

ADDITIONAL DISTRIBUTIONAL RECORDS OF SCOLOPENDRID CENTIPEDES (CHILOPODA: SCOLOPENDROMORPHA) FROM KERALA

P.M. Sureshan¹, Vinod Khanna² and C. Radhakrishnan³

¹ Estuarine Biological Station, Zoological Survey of India, Gopalpur-on-Sea, Orissa 761002, India

² Northern Regional Station, Zoological Survey of India, Dehradun, Uttarakhand 248195, India

³ Western Ghats Field Research Station, Zoological Survey of India, Calicut, Kerala 673002, India

Email: ¹ samanyu2003@yahoo.com

Sureshan *et al.* (2004) inventoried and illustrated 15 species of scolopendrid centipedes occurring in Kerala and adjacent areas in the neighboring states, along with a key to their identification. The present study is based on a collection of centipedes available in the Western Ghats Field Research Station, Zoological Survey of India (WGFRS, ZSI), Kozhikode, which includes eight species being recorded here for the first time from Kerala. Accordingly, a total of 23 species of scolopendrid centipedes belonging to eight genera under two subfamilies are now known to occur in Kerala, which forms about 23% of the centipede fauna of India, in turn roughly comprises 16.5% of the global diversity (Khanna, 2003). The tropical rainforests of Western Ghats in Kerala provide suitable habitat conditions for rich centipede diversity. However, information of the centipede fauna from this part of the country is poorly documented due to lack of serious field studies and lack of systematic collections. The collections pertaining to the present study are deposited in WGFRS, ZSI, Kozhikode.

List of scolopendrid centipedes occurring in Kerala

(* New record from Kerala, **Endemic to Kerala, + Probably occurring in Kerala)

1. *Scolopendra amazonica* Bucherl, 1946
2. *Scolopendra hardwickei* Newport, 1844 +
3. *Scolopendra morsitans* Linnaeus, 1758
4. *Scolopendra subspinipes dehaani* Brandt, 1840
5. *Arthrorhabdus jonesii* Verhoeff, 1937 **
6. *Cormocephalus dentipes* Pocock, 1891 *
7. *Cormocephalus nigrificatus* Verhoeff, 1937 **
8. *Asanada indica* Jangi & Dass, 1984
9. *Asanada socotrana* Pocock, 1899
10. *Asanada sukhensis* Jangi & Dass, 1984
11. *Otostigmus politus politus* Karsh, 1881
12. *Otostigmus splendens* Pocock, 1890 *
13. *Ethmostigmus coonooranus* Chamberlin, 1920 *
14. *Ethmostigmus platycephalus platycephalus* (Newport, 1845)
15. *Digitipes graveleyi* Jangi & Dass, 1984 **
16. *Digitipes coonorensis* Jangi & Dass, 1984 *
17. *Digitipes barnabasi* Jangi & Dass, 1984 *
18. *Digitipes chhotanii* Jangi & Dass, 1984

19. *Digitipes indicus* Jangi & Dass, 1984

20. *Rhysida lithobioides paucidens* Pocock, 1897 *

21. *Rhysida lithobioides trispinosus* Jangi & Dass, 1984 *

22. *Rhysida nuda subnuda* Jangi, 1955

23. *Rhysida longipes longipes* (Newport, 1845)

Systematic account

Class: Chilopoda

Order: Scolopendromorpha

Family: Scolopendridae

Subfamily: Scolopendrinae

Tribe: Scolopendriini

1. *Scolopendra amazonica* (Bucherl)

1946. *Scolopendra morsitans amazonica* Bucherl. *W. Mem. Inst. Butantan*, 19: 135-137.

1984. *Scolopendra amazonica* (Bucherl). Jangi & Dass. *J. Scient. Indl. Res.*, 43(2): 29.

2001. *Scolopendra amazonica* (Bucherl). Khanna. *Ann. For.* 9(2): 201.

Diagnostic characters: Body elongate, flat, with 21 pairs of legs, spiracles triangular, cephalic plate overlapping the first tergite, 20th pair of legs without tarsal spur, prefemur of anal legs ventrally with nine spines arranged in three rows of three each.

Distribution: Cosmopolitan.

Material examined: 1ex. Chambakadu, Chinnar Wildlife sanctuary, Idukki district, Kerala. 19.ix.1996, coll. P.M. Sureshan (Reg. No. 9453); 1ex. Kalpetta, Wynad district, 15.xii.1982, 1 ex. Karipur, Malappuram district, 26.vii.1982, 1 ex. Menanyam, Kozhikode district, 10.ii.1983, coll. K.N. Nair and party (Reg. Nos. 1302, 717, 1560); 4exs. Kolamkundu, Shendurni WLS, Quilon district, 17.viii.1997 (Reg. No. 10673); 1 ex. Palarauvi, Quilon district, 10.viii.1997 (Reg. No. 10645), coll. P.M. Sureshan.

Remarks: It is a medium-sized and the most dominant species of *Scolopendra* in Deccan. The species is found commonly occurring throughout Kerala. Collected and studied during this project.

