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## A new spider species of the genus *Colopsus* Simon, 1902 (Araneae: Salticidae) from the Western Ghats of India

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**Abstract:** A new plexippine jumping spider species, *Colopsus peppara* sp. nov., is described from males and females collected in the Agasthyamalai Biosphere Reserve, in the southern part of the Western Ghats of India. The systematic history of the genus *Colopsus* is presented and its localities in India are mapped as well.

**Keywords:** Agasthyamalai Biosphere Reserve - jumping spiders - Kerala - taxonomy.

### INTRODUCTION

The jumping spider genus *Colopsus* was established by Simon (1902) based on the type species, *Colopsus cancellatus* Simon, 1902 from Sri Lanka. The genus belongs to the subtribe Plexippina Simon, 1901 in the tribe Plexippini Simon, 1901 (see Maddison, 2015). The members of the genus are characterized by having a simple oval or rounded bulb with or without a posterior lobe, a thread-like or dagger-like embolus, a large membranous ‘window’ and two lateral blind pockets in the epigyne, and multi-chambered spermathecae (Kanesharatnam & Benjamin, 2021). This is a poorly known salticid group with seven valid species previously known from Sri Lanka, India, China and Vietnam (World Spider Catalog, 2023). To date two *Colopsus* species have been reported from India: *C. arkavathi* Caleb in Caleb *et al.*, 2022 and *C. manu* (Caleb, Christudhas, Laltanpui & Chitra, 2014) (see Caleb *et al.*, 2014, 2022; Caleb & Sankaran, 2023; Logunov, 2021a). Here we describe a third Indian species of the genus based on specimens collected from the Peppara Wildlife Sanctuary, Agasthyamalai Biosphere Reserve, Western Ghats, India.

### MATERIAL AND METHODS

The specimens were hand-collected and preserved in 70% ethanol. Morphological examination and morphometry

were carried out under a Leica M205A stereomicroscope. The images were taken using a Leica DFC4500 digital camera attached to the stereomicroscope, enabled with the software package Leica Application Suite (LAS), version 4.1.2. The distribution map was prepared using the online mapping software SimpleMappr (Shorthouse, 2010). Lengths of palp and leg segments are given as follows: total length [femur, patella, tibia, metatarsus (except for palp), tarsus]. The terminology of general morphology follows Kanesharatnam & Benjamin (2021) and that of leg spination Bossellaers & Jocque (2000). The studied specimens are deposited in the National Zoological Collections of the Zoological Survey of India (NZC-ZSI), Kolkata, India.

Abbreviations used in the text and figures are as follows: ALE - anterior lateral eye, AME - anterior median eye, CO - copulatory opening, do - dorsal, E - embolus, EP - epigynal pocket, FD - fertilization duct, pl - prolateral, PLE - posterior lateral eye, PME - posterior median eye, plv - prolateral-ventral, rl - retrolateral, RTA - retrolateral tibial apophysis, rlv - retrolateral-ventral, S - spermathecae, v - ventral.

### TAXONOMY

#### *Colopsus* Simon, 1902

**Type species:** *Colopsus cancellatus* Simon, 1902.

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***Colopsus peppara* sp. nov.**

Figs 1-3

**Type material:** NZC-ZSI-7945/18; male holotype; India, Kerala, Thiruvananthapuram, Peppara Wildlife Sanctuary, 8°38'29.71"N, 77°10'46.49"E, 100 m a.s.l.; 04.12.2021; leg. P. Girish Kumar. – NZC-ZSI-7946/18; 2 female and 2 male paratypes; same data as for holotype.

**Etymology:** The species is named after the Peppara

Wildlife Sanctuary where the types of the new species were collected. The epithet is a name in apposition.

