Results of the Austrian-Indian Hydrobiological Mission 1976 to the Andaman-Islands:
Part V: Taxonomy and Ecology of the Decapoda-Caridea

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Manuskript eingelangt am 9. Mai 1983

The previous work done on the crustacean fauna from Andaman islands has been already referred to by TIWARI & PILLAI (1971) in their description of the atyid shrimps of the Genus Caridina from the Anadaman islands. Several carcinologists have made collections from these islands and these include C. G. ROGERS (1911), H. S. RAO (1934), K. K. TIWARI (1959) and B. S. LAMDA (1964). However, these collections have been made mainly for taxonomical studies and hence no description of the ecological conditions prevailing in the places of collection has been given. The most recent collections of the Decapod Crustacea of the Andaman islands have been made by the Austrian-Indian Hydrobiological Mission (1976) led by Prof. Dr. F. STARMÜHLNER. During these collections detailed studies were also made of the physical and chemical conditions prevailing in the various biotopes of the collecting localities.

I am very thankful to Prof. Dr. F. STARMÜHLNER for placing at my disposal the crustacean collection of the expedition for study and description.

The present work is one in a series of studies on the ecology and distribution of Decapoda-Caridea in the Indian Ocean islands (COSTA, 1979).

List of Species collected by the Austrian Expedition 1976

Atyidae –
Caridina brachydactyla brachydactyla DE MAN 1878
Caridina gracilirostris gracilirostris DE MAN 1892
Caridina prashadi, TIWARI & PILLAI 1971
Caridina typus, H Milne EDWARDS 1837
Caridina weberi variety sumatrensis DE MAN 1892
Atya spinipes, NEWPORT 1847

1) Department of Zoology, University of Kelaniya, Kelaniya, Sri Lanka. (Promoted by the FONDS ZUR FÖRDERUNG DER WISSENSCHAFT, Project No. 2942 and the KULTURAMT DER STADT WIEN.)
Physico Chemical characteristics of the Collecting Stations

South Andamans

S.-And. 1/3. 12. 1976 June Creek, South of Port Blair near Coreyn's Cove. 
Altitude: 5–10 m; Breadth: 5 m; Depth: 2–3 cm pools upto 500 m; Temp.: 30° C; pH: 7.3; El. Conduc.: 470 μ S; Total Hardness: 4° dH; Bottom with mud and sand.
Species collected:

Macrobrachium lar 
Macrobrachium spp. Juveniles 

S.-And. 2/4. 12. 1976 School lane Creek near Port Blair Airport. 
Breadth: 1–4 m, Depth: 5–10 cm upto 50 cm in pools; Temp.: 25.6° C; pH: 6.25; El. cond.: 140 μ S; Total Hardness: 7° dH; Bottom with sand.
Species collected:

Caridina brachydactyla brachydactyla 
Caridina gracilirostris gracilirostris 
Caridina serratirostris 
Caridina typus 

Breadth: 3–8 m; Depth: 15–20 cm; pH: 7.2; El. cond.: 75 μ S; Total Hardness: 1° dH; Bottom with sand and pebbles.
Species collected:

Caridina brachydactyla brachydactyla 
Caridina typus 
Caridina weberi var. sumatrensis 

S.-And. 4/5. 12.1976 Small stream from the Chediatop area. 
Breadth: 2–3 m; Depth: 50 cm upto 15–30 cm; Temp.: 25.7° C; pH: 7.4; El. cond.: 30° S; Total Hardness: 10° dH.
Species collected:

Caridina brachydactyla brachydactyla 
Macrobrachium lar 
Macrobrachium scabriculum 
Macrobrachium juveniles spp. 

S.-And.: 5/5. 12. 1976 River close to Bhatrapur on the east coast. 
Breadth: 2–3 m; Depth: 10–20 cm; Temp.: 26° C; pH: 7.1; El. cond.: 160 μ S; Total Hardness: 3° dH; Bottom with sand and rock.
Species collected:
Caridina brachydactyla brachydactyla
S.-And. 6/6. 12. 1976 River near Mongeletum.e.
Breadth: 15–10 m; Depth: 5 cm; in pools above 50 cm; Temp.: 36.8° C; pH: 7.2; El. cond.: 175 µ S; Total Hardness: 1.6° dH; Bottom muddy.
Species collected:
- Caridina brachydactyla brachydactyla
- Caridina typus
- Caridina weberi var. sumatrensis
- Atya spinipes
- Macrobrachium scabriculum

Breadth: 3–10 m; Depth: 5–10 cm; upto 50 cm in pools; Temp.: 24° C; pH: 7.2; El. cond.: 97 µ S; Total Hardness: 1° dH; Bottom stony and sandy.
Species collected:
- Caridina brachydactyla brachydactyla
- Caridina prashadi
- Caridina typus
- Macrobrachium lar
- Macrobrachium juveniles spp.