2. *Scolopendra hardwickei* Newport

1844. *Scolopendra hardwickei* Newport. *Ann. Nat. Hist.*, 13: 96.

1903. *Scolopendra subspinipes* var. *hardwickei*, Kraepelin, *Mitt. Mus.*, Hamburg, 20: 262.

2001. *Scolopendra hardwickei* Newport. Khanna. *Ann. For.* 9(2): 201.

Diagnostic characters: Large and robust species; alternate dark green and brownish-yellow tergal segments giving remarkably a banded appearance to the trunk; anal leg prefemur without spines ventrally.

Distribution: India: Andaman & Nicobar Islands, Andhra Pradesh, Karnataka, Maharashtra, Tamil Nadu and West Bengal.

Remarks: It is the largest and comparatively rare species of scolopendridae in the Deccan. Though not yet reported from Kerala, the species is included here owing to its recent reports from localities bordering the states of Kerala and Tamil Nadu (Rathinasabapathy & Daniel, 1997; Rathinasabapathy & Yadav, 2000).

3. *Scolopendra morsitans* Linnaeus

1758. *Scolopendra morsitans* Linnaeus *Syst.Nat.*, 10: 638.

1984. *Scolopendra morsitans* Linnaeus: Jangi & Dass. *J. Scient. Indl. Res.*, 43(2): 27-54.

2001. *Scolopendra morsitans* Linn. Khanna. *Ann. For.* 9(2): 200.

Diagnostic characters: Large and robust species; 20th pair of legs with tarsal spur; anal leg prefemur with three longitudinal rows of three spines on ventral side.

Distribution: Cosmopolitan.

Remarks: It is a large sized species, and is the most dominant species in the Indo-gangetic plains. Khanna (2001) mentioned its occurrence in Kerala. But the present collection contains no specimens of this species. Rathinasabapathy and Yadav (2000) reported this species from Anaikkaty area of Western Ghats. Intensive collection is required

to ascertain the occurrence of the species in Kerala.

4. *Scolopendra subspinipes dehaani* Brandt.

1840. *Scolopendra subspinipes dehaani* Brandt. *Bull. Ac. St. Petersburg* 5:152.

1930. *Scolopendra subspinipes dehaani* Attems, *Das Tierr., Scolopendromorpha* 54(2): 51.

2001. *Scolopendra subspinipes dehaani* Brandt. Khanna. *Ann. For.* 9(2): 200.

Diagnostic characters: Antennae 18-19 articles, six basal glabrous and rest pilose; cephalic plate punctate and more or less roundish; tergites 1, 2 and 21 without longitudinal sutures and 3-5 and 20 with a pair of incomplete and 6-19 with complete paramedian longitudinal sutures; coxopleural process tipped with two spines, legs 1-20 with one tarsal spur, 21st without tarsal spur.

Distribution: India: Assam, Andaman & Nicobar Islands, Karnataka, Kerala.

Remarks: Though it is said to be the most abundant species of *Scolopendra* in the tropical and subtropical lands, it is poorly known from Deccan (Jangi & Dass, 1984). Khanna (2001) mentioned the occurrence of this species in Kerala but no locality details are available.

5. *Arthrorhabdus jonesii* (Verhoeff)

1937. *Arthrorhabdus (Tachycormocephalus) jonesii*, Verhoeff *Zool. Jahrb. (Syst.)* 71: 384.

2001. *Arthrorhabdus jonesii* Verhoeff. Khanna. *Ann. For.* 9(2): 203.

Diagnostic characters: Cephalic plate without basal plates and without longitudinal sutures; antennae with 17 articles, three basals glabrous and rest pilose; 21st tergite without median suture, lateral margination from 10th onwards, coxopleural process tipped with two spines; 1-4 legs with two tarsal spurs, anal leg prefemur with 1-2 spines ventromedially and three ventrally.

Distribution: India: Kerala: Trivandrum district (Ponmudi).

Remarks: This is a rare species known only from Kerala.

6. *Cormocephalus dentipes* Pocock

1891. *Cormocephalus dentipes* Pocock. *Ann. Nat. Hist. Soc.* 6,7: 66.

1984. *Cormocephalus pseudonudipes*, Jangi & Dass, *J. Scient. Indl. Res.*, 43(2): 37.

2001. *Cormocephalus dentipes* Pocock. Khanna. *Ann. For.* 9(2): 203.

Diagnostic characters: All legs without tarsal spur; 21st tergite without a longitudinal median sulcus, lateral margination present on tergites anterior to 21st, maxillipedes with prefemoral process, anal legs in adult male tuberculate.

Material examined: 1ex. Karimala, Parambikulam Wildlife Sanctuary, Palghat district, 27.i.1997, coll. P.M. Sureshan (Reg. No. 9872).

Distribution: India: Madhya Pradesh, Orissa, Kerala, W. Bengal, Uttar Pradesh, Andaman & Nicobar Islands, Bihar, Delhi, Himachal Pradesh, Meghalaya, Mizoram and Uttaranchal.

Remarks: The species is endemic to India; reported here for the first time from Kerala. Collected and studied during this project.

