

Jumping spiders of the genus *Pancorius* Simon, 1902 (Araneae: Salticidae: Plexippini) from eastern India, with a description of a new species

Пауки-скакунчики рода *Pancorius* Simon, 1902 (Araneae: Salticidae: Plexippini) из восточной Индии, с описанием нового вида

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KEY WORDS: Aranei, Arunachal Pradesh, Nagaland, new records, taxonomy.

КЛЮЧЕВЫЕ СЛОВА: Aranei, Аруначал Прадеш, Нагаланд, новые находки, таксономия.

ABSTRACT. A new *Pancorius* species, *P. nagaland* Caleb sp.n. (♀), is diagnosed and described from north-eastern India. Three species: *Pancorius darjeelingianus* Prószyński, 1992, *P. magnus* Żabka, 1985 and *P. tagorei* Prószyński, 1992 are illustrated and mapped. A new combination and synonymy are proposed: *Pancorius pseudopaykulli* Sen, Dhali, Saha et Raychaudhuri, 2015, comb.n. (ex *Plexippus*), and syn.n., as a junior synonym of *P. darjeelingianus* Prószyński, 1992.

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РЕЗЮМЕ. Новый вид *Pancorius* species, *P. nagaland* Caleb sp.n. (♀), диагностирован и описан из северо-восточной Индии. Три вида: *Pancorius darjeelingianus* Prószyński, 1992, *P. magnus* Żabka, 1985 и *P. tagorei* Prószyński, 1992 иллюстрированы и прокартированы. Предложены новая комбинация и синонимия: *Pancorius pseudopaykulli* Sen, Dhali, Saha et Raychaudhuri, 2015, comb.n. (ex *Plexippus*), и syn.n., как младший синоним *P. darjeelingianus* Prószyński, 1992.

