

FAUNA OF INDIA CHECKLIST

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ARTHROPODA: CRUSTACEA: OSTRACODA

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ZOOLOGICAL SURVEY OF INDIA
Ministry of Environment, Forest & Climate Change

FRESHWATER OSTRACODS (CRUSTACEA: OSTRACODA)

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Introduction: Ostracods are commonly known as seed shrimps and most important feature is presence of a bivalve carapace that can completely enclose a laterally compressed and weakly segmented body. They play a vital role in food chain and energy flow in the aquatic ecosystem (Altmsach *et al.*, 2014). Ostracod taxonomy has been of great interest because of their possible use as indicators in climate and environmental change, due to their specific ecological preference and tolerance (Kulkoyluoglu, 2003). Their diversity, abundance and seasonal fluctuations have a direct link with water quality (Tiwari and Mishra, 1985; Padmanabha and Belagali, 2008).

Global diversity: Globally, 2103 species of freshwater ostracods belongs to 270 genera, 17 families and four superfamilies were documented. Among this Oriental region constitute 271 species belongs 175 genera, of which 74.5% Cyprididae (Meisch *et al.*, 2019).

Diversity in India: 154 species belong to 40 genera, 15 subfamilies, 5 families and 2 superfamilies were recorded from India. The high diversity of ostracod species belongs to family cyprididae constitutes 120, followed by Notodromadidae 14, Candonidae 13 and Darwinulidae one species (Table 1 & 2). The state wise exploration shows Maharashtra has high species number 56 with 24 endemic and Madhya Pradesh 43 species with 14 endemic.

Table 1. Freshwater Ostracoda of the world and India

Sl. No.		World	India
1	Superfamilies	04	2
2	Families	17	5
3	Subfamilies	42	15
4	Genera	270	40
5	Species	2330	154

Table 2. Family wise Ostracoda species account from India

Sl. No.		World	India
1	Cyprididae	1006	120
2	Candonidae	675	13
3	Ilyocyprididae	41	6
4	Notodromadidae	38	14
5	Entocytheridae	212	-
6	Limnocytheridae	163	-
7	Cytherideidae	95	-
8	Leptocytheridae	23	-
9	Cytheridae	13	-
10	Loxoconchidae	10	-
11	Xestoleberididae	5	-
12	Cytheruridae	4	-
13	Paradoxostomatidae	2	-
14	Laxoconchidae	2	-
15	Kliellidae	2	-
16	Darwinulidae	35	1
17	Terrestriocytheridae	4	-

Table 3. Diversity in States of India

Sl. No.	State/UT	No. of Species	No. of Endemic Species
1	Andhra Pradesh	17	3
2	Arunachal Pradesh	0	0
3	Assam	9	0
4	Bihar	9	7
5	Chhattisgarh	4	1
6	Gujarat	10	2
7	Goa	2	0
8	Haryana	3	1
9	Himachal Pradesh	7	0
10	Jharkhand	2	0
11	Karnataka	14	4
12	Kerala	21	0
13	Madhya Pradesh	43	14
14	Maharashtra	56	24
15	Manipur	0	0
16	Meghalaya	1	0
17	Mizoram	0	0
18	Nagaland	0	0
19	Odisha	10	0
20	Punjab	37	14
21	Rajasthan	27	1
22	Sikkim	2	0

Table 3. Diversity in States of India

Sl. No.	State/UT	No. of Species	No. of Endemic Species
23	Tamil Nadu	39	15
24	Telangana	11	0
25	Tripura	0	0
26	Uttar Pradesh	0	0
27	Uttarakhand	2	0
28	West Bengal	6	1
29	Andaman & Nicobar	1	0
30	Chandigarh	8	0
31	Dadra Nagar Haveli, Daman & Diu	0	0
32	Delhi	4	2
33	Jammu & Kashmir	8	0
34	Ladakh	0	0
35	Lakshadweep	0	0
36	Puducherry	8	0
37	State Unknown	8	8

Endemism: The oriental region is the hotspot of ostracoda diversity with more than 200 species and nearly 83% are endemic (Martens *et al.*, 2008), of which, 70 species, 58% are endemic to India within the oriental region. Hence, intensive exploration and detailed revisionary investigations are needed for confirming the validity and status of the Indian freshwater ostracods.

