

## AQUATIC HEMIPTERA OF POCHARAM LAKE, ANDHRA PRADESH

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Aquatic insects play an important role not only in trophicodynamics of ecosystem, but also in the indication of the changes in the quality of water due to pollution or degradation because of their ability to respond quickly to such changes. It is estimated that about 3% of total insects are aquatic spending at least a part of their life cycles in water and these comprise about 25,000 to 30,000 species (Cheng, 1976). Hemiptera are true "Bugs". They may be distinguished from other aquatic insect orders by (i) the presence of a piercing and sucking beak like structure formed by the modification of the mouth parts, inserted near the anterior end of the head, (ii) leathery anterior pair of wings at the base and membranous at apical region and completely membranous second pair, and (iii) simple and gradual metamorphosis. As compared to other insect orders, relatively a very few species of hemipteran fauna, have adapted fully to aquatic habitats. In spite of 80 genera and 275 species accommodated in 16 major families of aquatic and semi aquatic Hemiptera known from India (Thirumalai, 2002), very little information on water bugs of Andhra Pradesh is available.

Being a preliminary study, the results of the study on aquatic Hemiptera of Pocharam lake has revealed eight species belonging to four families and five genera. Limited number of studies has also been carried out on general entomofauna of some specific wetlands from taxo-ecological point of view, which includes the work of Bhattacharya (2000) and Ramakrishna (2000).

**Pocharam lake:** Pocharam lake is a large water storage reservoir constructed between 1916 and 1922 (18°08'N - 77°57'E) at about 100kms north-west of Hyderabad in Medak and Nizamabad districts of Andhra Pradesh. The water spread area of the lake is about 16.835sq.km, with a depth of about 6-7m. depending on the season and fluctuations in rain fall. The lake water is being used for irrigation and domestic use.

**Materials and methods:** During the course of quarterly surveys in connection with faunistic studies on the lake during 2004-2005, collections were made with the help of hand operated nets of varying sizes by randomly netting different areas of the wetland. Surface floating/swimming insects were collected with small circular nets made of either coarsely meshed cotton cloths or finely meshed polyester mosquito curtain cloth. Macrophyte-associated insects were collected with help of hand operated D framed sweep net of the size of 50cm length, 25cm maximum breadth of the D. The frame was attached to a bag net made of fine malmal cloth with mesh size of approximately 200µ. The design and operation of the net was roughly based on those described by Junk (1977). Insects collected for study were preserved in 4% formalin or 70% alcohol. In order to cover maximum area of the water

body, seven village spots passing around the bank of the lake were selected (Pocharam village, Pochammaralu, Burugapalle, Rajpet, Kottapalle, Wadalparti & Polkampet). Aquatic hemiptera in the collections were identified with the aid of standard literature on the group - Thirumalai (1999) and Bal & Basu (1994a,b). Under each species citation for the original description and other accompanying work necessary to understand the taxon or its occurrence in India is given.

### Systematic list

**Order: Hemiptera**

**Sub order: Heteroptera**

**Infra order: Nepomorpha**

**Family: Nepidae**

**Subfamily: Ranantrinae**

**Tribe: Ranatrini**

**Genus: *Ranatra* (Fabricius)**

1. *Ranatra elongata* (Fabricius)
2. *Ranatra filiformis* (Fabricius)

**Sub family: Nepinae**

**Tribe: Nepini**

**Genus: *Laccotrephus* (Stal)**

3. *Laccotrephus griseus* (Guerin-Meneville)
4. *Laccotrephus ruber* (Linnaeus)

**Family: Belostomatidae**

**Subfamily: Belostomatinae**

**Genus: *Diplonychus* (Laporte)**

5. *Diplonychus rusticus* (Fabricius)

**Family: Corixidae**

**Sub family: Micronectinae**

**Genus: *Micronecta* (Kirkaldy)**

6. *Micronecta scutellaris scutellaris* (Stal)

**Infra order: Gerromorpha**

**Family: Gerridae**

**Subfamily: Gerrinae**

**Genus: *Limnogonus* (Stal)**

7. *Limnogonus (Limnogonus) nitidus* (Mayr)
8. *Limnometra fluviorum* (Fabricius)