Introduction

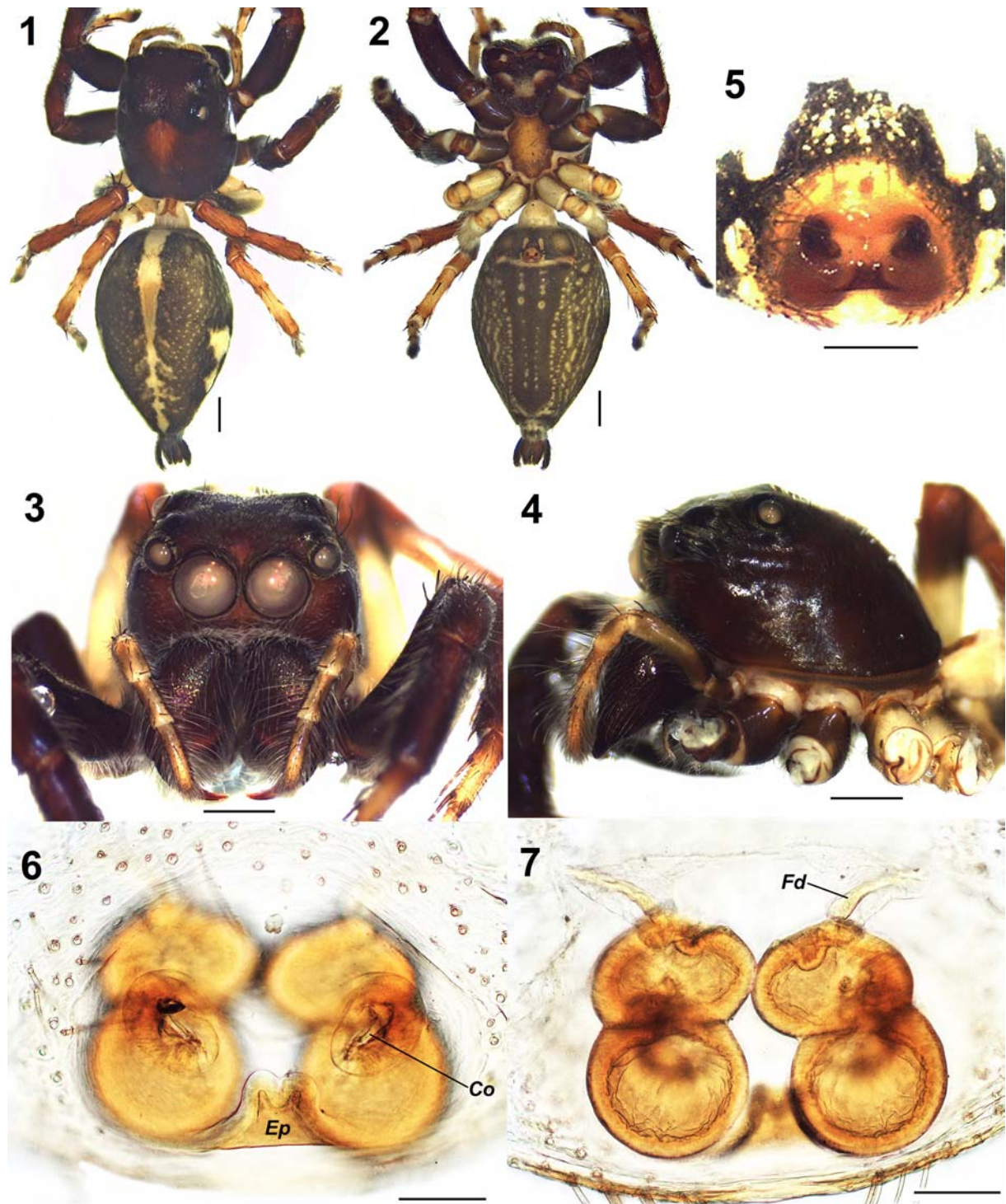
The plexippine genus *Pancorius* was erected by Simon in 1902, with *Ergane dentichelis* Simon, 1899 as its generotype. Currently, 34 valid *Pancorius* species are known from the Oriental Region [WSC, 2018], of which five species have been recorded/described from India: viz., *P. daitaricus* (Prószyński, 1992), *P.*

darjeelingianus Prószyński, 1992, *P. magnus* Żabka, 1985, *P. submontanus* Prószyński, 1992 and *P. tagorei* Prószyński, 1992 [Prószyński, 1992]. The species, *Pancorius dabanis* (Hogg, 1922) was described and known from South Annam in Vietnam only, but its distribution is erroneously mentioned as India in the World Spider Catalog [WSC, 2018]. The aims of the present paper are (1) to describe a new species from north-eastern India; (2) to provide records of all the *Pancorius* species known to date from India; and (3) to propose a new combination and a synonymy.

Material and methods

Specimens were examined by means of a Leica EZ4 HD stereomicroscope. Micro-photographs were obtained by means of a Leica M205A stereomicroscope equipped with a Leica DFC500 HD camera and supported with a Leica Application Suite (LAS) version 3.8. Epigynes were dissected and cleared in 10% KOH. Temporary preparations were examined and photographed by means of a Leica DM1000 compound microscope equipped with a Leica EC3 camera. Leg measurements are given in the following order: total (femur, patella, tibia, metatarsus, tarsus). Spine positions are as follows: prolateral, dorsal, retrolateral and ventral. All measurements are in millimeters. The map was prepared in the DIVA-GIS (<http://www.diva-gis.org>). The examined voucher and type specimens are deposited in the Arachnida Section of the National Zoological Collections, Zoological Survey of India, Kolkata (NZC-ZSI) and the Centre for DNA Taxonomy, Zoological Survey of India, Kolkata (ZSI-CDT).

Abbreviations used in the text are as follows: AER — anterior eye row; ALE — anterior lateral eye; AME — anterior median eye; EFL — eye field length; D — described; PER — posterior eye row; PLE — posterior lateral eye; PME — posterior median eye.

