



## First record of *Liocheles nigripes* Pocock, 1897 (Scorpiones: Hemiscorpidae) from Andhra Pradesh with a checklist of scorpions of the state

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The family Hemiscorpidae consists of 12 genera and 80 species that inhabit all continents except North America with the majority of its diversity in tropical and subtropical habitats (Rein 2009). This family previously known as Ischnuridae Simon, 1879, has been renamed Liochelidae Fet & Bechly, 2000 since it was homonymous with the

damselfly subfamily Ishnurinae Fraser, 1957 (Fet & Bechly 2000). Subsequently, Sogleglad et al. (2005) again changed the name to Hemiscorpidae. In India, this family is represented by three genera namely *Iomachus*, *Liocheles* and *Chiromachetes*. Members of the genus *Liocheles* resemble *Iomachus* but can be differentiated on the basis of the tarsi lacking a ventromedian series of small spinules between the setae (Image 4). The genus *Liocheles* Sundevall, 1833 is represented in India by two species *L. nigripes* Pocock, 1897 and *L. australasiae* Fabricius, 1775, both previously referred to the genus *Hormurus* Thorell, 1876. *L. australasiae* as well as *L. nigripes* are wide spread, the former being known from India to the western Pacific islands (Monod & Volschenk 2004; Tikader & Bastawade 1983; Sureshan et al. 2007) and the latter from parts of India, Laos, Vietnam, Indonesia and Malaysia (Kovařík 2000).

*Liocheles nigripes* was described by Pocock (1897) based on an immature specimen from Panch Mahal, Gujarat, India (Fet et al. 2000). Tikader & Bastawade (1983) reported this species from Gujarat and Rajasthan. The species has been recently sighted in Chhattisgarh and the distribution includes Udaipur (Rajasthan), Panch Mahal (Gujarat), Almora (Uttarakhand), Gonda (Uttar Pradesh), Satna (Madhya Pradesh) and Kanger Valley National Park (Chhattisgarh) (Aamod Zambre pers. comm.). While conducting faunal surveys in Andhra Pradesh, several specimens of *Liocheles nigripes* (Images 2 & 3) were recorded from different parts (Araku Township, Hyderabad outskirts, Manchirial Town and Maredumilly) of the state (Image 1) and only two specimens were collected from Araku Township, Vishakapatnam District (18°50'N & 79°42'E), near the Railway station on 28 February 2009, and deposited in the collection of the Bombay Natural History Society as BNHS SC 35 and BNHS SC 36. This

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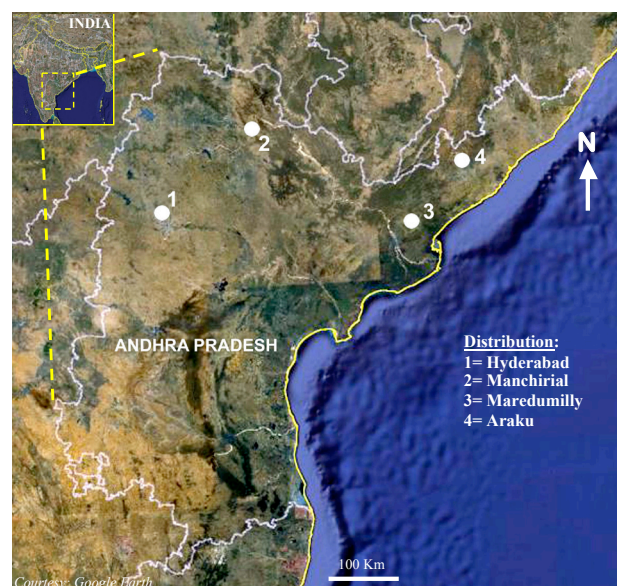


Image 1. Distribution of *Liocheles nigripes* in Andhra Pradesh.

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Images 2 & 3. *Liocheles nigripes* (live) female (BNHS SC 35 & 36)  
2 - Lateral aspect; 3 - Dorsal aspect (scale 5mm)

specimen represents the first record of this species from the state.

The present communication deals with the review of the distribution of this species and also provides an updated checklist of scorpions of Andhra Pradesh (Table 1).

The scorpion collected agrees well with the descriptions provided by Tikader & Bastawade (1983) and Kovařík (2000), the detailed morphometry is provided in Table 2.

A review of the distribution of *L. nigripes* reveals it to be widespread in India as well which is supported by its occurrence in at least seven Indian states. Its occurrence in Gujarat, Uttarakhand, Uttar Pradesh, Madhya Pradesh, Chhattisgarh and Andhra Pradesh is suggestive of its occurrence in Bihar, Jharkhand, Maharashtra, Karnataka and Orissa. Furthermore, the record of *Liocheles australasiae* from Kerala by Sureshan et al. (2007) needs confirmation if it is indeed *L. australasiae* or *L. nigripes* which will shed light of its occurrence in Kerala and possibly Tamil Nadu.

