

Fauna of Protected Areas - 22:

**UPDATED CHECKLIST OF PRAYING
MANTID SPECIES (INSECTA: MANTODEA)
FROM NAGARJUNASAGAR-SRISAILAM
TIGER RESERVE, ANDHRA PRADESH**

**K. Thulsi Rao¹, H.V. Ghate², M. Sudhakar³,
S.M. Maqsood Javed³ and I. Siva Rama Krishna³**

^{1,3} Ecological Research & Monitoring Laboratories, Nallamalai Hill Ranges, Eastern Ghats, Project Tiger Circle, Srisailam, Kurnool District, Andhra Pradesh 518102, India

² Department of Zoology, Modern College, Pune, Maharashtra 411005, India

Email: ¹ thulsirao@yahoo.co.in; ² hemantghate@yahoo.com

web supplement

In a recent note we presented a preliminary list of nine mantid species from Srisailam (Thulsi Rao *et al.*, 2004). During the last six months, a few more species of mantids were collected from the same area and the preliminary list has been updated with the new entries. Like in our previous survey, the mantids were identified on the basis of keys developed by Mukherjee *et al.* (1995). The survey is part of "All Taxa Biodiversity Inventory", from the Nagarjunasagar-Srisailam Tiger Reserve (N-STR) 15°53'-16°43'N & 78°30'-79°28'E, Andhra Pradesh. Since the geography of the area has already been described in our preliminary list, the same is not repeated. So far 14 genera and 16 species of mantids are known from Andhra Pradesh, from stray records (Mukherjee *et al.*, 1995; Thulsi Rao *et al.*, 2004).

We are now reporting a total of 26 species (23 genera) from Andhra Pradesh, many of which are first records for this region. As there have been no specific surveys for mantids in Andhra Pradesh so far, this is the first report of such a planned survey. We plan to conduct additional surveys in different seasons and habitats in the near future. The details of the identified species, their distribution and remarks are given along with available photographs (Images 1-12^w).

Mantids were collected from various places using insect net or were hand-picked and were dry/wet preserved, using standard entomological techniques, at the Andhra Pradesh Forest Department's Field Museum (Ecological Research and Monitoring Laboratories) in the headquarters of Nagarjunasagar-Srisailam Tiger Reserve at Sundipenta, Kurnool district. In this updated checklist, the names followed by an asterisk mark (*) indicate first record for Andhra Pradesh. Comments on distribution, wherever made, are based on Mukherjee *et al.* (1995). The species from our own preliminary list have also been included in this list and are marked with a hash (#). Known distribution for each species is compiled from literature prior to this publication. Specimens stored at the ERM Laboratory are denoted with registration numbers.

Family: Amorphoscelidae**Subfamily: Amorphoscelinae****1. *Amorphoscelis* sp.* (Image 1^w)**

Material examined: 2 females (ERMM_24, 25), 26.ix.04, Chinnarutla (16°02'N & 78°39'E), NSTR, Prakasam District, coll. K. Thulsi Rao.

Distribution: India: Sikkim, West Bengal; Indonesia: Kalimantan, Sumatra; Myanmar; Sri Lanka.

Remarks: This species is similar to *A. annulicornis* Stål, a widely distributed species but no species of this genus have been reported from Andhra Pradesh before. The specimens show longer wing and different colouration compared to *A. annulicornis*. Studies on male genitalia need to be conducted on these small mantids, as other differentiating characters are few.

Family: Hymenopodidae**Subfamily: Hymenopodinae**

2. *Creobroter laevicollis* (Saussure)[#] (See Thulsi Rao *et al.*, 2004)
Material examined: 1 male, 1 female (ERMM_1, 2), 1.ii.04, Chinna Mantanala (15°49'N & 78°51'E), NSTR, Prakasam District, coll. S. M. Maqsood Javed and I. Siva Rama Krishna.

Distribution: India: Andhra Pradesh, Assam, Meghalaya, Sikkim, West Bengal; Indonesia: Java.

Remarks: Known from the eastern and northeastern states of India.