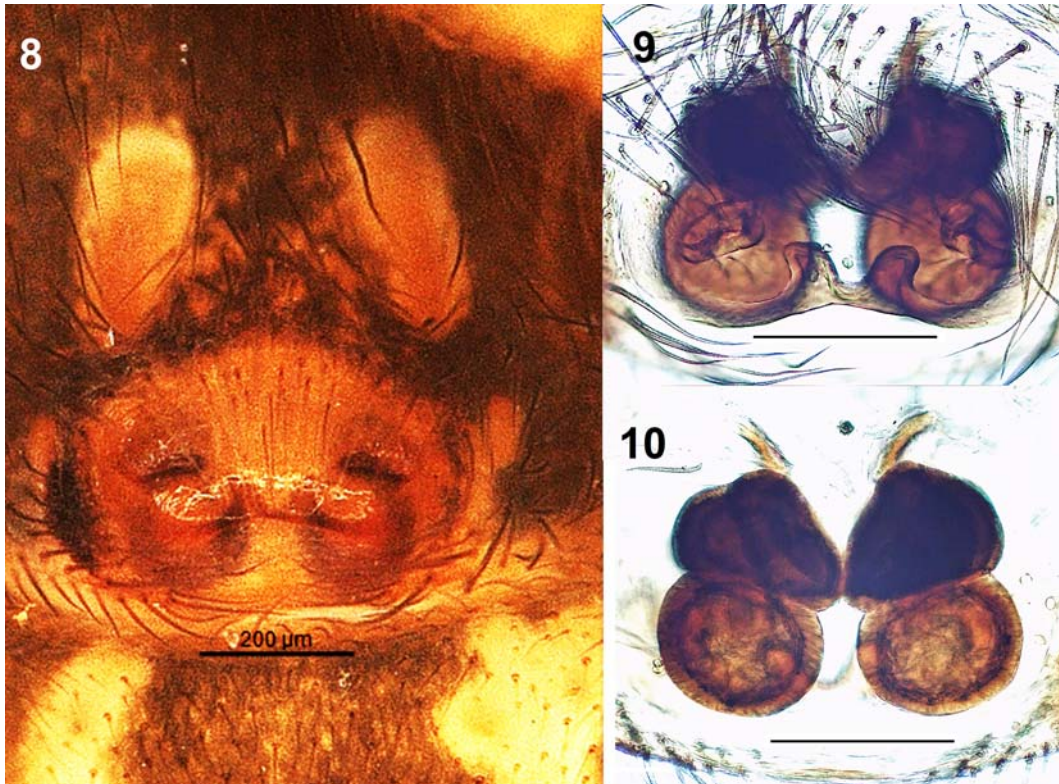


Figs 1–7. General appearance and copulatory organs of *Pancorius nagaland* sp.n., holotype female: 1 — general appearance, dorsal view; 2 — ditto, ventral view; 3 — front view; 4 — carapace, lateral view; 5 — epigyne, ventral view; 6 — cleared epigyne, ventral view; 7 — spermathecae, dorsal view. Scale bars = (1–4) 1 mm, (5) 0.25 mm, (6–7) 0.1 mm.

Abbreviations: Co — copulatory opening; Ep — epigynal pocket; Fd — fertilization duct.

Рис. 1–7. Общий вид и копулятивные органы *Pancorius nagaland* sp.n., самка-голотип: 1 — общий вид сверху; 2 — то же, снизу; 3 — вид спереди; 4 — головогрудь, вид сбоку; 5 — эпигина, вид снизу; 6 — осветленная эпигина, вид снизу; 7 — сперматека, вид сверху. Масштаб (1–4) 1 мм, (5) 0,25 мм, (6–7) 0,1 мм.

Сокращения: Co — копулятивное отверстие; Ep — эпигинальный карман; Fd — оплодотворительный канал.