### Systematic Account

**Family: Nepidae**

**Subfamily: Ranantrinae**

**1. *Ranatra elongata* (Fabricius)**

1790. *Ranatra elongata* Fabricius, Skirf. *Nat. Selesk.*, 1: 228

1994. *Ranatra elongata* Fabricius: Thirumalai, *Rec. zool. Surv. India*, Occ. Pap. No. 165: 22

**Material examined:** 3 exs., 4.xi.2003, Wadalapathy, S.S. Kamble & Party; 4 exs., 22.xii.2004, Rajpet, Deepa & Party; 4 exs., 12.iv.2005, Pocharam village, SVAC Sekhar & Party.

**Diagnostic characters:** This species can be identified by the structure of the anterior femur, which is provided with a triangular tooth beyond the middle of its length, and the metasternal process, which is subtriangular.

**Remarks:** It feeds on tadpoles, nymphs of mayflies and other aquatic hemipterans. During dry seasons it is known to migrate in search of suitable areas.

**Distribution:** India: Andhra Pradesh, Bihar, Delhi, Jammu & Kashmir, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Pondicherry, Rajasthan, Tamil Nadu, Uttar Pradesh, West Bengal.

**Elsewhere:** Australia, Nepal, Sri Lanka.

**2. *Ranatra filiformis* (Fabricius)**

1970. *Ranatra filiformis* Fabricius, *Skri. Nat. Selsk.*, 1: 228.

1989. *Ranatra filiformis*: Thirumalai, *Rec. zool. Surv. India*, Occ. Pap. No. 118: 31.

**Material examined:** 3 exs., 22.xii.2004, Burugupally, Deepa & Party; 3 exs., 7.i.2005, Pocharam village, SVAC Sekhar & Party; 4 exs., 7.i.2005, Pochammaralu, SVAC Sekhar & Party; 4 exs., 12.iv.2005, Burugupally, SVAC Sekhar & Party.

**Remarks:** This species is found in shallow waters, clinging to submerged vegetation and feeds on nymphs of dragon flies and mosquito pupae. This species is smaller in size than *R. elongata*.

**Distribution:** India: Andhra Pradesh, Arunachal Pradesh, Bihar, Delhi, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Pondicherry, Manipur, Meghalaya, Rajasthan, Tamil Nadu, Uttar Pradesh, West Bengal.

**Elsewhere:** China, Nepal, Pakistan, Philippines, Sri Lanka.

#### Subfamily: Nepinae

#### Tribe: Nepini

#### Genus: Laccotrephus (Stal)

##### 3. *Laccotrephus griseus* (Guerin-Meneville)

1844. *Nepa griseus* Guerin, *Iconogr. Regne Anim. Ins.*, 352.

1906. *Laccotrephus griseus* (Guerin): Distant, *Fauna British India*, 5: 314.

1994. *Laccotrephus griseus* (Guerin): Thirumalai, *Rec. zool. Surv. India*, Occ. Pap. No. 165: 21

**Material examined:** 4 exs., 16.vii.2003, Pocharam village, S.S. Kamble & Party; 2 exs., 22.xii.2004, Burugupally, Deepa & Party.

**Diagnostic characters:** It can be identified by the presence of slightly hooked and symmetrical parameres, abdominal appendages shorter than the body, presence of an obtusely rounded tooth at the base of the anterior femora.

**Remarks:** A very common sluggish species, found at the bottom of slow or stagnant water.

**Distribution:** India: Andhra Pradesh, Arunachal Pradesh, Bihar, Delhi, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Puducherry, Manipur, Meghalaya, Nagaland, Orissa, Rajasthan, Tamil Nadu, Uttar Pradesh, West Bengal.

**Elsewhere:** Malaysia, Myanmar, Seychelles, Sri Lanka, Thailand.

##### 4. *Laccotrephus ruber* (Linnaeus)

1764. *Nepa ruber*. Linnaeus. *Mus. Lud. Ulr.*, 165

1906. *Laccotrephus ruber* (Linn.): Distant, *Fauna British India*, 3: 18.