7. *Cormocephalus nigrificatus* Verhoeff.

1937. *Cormocephalus (Dehanonyx) nigrificatus* Verhoeff. *Zool. Anz. Leipzig* 120: 81.

2001. *Cormocephalus nigrificatus* Verhoeff. Khanna. *Ann. For.* 9(2): 204.

Diagnostic characters: 21st tergite without a median longitudinal sulcus; lateral margination absent on tergites anterior to 21; maxillipedes without prefemoral process.

Material examined: 1ex. Chambakadu, Chinnar WLS, Idukki district, 19.ix.1996, (Reg. No. 9453); 1ex. Kaduvapallam, Quilon district, 11.viii.1997 (Reg. No. 10643), coll. P.M. Sureshan.

Distribution: India: Kerala.

Remarks: The species is known only from Kerala. Apart from the type locality (Nedumangad, Trivandrum District), it is being reported from Quilon and Idukki districts of Kerala. Collected and studied during this project.

Tribe: Asanadini.

8. *Asanada indica* Jangi & Dass.

1984. *Asanada indica* Jangi & Dass, *J. Scient. Indl. Res.*, 43(2): 38-39.

2001. *Asanada indica* Jangi & Dass, Khanna. *Ann. For.* 9(2): 205.

Diagnostic characters: Longitudinal median groove present on posterior half of anal leg prefemur and femur; 21st sternite nearly twice as broad as long, posteriorly narrowing, slightly arched and with a slight median notch at posterior margin.

Distribution: India: Kerala, Maharashtra, Orissa, Delhi, Haryana, Rajasthan, Himachal Pradesh, Uttar Pradesh and Uttaranchal.

Remarks: Khanna (2001) mentioned the occurrence of the species in Kerala; no locality details are available. Collected and studied during this project.

9. *Asanada socotrana* Pocock.

1899. *Asanada socotrana*, Pocock *Bull. Liverpool Mus.*, 2: 9.

1918. *Asanada brevicornis* Var. *afra*, Silvestri, *Boll. Laborat. Zool. Portici.*, 12: 311.

1930. *Asanada socotrana*, Attems, *Das Tierr., Scolopendromorpha*, 54(2): 124-125.

2001. *Asanada socotrana* Pocock, Khanna. *Ann. For.* 9(2): 205.

Diagnostic characters: Anal legs short and thick; paired longitudinal median sutures always complete on 20th tergite; 21st tergite more than twice as broad as long; longitudinal median groove present throughout on anal leg femur only.

Distribution: India: Kerala, Maharashtra, Tamil Nadu.

Remarks: Jangi and Dass (1984) reported this species from Parambikulam of Palghat district.

10. *Asanada sukhensis* Jangi & Dass.

1984. *Asanada sukhensis* Jangi & Dass. *J. Scient. Indl. Res.*, 43(2): 38-39.

2001. *Asanada sukhensis* Jangi & Dass. Khanna. *Ann. For.* 9(2): 205.

Diagnostic characters: Anal legs short and thick; 21st tergite more than twice as broad as long; longitudinal median groove confined to posterior half of anal leg femur only.

Distribution: India: Kerala, Madhya Pradesh, Orissa.

Remarks: This species is endemic to India. Khanna (2001) mentioned the occurrence of the species from Kerala; no locality details are available.

Subfamily: Otostigminae

Tribe: Otostigmini

11. *Otostigmus politus politus* Karsch.

1881. *Otostigma politum*, Karsch, *Berlin Ent. Z.*, 25: 219.

1930. *Otostigmus (O) politus politus* Attems, *Das Tierr., Scolopendromorpha*, 54(2): 149.

2001. *Otostigmus politus politus* Karsch. Khanna. *Ann. For.* 9(2): 207.

Diagnostic characters: Claw of second maxillae with a spur; first 5-6 legs with two tarsal spurs and following legs up to 19th with a single tarsal spur; tergites smooth.

Distribution: India: Assam, Delhi, Himachal Pradesh, Kerala, Maharashtra, Meghalaya, Orissa, Sikkim, Uttaranchal and West Bengal.

Remarks: Khanna (2001) mentioned the occurrence of this species from Kerala; no locality details are available. It is an uncommon species.

12. *Otostigmus splendens* Pocock.

1890. *Otostigmus splendens*, Pocock. *Ann. Nat. Hist., Ser.*, 6,5: 245.

1930. *Otostigmus (O) splendens*, Attems. *Das Tierr., Scolopendromorpha* 54(2): 145.

2001. *Otostigmus splendens* Pocock. Khanna. *Ann. For.* 9(2): 206.

Diagnostic characters: Coxopleural process with dorsal spine; anal legs with prefemoral process.

Material examined: 1 ex. Parakkadavu, Shendurni Wildlife Sanctuary, Quilon district; 8.viii.1997 (Reg. No. 10463); 1 ex. Vallamvetti, Quilon district, 18.viii.1997 (Reg. No. 10465), coll. P.M. Sureshan.

Distribution: India: Kerala, Maharashtra and Tamil Nadu.

