

FURTHER REPORTING WITH DESCRIPTION OF TWO RARE SPIDERS *INTHAERON ROSSI* AND *CITHAERON INDICUS* (ARANEAE: CITHAERONIDAE) FROM INDIA

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ABSTRACT: The family Cithaeronidae Simon, 1893 is one of the poorly known but very interesting spider family represented by eight species in two genera namely, *Cithaeron* O. Pickard-Cambridge, 1872 and *Inthaeron* Platnick, 1991. In this paper, we report two rare Cithaeronid spiders from India viz., *Inthaeron rossi* Platnick, 1991 from Kalahandi district, Odisha in the east and *Cithaeron indicus* Platnick & Gajbe, 1994 from Solapur district, Maharashtra in the south and Kalahandi district, Odisha in the east. We are providing additional description of both the species. Also distribution map of cithaeronid species in India.

KEY WORDS: *Cithaeron*, distribution, India, *Inthaeron*, Maharashtra, Odisha

The curly-legged or swift ground spider family Cithaeronidae Simon, 1893 is one of the poorly known but very interesting family represented by two genera namely, *Cithaeron* O. Pickard-Cambridge, 1872 and *Inthaeron* Platnick, 1991 and eight species (World Spider Catalog, 2020). *Inthaeron* is monotypic genus and endemic to India, whereas, *Cithaeron* is having wide distribution range and is reported from Africa, Mediterranean, Near East to India, Malaysia, and introduced in Australia, Cuba and Brazil (Platnick, 1991; World Spider Catalog, 2020). In India, *Inthaeron* is represented by *I. rossi* Platnick, 1991 from Madhya Pradesh and Maharashtra; and *Cithaeron* is represented by two species viz., *C. indicus* Platnick & Gajbe, 1994 from Chhattisgarh and Madhya Pradesh, and *C. praedonius* O. Pickard-Cambridge, 1872 from Ramnad, which is same as the present day Ramanathapuram in Tamil Nadu (Platnick, 1991).

While carrying out survey in Eastern Ghats of Odisha and Eastern Maharashtra, we collected few Cithaeronids from Odisha and Maharashtra. On examining the specimens, interestingly, we found one male *I. rossi* from Kalahandi district of Odisha. Similarly, we found females of *C. indicus* from Solapur district of Maharashtra and Kalahandi district of Odisha. Both *I. rossi* and *C. indicus* are rare spiders that are endemic to India and though both are described about more than two and half decades ago, there is no further reporting of these species and till date both species are known from two specimens each. In

this paper we provide additional description of both the species with notes on their taxonomic variations. Also distribution map of Cithaeronid species in India.

MATERIALS AND METHODS

All the specimens were collected by hand-picking and preserved in in 70% ethanol. All measurements are in mm. Copulatory organs were dissected and cleaned in concentrated lactic acid for 15-20 minutes. All illustrations were prepared with the help of camera lucida attached to Olympus SZX10 stereomicroscope. Specimens from Odisha were deposited at Indraprastha University Museum (IPUM), New Delhi, India and from Maharashtra were deposited at Wildlife Information Liaison Development Society (WILD), Coimbatore, Tamil Nadu, India. Abbreviations: A-atrium; AH-anterior hood; ALE-anterior lateral eyes; ALO-anterolateral openings; AME-anterior median eyes; C-cymbium; FF-fringed flange; E-embolus; ED-epigynal duct; FD-fertilization duct; MA-median apophysis; MOQ-median ocular quadrate; PLE-posterior lateral eyes; PME-posterior median eyes; RTA-retrolateral tibial apophysis; S-spermathecae; SAL-spermathecal anterior lobe; SPL-spermathecal posterior lobe; TG-Tegulum. Abbreviations used for leg measurements and spines and hairs count on legs are d-dorsal, fe-femur, mt-metatarsus, pa-patella, tarsus, ti-tibia and v-ventral.

TAXONOMY

Inthaeron rossi Platnick, 1991 (Figs. 1-11)

Inthaeron rossi Platnick, 1991c: 12, f. 21-22.