Subfamily: Acromantinae**3. *Ephestiasula intermedia* Werner^{*}**

Material examined: 2 males, 2 females (ERMM_57, 58), 4.v. 04, Pulicheruvu (15°59'N & 78°55'E), NSTR, Prakasam District, Coll. K. Thulsi Rao and I. Siva Rama Krishna.

Distribution: India: Jammu & Kashmir, Karnataka, Madhya Pradesh, Rajasthan, Uttar Pradesh, Orissa.

Remarks: First report from Andhra Pradesh.

4. *Euantissa pulchra* (Fabricius) (Image 2^w)

Material examined: 1 nymph (ERMM_26), 26.viii.04, Palutla (16°09'N & 79°24'E), NSTR, Prakasam District, coll. K. Thulsi Rao.

Distribution: India: Eastern, northeastern and southern India; Sri Lanka

Remarks: Nymphs are similar to black ants. A very common and widely distributed species.

5. *Hestiasula brunneriana* Saussure (Image 3^w)

Material examined: 1 male (ERMM_27), 17.viii.04, Srisailam (16°04'N & 78°52'E), NSTR, Kurnool District, coll. I. Siva Rama Krishna.

Distribution: India: Andhra Pradesh, Meghalaya, West Bengal; Bangladesh; Sri Lanka.

Remarks: Known from many eastern states.

Family: Liturgusidae**Subfamily: Liturgusinae****6. *Humbertiella ceylonica* Saussure^{*} (Image 4^w)**

Material examined: 3 males, 4 females (ERMM_28-34), 17.ix.04, Sundipenta (16°04'N & 78°54'E), NSTR, Kurnool District, coll. K. Thulsi Rao and S.M. Maqsood Javed.

Distribution: India: Assam, Bihar, Karnataka, Madhya Pradesh, Maharashtra, Tamil Nadu, Uttar Pradesh, West Bengal; Myanmar; Sri Lanka.

Remarks: Originally described from Sri Lanka, but it is a widely distributed species. First report from Andhra Pradesh.

7. *Humbertiella* sp.[#] (Image 5^w)

Material examined: 2 females (ERMM_3, 4), 18.ix.04, Sundipenta (16°04'N & 78°54'E), NSTR, Kurnool District, coll. I. Siva Rama Krishna and S.M. Maqsood Javed

Distribution: India: Andhra Pradesh (collection locality).

Remarks: Similar to *H. similis* Giglio-Tos (*H. indica* Saussure, another very similar species, is probably a synonym of *H. similis*). Male genitalia must be studied to establish species level identification.

^w see Images 1-12 in the web supplement at www.zoosprint.org

Family: Mantidae**Subfamily: Schizocephalinae**

8. *Schizocephala bicornis* (Linnaeus)[#] (See Thulsi Rao *et al.*, 2004)
Material examined: 1 male, 1 female (ERMM_5, 6), 12.ii.04, Bailuty (15°52'N & 78°42'E), NSTR, Kurnool District, coll. K. Thulsi Rao.

Distribution: India: Andhra Pradesh, Madhya Pradesh, Maharashtra, Uttar Pradesh, West Bengal; Sri Lanka.

Remarks: Widely distributed species.

Subfamily: Miomantinae

9. *Deiphobe infuscata* (Saussure)^{*}

Material examined: 1 male, 1 female (ERMM_35, 36), 16.x.04, Vijayapuri North (16°35'N & 79°19'E), NSTR, Nalgonda District, coll. K. Thulsi Rao and I. Siva Rama Krishna.

Distribution: India: Bihar, Himachal Pradesh, Jammu & Kashmir, Madhya Pradesh, Tamil Nadu and Uttar Pradesh.

Remarks: Widely distributed species. First report from Andhra Pradesh.

10. *Deiphobella laticeps* (Wood-Mason)[#] (See Thulsi Rao *et al.*, 2004)

Material examined: 2 males, 4 females (ERMM_7-12), 18.iv.04, Shikharam (16°03'N & 78°53'E), Kurnool District, coll. K. Thulsi Rao.