**Diagnosis:** *Colopsus peppara* sp. nov. is most similar to *C. manu* from which it can be distinguished by the following combination of characters: RTA broad, fountain-pen-nib-like, with the distal tip in 1 o'clock position in retrolateral view (narrower, thorn-like with the tip in 12 o'clock position in *C. manu*); cymbium with posterolaterally-oriented projections (laterally-

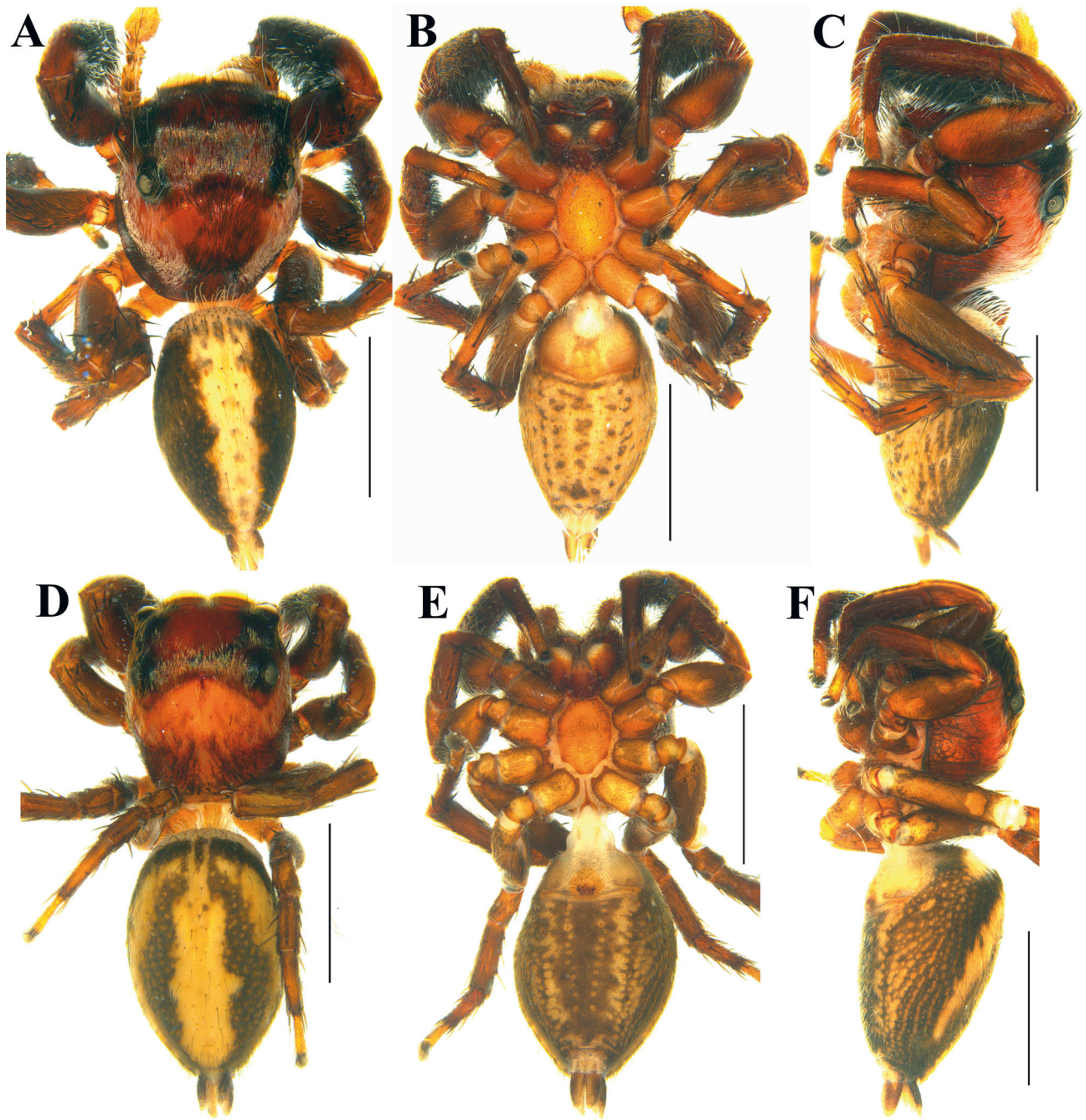


Fig. 1. *Colopsus peppara* sp. nov., habitus photos. (A) Male holotype, dorsal view. (B) Same, ventral view. (C) Same, lateral view. (D) Female paratype, dorsal view. (E) Same, ventral view. (F) Same, lateral view. Scale bars: 2 mm.