Material examined: 1♂, (IPUM), INDIA. Babaji Dangar, Kalahandi district, Orissa, 19°55'55.8" N; 83°10'36.3"E, 239 m, 10 August, 2016, coll. S.R. Choudhury and N. Panda, IPU-16-ARA-0111.

Description (Figs. 1-11): Total length 4.50. Carapace 1.75 long, 1.63 wide; abdomen 2.75 long, 1.13 wide. Carapace greenish-brown with darker margins, fovea longitudinal slit-like, glabrous except for few short hairs on clypeus. Eyes in two rows, both rows procurved. PME oblong shaped and opaque. Eye: AME 0.19, PME 0.22, PLE 0.13, ALE 0.16, AME-AME 0.09, PLE-PME 0.06, ALE-PLE 0.13, PME-PME adjacent, AME-ALE adjacent. Ocular group 0.34 long, 0.56 wide; MOQ 0.48 long, front width 0.38, back width 0.35. Clypeus height 0.22. Sternum: 1.37 long, 1.06 wide, oval, orangish-brown with darker margins, covered with short, long bristles. Labium: 0.37 long, 0.31 wide, dark brown. Maxillae: 0.50 long, 0.25 wide, orangish-brown, covered with long bristles. Chelicerae: dark brown. Legs: very long and slender, all tarsi weak and curved towards tip, black, greenish-brown, anterior legs darker than posterior legs. Spinination: leg I-IV fe d1; leg III ti v4, leg IV ti v5; leg III mt v6, leg IV mt v5. Leg measurements (fe, pa, ti, mt, ta, total): I: 3.00, 0.71, 2.82, 2.71, 1.94, 11.18; II: 2.82, 0.71, 2.53, 2.47, 1.71, 10.24; III: 2.47, 0.71, 1.88, 2.29, 1.53, 8.88; IV: 3.06, 0.82, 2.88, 3.47, 2.00, 12.24; Palp: 1.00, 0.35, 0.35, -, 1.18, 2.88. Leg formula 4123. Abdomen: Oblong, with oval dorsal scutum covering anterior two third of the body, brownish-black dorsally except white patch above spinnerets; ventrally epigastral area with orangish scutum, rest area greyish with pale longitudinal patch, covered with short and long hairs and bristles. Palp: RTA triangular with broad bulbous base and pointed short tip; median apophysis absent; palp bulb flat disc-like with

embolus begins in 9 o'clock position and compactly coiled (7 times) around tegulum; translucent, fringed flange emerge between 9-10 o'clock position (Figs. 4-11).

Variations: Though, Platnick (1991) had mentioned for the family "males with long anterior scutum occupying half of abdominal length" there is no mention of a scutum by Platnick & Gajbe (1994) for *I. rossi* male. Hence, this male from Odisha differs from the male described by Platnick & Gajbe (1994) by presence of oval abdominal scutum on dorsal side (Fig. 1). Further, the male from Odisha lacks median apophysis (figs. 5,6,11), but median apophysis was present and reduced to tiny lobe in the male described by Platnick & Gajbe (1994). Also, the male from Odisha possesses embolus with fringed flange that arise between 9 and 10 o'clock position (Fig. 6), but in the male described by Platnick & Gajbe (1994) the fringed flange arise in 12 o'clock position; however, the difference is minimal, and this is most probably due to rotation of copulatory bulb during expansion.

***Cithaeron indicus* Platnick & Gajbe, 1994** (Figs. 12-23)

Cithaeron indicus Platnick & Gajbe, 1994: 83, f. 4-5.

Material Examined: 2♀♀ (WILD), INDIA. Solapur, Solapur district, Maharashtra, 17°37'06.8"N; 75°57'43.4"E, 150m, 26 July 2017, coll. Rajshekhar Hippargi, (WILD-17-ARA-1553; WILD-17-ARA-1554); 1 ♀, (IPUM), INDIA. Jakham road, Karlapat Wildlife Sanctuary, Kalahandi district, Odisha, 19°44'35.2"N; 83°06'29.5"E, 357m, 24 January, 2018, coll. S.R. Choudhury and N. Panda, IPU-18-ARA-1169.