Remarks: The species is reported here for the first time from Kerala. Collected and studied during this project.

13. *Ethmostigmus coonooranus* Chamberlin.

1920. *Ethmostigmus coonooranus*, Chamberlin, *Univ. Calif. Pub.* 19: 392.

1930. *Ethmostigmus coonooranus* Attems. *Das Tierr., Scolopendromorpha* 54(2): 178.

2001. *Ethmostigmus coonooranus* Chamberlin. *Khanna. Ann. For.* 9(2): 209.

Diagnostic characters: First pair of spiracles large and sieve like; prefemur of maxillipedes without a median dental process; three basal antennal segments glabrous.

Material examined: 6 exs. Vallamvetti, Quilon district, 18.viii.1997 (Reg. No. 10465); 1 ex. Kaduvapallam, Quilon district, 11.viii.1997 (Reg. No. 10463), coll. P.M. Sureshan.

Distribution: India: Tamil Nadu, Kerala.

Remarks: The species has been so far known only from Nilgiri district, Tamil Nadu. It is reported here for the first time from Kerala. Collected and studied during this project.

14. *Ethmostigmus platycephalus platycephalus* (Newport).

1845. *Heterostoma platycephalus platycephalus*, Newport, *Trans. Linn. Soc.* 19:415.

1903. *Ethmostigmus platycephalus* Kraepelin, *Mitt. Mus., Hamburg*, 20: 162.

1930. *Ethmostigmus platycephalus platycephalus* Attems. *Das Tierr., Scolopendromorpha* 54(2): 18.

2001. *Ethmostigmus platycephalus platycephalus* (Newport). *Khanna. Ann. For.* 9(2): 209.

Diagnostic characters: Four basal antennal segments glabrous; anal leg prefemur mostly with three ventrolateral spines; coxopleural process tipped with 2-4 spines and bearing dorsally 0-1 spines.

Material examined: 1 ex. Kurichiyad, Wynad dist., 1.ii.1983, coll. K.N. Nair (Reg. No.3151); 1 ex. Kottawasal, Aryankavu, Quilon dist., 15.viii.1997 (Reg. No.10678); 1 ex. Thannikudi, Periyar Tiger Reserve, Idukki dist., 7.xi.1996 (Reg.No.9452); 6 exs. Manakavala, Periyar Tiger Reserve, Idukki dist., 12.xi.1996 (Reg. No. 9455); 1 ex. Pooyamkutty, Pindimedu, Ernakulam dist. 24.xi.1999 (Reg. No. 10019); 2exs. Vallamvetti, Quilon dist., 18.viii.1997 (Reg. No. 10465); 2 exs. Palaruvi, Quilon dist., 10.viii.1997 (Reg. No. 10645); coll. P.M. Sureshan.

Distribution: India: Kerala, Maharashtra.

Remarks: The species is locally common in the forested tracts of Western Ghats in Kerala. The specimens from the area are robust and dark brown in colour. Collected and studied during this project.

15. *Digitipes gravelyi* Jangi & Dass

1984. *Digitipes gravelyi* Jangi & Dass. *Scient. Indl. Res.* 43(2): 41.

2001. *Digitipes gravelyi* Jangi & Dass. *Khanna. Ann. For.* 9(2): 210.

Diagnostic characters: Tergites beyond 1 and 2 ridged and tuberculate; paramedian sutures complete on 6-20, confined anteriorly and posteriorly on preceding ones; coxopleural process tipped with four spines and bearing two lateral spines.

Material examined: 1 ex. Palaruvi, Quilon dist., 10.viii.1997 (Reg. No.10645); 1 ex. Vallamvetti, Quilon dist., 18.viii.1997 (Reg. No.10465); 1 ex. Parakkadavu, Shendurni Wildlife Sanctuary, Quilon dist., 8.viii.1997 (Reg. No.10463), coll. P.M. Sureshan.

Distribution: India: Kerala.

Remarks: The species is endemic to Kerala and has been described from Parambikulam of Palghat district. Here the species is reported from Quilon district subsequent to its original description. Collected and studied during this project.

16. *Digitipes coonoorensis* Jangi & Dass.

1984. *Digitipes coonoorensis* Jangi & Dass, *Scient. Indl. Res.*, 43(2):

43.

2001. *Digitipes coonoorensis* Jangi & Dass. *Khanna. Ann. For.* 9(2): 210.

Diagnostic characters: 20th leg without tarsal spur; 21st tergite a little broader than long and having its lateral margins slightly convex; coxopleural process tipped with two spines and bearing a single lateral spine.

Material examined: 2exs. Rajakooop, Shendurni WLS, Quilon dist., 14.viii.1997 (Reg.No10476); 1ex. Kaladi, Kodanad, Mallana, Ernakulam dist., 12.xi.1999 (Reg. No. 11263); 2exs. Pooyamkutty, Pindimedu, Ernakulam dist. 22.xi.1999 (Reg. No.11260); 2exs. Kottiyoor, Kannur dist., 2.ii.1995 (Reg. No. 7453); 4exs. Kazhuthurutti, Shendurni WLS, Quilon dist. 9.viii.1997 (Reg. No. 10462); 1ex. Parakkadavu, Shendurni WLS, Quilon dist 8.viii.1997 (Reg. No. 10465), coll. P.M. Sureshan.