oriented projections in *C. manu*); tegulum without posterior lobe (prominent posterior lobe in *C. manu*); embolus tip in 1 o'clock position in ventral view (in 2 o'clock position in *C. manu*); epigyne with a single, median conical pocket (M-shaped pocket in *C. manu*); copulatory ducts wide, without coiling around the spermathecae (relatively narrower and coiling around the spermathecae in *C. manu*) (Fig. 2A-D cf. Caleb *et al.*, 2014: figs 7-10, Caleb, 2020: fig. 16F-H and Caleb *et al.*, 2022: figs 17-21).

**Description of male** (holotype, NZC-ZSI-7945/18) (Figs 1A-C, 2A-B): Measurements: Body length 5.96. Carapace length 2.81, width 2.34. Abdomen length 2.93, width 1.77. Ocular area length 1.51, width at PEs 1.83. Eye diameters and interdistances: AME 0.61, ALE 0.34, PME 0.11, PLE 0.26; AME-AME 0.07, ALE-AME 0.08, ALE-ALE 1.45, ALE-PME 0.28, PLE-PLE 1.68, PME-PME 1.73, PME-PLE 0.21. Clypeus height 0.27. Length of chelicera 1.01. Measurement of palp and legs: palp 1.87 [0.71, 0.21, 0.29, 0.66], leg I 6.00 [1.86, 0.99, 1.61, 0.93, 0.61], II 4.68 [1.54, 0.77, 1.14, 0.71, 0.52], III 5.89 [2.13, 0.83, 1.11, 1.06, 0.76], IV 5.23 [1.71, 0.63, 1.13, 1.11, 0.65]. Leg formula 1342. Leg spination: femora I, IV pl 2 rl 1 do 3, II pl 2 rl 2 do 3, III pl 3 rl 2 do 3; patella I pl 1, II-IV pl 1 rl 1;

tibia I pl 2 plv 3 rlv 3, II pl 3 rl 2 plv 3 rlv 3, III pl 3 rl 3 plv 2 rlv 2, IV pl 3 rl 3 plv 2 rlv 1; metatarsus I plv 2 rlv 2, II pl 1 plv 2 rlv 2, III pl 3 rl 3 plv 2 rlv 2, IV pl 4 rl 4 plv 2 rlv 2; tarsi I-IV spineless. Carapace high, sloping backwards, reddish brown, densely covered with dark brown hairs, laterally with longitudinal white bands extending back from anterior lateral eyes (Fig. 1A); carapace margin with narrow black bands; eye field wider than long, covered with dark brown hairs and few long white hairs, a row of long black setae present above AMEs (Fig. 1A); eyes surrounded with black rings and dull white hairs (Fig. 1A); lateral sides of carapace with tufts of long, stiff, and slightly curved black hairs situated near PMEs (Fig. 1A); anterior corners of carapace with three black longitudinal stripes. Clypeus low, covered with stiff white hairs, its lower margin with long, light orange hairs overhanging chelicerae. Chelicerae red-brown, frontal side with long white hairs; promargin of cheliceral groove with two teeth, retromargin with a single tooth. Palpal coxae and labium light reddish brown, with dull white inner tips (Fig. 1B). Sternum oval, yellowish, sparsely covered with light brown hairs (Fig. 1B). Leg I reddish brown, with light reddish yellow femur and tarsus; patella, tibia, and metatarsus bearing dense ventral fringes of