Description (Figs. 12-23): Total length 7.05-7.87. Carapace 2.57-3.60 long, 1.98-2.60 wide; abdomen 4.27-4.80 long, 2.30-2.55 wide. Carapace, pear-shape, longer than wide, narrow in front, orangish-brown, fovea longitudinal depression. Eyes: In two rows, both rows distinctly procurved, PME large, oblong shaped, rest eyes subequal in size and round; ALE, PME, PLE opaque. Eye: AME 0.15-0.22, PME 0.23-0.25, PLE 0.11-0.14, ALE 0.14-0.16, AME-AME 0.10-0.15, PME-PME adjacent, ALE-PLE 0.12-0.16, PME-PLE 0.10-0.14, AME-ALE adjacent. Ocular group 0.50-0.56 long, 0.77-0.95 wide; MOQ 0.47-0.56 long, front width 0.42-0.52, back width 0.37-0.47. Clypeus height 0.37-0.40. Sternum: 1.63-2.17 long, 1.28-1.58 wide, orangish-yellow with darker, sclerotized margins with small triangular chitinous projection with their apex pointing directly opposing coxae, covered with short and long bristles. Labium: 0.45-0.58 long, 0.38-0.49 wide, orangish-brown. Endites 0.56-0.87 long, 0.32-0.43 wide, longer than wide, orangish-brown, covered with long bristles. Chelicerae: orangish-brown. Legs: very long and slender, all tarsi weak and curved towards tip, greenish-brown, lighter ventrally. Spination: leg I fe d2, leg II-IV fe d1, palp fe v3; leg I ti v1, leg III ti v4, leg IV ti v3, palp ti p5 r3; leg III-IV mt v4; palp ta v2. Leg measurements (fe, pa, ti, mt, ta, total): Leg I: 2.58-3.39, 0.84-1.10, 2.30-2.85, 2.11-2.67, 1.75-2.00, 9.67-11.89; Leg II: 2.41-3.13, 0.84-1.15, 2.09-2.68, 2.00-2.52, 1.68-2.27, 9.13-11.75; Leg III: 2.11-2.72, 0.63-1.00, 1.69-2.09, 1.89-2.48, 1.18-1.49, 7.68-9.78; Leg IV: 3.04-3.70, 0.63-1.03, 2.49-3.00, 2.95-3.95, 1.70-2.21, 11.04-13.34; Palp 0.79-1.04, 0.42-0.47, 0.64-0.77, -, 0.94-1.17, 2.90-3.45. Leg formula 4123. Abdomen: longer than wide, oblong, greyish-brown dorsally with faint blotches and big white patch posteriorly before spinnerets; ventrally epigastral area orangish-green, rest area pale greyish, mottled with faint pale dots; abdomen covered with short and long hairs and bristles. Externally, epigynum with atrium:

anteromedially atrium with sclerotized inverted cup-shape hood (AH) with lateral slightly curved short extensions; two large sigmoid-shape openings anterolaterally and epigynal lower lip slightly concaved or straight (Figs. 16, 18, 20, 22). Internally, epigynal ducts highly coiled of various thickness, initially forming spherical tight coiled ball with sclerotized or darker margins, later dilates and loosely coils multiple times and before opening into the atrium runs straight vertically in epigynal cavity; fertilization duct, short, emerge from prolateral sides of base of epigynal ducts and forming wide straight platform-like structure (Figs. 17, 19, 21, 23).

Variations: According to Platnick (1991), in *Cithaeron* cheliceral teeth are absent but Gajbe (2007) reports presence of one promarginal and one retromarginal tooth. This further needs to be investigated as none of the specimens from Odisha and Maharashtra described here have any cheliceral tooth.

Specimens from Maharashtra and Odisha are confirmed to be *C. indicus* based on basic structure of epigyne. Though there is slight variation in the epigynal structure in specimens from Odisha and Maharashtra: Atrium is slightly wider in Maharashtra specimens than Odisha specimens and coiling of epigynal duct is slightly different (Figs. 16-23). But looking at the basic structure of external and internal epigynum, they look alike and therefore, we consider them as same species till we find male.

