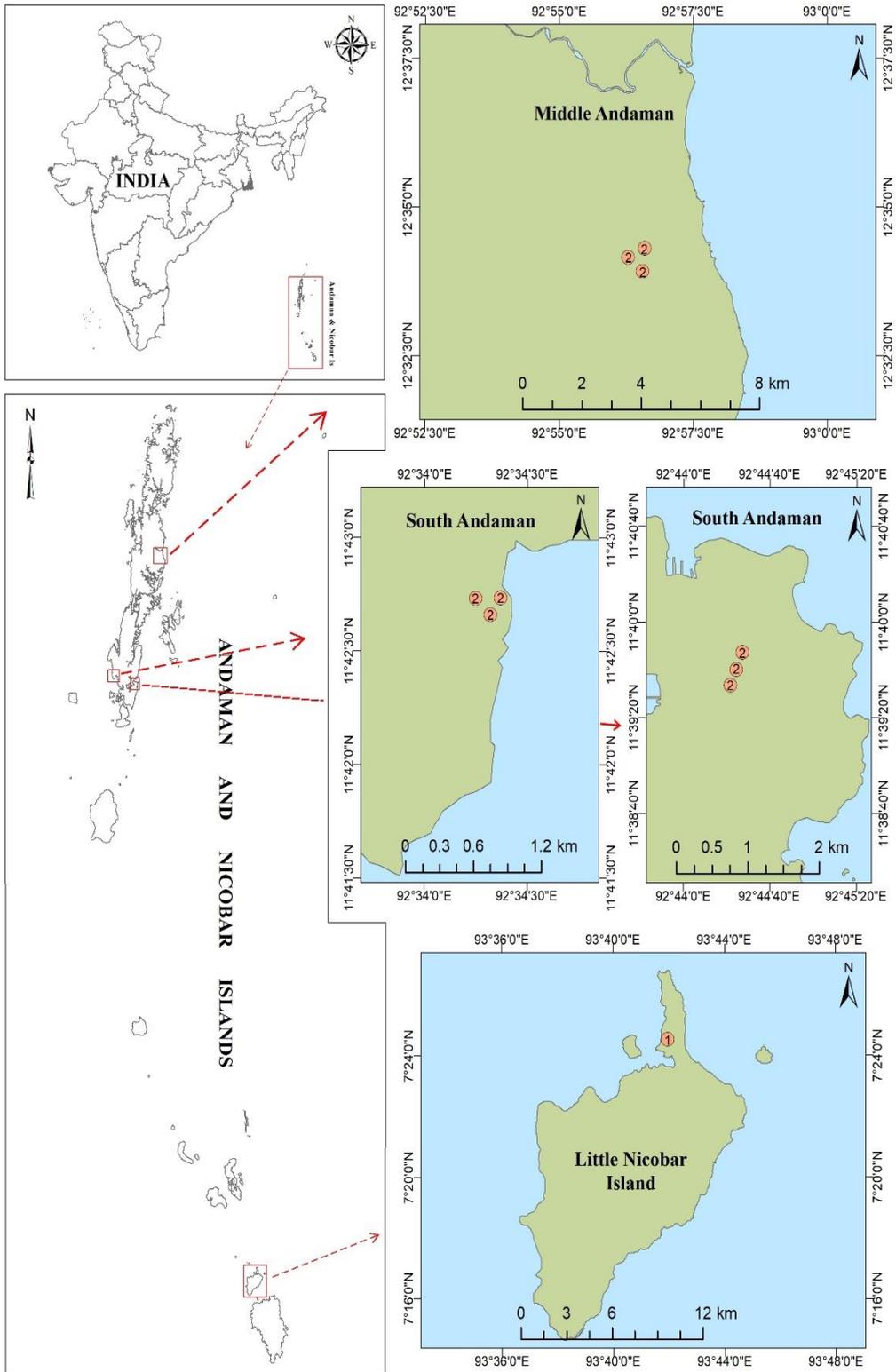


Figure 1. Map showing the survey localities

In an attempt to perform the same for our specimens we failed to show any kind significant co-relation between TBL vs. Latitude and Femur length vs. latitude probably because of the paucity of the data for both character.