The present record is not significant from a biogeographic point of view but it is a noteworthy contribution towards the study of Indian scorpions and

their distribution on a broader scale as there is a distinct gap in distribution records of most species of scorpions and other arachnids, being merely known from either the type locality or a few scattered localities.

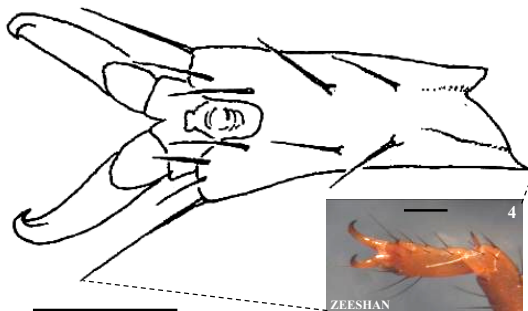
Rao et al. (2005) recorded seven species of scorpions whereas the recent literature review shows the state hosting at least eighteen species of scorpions (Table 1).

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**Table 1. Checklist of scorpions of Andhra Pradesh:**

Species Checklist	Reference
<b>Buthidae</b>	
<i>Buthoscorpio sarassinorum</i> (Karsch, 1891)	Rao et al. 2005
<i>Charmus indicus</i> Hirst, 1915	Tikader & Bastawade 1983
<i>Hottentotta stockwelli</i> Kovařík, 2004	Kovařík 2007
<i>Hottentotta rugiscutis</i> (Pocock, 1897)	Kovařík 2007
<i>Hottentotta tamulus</i> (Fabricius, 1798)	Kovařík 2007, Rao et al. 2005
<i>Isometrus thurstoni</i> Pocock, 1893	Kovařík 2003
<i>Isometrus khammamensis</i> Kovařík, 2003	Kovařík 2003
<i>Isometrus corbeti</i> Tikader & Bastawade, 1983	Rao et al. 2005
<i>Isometrus vittatus</i> Pocock, 1900	Rao et al. 2005
<i>Lychas tricarinatus</i> Simon, 1884	Kovařík 1997, Rao et al. 2005
<i>Lychas scaber</i> Pocock, 1893	Kovařík 1997
<b>Hemiscorpiidae</b>	
<i>Iomachus nitidus</i> Pocock, 1900	Tikader & Bastawade 1983
<i>Liocheles nigripes</i> Pocock, 1897	This publication
<b>Scorpionidae</b>	
<i>Heterometrus fulvipes</i> (C. L. Koch, 1837)	Kovařík 2004
<i>Heterometrus madraspatensis</i> Pocock, 1900	Kovařík 2004, Rao et al. 2005
<i>Heterometrus swammerdami</i> Simon, 1872	Kovařík 2004, Rao et al. 2005
<i>Heterometrus tristis</i> (Henderson 1919)	Kovařík 2004
<i>Heterometrus wroughtoni</i> (Pocock 1899)	Kovařík 2004



**Image 4. *Liocheles nigripes*. Ventral aspect of tarsomere II of right leg IV, showing ventral submedian setae lacking row of small midventral spinules. (scale 1mm)**

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**Table 2. Morphometry of female *Liocheles nigripes* from Andhra Pradesh (measurements in mm):**

Parameters	BNHS SC 35	BNHS SC 36
Carapace Length	6.65	7.19
Carapace Anterior Width	3.87	4.28
Carapace Posterior Width	6.11	6.89
Mesosoma Length	16.08	16.15
Metasoma Length	13.01	14.25
Metasomal Segment I Length	1.94	2.31
Width	1.54	1.62
Metasomal Segment II Length	2.23	2.52
Width	1.33	1.42
Metasomal Segment III Length	2.49	2.54
Width	1.31	1.52
Metasomal Segment IV Length	3.11	3.24
Width	1.33	1.41
Metasomal Segment V Length	3.24	3.64
Width	1.24	1.29
Telson Length	3.48	3.87
Aculeus Length	1.10	1.11
Pedipalp Total Length	23.75	26.19
Pedipalp femur Length	5.50	6.17
Width	2.58	2.77
Pedipalp Patella Length	6.21	6.37
Width (max.)	3.77	4.22
Pedipalp Chelae Length	12.04	13.65
Width	4.36	4.82
Movable Finger Length	5.64	6.25
Pectinal Teeth L/R	6/6	6/6

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