Figs 8–10. Copulatory organs of *Pancorius darjeelingianus* Prószyński, 1992: 8, 9 — epigyne, ventral view; 10 — spermathecae, dorsal view. Scale bars = (9) 0.2 mm.

Рис. 8–10. Копулятивные органы *Pancorius darjeelingianus* Prószyński, 1992: 8, 9 — эпигина, вид снизу; 10 — сперматека, вид сверху. Масштаб (9) 0,2 мм.

Survey of species

Genus *Pancorius* Simon, 1902

Pancorius nagaland Caleb, **sp.n.** Figs 1–7, 19–20, Map.

TYPES. Holotype ♀ (NZC-ZSI-6449/18) from Intangki National Park (25.663889°N, 93.512778°E; 195 m a.s.l.), Peren District, Nagaland, India, 25 March 2017, Swati & Aneesh. Paratype: 1 ♀ (NZC-ZSI-6460/18), Arunachal Pradesh, Tirap District, Gibbon's land, c. 16 km E of Miao (27.4882°N, 96.3576°E; 701 m a.s.l.; Namdapha Survey), 19 February 1982, S. Biswas.

ETYMOLOGY. Specific epithet is used as a noun in apposition taken from Nagaland, the Indian State where the type locality is situated.

DIAGNOSIS. The species can easily be distinguished from all the *Pancorius* species but *P. minutus* Zabka, 1985 by the shape and orientation of the copulatory openings (Figs 5–7, 19, 20). From the latter species, it can be separated by the median, M-shaped epigynal pocket (wide and directed laterally in *P. minutus*); sub-equal spermathecal chambers (the posterior chamber is much smaller in *P. minutus*) (cf. Figs 5–7, 19, 20 with figs 401, 402 in Zabka [1985]). It can be distinguished from *P. tagorei* by the slit-shaped copulatory openings (Figs 6, 19) (semilunar in *P. tagorei*; Figs 17, 21); two spermathecal chambers without developed channels (Figs 7, 20) (three distinct chambers in *P. tagorei*; Figs 18, 22).

DESCRIPTION. FEMALE (holotype). Total length: 10.28; carapace: 4.27 long, 3.39 wide; abdomen: 6.01 long, 3.91 wide. Carapace reddish brown, clothed with pale hairs (Fig. 1) and with two pairs of small tubercles occurring along the margin of the ocular area, one between the ALEs and PMEs and the other near the PLEs (Fig. 4). Black around posterior eyes. Anterior eyes surrounded by yellowish orbital setae. Clypeus is covered with white hairs (Fig. 3). Eye measurements: AME 0.92, ALE 0.48, PME 0.12, PLE 0.42, AER 2.70, PER 2.55, EFL 1.77. Clypeus height 0.23. Sternum light brown. Chelicerae reddish brown, with two teeth on the promargin and one tooth on the retromargin; labium and maxillae yellowish brown (Fig. 2). Legs yellowish brown; femora patellae and tibiae of legs I & II reddish brown; femora III & IV with lighter, yellowish proximal portion and dark brown distal portion (Figs 1, 2). Leg measurements: I 9.00 (2.79, 1.75, 2.10, 1.43, 0.93); II 8.47 (2.79, 1.66, 1.79, 1.37, 0.86); III 10.27 (3.55, 1.67, 2.00, 1.97, 1.08); IV 9.71 (3.25, 1.28, 2.04, 2.19, 0.95). Leg formula: 3412. Spination of legs: femora I 1600, II 1600, III 0700, IV 0500; patellae I 0000, II 0000, III–IV 1010; tibiae I 2006, II 2016, III 3023, IV 3033; metatarsi I 0004, II 0004, III 3034, IV 4034; tarsi I–IV 0000. Abdomen brownish, with a median yellowish longitudinal stripe; mid-dorsal region with light brown chevron-shaped markings; lateral margins of abdomen with yellow patches; venter brownish, with yellow-brown spots. Spinnerets brownish (Figs 1, 2). Epigyne and its internal structure as in Figs 5–7, 16–17.