In this paper we have examined the freshly collected specimens of *Phrynarachne ceylonica* (O. Pickard-Cambridge, 1884) for their morphological dimensions (Body Length, Carapace, Opisthosoma, Legs) sampled across these islands. Also, we have studied their habitat selection through evaluating 3 clusters of adult females each of them comprising of three adult females. Although in the recent article [4] the authors provided detailed account of *P. ceylonica* from Assam, India, a complete description of this species from the type locality was required.

2. METHODS

Specimens were preserved in 80% EtOH after collection; prior to the examination the specimens were transferred to 95% EtOH so that the specimen retains the color [5]. The epigynum was immersed in 2-3 drops of 2% lactic acid after dissection and then transferred and stored in 85% EtOH for clearing up the residual tissues. All the necessary details were measured and photographed using LEICA M 205 A attached with LEICA DFC 500 digital camera. The image stacking was performed using the Montage Multi focus module within LAS software (v.3.8.5). For the dissections of epigynum, stretching of legs and chelicerae CZM6 stereomicroscope was used. Legs (femur, patella + tibia, metatarsus, tarsus), eyes and body length were measured following Tang and Li (2010) [6]. The materials are deposited at the Andaman and Nicobar Regional Centre, Zoological Survey of India, Port Blair. The species distribution map was prepared in ESRI Arc GIS for Desktop ver. 10.4.1 (**Figure 1**).

All the measurements in this paper are in millimeters. Abbreviations used: AFV = Aberdeen Forest Village; AER = anterior eye row; ALE = anterior lateral eyes; AME = anterior median eyes; ANI: Andaman and Nicobar Islands; CO = copulatory opening; CD = copulatory ducts; E = embolus; ER = epigynal ridge; ET = epigynal tooth; H = hood; PER = posterior eye row; PLE = posterior lateral eyes; PME = posterior median eyes; S = spermatheca; TBL: Total Body Length; ZSI-ANRC: Andaman and Nicobar Regional Centre, Zoological Survey of India, Port Blair, Andaman and Nicobar Islands, India.

3. RESULTS AND DISCUSSION

Taxonomic Account

Family: Thomisidae Sundevall, 1833

Genus: *Phrynarachne* Thorell, 1869

Species: *Phrynarachne ceylonica* (O. Pickard-Cambridge, 1884) (**Figure 2a-d**)

Ornithoscatoides ceylonica O. Pickard-Cambridge 1884, p.201, pl. 15, f. 3 (Df), [7]

Ornithoscatoides nigra O. Pickard-Cambridge 1884, p.202, pl. 15, f. 4 (Dm), [7]

Phrynarachne nigra Simon 1895, p.1045, [3]

Phrynarachne ceylonica Thorell 1891, p. 97, [8]

Phrynarachne ceylonica Das, Kalita & Mahanta 2019, p. 985-990 (f), [4]

*For a detailed list of synonyms refer to World Spider Catalogue.