Distribution: India: Andhra Pradesh, Karnataka; Sri Lanka.

Remarks: An interesting species with laterally conical eyes. Not widely distributed.

Subfamily: Phyllothelinae

11. *Phyllothelys westwoodi* (Wood-Mason)^{*} (Image 6^w)

Material examined: 1 male, 2 females (ERMM_37-39), 17.vii.2004, Shikharam (16°03'N & 78°53'E), NSTR, Kurnool District, coll. S.M. Maqsood Javed.

Distribution: India: Assam, Uttar Pradesh; Myanmar.

Remarks: First report from Andhra Pradesh.

Subfamily: Paramantinae

12. *Hierodula coarctata* Saussure^{*} (Image 7^w)

Material examined: 1 male, 1 female (ERMM_40, 41), 15.vii.04, Thummalabailu (15°57'N & 78°55'E), NSTR, Prakasam District, coll. K. Thulsi Rao and S.M. Maqsood Javed.

Distribution: India; Australia (?).

Remarks: In reality a widely distributed species but not supported by adequate distribution records treated as *Parhierodula coarctata* for some time but recently was placed under the same genus in which it was originally described. First report from Andhra Pradesh.

13. *Hierodula tenuidentata* Saussure[#] (Image 8^w)

Material examined: 2 females (ERMM_13, 14), 4.iii.04, Shikharam (16°03'N & 78°53'E), NSTR, Kurnool District, coll. S.M. Maqsood Javed.

Distribution: India: Andamans, Andhra Pradesh, Bihar, Lakshadweep, Madhya Pradesh, Orissa, Uttar Pradesh, West Bengal; Indonesia: Kalimantan; Western Asia.

Remarks: Widely distributed species.

14. *Hierodula unimaculata* (Olivier)^{*}

Material examined: 1 male (ERMM_42), 7.xi.04, Chinnarutla (16°02'N & 78°39'E), NSTR, Prakasam District, coll. K. Thulsi Rao.

Distribution: India: Karnataka, West Bengal; China; Indonesia; Java; Sri Lanka.

Remarks: Not widely distributed species. First report from Andhra Pradesh.

Subfamily: Mantinae

15. *Tenodera* sp.[#] (See Thulsi Rao *et al.*, 2004)

Material examined: 1 nymph (ERMM_15), 9.iv.04, Sundipenta (16°04'N & 78°54'E), NSTR, Kurnool District, coll. K. Thulsi Rao.

Distribution: India: Andhra Pradesh.

Remarks: Only one nymph was collected.

Subfamily: Amelinae

16. *Amantis* sp.[#] (See Thulsi Rao *et al.*, 2004)

Material examined: 1 nymph (ERMM_23), 11.v.04, V.V. Palli (16°15'N & 78°48'E), NSTR, Mahaboobnagar District, coll. I. Siva Rama Krishna.

Distribution: India: Andhra Pradesh, West Bengal.

Remarks: Need mature specimens for complete identification.

17. *Elmantis trincomaliae* (Saussure)

Material examined: 1 male, 1 female (ERMM_43, 44), 24.vi.04, Sundipenta (16°04'N & 78°54'E), NSTR, Kurnool District, coll. I. Siva Rama Krishna.

Distribution: India: Andhra Pradesh, Karnataka, Maharashtra, Tamil Nadu; Sri Lanka.

Remarks: Originally described from Sri Lanka, this species was collected from Andhra, in 1985, at Jyotinamidi, Vizag; R.K. Nagar and Lankapakalu.

18. *Gonypetyllis* sp.^{*}

Material examined: 1 male, 2 females (ERMM_45-47), 2.xi.04, Shikharam (16°03'N & 78°53'E), NSTR, Kurnool District, coll. S.M. Maqsood Javed.

Distribution: Andhra Pradesh (Collection Site).

Remarks: Only one species, namely *G. semuncialis* Wood-Mason, is known under this genus, but the present examples show a slight variation in the typical colour pattern present on the femur. First report from Andhra Pradesh.