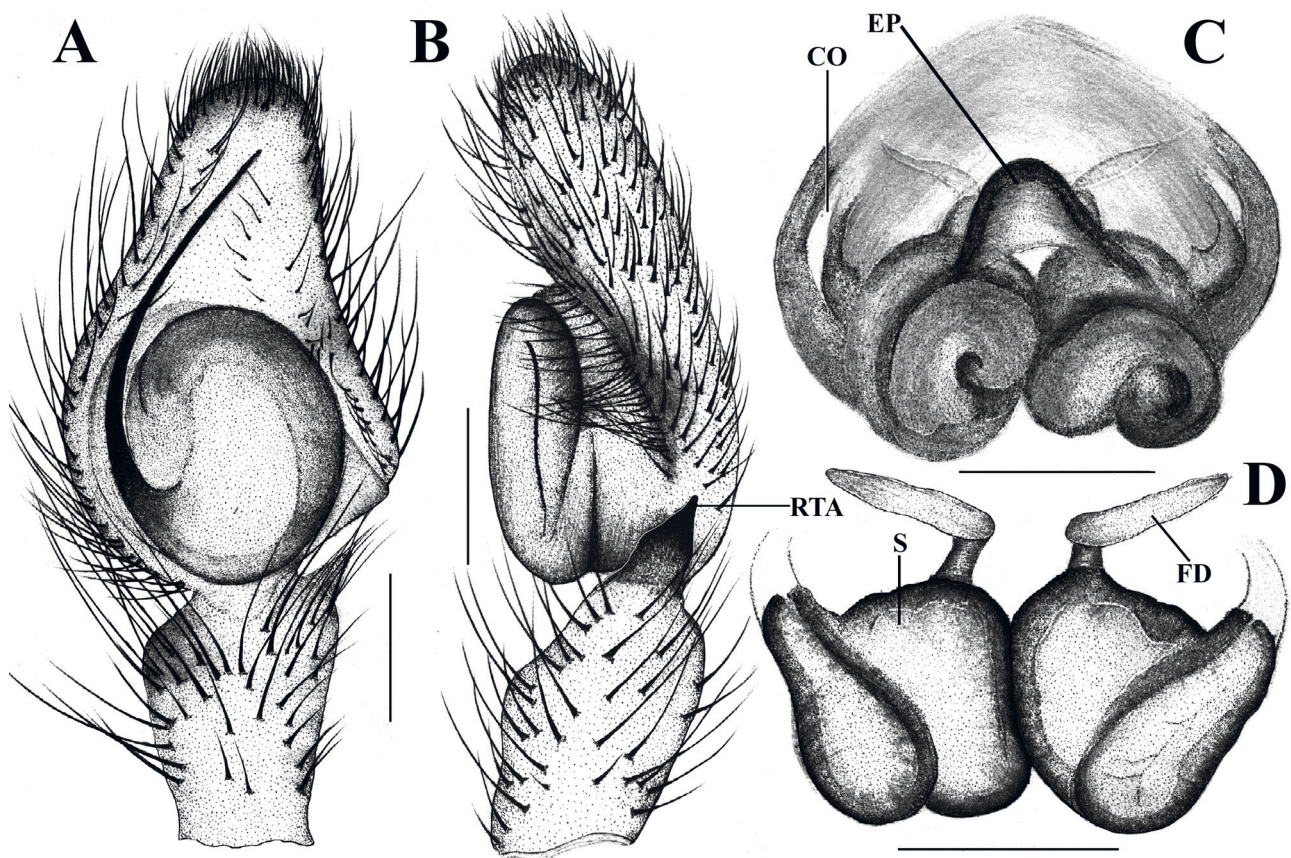


Fig. 2. *Colopsus peppara* sp. nov., copulatory organs. (A) Distal part of left male palp, ventral view. (B) Same, retrolateral view. (C) Epigyne, ventral view. (D) Vulva, dorsal view. Scale bars: 0.2 mm (A-B), 0.1 mm (C-D).