Distribution: India: Kerala, Maharashtra, Tamil Nadu.

Remarks: This species was known only from Tamil Nadu and Maharashtra. Here the species is reported for the first time from Kerala. The species appears locally common in the forested tracts of Kerala. Collected and studied during this project.

17. *Digitipes barnabasi* Jangi & Dass.

1984. *Digitipes barnabasi* Jangi & Dass. *Scient. Indl. Res.*, 43(2): 44.

2001. *Digitipes barnabasi* Jangi & Dass. *Khanna. Ann. For.* 9(2): 210.

Diagnostic characters: 20th leg with tarsal spur; porous area of coxopleura almost touching dorsal margins.

Material examined: 1ex. Kottiyoor, Kannur dist. 31.i.1995 (Reg. No. 7448), coll. P.M.Sureshan.

Distribution: India: Kerala, Maharashtra, Tamil Nadu.

Remarks: This species was known only from Tamil Nadu and Maharashtra. Here the species is reported for the first time from Kerala. Collected and studied during this project.

18. *Digitipes chhotanii* Jangi & Dass.

1984. *Digitipes chhotanii* Jangi & Dass., *Scient. Indl. Res.*, 43(2): 46.

2001. *Digitipes chhotanii* Jangi & Dass. *Khanna. Ann. For.* 9(2): 210.

Diagnostic characters: 20th leg without tarsal spur; lateral tergal margination beginning on 7th; posterior margin of 21st sternite straight; 1st tarsus of anal leg nearly twice as long as second, 2nd tarsus 3.5 times as long as claw.

Material examined: 2exs. Thakarappady, Kozhikode dist.15.x.1991, (Reg. No. 113), coll. K.N. Nair & party; 1ex. Kottiyoor, Kannur dist., 2.ii.1995 (Reg. No.7453); 1ex. Amakulam, Kulathupuzha, Quilon dist., 16.viii.1997 (Reg. No.10464); 2exs. Chambakad, Chinnar WLS, Idukki dist., 18.xi.1996 (Reg. No. 9459), coll. P.M. Sureshan.

Distribution: India: Kerala, Maharashtra, Tamil Nadu.

Remarks: According to Khanna (2001) the species is known from Kerala. Collected and studied during this project.

19. *Digitipes indicus* Jangi & Dass.

1984. *Digitipes indicus* Jangi & Dass. *Scient. Indl. Res.*, 43(2): 46-47.

2001. *Digitipes indicus* Jangi & Dass. *Khanna. Ann. For.* 9(2): 210.

Diagnostic characters: 20th leg with tarsal spur; lateral margination beginning on 11th leg bearing segment; posterior margin of 21st sternite concave; 1st tarsus of anal leg nearly 1.5 times as long as 2nd and 2nd tarsus slightly more than twice as long as claw; prefemoral spines of anal leg comprising a ventrolateral and a ventromedial spine.

Material examined: 1ex. Menanyam, Kozikode dist.10.ii.1983 (Reg. No.1560), coll. K.N. Nair & party; 1ex. Kaduvapallam, Quilon dist., 2.viii.1997 (Reg. No. 10643); 1ex. Palaruvi, Quilon dist., 10.viii.1997 (Reg. No. 10645), coll. P.M. Sureshan.

Distribution: India: Kerala, Maharashtra.

Remarks: This species is described from Kerala based on the specimen collected from Palghat district. The species is also reported from Trichur district of Kerala (Jangi & Dass, 1984). Collected and studied during this project.

20. *Rhysida lithobioides paucidens* Pocock

1897. *Rhysida paucidens*, Pocock, D. Smith, Unknown African countries, app.c.p. 403.

1930. *Rhysida lithobioides paucidens*, Attems, *Das Tierr., Scolopendromorpha*, 54(2): 188.

2001. *Rhysida lithobioides paucidens* Pocock. Khanna. *Ann. For.* 9(2): 211.

Diagnostic characters: Coxopleural process without lateral spines; sternites with anteriorly confined short suture; first eight or more pairs of legs with two tarsal spurs; coxopleural process tipped with two spines; 21st sternite hardly tapering posteriorly.

Material examined: 1ex. Kottavasal, Aryankavu, Quilon dist., 15.viii.1997 (Reg. No. 10678), coll. P.M.Sureshan.

Distribution: India: Kerala, Pondicherry, Tamil Nadu.

Remarks: This is a species endemic to Deccan. The species is reported here for the first time from Kerala. Collected and studied during this project.

21. *Rhysida lithobioides trispinosus* Jangi & Dass.

1984. *Rhysida lithobioides trispinosus*, Jangi & Dass. *J. Scient. Indl. Res.*, 43(2):48.

2001. *Rhysida lithobioides trispinosus* Jangi & Dass. Khanna. *Ann. For.* 9(2): 211.