1994. *Laccotrephus ruber* (Linn.): Thirumalai, *Rec. Zool. Surv. India*, Occ. paper No. 165: 22.

**Material examined:** 5 exs., 22.xii.2004, Rajpet, Deepa & Party; 2 exs., 12.iv.2005, Burugupally, SVAC Sekhar & Party.

**Diagnostic characters:** This is a larger species with the abdominal appendices slightly longer than the body. The male parameres are curved and hook shaped.

**Distribution:** India: Arunachal Pradesh, Assam, Bihar, Delhi, Gujarat, Himachal Pradesh, Jammu & Kashmir, Karnataka, Madhya Pradesh, Maharashtra, Orissa, Puducherry, Manipur, Meghalaya, Nagaland, Orissa, Tamil Nadu, Uttar Pradesh, West Bengal.

**Elsewhere:** China, Japan, Nepal, Pakistan, Taiwan.

#### Family: Belostomatidae

#### Subfamily: Belostomatinae

#### Genus: Diplonychus (Laporte)

##### 5. *Diplonychus rusticus* (Fabricius)

1781. *Nepa rustica* Fabricius, *Ent. Syst.*, 4: 62

1994. *Diplonychus rusticus* (Fab.): Thirumalai, *Rec. zool. Surv. India*, Occ. Pap. No. 165: 25

**Material examined:** 3 exs., 4.xi.2003, Wadalapathy, S.S. Kamble & Party; 4 exs., 22.xii.2004, Pochammaralu, Deepa & Party; 4 exs., 12.iv.2005, Pocharam village, SVAC Sekhar & Party.

**Diagnostic characters:** It has single segmented fore tarsus with claw, pale lateral basal margins of pronotum and its head length is shorter than the intraocular space. Body 15-17mm long.

**Remarks:** This species is voracious feeder on fish fry, mosquito

larvae. It is a voracious feeder and has been reported to attack fish fry and fingerlings.

**Distribution:** India: Andaman & Nicobar, Andhra Pradesh, Arunachal Pradesh, Bihar, Delhi, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Puducherry, Rajasthan, Tamil Nadu, West Bengal.

**Elsewhere:** Malaysia, Myanmar, China, Indonesia, Japan, New Guinea, New Zealand, Sri Lanka, Thailand

#### Family: Corixidae

#### Subfamily: Micronectinae

#### Genus: Micronecta (Kirkaldy)

##### 6. *Micronecta scutellaris scutellaris* (Stal)

1858. *Sigra scutellaris* Stal, *Vetens akad. Forh.*, 15: 319

1940. *Micronecta (Basilonecta) scutellaris* (Stal, 1858): Hutchinson, *Trans. Connecticut Acad. Art. Sci.*, 33: 365

1994. *Micronecta (Basilonecta) scutellaris* (Stal, 1858): Thirumalai, *Rec. zool. Surv. India*, Occ. Pap. No. 165: 9

**Material examined:** 3 exs., 4.xi.2003, Wadalapathy, S.S. Kamble & Party; 2 exs., 22.xii.2004, Rajpet, Deepa & Party; 4 exs., 12.iv.2005, Polkampet, SVAC Sekhar & Party.

**Diagnostic characters:** It is the largest species (2.8 to 3.1mm) of the genus. Pronotum grey or grayish-brown, paler margins and with obscure elytral pattern.

**Remarks:** This species is very widely distributed in India and mostly found in stagnant pools, pond and ditches.

**Distribution:** India: Andhra Pradesh, Himachal Pradesh, Bihar, Delhi, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Rajasthan, Tamil Nadu, Uttar Pradesh, West Bengal.