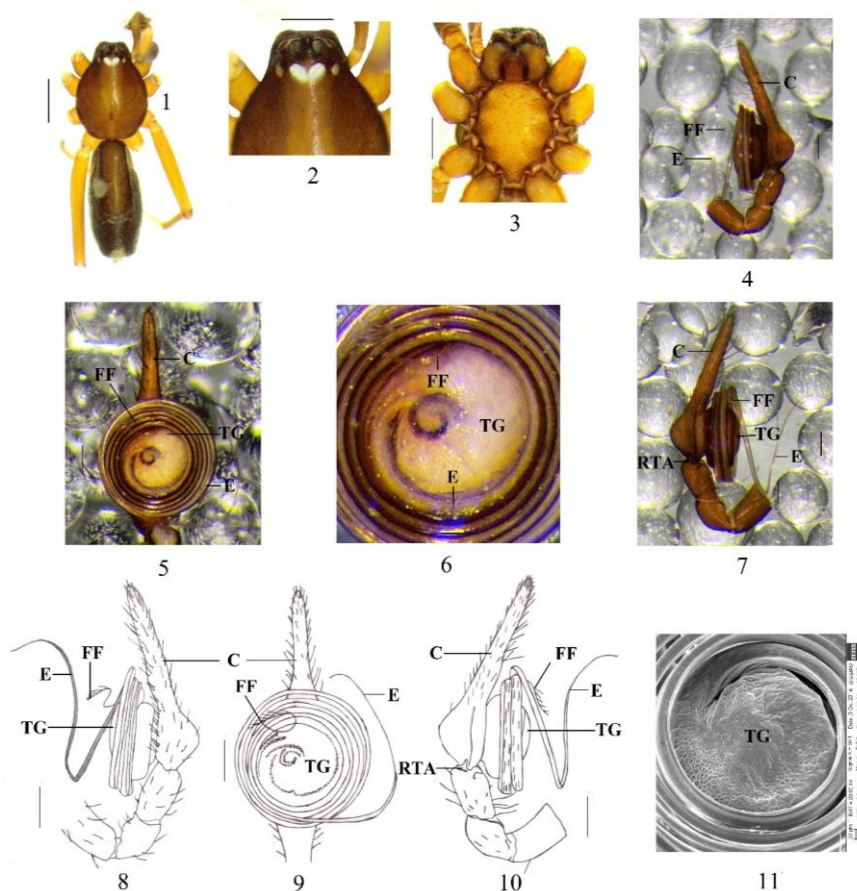
Distribution: Distribution map of cithaeronid species in India is provided herewith (Fig. 24).