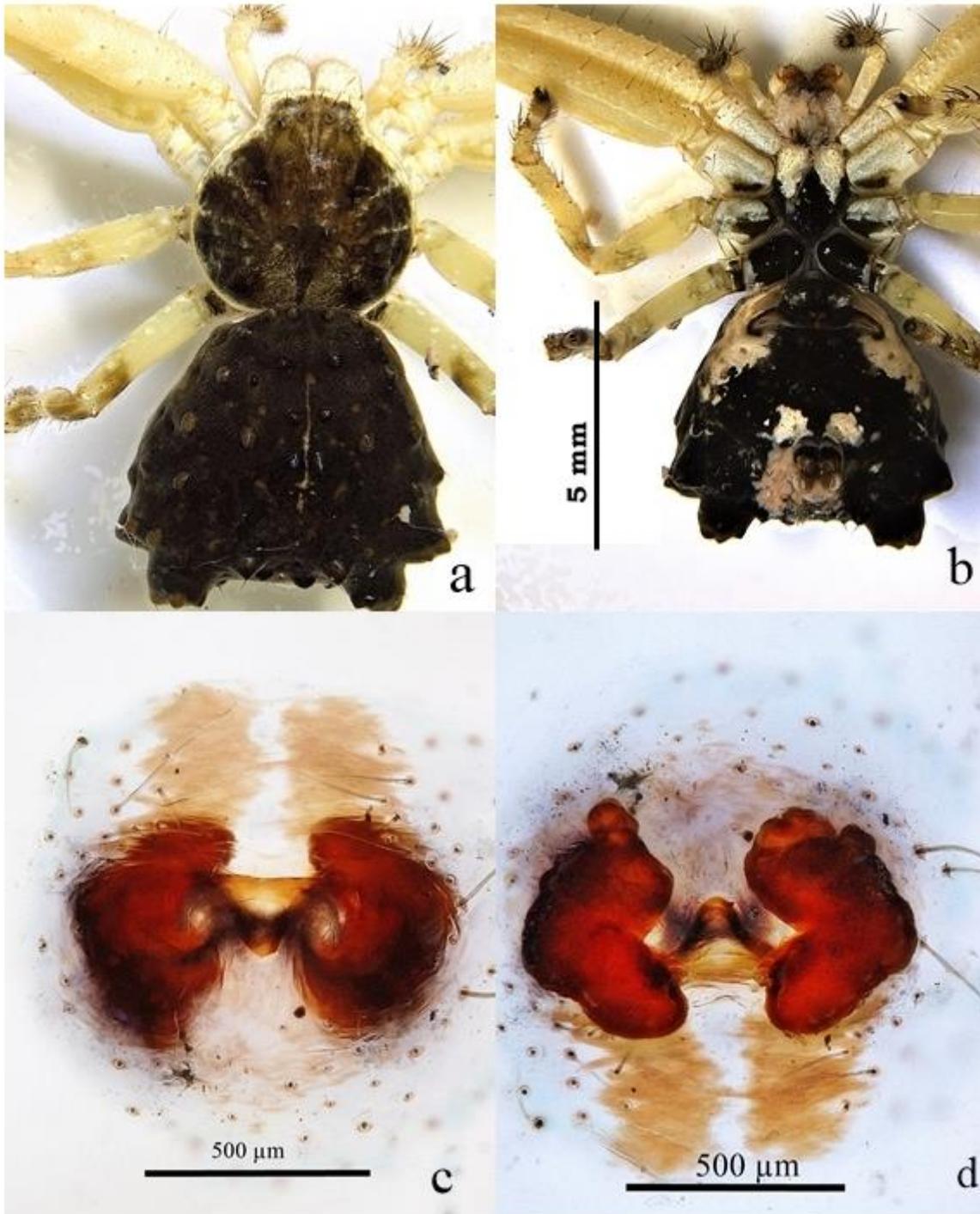


Figure 2. (a) Habitus of female *Phrynarachne ceylonica* (O. Pickard-Cambridge, 1884), (b) ventral view of the same, (c) Epigyne external view, (d) Duct system

Material examined for *P. ceylonica*. South Andaman. 1 adult female; Jhaukona Hotspot, Tirur; Lat: 7° 24.480'N Long: 93° 42.471'E; ZSI/ANRC- 8295; 11.v.2019. 1 adult female; east side of Jhaukona Hotspot, Tirur; Lat: 11° 42.703'N Long: 92° 34.372'E; ZSI/ANRC-8296; 11.v.2019. 1 adult female; east side of Jhaukona Hotspot, Tirur; Lat: 11° 42.727'N Long: 92° 34.290'E; ZSI/ANRC-8297; 11.v.2019. 1 adult female; Aberdeen Forest Village, Port Blair, ANI; Lat: 11° 39.675'N Long: 92° 44.414'E; ZSI/ANRC-9425; adjacent to the waterfall; 29.ix.2019. 1 adult female; AFV, Near the entrance of Forest nursery; Lat: 11° 39.669'N Long: 92° 44.410'E; ZSI/ANRC-9426, 29.ix.2019. 1 adult female; AFV; Lat: 11° 39.678'N Long: 92° 44.421'E; ZSI/ANRC-9427; 30.ix.2019.