black and dull white hairs, some hairs with white tip; patella and tibia prolaterally with similar hairs with white tips. Leg II light reddish brown, with light yellow metatarsus and tarsus, femur light yellowish brown; patella and tibia bearing weak ventral fringes of black and dull white hairs. Leg III light reddish brown, with light yellow metatarsus and tarsus. Leg IV almost pale yellow. Abdomen elongate oval, narrowing posteriorly, dorsum greyish with broad pale yellow median band (Fig. 1A); anterior side of abdomen with a tuft of pale yellow protruding hairs, dorsal region sparsely covered with long black hairs (Fig. 1A); lateral side of abdomen pale yellow, with dark brown longitudinal lines and patches (Fig. 1C); venter light yellow-brown, with several irregular black patches (Fig. 1B). Anterior spinnerets grey, others yellowish brown. Cymbium (= palpal tarsus) and tibia yellow, other segments yellowish brown, dorsal region of tibia with black patch; tibia covered with several elongated dark brown and dull white hairs; RTA broad, shaped like a fountain pen nib, with its distal tip in 1 o'clock position in retrolateral view; cymbium nearly triangular, with a retrolateral-proximal projection; tegulum oval, without any projection; embolus long, needle-like, originating from prolateral-proximal portion of tegulum, its tip terminating in 12 o'clock position in ventral view (Fig. 2A-B).

**Description of female (paratype)** (Figs 1D-F, 2C-D): Measurements: Body length 6.12. Carapace length 2.61, width 2.08. Abdomen length 3.17, width 1.96. Ocular area length 1.11, width 1.80. Eye diameters and interdistances: AME 0.53, ALE 0.31, PME 0.12,

PLE 0.25; AME-AME 0.04, ALE-AME 0.07, ALE-ALE 1.27, ALE-PME 0.28, PLE-PLE 1.61, PME-PME 1.62, PME-PLE 0.21. Clypeus height 0.18. Length of chelicera 0.91. Measurement of palp and legs: palp 1.75 [0.65, 0.22, 0.33, 0.55], leg I 4.42 [1.39, 0.72, 1.07, 0.67, 0.57], II 3.97 [1.33, 0.70, 0.86, 0.61, 0.47], III 4.82 [1.82, 0.47, 1.07, 0.83, 0.63], IV 4.37 [1.43, 0.60, 0.89, 0.91, 0.54]. Leg formula 3142. Leg spination: femur I pl 2 rl 2 do 3, II pl 2 rl 3 do 3, III pl 2 rl 1 do 3, IV pl 1 rl 1 do 3; patellae I-II pl 1, III-IV pl 1 rl 1; tibia I plv 4 rlv 3, II pl 3 plv 3 rlv 3, III-IV pl 3 rl 3 plv 2 rlv 1; metatarsi I-II plv 2 rlv 2, III-IV pl 3 rl 3 do 2 plv 2 rlv 2; tarsi I-IV spineless. In all details mostly as male, except for the following: carapace with less prominent curved hair tufts near PMEs (Fig. 1D). Legs I and II without ventral fringes; legs with brown annulations along joints of each segment. Abdomen with a yellow mid-dorsal band and lateral yellow bands (Fig. 1D); lateral sides dark brown, with continuous pale yellow dotted lines (Fig. 1F). Venter greyish brown, medially with a pair of greyish yellow dotted lines and laterally with similar-coloured discontinuous stripes (Fig. 1E). Epigyne surrounded by light brown hairs and with a large median epigynal pocket; copulatory openings narrow, V-shaped, situated laterally; copulatory ducts broad, looping posteriorly; spermathecae globular; fertilization ducts long, oriented laterad, situated in anterior region of vulva (Fig. 2C-D).