Diagnostic characters: Coxopleural process tipped with three spines; 21st sternite clearly tapering posteriorly; sternites with short paramedian sulci confined anteriorly; 21st tapering caudad and with prominently convex lateral margins and concave posterior margin.

Material examined: 1ex. Kattilappara, Shendurni WLS, Quilon dist., 12.viii.1997 (Reg. No. 10675); 1ex. Kolamkunnu, Shendurni WLS, Quilon dist., 17.viii.1997 (Reg. No. 10673); 1ex. Pooyamkutty, Pindimedu, Ernakulam dist., 24.xi.1999, (Reg. no. 10019); 7exs. Chambakad, Chinnar Wild life sanctuary, Idukki dist., 18.xi.1996 (Reg. No. 9459), 1ex. Karimala, Parambikulam WLS, Palghat dist., 27.i.1997 (Reg. No. 9872), coll. P.M. Sureshan.

Distribution: India: Kerala, Tamil Nadu, Maharashtra.

Remarks: This is a species endemic to the Deccan and is reported here for the first time from Kerala. The species is locally common in the forested tracts of Kerala. Collected and studied during this project.

22. **Rhysida nuda subnuda* Jangi

1955. *Rhysida nuda subnuda*, Jangi. *Ann. Mag. nat. Hist. ser.* 12,8: 69-80.

2001. *Rhysida nuda subnuda* Jangi. Khanna. *Ann. For.* 9(2): 212.

Diagnostic characters: Only 21st tergite laterally marginate, 20th pair of legs with one tarsal spur; apex of the coxopleural process without spines; antennae 21 segmented.

Material examined: 3exs., Koduvally, Kozhikode dist., 21.ix.1982 (Reg. No. 1056, 1057), coll. K.N. Nair & party; 3exs. Kottavasal, Aryankavu, Quilon dist., 15.viii.1997 (Reg. No. 10678), 1ex. Kattilappara, Quilon dist., 12.viii.1997 (Reg. No. 10675), 12exs. Kolamkunnu, Quilon dist., 17.viii.1997 (Reg. No. 10673), 3exs. Manjappara, Pooyamkutty,

Ernakulam dist., 15.xi.1999 (Reg. No. 10999); 3exs. Kazhuthurutti, Thenmala, Quilon dist., 9.viii.1997 (Reg. No. 10462); 1ex. Karimala, Parambikulam WLS, Palghat dist., 29.iii.1997 (Reg. No. 10078); 3exs. Kaduvapallam, Quilon dist., 11.viii.1997, (Reg. No. 10643), coll. P.M. Sureshan.

Distribution: Cosmopolitan.

Remarks: This is a common species occurring throughout Kerala.

23. *Rhysida longipes longipes* (Newport).

1845. *Branchiostoma longipes longipes*, Newport. *Trans. Linn. Soc., London.* 19: 411.

1930. *Rhysida longipes*, Attems. *Das Tierr., Scolopendromorpha*, 54(2): 194.

2001. *Rhysida longipes longipes* (Newport). Khanna. *Ann. For.* 9(2): 212.

Diagnostic characters: Prefemur of anal leg with posteromedial spiny process; coxopleural process with lateral spine; tergites preceding 21st clearly marginate laterally and several of them involved.

Material examined: 1ex. Kottavasal, Aryankavu, Quilon dist., 15.viii.1997 (Reg. No. 10678), 2exs. Kattilappara, Quilon dist., 12.viii.1997 (Reg. No. 10675); 9exs., Kolamkunnu, Quilon dist., 17.viii.1997 (Reg. No. 10673), coll. P.M. Sureshan.

Distribution: India: Andaman & Nicobar Islands, Arunachal Pradesh, Delhi, Goa, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Uttaranchal, Uttar Pradesh, W. Bengal,

Remarks: This is a commonly occurring *Rhysida* species. It is reported here for the first time from Kerala. Collected and studied during this project.

DISCUSSION

The family Scolopendridae is represented in Kerala by 22 species belonging to eight genera, viz., *Scolopendra*, *Arthrorhabdus*, *Cormocephalus*, *Asanada*, *Digitipes*, *Otostigmus*, *Ethmostigmus* and *Rhysida*. Of these, the first four belong to the subfamily Scolopendrinae and the remaining four to the subfamily Otostigminae. The genus *Scolopendra* found throughout the tropics and the warmer lands of temperate world is unique in having the cephalic plate, which clearly overlies the anterior margin of the first tergite. Among the 21 species of Indian *Scolopendra*, only two are so far known from Kerala, namely, *S. amazonica* and *S. morsitans*. These two species are sympatric and cosmopolitan in distribution, which were considered earlier conspecific. The most important distinguishing character between these two species is the spur on 20th leg, which is present in *morsitans* and absent in *amazonica*. Though there is an opinion among workers favouring the synonymy of these species, Jangi and Dass (1984)