Habitat: Ostracods live in all aquatic environments like rivers, lakes, ponds, rice fields, small pools and puddles, ground waters, springs, and wet leaf litter. They are mainly colonized benthic and periphytic habitats and feed on both living and detrital particles including organic detritus, algae, plant material, dead animals and sometimes live animals such as young snails, worms and larvae of other crustaceans. More rarely, they can be predators or parasites (Rossettil *et al.*, 2006). Stagnant water especially, lakes, reservoirs, temporary water and small pools hold more diversity.

Gap areas (Discuss taxonomic and geographic gap areas): Freshwater Ostracods of Indian studies are limited and scattered compared to the global contest. In fact, the studies in this country are confined to a few states like Andhra Pradesh, Chhattisgarh, Kerala, Maharashtra, Madhya Pradesh, Punjab, Rajasthan and Tamil Nadu. There are no much studies from the freshwater ecosystems of North Eastern states, Himalaya, Western Ghats and sub terrain regions. Hence, most of the Indian ostracod species still the validity status is uncertain. So, this report emphasizes the need for further detailed investigation and documentation from unexplored areas. Detailed revisory studies will confirm the validity and status of the listed Indian Ostracoda species.

Systematic List of freshwater Ostracods from India

Class	: Ostracoda Latreille 1802
Subclass	: Prodocopa G.W. Müller, 1894
Order	: Podocopida Sars 1866
Suborder	: Cypridocopina Jones 1901
Super family	: Cypridoidea Baird 1845

Family: Cyprididae**Subfamily: Cyprettinae**

- 1 *Cypretta alagarkoilensis* Victor & Michael, 1975
- 2 *Cypretta fontinalis* Hartman, 1964
- 3 *Cypretta foveata* Hartmann, 1964
- 4 *Cypretta gargi* Deb, 1983
- 5 *Cypretta globosa* (Brady, 1886)
- 6 *Cypretta globula* (Sars, 1889)
- 7 *Cypretta patialaensis* Battish, 1982
- 8 *Cypretta raciborskii* (Grochmalicki, 1915)
- 9 *Cypretta ramai* Deb, 1984
- 10 *Cypretta seurati* Gauthier, 1929
- 11 *Cypretta turgida* Sars, 1896
- 12 *Pseudocypretta maculata* Klie, 1932

Subfamily: Cypricercinae

- 13 *Astenocypris papyracea* (Sars, 1903)
- 14 *Bradleycypris vittata* (Sars, 1903)
- 15 *Bradleystrandesia dani* (George & Martens, 1993)
- 16 *Bradleystrandesia mollis* (Furtos, 1936)
- 17 *Bradleystrandesia parva* (Hartmann, 1964)
- 18 *Bradleystrandesia reticulata* (Zaddach, 1844)
- 19 *Bradleystrandesia trichurensis* (Victor et al., 1980)
- 20 *Bradleystrandesia weberi* (Moniez, 1892)
- 21 *Bradleytriebella tuberculata* (Hartmann, 1964)
- 22 *Cypricercus indrani* Deb, 1983
- 23 *Cypricercus munshii* Deb and Nasar, 1977
- 24 *Cypricercus steosus* Farkas, 1857
- 25 *Cypricercus vietsi* Farkas, 1957
- 26 *Pseudostrandesia calapanensis* Tressler, 1937
- 27 *Strandesia bicornuta* Hartmann, 1964
- 28 *Strandesia elongate* Hartmann, 1964
- 29 *Strandesia flavescens* Klie, 1932
- 30 *Strandesia gibbosa* (Baird, 1837)
- 31 *Strandesia gopinathani* George & Martens, 1993
- 32 *Strandesia hartmanni* Victor et al., 1980
- 33 *Strandesia labiata* Hartmann, 1964
- 34 *Strandesia madhuriai* Harshey & Srinivasan 1984
- 35 *Strandesia odiosa* (Moniez, 1892)
- 36 *Strandesia perakensis* Victor & Fernando, 1981
- 37 *Strandesia bornemiszaei* Klie, 1935
- 38 *Strandesia pupurascens* (Brady, 1886)
- 39 *Strandesia quasirotunda* Hartmann & Petersen, 1985
- 40 *Strandesia vinciguerrae* (Masi, 1905)
- 41 *Strandesia saetosa* Hartmann, 1964
- 42 *Strandesia victori* Harshey & Srinivasan, 1984
- 43 *Tanycypris pellucida pellucida* (Klie, 1932)