**Distribution:** Known only from the type locality in Kerala, India (Fig. 3).

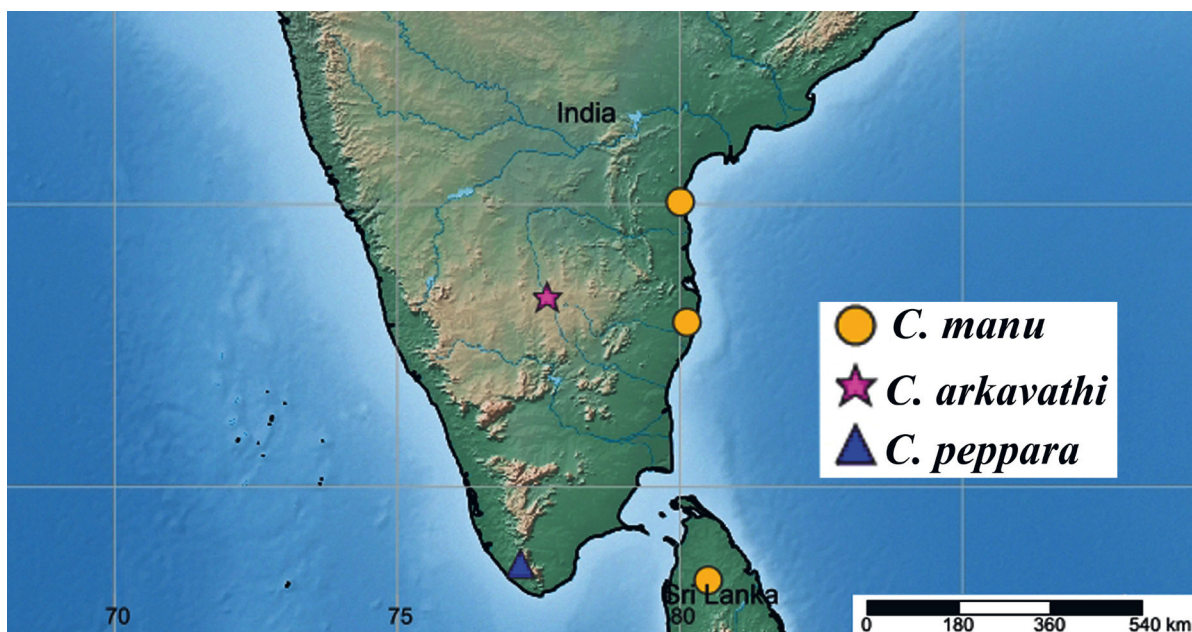


Fig. 3. Map of southern India and northern Sri Lanka showing localities of *Colopsus* species.

## DISCUSSION

The Oriental salticid genus *Colopsus* was described as a monotypic genus and synonymized with *Evarcha* Simon, 1902 by Prószyński (1984). Later, Prószyński (2018) added *C. cancellatus* to his new genus *Evacin* Prószyński, 2018, but this was not accepted and *Evacin* was treated as a subjective junior synonym of *Colopsus* by Blick & Marusik (2018). Nevertheless, *Evacin* is not a synonym of *Colopsus* since the latter does not comprise the type species of *Evacin* (World Spider Catalog, 2023). Recently, Kanesharatnam & Benjamin (2021) reinstated *Colopsus* as a distinct and valid genus based on morphological and molecular data. There are currently seven valid species in this genus, five of which are from Sri Lanka, three from India (including the new species described here), and one each from China and Vietnam (World Spider Catalog, 2023). The Sri Lankan species *Colopsus cinereus* Kanesharatnam & Benjamin, 2021, reported by Logunov (2021a) to also occur in Andhra Pradesh, was the first representative of this genus to be known from India, but it was later recognized as a junior synonym of *Hyllus manu* Caleb, Christudhas, Laltanpuii & Chitra, 2014. This species was transferred to *Colopsus* in a recent paper (Caleb *et al.*, 2022), and another species, *C. arkavathi*, was at the same time described from Karnataka, India. Currently three valid species of this genus are known from India, all reported from the southern part of the country. Logunov (2021b) suggested that the current concept of *Colopsus* needs to be revised, and Caleb *et al.* (2022) stated that the generic placement of all Indian *Colopsus* species also needs confirmation by molecular data.

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