

New Record of Some Freshwater Seed Shrimps (Ostracoda: Podocopida) from Lakes of Sindh, Pakistan

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Abstract.- Five species of seed shrimps belonging to five genera *Cypris subglobosa*, *Eucypris virens*, *Dolerocypris sinensis*, *Herpetocypris fontinalis* and *Cypridopsis obesa* have been recorded for the first time from Pakistan. All these belong to family Cyprididae, except *C. obesa*, which has been placed in family Cypridopsidae (Pennak, 2001). The specimens were collected from open water and weedy areas of Keenjhar lake, Manchar lake and Chotiari lake of Sindh.

Key words: Crustacea, lacustrine, zooplankton, ostracodes.

Ostracods are referred to as “seed shrimps” because of their shape and small size. The body is enclosed in a bivalve, calcified shell (carapace). They are found in marine, brackish and freshwaters. The order Ostracoda is divided into three suborders (i) Myodocopida (ii) Platycopida and (iii) Podocopida. First two suborders are represented in marine and members of the third are found in freshwater (Pennak, 2001). About 5000 species of Ostracodes are known from various habitats (Oliver *et al.*, 2000). Members of family Cyprididae are cosmopolitan in distribution (Bronstein, 1988).

Ostracod fauna has been extensively studied from different areas of the world, such as USA (Henderson, 1990), USSR (Bronstein, 1988), Europe (Meisch, 2000), Australia (McKenzie, 1971), south-east Asia (Victor and Fernando, 1982),

India (Klie, 1927; Victor and Fernando, 1979, Batish, 1978, 1981) and Turkey (Dole-Ozelo *et al.*, 2001). Before 1947, Gurney (1920) described few species of seed shrimps from western Balochistan. Arora (1931) studied ostracodes from different areas of Lahore and recorded 10 species. Similarly Arora (1935) described six species from Karachi area. Kazmi (2002) also listed these species. Later on twelve more species were recorded from Lahore (Mahoon and Sultana, 1977). One species, *Stenocypris fontinalis* was reported in plankton samples from Deg Nalla near Lahore (Chowdhry *et al.*, 1986). As there is paucity of data on ostracods of Pakistan, present study was initiated.

Three lakes of Sindh, Keenjhar (Distt: Thatta), Manchhar (Distt: Dadu) and Chotiari (Distt: Sanghar) were surveyed for the occurrence of seed shrimps during 2005-2006. Random sampling was carried-out by using No. 25 plankton net (mesh size 55µm). Some specimens were also collected from algal mats in shallow, weedy marginal areas. The samples were preserved in 5% formalin solution for later studies in the laboratory. Identification was conceded with the help of taxonomic keys (Ward and Whipple, 1976; Bronstein, 1988; Pennak, 2001). Photographs were taken with a digital camera DCM 35 (350 K Pixels, USB 1.0, mounted on the trinocular microscope (Nikon, Eclips E-200 and Swift 300-D).

The following ostracods were recorded.

1. *Cypris subglobosa* (Sowerby, 1840)

Shell somewhat globular in dorsal view, length 1.19 mm, height 0.7mm, width 0.62mm, anterior and posterior margins of shell rounded, posterior portion denticulate. Surface sculptured with deep, rounded pits. Shell blackish-green in colour (Fig. 1A). Antennule and antennae natatory, with long plumose setae thoracic leg II with a long terminal spine. Collected from Chotiari lake.

2. *Eucypris virens* (Jurine, 1820)

Shell somewhat bean shaped, dorsal margin arched with maximum width in the middle, ventral margin straight. Length 1.97mm and height 1.06mm. Anterior margin of shell more denticulate

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(Fig.1B) then posterior margin. Shell surface covered with short setae. Antennae 1 notatory with long plumose setae. Setae of antennae II short. Furca with three spines, about 12 times as long as wide, terminal spine length 2/3 of stem. This species was collected from weedy area of Keenjhar lake during April in association with rotifers and cladocerans.

3. *Dolerocypris simensis* (Sars, 1903)

Shell elongated, slightly convex dorsally, ventral margin straight. Length 2.02mm, width 0.72mm. Anterior margin more rounded then posterior. Anterior margin bears marginal bristles. Shell fairly transparent, yellowish brown in colour, a yellowish green spot extends across the shell. Six, elongated muscle attachment scars visible in the centre of shell (Fig. 1C). This species was collected from turbid waters of shallow area of Manchar lake during July.

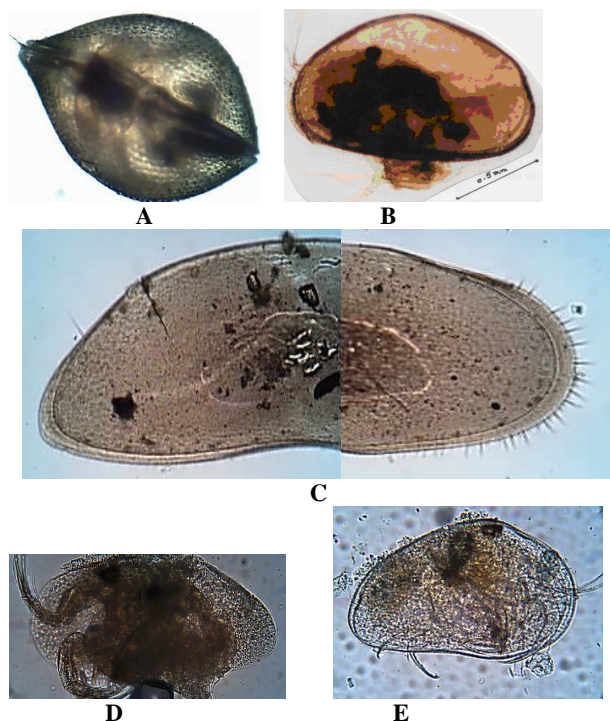


Fig. 1. A, *Cypris subglobosa*; B, *Eucypris virens*; C, *Dolerocypris simensis*; D, *Herpetocypris fontinalis*; E, *Cypridopsis obesa*.