Key to the *Rhysida* species of Kerala

1. Only 21st tergite laterally marginate, and if at all hardly a couple of them preceding 21st marginate, that too incompletely and weakly... *Rhysida nuda* (Newport) (20th pair of walking legs without tarsal spur; coxopleural process without spines; antenna 21 segmented) sub species *subnuda* Jangi
- Tergites preceding 21st clearly marginate laterally and several of them involved 2
2. Coxopleural process with lateral spine *Rhysida longipes* (Newport) (prefemur of anal leg with posteromedial spiny process subspecies *longipes* (Newport)
- Coxopleural process without lateral spine (sternites at the most with anteriorly confined short suture; first 8 or more pairs of legs with 2 tarsal spurs *Rhysida lithobioides* (Newport)3
3. Coxopleural process tipped with 2 spines, seldom with 1 spine; 21st sternite hardly tapering posteriorly
- *Rhysida lithobioides paucidens* Pocock
- Coxopleural process tipped with 3 spines, 21st sternite clearly tapering posteriorly
- *Rhysida lithobioides trispinosus* Jangi & Dass

clearly mentioned their separate status in the Deccan. Though the most dominant species of Indo-Gangetic plains, *S. morsitans* is very rarely reported from Tamil Nadu, Karnataka and Kerala, the species is not represented in the present collection. Jangi and Dass (1984) expressed the view that the records of *S. morsitans* from these three states may be pertaining to *S. amazonica*. Rathinasabapathy and Yadav (2000) reported this species from Anaikatty area of Western Ghats, Tamil Nadu. *S. hardwickei* Newport is another rare *Scolopendra* species not reported from Kerala but known from localities bordering Kerala and Tamil Nadu (Rathinasabapathy & Yadav, 2000). So intensive field exploration and collection of specimens throughout Kerala is essential to prove the occurrence of *S. morsitans* and *S. hardwickei* in the state.

Scolopendra subspinipes dehaani Brandt is another *Scolopendra* species known from Kerala (Khanna, 2001). The occurrence of this species in Kerala is doubtful and the above record may pertain to that from Karwar district of Karnataka by Jangi and Dass (1984). Another interesting species of Scolopendrini is *Arthrorhabdus jonesii*, which is the only representative of the genus in India. The species is known only from the Ponmudi hills of Trivandrum district. It is very essential to make intensive collection of centipedes from this area in order to prove the occurrence of the species still in that locality after a gap of several years since its earlier report. *Cormocephalus* is a genus of Scolopendrinae, which is species-rich. Out of the eight Indian species, only two are represented in Kerala, namely, *C. nigrificatus* and *C. dentipes*. Both these species lack a longitudinal median sulcus on the 21st tergite, which separate them from other Indian species. *C. nigrificatus* is so far known only from the Thiruvananthapuram district of Kerala, its distribution is extended here to Idukki and Quilon districts by the collection of specimens.

Asanadini is a monogeneric tribe with the genus *Asanada*. Though the genus has an extensive geographical range, it is very poorly represented in general collections. Among the eight species known from India, three are represented in Kerala viz., *A. indicus*, *A. socotrana*, and *A. sukhensis*. All these species have short and thick anal legs unlike in other Indian species with anal legs long and slender. Not a single specimen of *Asanada* is represented in the present collection. Since members of this genus are usually smaller in size and unnoticeable, special care has to be taken during collection.

The subfamily Otostigminae is represented by 13 species from Kerala, among them *Digitipes* contains five, followed by *Rhysida* with four and *Ethmostigmus* and *Otostigmus* each with two species. *Digitipes coonoorensis* is represented by a good number of

Distribution of centipede species in the districts of Kerala

Name of the species	Status	Trivandrum	Quilon	Pathanamthitta	Alappuzha	Kottayam	Idukki	Ernakulam	Trichur	Kozhikode	Malappuram	Wynad	Palghat	Kannur	Kasaragod
* <i>Scolopendra morsitans</i>	Cosmopolitan	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Scolopendra amazonica</i>	Circumtropical	-	-	-	-	-	-	-	-	-	-	-	-	-	-
* <i>Scolopendra subspinipes dehaani</i>	Indo-Malayan	+	-	-	-	-	-	-	-	-	-	-	-	-	-
* <i>Scolopendra hardwickei</i>	Indo-Malayan	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Cormocephalus dentipes</i>	Indian	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Cormocephalus nigrificatus</i>	India, Africa	-	-	-	-	-	+	-	-	-	-	-	-	-	-
<i>Arthrorhabdus jonesii</i>	Indian	-	-	-	-	-	-	-	-	-	-	-	-	-	-
* <i>Asanada indica</i>	Indian	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Asanada socotrana</i>	Indian	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Asanada sukhensis</i>	Indian	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Otostigmus (O) politus</i>	Indo-Australian	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Otostigmus (O) splendens</i>	Indo-Malayan	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>Ethmostigmus coonooranus</i>	Extending Australia	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Ethmostigmus platycephalus</i>	Indian	-	+	-	-	-	+	-	-	-	-	-	-	-	-
<i>Digitipes graveyi</i>	Palaearctic, Ethiopian	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Digitipes coonoorensis</i>	Indian	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>Digitipes indicus</i>	Indian	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>Digitipes barnabasi</i>	Indian	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Digitipes chhotani</i>	Indian	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Rhysida nuda subnuda</i>	Indian	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Rhysida longipes longipes</i>	Indian	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>Rhysida lithobioi despaucoidens</i>	Cosmopolitan	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>Rhysida lithobioideus rispinosus</i>	Oriental	-	+	-	-	-	-	-	-	-	-	-	-	-	-
	Indian	-	+	-	-	-	-	-	-	-	-	-	-	-	-