Subfamily: Vatinae

19. *Ambivia undata* (Fabricius)^{*} (Image 9^w)

Material examined: 1 male, 1 female (ERMM_48, 49), 13.xi.04, Srisailam (16°04'N & 78°52'E), NSTR, Kurnool District, coll. K. Thulsi Rao.

Distribution: India: Sikkim, West Bengal; Indonesia: Kalimantan, Sumatra; Myanmar; Sri Lanka.

Remarks: Formerly known as *A. popa* Stål, this species has perhaps restricted distribution. First report from Andhra Pradesh.

Family: Tarachodidae**Subfamily: Tarachodinae**

20. *Dysaulis* sp.^{*}

Material examined: 1 female (ERMM_50), 8.vii.04, Sundipenta (16°04'N & 78°54'E), NSTR, Kurnool District, coll. I. Siva Rama Krishna.

Distribution: India: Andhra Pradesh (this collection).

Remarks: Appears similar to *D. longicollis* Stål, which is known from the Nilgiris. More material and study of the male genitalia are necessary. First report from Andhra Pradesh.

21. *Oxyopthalma engaea* Wood-Mason^{*}

Material examined: 1 female (ERMM_51), 26.x.04, Shikharam (16°03'N & 78°53'E), NSTR, Kurnool District, coll. K. Thulsi Rao.

Distribution: India: Tamil Nadu; Sri Lanka

Remarks: Described originally from Sri Lanka, in India this species is known from Tamil Nadu (Nilgiri Hills) only. First report from Andhra Pradesh.

Family: Thespidae**Subfamily: Thespiinae**

22. *Parathespis humberiana* Saussure (Image 10^w)

Material examined: 1 male, 1 female (ERMM_52, 53), 15.ix.04, Sundipenta (16°04'N & 78°54'E), NSTR, Kurnool District, coll. S.M. Maqsood Javed.

Distribution: India: Andhra Pradesh, Madhya Pradesh, Tamil Nadu; Sri Lanka.

Remarks: A very interesting species due to its peculiar eyes. Originally described from Sri Lanka, it was collected in Guntur (Nagarjun Hills) in 1968. Also known from Tamil Nadu and Madhya Pradesh. No subsequent report from Andhra or any other part of India.

^w see Images 1-12 in the web supplement at www.zoosprint.org

Family: Toxoderidae**Subfamily: Toxoderinae****23. *Aethalochroa ashmoliana*** (Westwood)* (Image 11^w)

Material examined: 1 male, 1 female (ERMM_54, 55), 12.viii.04, V.V. Palli (16°15'N & 78°48'E), NSTR, Mahaboobnagar District, coll. K. Thulsi Rao and S.M. Maqsood Javed.

Distribution: India: Maharashtra, Orissa, West Bengal.

Remarks: First report from Andhra Pradesh.

24. *Toxoderopsis taurus* Wood-Mason[#] (See Thulsi Rao *et al.*, 2004)

Material examined: 1 male, 3 females (ERMM_16-19), 15.ii.04, Farahabad (16°16'N & 78°41'E), NSTR, Mahaboobnagar District, coll. K. Thulsi Rao and S.M. Maqsood Javed.

Distribution: India: Andhra Pradesh, Bihar, Orissa; Pakistan.

Remarks: Distributed throughout the NSTR.

Family: Empusidae**Subfamily: Empusinae****25. *Empusa* sp.** (Image 12^w)

Material examined: 1 nymph (ERMM_56), 17.x.04, Chinnarutla (16°02'N & 78°39'E), NSTR, Prakasam District, coll. K. Thulsi Rao and I. Siva Rama Krishna.

Distribution: India: Andhra Pradesh.

Remarks: The photo of the adult suggests that it could be *E. guttula* (Thunberg), a species known from Mahaboobnagar, Andhra Pradesh.

26. *Gongylus gongylodes* (Linnaeus)* (See Thulsi Rao *et al.*, 2004)

Material examined: 1 male, 2 females (ERMM_20-22), 29.i.04, Sundipenta (16°04'N & 78°54'E), NSTR, Kurnool District, coll. K. Thulsi Rao and S.M. Maqsood Javed.