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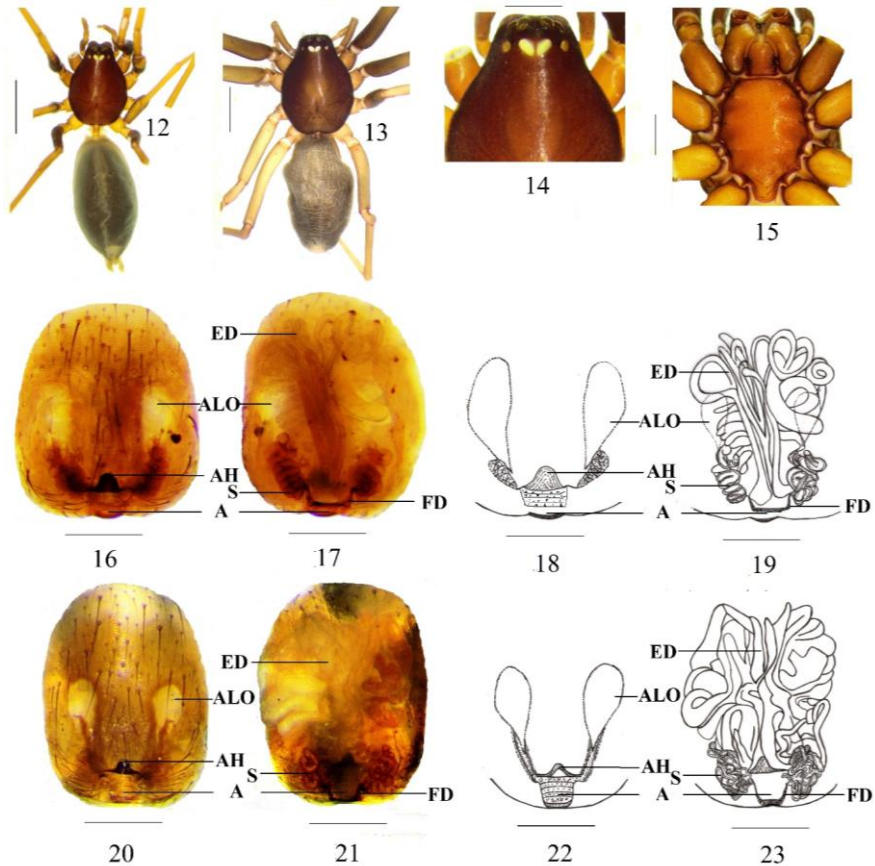
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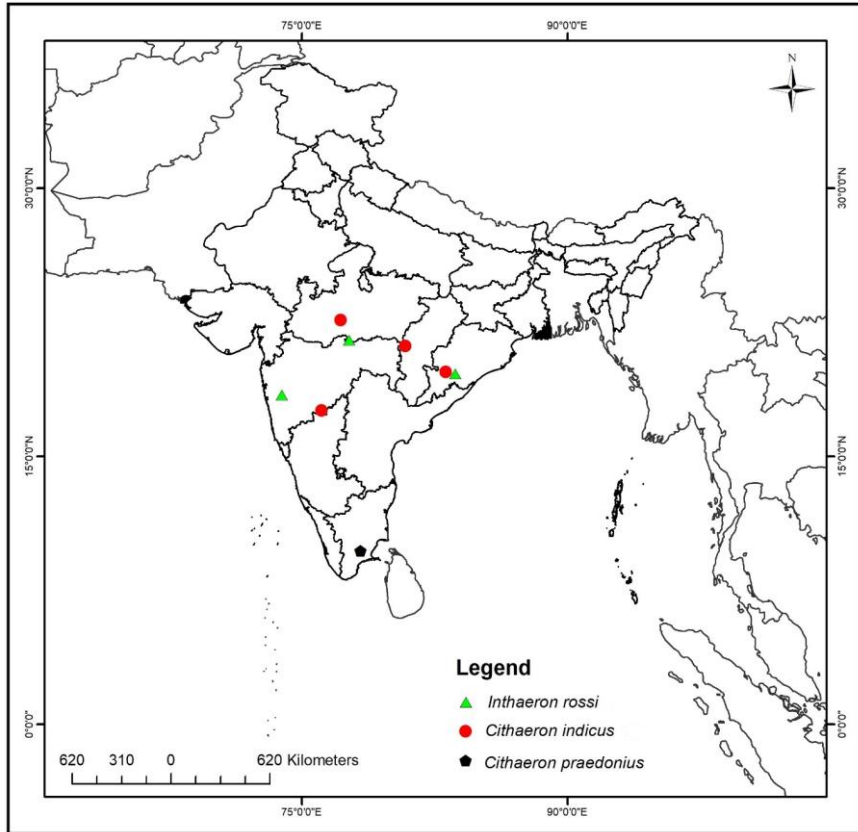
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Figures 1-11. *Inthaeron rossi*, ♂ (IPU-16-ARA-0111): 1. Spider habitus, 2. Eyes, 3. Sternum, maxillae and labium, 4,8. Right male palp prolateral view, 5,9. Right male palp ventral view, 6. Right male palp ventral view- central portion of bulb enlarged (fringed flange of embolus marked with red arrow mark), 7,10. Right male palp retrolateral view, 11. SEM of left male palp ventral view- central portion of bulb enlarged; Scale for 1=1mm, 2,3=0.5mm, 4,5,7-10=0.2mm.



Figures 12-23. *Cithaeron indicus*, 12, 14-19 ♀ (WILD-17-ARA-1553), 13, 20-23 ♀ (IPU-18-ARA-1169): 12,13 Spider habitus, 14. Eyes, 15. Sternum, maxillae and labium, 16,18,20,22 Epigynum, ventral view, 17,19,21,23 Same, dorsal view; Scale for 12, 13=1mm, 14,15=0.5mm, 16-23=0.2mm.



Figures 24. Distribution of Cithaeronidae spp. in India.