MALE unknown.

DISTRIBUTION. India (Nagaland, Arunachal Pradesh) (Map).

Pancorius darjeelingianus Prószyński, 1992
Figs 8–10, Map.

Pancorius darjeelingianus Prószyński, 1992: 190, figs 106–108 (D♀; the ♀ in the Hungarian Natural History Museum, Budapest, not examined).

Plexippus pseudopaykulli Sen, Dhali, Saha et Raychaudhuri, 2015: 32, figs 77–81, pl. 13 (D♀; the ♀ in the Ramakrishna Mission Vivekananda University, Narendrapur, Kolkata, digital images of a paratype – both the copulatory organs and general appearance – examined), **comb.n.**, **syn.n.**

Plexippus pseudopaykulli: Dhali *et al.*, 2017: 28, figs 28–32, pl. 18 (♀); Prószyński, 2017: 63, figs. 2T, 6L (♀, referred to this species as “unrecognizable”, *species inquirenda*, probably *nomen dubium*).

MATERIAL. INDIA: 1 ♀ (NZC-ZSI), West Bengal, Rajabhat, Buxa Wildlife Sanctuary (26.6148°N, 89.5336°E; 77 m a.s.l.), 23 March 2018, A. Rameshkumar.

COMMENTS. *Plexippus pseudopaykulli* was described from the holotype female and eight paratype females collected from the Gorumara National Park, which is located in the northern part of West Bengal [Sen *et al.*, 2015]. Later, the species was repeatedly illustrated by Dhali *et al.* [2017]. The species was misclassified though and is better placed in *Pancorius*, since it shares such the diagnostic characters thereof as the slit-like copulatory openings on the sclerotized epigynal plate, the presence of the medial epigynal pocket and the three-chambered spermathecae. The authors’ idea of *P. pseudopaykulli* seemed to vary a little, as the epigyne illustrated by Dhali *et al.* [2017: fig. 31] shows the semilunar copulatory openings being identical to those of *P. tagorei* (cf. Figs 18, 22 and fig. 127 in Prószyński, 1992). However, the female from the Buxa Wildlife Sanctuary studied in the present work (Figs 8–10) is found to be identical with the digital images of the copulatory organs of *P. pseudopaykulli* (presumably of the paratype) provided to JC by Prof Dinendra Raychaudhuri, the author of the latter species. Both the specimen from Buxa Wildlife Sanctuary and the paratype of *P. pseudopaykulli* (based on its images) are identical with *P. darjeelingianus* having its main diagnostic character: viz., the slit-like copulatory openings surrounded by a lip-like lining (Fig. 9) (in *P. tagorei*, only anterior lips present, posterior region without a distinct lip but with a simple groove-like passage; Figs 17, 21). The only minor difference observed is the shape of the median epigynal pocket, which has a visibly deeper depression in its middle (cf. Figs 8–10 with figs 107, 108 in Prószyński, 1992). Therefore, it is safe to conclude that the name *P. pseudopaykulli* is to be synonymized with *P. darjeelingianus*.

DISTRIBUTION. India (West Bengal) (Map).

Pancorius magnus Żabka, 1985
Figs 11–14, Map.

Pancorius magnus Żabka, 1985: 422, figs 387–400 (D♂♀).

Pancorius magnus: Prószyński, 1992: 191, figs 109–112 (♂); Peng & Li, 2002: 340, figs 9–15 (♂♀); Jastrzębski, 2011: 186, figs 9, 20 (♂).

MATERIAL. INDIA: 3 ♂♂ (ZSI-CDT-AA-1058, 1059, 1061), 2 ♀♀ (ZSI-CDT-AA-1060, 1062), Assam, Tinsukia, Bherjan-Borajan-Padumoni Wildlife Sanctuary (27.5227°N, 95.3647°E), 30 March 2017, Shantanu Kundu & Devkant Singa; 1 ♀ (NZC-ZSI-6459/18), Arunachal Pradesh, Tirap Dist. (Namdapha survey), c. 27 km E of Miao, Deban (27.5405°N, 96.3974°E; 481 m a.s.l.), 14 December 1982, S. Biswas & Party.