Distribution: India: Andhra Pradesh, Kerala, Tamil Nadu, West Bengal; Indonesia (Java); Sri Lanka.

Remarks: Distributed throughout NSTR.

The previous list (Thulsi Rao *et al.*, 2004) was prepared as per Mukherjee *et al.* (1995). Names of the species, families and subfamilies in the present paper are as per Ehrmann (2002). There are some changes in this scheme as compared to Mukherjee *et al.* (1995), for example, (a) Liturgusidae, Tarachodidae, Thespidae, and Toxoderidae are treated as families rather than subfamilies under Mantidae; (b) Genus *Parhierodula* is treated as synonym of *Hierodula*, as in *H. coarctata*; (c) *Ambivia undata* is treated as a valid name for *Ambivia popa*.

Twelve mantid species are reported in this paper for the first time from Andhra Pradesh. Thulsi Rao *et al.* (2004) reported eight mantid species as new records from Andhra Pradesh. Species-wise scrutiny of the monograph developed by Mukherjee *et al.* (1995) revealed that there are actually only 13 species recorded from Andhra. The genera previously known from Andhra but not represented in our collections are: 1. *Statilia*, *Memantis* and *Heterochaetula*. Considering the above list of 26 species along with the five previously reported species known from Andhra but not yet collected by us, it is safe to assume that the total number of mantid species from the state is more than 30. It is interesting to note that many species in this region are also found in Sri Lanka. It will be worthwhile to see how much genetic divergence has occurred between Indian and Sri Lankan mantid populations.

REFERENCES

- Ehrmann, R. (2002).** *Mantodea: Gottesanbeterinnen der Welt*. Natur und Tier - Verlag, Munster, Germany (Praying Mantids of the World (in German), 519pp).
- Mukherjee, T.K., A.K. Hazra and A.K. Ghosh (1995).** The mantid fauna of India (Insecta: Mantodea). *Oriental Insects* 29: 185-358.
- Thulsi Rao, K., H.V. Ghate, M. Prudhvi Raju, S.M. Maqsood Javed and I. Siva Rama Krishna (2004).** Some species of praying mantids (Insecta: Mantodea) from Nagarjunasagar Srisailem Tiger Reserve, Andhra Pradesh, India. *Zoos' Print Journal* 19(11): 1692-1693 (plus web supplement).

ACKNOWLEDGEMENTS

The authors are very much thankful to Sri S.K. Das, IFS, Prl. Chief Conservator of Forests, Sri Hitesh Malhotra, IFS, Addl. Prl. Chief Conservator of Forests (WL), Sri A.V. Joseph, IFS, Chief Conservator of Forests (WL) A.P., Hyderabad for constant encouragement and sustained support. We are also grateful to Dr. Rajesh Gopal, IFS, Inspector General of Forests and Director Project Tiger and the MoEF, New Delhi, for their consistent funding, support and encouragement. We gratefully acknowledge our thanks to Dr. D.B. Bastawade, Assistant Zoologist, ZSI WRS, Pune and the authorities of Modern College, Pune.



The 2nd Conference of the International Congress of Zookeepers

Gold Coast, Queensland, Australia
7th – 11th May 2006

Second Call for Papers/Posters and Workshops

After the success of the 1st conference in 2003, a second conference will be held in Australia in 2006 with more than 300 zookeepers from around the world expected to attend. The conference will cover all areas of Zookeeping.

You are invited to submit an abstract of a paper or presentation you would like to give. More information and guidelines can be found at www.iczoo.org

Abstracts for oral and poster presentations should be written in English and no more than 600 words long. If you want to run a workshop focused on developing zoo keeper skills please send a short description.

These should be sent to: Paul Howse, ICZ Programme Committee at p.howse@chesterzoo.org

Preferably in RTF or MS word format marked 'ICZ Programme'.

Deadline for submissions is 30 September 2005