Breadth: 2–10 m; Depth: 3–5 cm upto 50 cm in pools; Temp.: 25.7° C; pH: 7.8; El. cond.: 278 µ S; Total Hardness: 5.9° dH; bottom muddy.
Species collected:
- Caridina brachydactyla brachydactyla
- Caridina weberi var. sumatrensis
- Macrobrachium latidactylus
- Macrobrachium scabriculum

Breadth: 20 cm – 1 m; Depth: 2–10 cm upto 50 cm in pools; Temp.: 25.2° C; Total Hardness: 3° dH; bottom muddy.
Species collected:
- Caridina brachydactyla brachydactyla

Breadth: 1–5 m; Depth: 1–3 cm upto 50 cm in pools; Temp.: 23.2° C; pH: 6.8; El. cond.: 150 µ S; Total Hardness: 1.8° dH; Current: 30 cm/sec.
Species collected:
- Caridina brachydactyla brachydactyla

Breadth: 2.5 m; Depth: upto 1 m; Bottom with mud and sand; Temp.: 25.4° C; pH: 7.0; El. cond.: 17 ° S; Total Hardness: 2.8° dH; bottom covered with water plants.
Species collected:
Caridina brachydactyla brachydactyla
Caridina gracilirostris gracilirostris
Macrobrachium lar
Macrobrachium spp. juveniles

S.-And. 15/11. 12. 1976 Forest stream near N. Bay.
Breadth: 50 cm – 1 m; Depth: 3–10 cm; Temp.: 28° C; pH: 6.9; El. cond.: 100 ° S; Total Hardness: 0.8° dH; bottom with mud and sand.
Species collected:
Caridina typus
Macrobrachium spp. juveniles

S.-And. 16/19. 2. 1976 Stream in a rice field near Metra NW of Port Blair.
Breadth: 2–3 m; Depth: 5–10 cm; Temp.: 25.1° C; Stream bordered by bamboos and other plants.
Species collected:
Caridina gracilirostris gracilirostris
Caridina serratifrons

S.-And. 19/21. 12. 1976 Stream near Dhanikari; Primary forest.
Altitude: 150–200 m; Breadth: 3–10 m; Depth: 10–20 cm upto 50 cm in pools; Temp.: 24.6° C; pH: 6.5; El. cond.: 148 µ S; Total Hardness: 4° dH.
Species collected:
Caridina brachydactyla brachydactyla
Macrobrachium latidactylus

(Numerous amphipod crustaceans were also collected.)

North Andaman (Diglipur region)

N.-And. 1/12. 12. 1976 Magher Nalah River 7 km from Diglipur.
Breadth: 2–3 m; Depth: 10–50 cm; current 30 cm/sec; Temp.: 27.5° C; pH: 7.2; El. cond.: 250 µ S; Total Hardness: 5.9° dH; Bottom: pebbles, silt & mud.
Species collected:
Caridina gracilirostris

Breadth: 30–40 cm; Depth: 5–20 cm; Temp.: 24.9° C; pH: 8.4; El. cond.: 310 µ S; Total Hardness: 10° dH.
Species collected:
Caridina brachydactyla brachydactyla
Caridina gracilirostris
Caridina weberi var. sumatrensis
Macrobrachium latidactylus

Breadth: more than 10 m; Depth: 10–30 cm; to 1 m; Current: 30–50 cm/sec; Temp.: 26.7° C; pH: 7.8; El. cond.: 315 µ S; Total Hardness: 7° dH.
Species collected:
Caridina typus
Caridina weberi var. sumatrensis
Macrobrachium spp young

N.-And. 4/14. 12. 1976 River Lakshmipur, 5 km from Diglipur.
Breadth: 2-5 cm; Depth: 3-5 cm; Current: 30-50 cm/sec; Temp.: 25.6° C; pH: 7.4; El. cond.: 200 µ S; Total Hardness: 4.4° dH.
Species collected:

Caridina brachyactyla brachyactyla
Caridina gracilirostris gracilirostris
Caridina weberi var. sumatrensis

Depth: 5-10 cm; Temp.: 27.2° C; pH: 7.4; El. cond.: 210 µ S; Total Hardness: 36° dH.
Species collected:

Caridina brachyactyla brachyactyla

Breadth: 2.3 m; Depth: 1-5 cm upto 1 m in pools; Current: 20-30 cm/sec; Temp.: 26.4° C; pH: 7.8; El. cond.: 260 ° S; Total Hardness: 5° dH.
Species collected:

Caridina brachyactyla brachyactyla
Caridina weberi var. sumatrensis

N.-And. 7/15. 12. 1976 Middle section of River Kalimpong.
Breadth: 5-10 m; Depth: 10-30 cm; Current: 30-35 cm/sec; Temp.: 28° C; pH: 7.5; El. cond.: 242 µ S; bottom with pebbles and rocks.
Species collected:

Caridina brachyactyla brachyactyla
Caridina serratirostris
Caridina weberi var. sumatrensis

General Comments

With the present description, it is now established that there are around five species of Caridina, one species of Atya and five species of Macrobrachium in the Andaman islands. The range of ecological conditions of the habitats of these decapod crustacea are summarised in Table I. Of the Caridina species collected, Caridina brachyactyla brachyactyla has the widest distribution being widely distributed both in the southern and northern parts of the island. C. prashadi seems to have a very limited distribution and was collected from one station situated in the east coast of South Andamans. Although all the known species of Caridina found in the Andamans have been collected by the present expedition, only three species of the five known Macrobrachium species found in the Andaman islands (TIWARI 1952, TIWARI personal communication, 1973) have been collected by the present expedition. Although TIWARI & PILLAI (1971) indicated that Caridina
serratirostris may be restricted to S. Andamans, the present expedition has collected this species from the northern part of Andaman islands as well. *Caridina weberi* var. *sumatrensis* is recorded for the first time from Andaman Islands.

Table I: Summary of the range of conditions in the collecting habitats of the Decapod crustaceans in the Andaman Islands.

<table>
<thead>
<tr>
<th>Species</th>
<th>Temp. °C</th>
<th>pH</th>
<th>Electrical Conductivity µS at 20°C</th>
<th>Total Hardness °dH</th>
<th>Current cm/sec</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>C. brachydactyla</em></td>
<td>24-28</td>
<td>6.1-8.4</td>
<td>70-306</td>
<td>1-13</td>
<td>10-50</td>
</tr>
<tr>
<td><em>C. gracilirostris</em></td>
<td>25-28</td>
<td>7.0-7.4</td>
<td>170-310</td>
<td>2-38</td>
<td>10-30</td>
</tr>
<tr>
<td><em>C. prashadi</em></td>
<td>24-25</td>
<td>7.2</td>
<td>91</td>
<td>1</td>
<td>10-50</td>
</tr>
<tr>
<td><em>C. serratirostris</em></td>
<td>25-28</td>
<td>6.6-7.5</td>
<td>126-240</td>
<td>2-5</td>
<td>10-50</td>
</tr>
<tr>
<td><em>C. typus</em></td>
<td>24-28</td>
<td>6.1-7.8</td>
<td>73-315</td>
<td>1-9</td>
<td>30-50</td>
</tr>
<tr>
<td><em>C. weberi</em> var. <em>sumatrensis</em></td>
<td>24-28</td>
<td>6.1-7.8</td>
<td>73-315</td>
<td>1-9</td>
<td>30-50</td>
</tr>
<tr>
<td><em>Atya spinipes</em></td>
<td>26.8</td>
<td>7.2</td>
<td>175</td>
<td>1.6</td>
<td>30-50</td>
</tr>
<tr>
<td><em>Macrobrachium lar</em></td>
<td>26-30</td>
<td>6.9-7.6</td>
<td>170-470</td>
<td>1-10</td>
<td>30-50</td>
</tr>
<tr>
<td><em>M. latidactylus</em></td>
<td>25-28</td>
<td>6.5-7.8</td>
<td>148-306</td>
<td>1-10</td>
<td>30-50</td>
</tr>
<tr>
<td><em>M. scabriculum</em></td>
<td>25-28</td>
<td>6.8-7.8</td>
<td>175-350</td>
<td>1-10</td>
<td>30-50</td>
</tr>
</tbody>
</table>

The range of distribution of the Decapoda crustacea described from the Andaman islands in relation to India, Sri Lanka, Indonesia and Malaysia is as follows:

<table>
<thead>
<tr>
<th>Species</th>
<th>India</th>
<th>Sri Lanka</th>
<th>Andamans</th>
<th>Indonesia</th>
<th>Malaysia</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Caridina brachydactyla</em></td>
<td>–</td>
<td>–</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td><em>C. gracilirostris</em></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td><em>C. serratirostris</em></td>
<td>–</td>
<td>–</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td><em>C. weberi</em> var. <em>sumatrensis</em></td>
<td>x</td>
<td>–</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td><em>C. prashadi</em></td>
<td>–</td>
<td>–</td>
<td>x</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td><em>C. typus</em></td>
<td>–</td>
<td>–</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td><em>Atya spinipes</em></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td><em>Macrobrachium</em></td>
<td>–</td>
<td>–</td>
<td>x</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td><em>M. australis</em></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>–</td>
</tr>
<tr>
<td><em>M. lar</em></td>
<td>–</td>
<td>–</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td><em>M. latidactylus</em></td>
<td>–</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td><em>M. scabriculum</em></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>–</td>
</tr>
</tbody>
</table>

So far *C. prashadi* and *M. andamanicum* have been described only from the Andaman islands and it appears that these species are endemic to these islands.
References