DISTRIBUTION. India (West Bengal, Assam, Arunachal Pradesh), Nepal, Taiwan and Vietnam (Map).

Pancorius tagorei Prószyński, 1992
Figs 15–18, 21–22, Map.

Pancorius tagorei Prószyński, 1992: 193, figs 125–128 (D♂♀).

MATERIAL. INDIA: 1 ♂ (NZC-ZSI-6530/18), South Range, Mahananda Wildlife Sanctuary, Jalpaiguri (26.8066°N, 88.3992°E; 151 m a.s.l.), 9 November 2017; 1 ♀ (NZC-ZSI-6639/18), Dhoopjhar beat, South Gorumara Range, Gorumara National Park (26.7306°N, 88.8046°E; 184 m a.s.l.), 4 November 2017, all leg. M.E. Hassan & party.

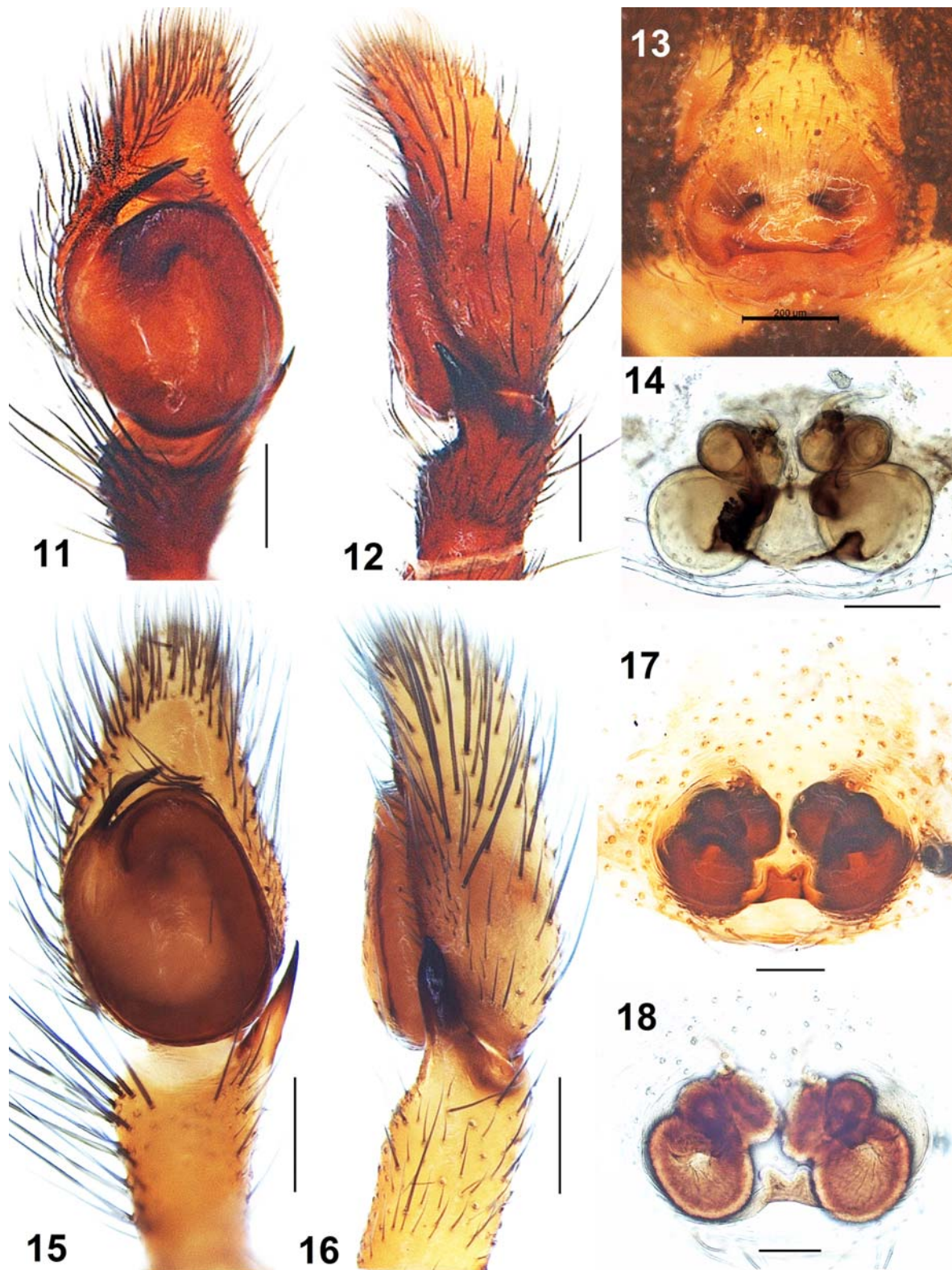
DISTRIBUTION. India (West Bengal) (Map).

