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The Odonata of Goa is well explored and comprises of 87 species (Rangnekar et al. 2010; Rangnekar & Naik 2014). Recently one new species *Idionyx gomantakensis* Subramanian et al. 2013 was described from Collem, Goa (Subramanian et al. 2013). The present record adds an additional record to the Odonata fauna of Goa (Image 1).

During the opportunistic survey conducted at Collem, South Goa, (15°20'16"N & 74°15'8"E) the specimen of male *Microgomphus souteri* Fraser, 1924 (Image 7) was collected on 14 September 2013 at 11.00hr (Specimen I). Two males were spotted perching on a shrub close to each other at a height of 5m which was exposed to sunlight, out of which one individual was collected with the help of a sweep net. Both individuals were located in a seasonal stream with high shade cover which retains water up to December and later runs dry. The collected specimen was dry preserved in an insect box. Specimens are currently with authors and will be deposited in museum in future.

Another male specimen was collected on 28 June 2014 in Collem (15°20'0"N & 74°15'29"E) (Specimen II, Image 8) found entangled in a spider web. The specimen was intact without any morphological damage hence no difficulties were faced in describing morphological details and it was preserved in absolute alcohol. Both specimens were identified with the help of identification

RANGE EXTENSION OF *MICROGOMPHUS SOUTERI* FRASER, 1924 (INSECTA: ODONATA: GOMPHIDAE) TO NORTHERN WESTERN GHATS, INDIA

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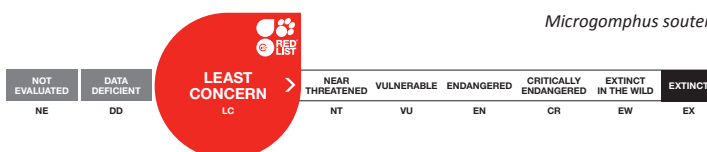
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keys provided by Fraser (1934).

The genus *Microgomphus* belongs to family Gomphidae. Its members are among the smallest species in the family and are colored black, marked with greenish-yellow, superior anal appendages are curiously branched (Fraser 1934). The genus *Microgomphus* is represented in India by four species, viz.: *chelifer* Selys, 1858; *souteri* Fraser, 1924; *torquatus* (Selys, 1854); and *verticalis* (Selys, 1873) (Subramanian 2014). Out of all these, *Microgomphus souteri* is endemic to the Western Ghats and assessed as 'Least Concern' (Subramanian 2013).

The genus is distributed in the humid parts of the Western Ghats and the northeastern part of India at



Microgomphus souteri



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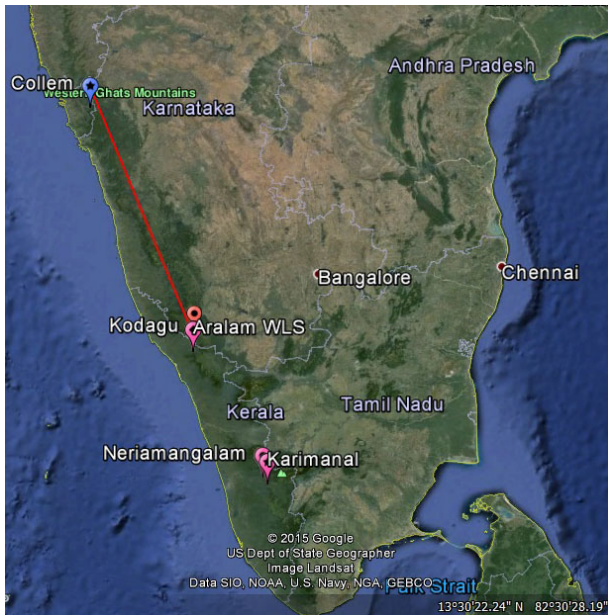


Image 1. Map showing range extension of species and distribution with current record

an elevation of 609m and above. Other species of the genus are distributed in Myanmar, Malaysia, Sumatra, Singapore and Borneo. Species of the genus are arboreal by nature, but occasionally the males descend and settle on rocks in midstream; they do not wander far from their parent streams, and may be found settled on vegetation, usually beside the water (Fraser 1934).

No previous records of this species is available in northern Western Ghats. The genus *Microgomphus* and species *souteri* is new record to the odonate fauna of Goa.

The morphometric details of the Specimen II are given as follows: *Microgomphus souteri* Fraser, 1924 (Image 8)

Materials examined: 28.vi.2014, 1 male, Collem, southern Goa, India; 15°20'0"N & 74°15'29"E, elevation 105m, coll. Dhiraj Halali

Measurements: Length of abdomen: 28mm, length of hindwing: 23mm

Diagnostic character

Head: Labium pale yellow, labrum black with two large triangular greenish spots, anteclypeus greenish-white, postclypeus and front of the frons black, lower outer part of postclypeus is greenish-white continuing to the colour of anteclypeus. Upper surface of frons is greenish-white. Base of antennas black. Vertex and occiput black. Eyes bottle green and not confluent (Image 2).