Middle Andaman. 1 adult female; Horticulture farm, Panchavati, Rangat; Lat: 12° 34.200'N Long: 92° 56.515'E; ZSI/ANRC-9276,9277,9278; 18.vi.2019. 1 adult female; Panchavati, Rangat; Lat: 12° 34.172'N Long: 92° 56.510'E; ZSI/ANRC-9277; 18.vi.2019. 1 adult female; near the entrance, Horticulture farm, Panchavati, Rangat; Lat: 12° 34.211'N Long: 92° 56.530'E; ZSI/ANRC-9278; 18.vi.2019.

Diagnosis

The spider of this genus is well known as the Bird-dung spider. Quite frequently seen sitting on leaves. Clearly differentiated from the Indian congeners by the black colored carapace and abdomen observed in the live specimen and prominent black colored half of the metatarsi and tarsi (I and II) contrasting with the rest bright yellow colored legs. Epigynum is distinctive from *P. tuberosa* and *P. peeliiana* by the presence of elliptical copulatory openings accompanied by bean shaped spermatheca.

Description. Female. Based on the specimen collected from AVF (ZSI/ANRC- 9425)

Total Body length: 14.47. Carapace 6.92 long 6.10 wide; abdomen 7.96 long, 9.34 wide (detailed measurements for collected specimens provided in **Table 1**).

Table 1. Total body length and leg (I pair) measurements is given for 9 exemplars (Locality details for each voucher number is available in the text).

Voucher No.	TBL	Femur	Patella + Tibiae	Metatarsus	Tarsus
ZSI/ANRC- 8295	14.48	8.45	9.40	4.21	2.20
ZSI/ANRC- 8296	14.48	8.44	9.40	3.99	2.15
ZSI/ANRC- 8297	14.48	8.45	9.41	4.21	2.20
ZSI/ANRC-9425	14.45	8.43	9.34	4.02	1.99
ZSI/ANRC-9426	14.45	8.43	9.34	4.01	1.98

ZSI/ANRC-9427	14.46	8.43	9.35	4.02	1.99
ZSI/ANRC-9276	14.43	8.38	9.33	4.01	1.87
ZSI/ANRC-9277	14.43	8.39	9.32	4.01	1.90
ZSI/ANRC-9278	14.43	8.38	9.33	4.01	1.87

Carapace: Carapace somewhat flattened, circular shaped. Prosoma is dark olive brown in appearance with dark colored marking extending inwards from the cephalic margin. Ocular quad rectangular in shape with procurved AER and PER (more curved). Presence of two dark setae just between the AMEs. Sizes for the eyes and inter distance AME 0.16; ALE 0.27; PME 0.15; PLE 0.18 AME–AME 0.27; AME–ALE 0.15; PME–PME 0.41; PME–ALE 0.23. Chelicerae light yellowish, 2.14 in length and 1.02 in width, whitish in color, with three retromarginal and four promarginal teeth. Maxillae length 1.57; width 0.58. Labium length 1.41; width 0.77. Sternum 3.53 in length with a W-shaped white patch on the anterior side contrasting to black background. Legs yellow in color with dark patches or colorations on the coxa. First pair of legs with a white colored coxa along with dark band on patella. Along the half way of tibiae dark coloration can be seen ventrally extending up to the distal end of metatarsus of I and II pair of legs. Coxa of II and III pair of legs whitish with dark patches on the ventral retrolateral sides. Trochanter of IV pair of legs blackish in color, mild dark colored patches can be seen on both the ends of femur. Leg measurements as given below: Leg I 27.62 (8.44, 9.40, 4.20, 2.19), Leg II 27.45 (8.03, 9.84, 3.72, 2.17), Leg III 11.86 (3.27, 4.37, 1.47, 0.54), Leg IV 12.24 (3.28, 4.24, 1.04, 0.69). Leg formula: I>II>IV>III.