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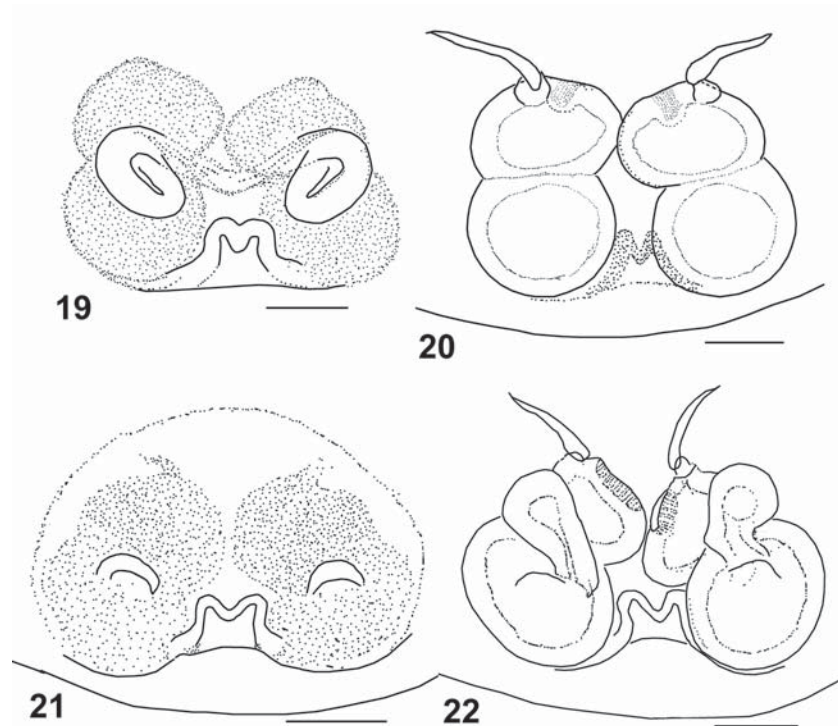
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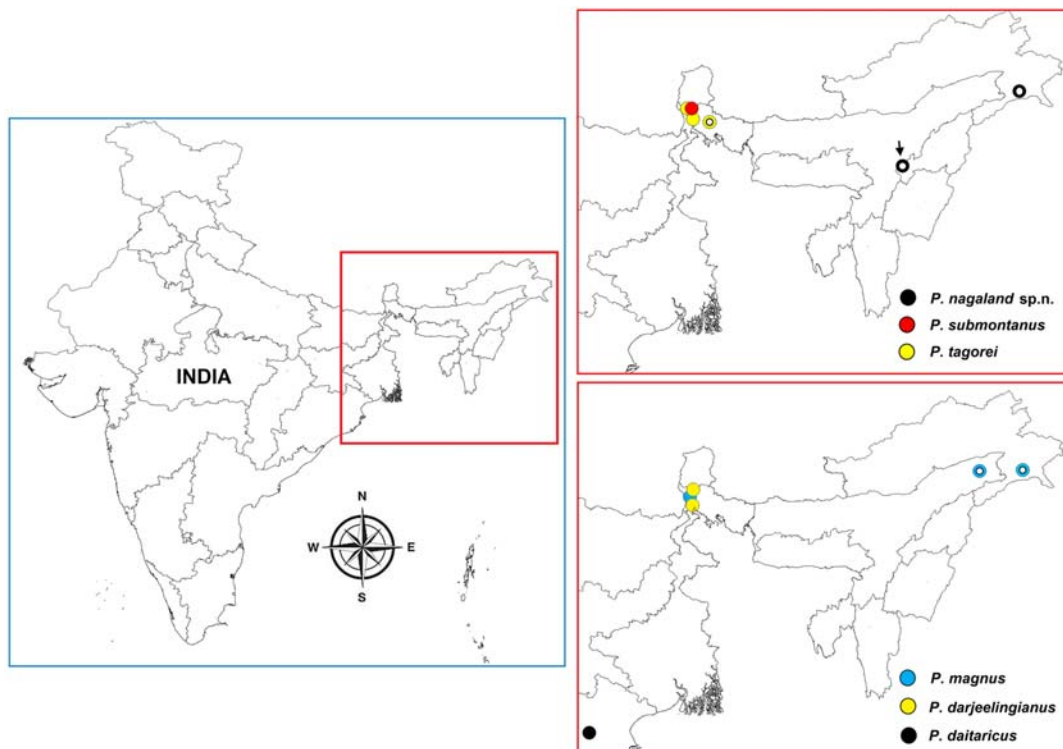
Figs 11–18. Copulatory organs of *Pancorius magnus* Żabka, 1985 (11–14) and *P. tagorei* Prószyński, 1992 (15–18): 11, 15 — male left palp, ventral view; 12, 16 — ditto, retrolateral view; 13, 17 — epigyne, ventral view; 14, 18 — spermathecae, dorsal view. Scale bars = (11–13, 15, 16) 0.2 mm; (17, 18) 0.1 mm.