* - Known from Kerala, no locality details available (Khanna, 2001); + - Probably occurring in Kerala



Figure 1. Maps showing distribution of centipedes in Kerala

specimens in the collection, mostly collected from the forested tracts of Western Ghats. It is reported for the first time from Kerala. Occurrence of *Digitipes barnabasi* in Western Ghats of Kerala is interesting since it is previously known only from Maharashtra and Tamil Nadu (Yadav 2001; Khanna, 2001). The other species of *Digitipes* known from Kerala are *D. indicus*, *D. graveleyi* and *D. chhotani*, which are all represented in the Deccan too.

The genus *Otostigmus* is species rich as far as India is concerned. According to Khanna (2001), 23 species of *Otostigmus* are known from India. Though species rich, the genus is also not plentiful in the collections; only two specimens of *O. splendens* are encountered here collected from Quilon district. *O. politus politus* is also known from the state. In *Ethmostigmus*, *E. platycephalus platycephalus* is found commonly occurring in the forested tracts of Kerala represented by specimens of robust size. *E. coonooranus* is reported here for the first time from Kerala. The genus *Rhysida* is represented by four species, viz., *R. nuda subnuda*, *R. lithobioides trispinosus*, *R. lithobioides paucidens* and *R. longipes longipes*. Among these, *R. nuda subnuda* is found commonly occurring in both the plains and hills of Kerala represented by maximum number of specimens in the collection. The occurrence of *R. lithobioides paucidens* in Kerala is also interesting.

The present study proved that the centipede fauna of Kerala is rich though not explored fully. They form a rewarding animal group for detailed systematic studies from Kerala since they play a very valuable role in the terrestrial ecosystems acting as important links in the food chains, devouring harmful insect pests, meal worms, termites, millipedes etc thereby helping to control them. Even though the present collection represents a randomly picked assemblage of specimens, it contains some interesting species, which are being reported for the first time from Kerala. Since most the present collection is made from the forested tracts of Western Ghats, it will not give a complete picture of the distribution of the centipede species in Kerala. So more intensive collections of centipedes from the plains and mid lands are also very essential to derive a complete picture of the distribution of centipede fauna in Kerala. Moreover, some of the districts of Kerala like Kasaragod, Alappuzha, Pathanamthitta and Kottayam are totally unexplored for centipedes and there are no records of species available from these districts. Serious attempts to collect centipedes from all the different types of habitats belonging to the 14 districts of Kerala needs to be made to get a clear picture of the distribution, endemism, intraspecific variations, evolutionary status etc of the centipede species occurring in this part of peninsular India, which will in turn provide further detailed knowledge on the centipede fauna of the country.

REFERENCES

- Jangi, B.J. and C.M.S. Dass (1984). Scolopendridae of the Deccan. *Journal of Scientific and Industrial Research* 43: 27-54.
- Khanna, V. (2001). A checklist of the Indian species of the centipedes (Chilopoda: Scolopendromorpha). *Annals of Forestry* 9(2): 199-219.
- Khanna, V. (2003). Diversity of Scolopendrid centipedes (Chilopoda: Scolopendromorpha) in Himalayan ecosystem and adjacent areas - A review. *Records of Zoological Survey of India* 101(3-4): 207-223.
- Rathinasabapathy, B. and B.A. Daniel (1997). Note on Tiger Centipede *Scolopendra hardwickei* (Newport) from Coimbatore Zoological Park site, Anaikatty, Western Ghats. *Zoos' Print* 12(8): 1.
- Rathinasabapathy, B. and B.E. Yadav (2000). Centipedes (Scolopendridae) of Coimbatore Zoological Park Area, Anaikatty, Western Ghats. *Zoos' Print Journal* 15(19): 327-328.
- Sureshan, P.M., B.E. Yadav and C. Radhakrishnan (2003). An illustrated key to the identification of centipedes (Chilopoda: Scolopendromorpha) of Kerala. *Zoos' Print Journal* 19(3): 1401-1407.
- Yadav, B.E. (2001). Centipedes (Chilopoda: Scolopendridae), pp. 39-44. In: *Fauna of conservation Area Series No.11. Fauna of Nilgiri Biosphere Reserve*. Zoological Survey of India, Kolkata.

ACKNOWLEDGEMENTS

The authors are grateful to Dr. J.R.B. Alfred, Director, Zoological Survey of India, Kolkata and Dr. S.Z. Siddiqi, Officer-in-charge, Zoological Survey of India, Estuarine Biological Station, Gopalpur-on-Sea, Orissa for providing facilities and encouragement.