Image 2. *Microgomphus souteri* - Head showing mouth parts



Image 3. *Microgomphus souteri* - Thorax (lateral view)



Image 4. *Microgomphus souteri* - Thorax (dorsal view)



Image 5. *Microgomphus souteri* - anal appendages

Prothorax: Black with anterior collar greenish-yellow.

Thorax: Mesothoracic collar not confluent interrupted in the middle by black mid-dorsal carinal suture, antehumeral stripes broad, short and not confluent with mesothoracic collar, mesepimeron and metepimeron yellow separated by thick black stripe at posterolateral suture (Images 3 & 4).

Legs: Black, base of trochanters with slight yellow pruinescence, femur black and stout, tibia and tarsus black.

Wings: Hyaline Pterostigma: Brown surrounded by thick black nervures, covering around four cells.

Forewing: 13 antenodal and 11 postnodal nervures, median space entire, cubital space interrupted by single anal crossvein; discoidal cell, subtrigone, hypertrigone entire; discoidal cell present beyond arculus separated from it by a distance equal to the length of arculus, discoidal cell elongate across the wing axis, sectors of arculus not fused at origin and bifurcate at level of arc, anterior sector of arculus (Rs) forking well beyond half-way from the arculus to the level of subnodus, cells in discoidal field are pentagonal in shape and field starts with two rows of cells, IA ends slightly in front to the level of node and cuui ends at the level of node and run parallel to each other, single row of cell between IA and cuui and ends with two rows of cells, single row of cells between MA and Riv+v

Hindwing: 11 antenodal nervure and 11 postnodal nervure, median space entire, presence of one anal cross vein in cubital space. Discoidal cell, subtrigone and hypertrigone entire, anal triangle with two nervures; discoidal cell elongate across wing axis, anterior sector of arculus (Rs) forking well beyond half-way from the arculus to the level of subnodus. Single row of cell

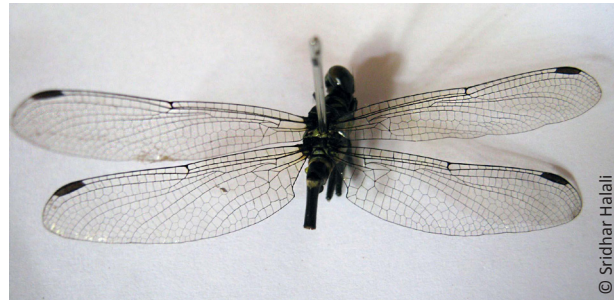


Image 6. Wing venation alcohol preserved of male *Microgomphus souteri* (broken abdomen)



Image 7. Specimen photographed on 14 September 2013

between IA and Cuii, discoidal field starts with two rows of pentagon shaped cell, one row of cells between MA and Riv+v which are square in shape at the start. (Image 6)

Note: Description of wing venation is based on right fore and hind wing.

Nodal Index: 10-14/13-11 / 11-11/11-11

Abdomen: Black marked with greenish-yellow as follows, segment one with narrow apical ring, segment two with broad basal ring with an apicolateral spot, segment 3–6 with narrow basal ring, segment seven similar but the basal ring overlapping the transverse suture, segment 8–10 without yellow marking. This characters are similar as described by Fraser (1934).

Anal appendages: Superiors yellow with inner branches tipped with black extending beyond their apices, inferiors robust (Image 5).

However, differences in nodal index was observed between the collected specimens and the type specimen which is summarized in Table 1.

Fraser (1934) described *Microgomphus souteri* based on the specimen collected from Coorg, Karnataka. According to Fraser its distribution is confined to Coorg and South Kanara districts. It breeds in Sampaji and Hallery rivers and the Kibribetta stream 610–1065 m



Image 8. *Microgomphus souteri* specimen photographed on 28 June 2014

Coorg.

This species was added as a new record to Kerala and was recorded in Aralam Wildlife Sanctuary (between 11°53'1"–11°59'14"N & 75°47'29"–75°55'58"E) by Emiliyamma et al. (2012) which is 40–50 km south of the type locality. Also the same species was recorded in Neriambangalam (10°06'21.1"N & 76°47'11.1"E) and Karimanal (10°00'59.7"N & 76°51'15.1"E) in Salim Ali Bird Sanctuary in Kerala by Varghese et al. (2014) which is further south of Aralam Wildlife Sanctuary.

The current record of the species in Goa has increased its distribution range by around 417km from Aralam Wildlife Sanctuary towards the north of the

Table 1. Comparison between type specimen described by Fraser (1934) and collected specimen

	Type Specimen	Specimen I	Specimen II
Length of abdomen	29mm	28mm	28mm
Length of hindwing	24mm	23mm	23mm
Nodal index	9-15/16-11 / 12-11/11-11	10-14/12-12 / 10-11/11-10	10-14/13-11 / 11-11/11-11

Western Ghats. As proper co-ordinates of type locality are not available, we calculated the distance from Aralam Wildlife Sanctuary which is very close to type locality. With the present discovery it may be inferred that the species is distributed from 10–14 °N in the western slopes of the Western Ghats.

Distribution: India: Kodagu, Dakshina Kannada (Karnataka); Kannur, Neriambangalam, Karimanal (Kerala); Collem (Goa) - Present report.

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