4. *Herpetocypris fontinalis* (Bronshstein, 1928)

Shell elongated, surface covered with small setae. Length 1.49 mm, width 0.49 mm, height 0.54 mm. Anterior portion of shell broadly rounded, while posterior portion distinctly narrow (Fig. 1D). Dorsal margin of shell gently convex, while ventral margin slightly concave in the middle. Color of shell olive green with violet spots. Natatory Setae of antenna II not very long but reach the tip of terminal portion. This specie was collected from middle area of shallow Manchar lake (z=3m) During March, June and December.

5. *Cypridopsis obesa* (Brady and Robertson, 1877)

Shell roughly sub-globular, anterior side broadly rounded while posterior end truncated. Dorsal side of shell distinctly convex in the anterior half of the body, ventral margin slightly concave in the middle. Surface of shell covered with fine setae. Length 0.67 mm, width 0.4 mm and height 0.34 mm. Color of shell yellowish green. Furca rudimentary with a long flagellum (Fig. 1E). This specie was collected from Keenjhar and Chotiari lakes during summer season.

Discussion

Cosmopolitanism is the prominent feature of distribution of freshwater ostracods. Victor and Fernando (1982) while discussing the distribution in south-east Asia have shown that 14 genera of family Cyprididae were cosmopolitan and one genus each had the affinities of Palaearctic-Oriental, Australian-Ethiopian region. Five genera and species of seed shrimps recorded from Pakistan in the present study are cosmopolitan. Various modes of dispersal of resistant eggs of ostracods have been suggested, such as migratory birds (De Deckker, 1977). Wind (Meckenzie, 1971), fish (Kornicker and Solen, 1971) and rice seed transport (Victor and Fernando, 1982). In Oriental region the dispersal of ostracodes due to rice seed transport has been indicated by recorded of similar rice-field Ostracodes in wide zoogeographical areas (Neal, 1977; Victor and Fernando, 1979; Batish, 1978). *Cypris subglobosa* reported from Pakistan is true cosmopolitan specie. It has been reported from USA

(Ferguson, 1964), India (Victor and Fernando, 1979), Sri Lanka (Neal, 1977), Indonesia (Victor and Fernando, 1979), Japan (Okubo, 1974), China (Yunfang, 1995) and Russia (Bronstein, 1988). *C. subglobosa* was originally described from fossil record of India (Sowerby, 1840). Baird (1859) asked an interesting question that how a specie which has been described as fossil can be found in living condition, when he studied the collection of some pools in Nagpur (India). The fossil *C. subglobosa* continued to be referred as such for more than 150 years. This was a typical case of incorrect identification. Whatley *et al.* (2003) studied the original fossils (described by Sowerby, 1840) in British Museum of Natural History, London and concluded that these fossils be renamed as *Peraperacyprretta subglobosa*, so the confusion between a fossil specie and a living specie has been finally resolved.

Eucypris virens was first described from Western Europe (Jurine, 1820). It has been recorded from North America, Russia, Greenland, Iran (Bronstein, 1988), China (Yunfang, 1995) and Sicily southern Italy (Pieri *et al.*, 2006). *Dolerocypris sinensis* was first recorded from China (Sars, 1903). This species has also been recorded from spring pools and rice fields of Samarkand, Russia (Bronstein, 1988). It has recently been described from various parts of China (Yunfang, 1995).

Herpetocypris fontinalis was first described from Russia in spring pools, where there was dense growth of *Fontinalis* sp. Two other species of this genus *H. chevrenxi* and *H. reptans* (also recorded from Russia) are known to be distributed in western Europe, north Africa, and south Africa (Bronstein, 1988). *H. chevrenxi* and *H. brevicaudatus* have been recently recorded from various water bodies of (Sicily) southern Italy (Pieri *et al.*, 2006). *Cypridopsis obesa* was first recorded by Brady and Roberts in 1870. Species of genus *Cypridopsis* are known from Australian and Oriental region. *C. obesa* has also been recorded from England, Germany, Switzerland and Norway (Bronstein, 1988). Two species of this genus *C. vidua* and *C. elonga* have been recently recorded from (Sicily) southern Italy (Pieri *et al.*, 2006). Gurney (1920) reported six species from western Balochistan,

while Arora (1931, 1935) recorded 10 species from Lahore city and six species from Karachi area respectively. Later on, one species *Stenocypris fontinalis* was reported from Lahore area (Mahoon and Sultana, 1977; Chowdhry *et al.*, 1986). As two species are common from Sindh and Balochistan, in all 21 species have already been reported from Pakistan. The present new record of five species from Pakistan (Lower Sindh) is an addition to already known freshwater ostracod fauna of Pakistan.

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