Рис. 11–18. Копулятивные органы *Pancorius magnus* Żabka, 1985 (11–14) и *P. tagorei* Prószyński, 1992 (15–18): 11, 15 — левая пальпа самца, вид снизу; 12, 16 — тоже, вид сбоку-сзади; 13, 17 — эпигина, вид снизу; 14, 18 — сперматека, вид сверху. Масштаб (11–13, 15, 16) 0,2 мм; (17, 18) 0,1 мм.



Figs 19–22. Copulatory organs of *Pancorius nagaland* sp.n. (19–20) and *P. tagorei* Prószyński, 1992 (21–22): 19, 21 — epigyne, ventral view; 20, 22 — spermathecae, dorsal view. Scale bars = 0.1 mm.

Рис. 19–22. Копулятивные органы *Pancorius nagaland* sp.n. (19–20) и *P. tagorei* Prószyński, 1992 (21–22): 19, 21 — эпигина, вид снизу; 20, 22 — сперматека, вид сверху. Масштаб 0,1 мм.



Map. Collecting localities of *Pancorius* species described/recorded from India. Full circles represent records from the literature. The circles having inner circles represent original data. The type locality of the new species *P. nagaland* sp.n. is arrowed.

Карта. Точки находок видов *Pancorius* описанных/отмеченных из Индии. Заполненные кружочки представляют литературные данные. Кружочки, имеющие внутренние кружочки, представляют оригинальные данные. Типовой локалитет нового вида *P. nagaland* sp.n. помечен стрелкой.