**Elsewhere:** Malaysia, China, Indonesia, Japan, Sri Lanka, Vietnam, Africa (Central).

#### Infra order: Gerromorpha

#### Family: Gerridae

#### Subfamily: Gerrinae

#### Genus: Limnogonus (Stal)

##### 7. *Limnogonus (Limnogonus) nitidus* (Mayr)

1865. *Hydrometra nitida* Mayr, *Verh. Zool. Bot. Ges. Wein*, 15: 443

1994. *L. (Limnogonus) nitidus* (Mayr): Bal & Basu, *Zool. Surv. India, State Fauna, Series 3, Fauna of West Bengal*: 525

**Material examined:** 4 exs., 22.xii.2004, Pochammaralu, Deepa & Party; 2 exs., 10.x.2004, Polkampet, CAN Rao & Party; 4 exs., 12.iv.2005, Kottapalle, SVAC Sekhar & Party.

**Diagnostic characters:** This species can be identified from all the known species of this genus by the presence of fairly, prominent connexival spines and yellow markings at the anterior pronotal lobe.

**Remarks:** It has been recorded from temporary pools, rice fields, ponds from sea level to 1000m and found as winged individual.

**Distribution:** India: Andhra Pradesh, Arunachal Pradesh, Bihar, Delhi, Chandigarh, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Puducherry, Manipur, Meghalaya, Rajasthan, Tamil Nadu, Tripura, Uttar Pradesh, West Bengal.

**Elsewhere:** Malaysia, Myanmar, China, Indonesia, Sri Lanka, Thailand, Vietnam, Singapore.

##### 8. *Limnometra fluviarum* (Fabricius)

1798. *Cimex fluviarum* Fabricius, *Ent. Syst. Suppl.* 543.

1934. *Limnometra fluviarum* (Fab.): Lundblad, *Arch. Hydrobiol. Suppl.* 12: 371.

1995. *Limnometra fluviarum* (Fab.): Andersen, *Steenstrupia*, 21: 118.

**Material examined:** 3 exs., 4.xi.2003, Wadalapathy, S.S. Kamble & Party; 4 exs., 22.xii.2004, Rajpet, Deepa & Party; 4 exs., 12.iv.2005, Polkampet, SVAC Sekhar & Party.

**Diagnostic characters:** This species can be identified from all the known species of this genus by the presence of spine like projection on the dorsolateral rear margin of the middle coxae. It is commonly found in fresh water habitats of Southern India.

**Distribution:** India: Karnataka, Kerala, Maharashtra, Puducherry,

Tamil Nadu, West Bengal.

Elsewhere: Philippines, Sri Lanka.

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## COMMUNAL FORAGING OF INDIAN GREY HORNBILL *Ocyrceros birostris* ON THE LEAVES OF *Ailanthus excelsa* TREE

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On 18 May 2006 evening we visited the cultivation of Krishi Mahavidyalaya adjacent to Maharajbagh garden, in Nagpur city of Maharashtra. The geographical location of this place is 21°08'58"N-79°04'52"E. Around 1730hr we saw an Indian Grey Hornbill *Ocyrceros birostris* on the top of *Ailanthus excelsa* called *Maharukh* in Marathi. Then we could locate a female bird on the same tree. Soon five more Indian Grey Hornbills (2 males and 3 females) arrived. All the birds were plucking and swallowing the leaves of this tree. On three occasions the leaves fell down from their bill.

The birds were rubbing their beaks on branches of the tree to clean them. We observed the birds till 1800hr when the weather changed and became stormy.

Indian Grey Hornbills are frugivorous birds and are known to eat fruits as well as small reptiles like lizards and geckos. Ali (1996) reported its food as "mainly fruit, but also large insects, lizards, young mice, etc." Grewal (2000) also has mentioned of similar food taken by the species. Patil *et al.* (1997) studied the excreta contents of the species and listed various food items including green leaves of unknown plants. Indian Grey Hornbills are known to forage for figs or fruits in groups of many birds. Neelakantan (1953) has reported the species to take the poisonous fruits of Yellow Oleander. Newnham (1911) has described an event, which indicates the species taking young Parakeets from nest holes.

The leaves of *Ailanthus excelsa* has medicinal properties and is known to be wormicidal (Asolkar *et al.*, 1992). This is the first report on communal foraging on leaves of *Ailanthus excelsa* is not reported in the Indian Grey Hornbills.

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