Abdomen: Dorsal side uniformly dark brown in appearance with four spiniform apophysis protruding on the posterior margin. Olive brown colored small spiniform tubercles are present all over the dorsal side. A pair of white colored oblong patches on the retrolateral margin of the ventral side. One small pair of white patches just above the spinnerets. Spinnerets placed posteriorly.

Epigynum and internal genitalia: Dark in color with black margins (dorsal view). Atrium sclerotized, wide median septum. CO placed anteriorly with hood. Spermatheca kidney-shaped connected through a narrow CD.

Distribution:

Worldwide: Sri Lanka to China, Taiwan, Japan.

India: Assam, Andaman and Nicobar Islands.

Natural history: The species was found on the underside of broad leaves of fig plants, *viz.* *Ficus* sp., alongside the forest stream. The spiders were concealed by building a small retreat with debris of the plants (**Figure 3**). Adult females with egg sac were observed during the months of October and November.



Figure 3. Photograph of *Phrynarachne ceylonica* (O. Pickard-Cambridge, 1884) from Aberdeen Forest Village, South Andaman showing, **(a)** dorsal view of female in its habitat, **(b)** Same, different habitat.

4. CONCLUSION

Tikader, 1977 [9] reported some taxonomic insights to the Thomisids of these islands, so the report of *P. ceylonica* adds a certain zoogeographical value to the previously studied species. Both the specimens reported from India confirming the presence of this species are females. Its

diagnostic features are distinctive, and the identification of this species will not be a problem in the future. Although the description of male is add more to the taxonomic status of this species.

Acknowledgments

The authors are grateful to Dr. Kailash Chandra, Director, Zoological Survey of India, for encouragement and providing necessary facilities to undertake this research project. The first author would like to thank Apurba Kumar Das who prepared the map included in this manuscript.

References

- [1] World Spider Catalog (2021). World Spider Catalog. Version 21.5. Natural History Museum Bern, online at (<http://wsc.nmbe.ch>) doi: 10.24436/2
- [2] Roy, T. K., Dhali, D. C., Saha, S. & Raychaudhuri, D. Resurrection of the endemic bird dung crab spiders, *Phrynarachne Thorell* (Araneae: Thomisidae) of 19th century India. *Munis Entomology and Zoology* 5 (2010) 543-550
- [3] Simon, E. Histoire naturelle des araignées. Deuxième édition, tome premier. Roret, Paris, (1895) 761-1084.
- [4] Das, S., Kalita, J. & Mahanta, N. New report of *Phrynarachne ceylonica* (O. Pickard-Cambridge, 1884) (Araneae: Thomisidae) from Assam, India. *International Journal of Scientific Research and Reviews* 8(2) (2019) 985-990
- [5] Framenau, V.W. Lariniophora, a new monotypic orb-weaving spider genus from Australia (Araneae: Araneidae: Araneinae). *Records of the Western Australian Museum*, 26 (2) (2011) 191-201
- [6] Tang, G. and Li, S. Crab spiders from Xishuangbanna, Yunnan Province, China (Araneae, Thomisidae). *Zootaxa*, 2703 (2010) 1-105
- [7] Pickard-Cambridge, O. On two new genera of spiders. *Proceedings of the Zoological Society of London* 52(2) (1884) 196-205, Pl. XV
- [8] Thorell, T. Spindlar från Nikobarerna och andra delar af södra Asien. *Kongliga Svenska Vetenskaps-Akademiens Handlingar* 24(2) (1891) 1-149
- [9] Tikader, B. K. Studies on spider fauna of Andaman and Nicobar islands, Indian Ocean. *Records of the Zoological Survey of India* 72 (1977) 153-212