Subfamily: Cypridinae

- 44 *Cypris debi* Deb, 1983
- 45 *Cypris decaryi* Gauthier, 1933
- 46 *Cypris dravidensis* Victor & Michael, 1975
- 47 *Cypris elongata* Deb, 1983
- 48 *Cypris globosa* Deb, 1983
- 49 *Cypris kumari* (Arora, 1931)
- 50 *Cypris protuberata* Victor & Fernando, 1978
- 51 *Cypris granulata* Daday, 1898
- 52 *Pseudocypris patialaensis* Battish, 1977

Subfamily: **Cypridopsinae**

- 53 *Klieopsis horai* (Klie, 1927)
 54 *Plesiocypridopsis maduraiensis* Victor & Michael, 1975
 55 *Plesiocypridopsis angularis* (Victor & Michael, 1975)
 56 *Plesiocypridopsis dispar* (Hartmann, 1964)
 57 *Plesiocypridopsis newtoni* (Brady & Robertson, 1870)
 58 *Potamocypris arcuata* (Sars, 1903)
 59 *Potamocypris narayanani* George & Martens, 2002
 60 *Sarsocypridopsis ochracea* (Sars, 1924)

Subfamily **Cyprinotinae**

- 61 *Cyprinotus cingalensis* Brady, 1886
 62 *Cyprinotus indicus* Battish, 1981
 63 *Hemicypris anomala* (Klie, 1938)
 64 *Hemicypris arorai* (Battish, 1981)
 65 *Hemicypris bairdi* Martens & Wouters 1985
 66 *Hemicypris bhatiai* Battish, 1981
 67 *Hemicypris dentatomarginatua* (Baird, 1859)
 68 *Hemicypris derweshensis* Battish, 1981
 69 *Hemicypris dissonus* Victor & Fernando, 1976
 70 *Hemicypris falcatus* Victor & Fernando 1976
 71 *Hemicypris gillensis* (Battish, 1981)
 72 *Hemicypris malerkotlaensis* Battish, 1981
 73 *Hemicypris megalops* Sars, 1903
 74 *Hemicypris ovata* Sars, 1903
 75 *Hemicypris pailensis* Battish, 1981
 76 *Hemicypris pyxidata* (Moniez, 1892)
 77 *Heterocypris anitae* Battish, 1981
 78 *Heterocypris aurea* Sars, 1895
 79 *Heterocypris chandrai* (Arora, 1931)
 80 *Heterocypris fluviatilis* (Furtos, 1933)
 81 *Heterocypris giesbrechti* (G.W. Müller, 1898)
 82 *Heterocypris incongruens* (Ramdohr, 1808)
 83 *Heterocypris makua* (Tressler, 1937)
 84 *Heterocypris malini* Deb, 1983
 85 *Heterocypris nuda* (Victor & Michael, 1975)
 86 *Heterocypris salina* (Brady, 1868)

Subfamily: **Dolerocypridinae**

- 87 *Dolerocypris sinensis* Sars, 1903

Subfamily: **Eucypridinae**

- 88 *Eucypris biharensis* Deb, 1984
 89 *Eucypris bispinosa* (Victor & Michael, 1975)
 90 *Eucypris compressa* Deb, 1983
 91 *Eucypris ellipticalis* Deb, 1983
 92 *Eucypris gomti* Deb, 1983
 93 *Eucypris himani* Deb, 1983
 94 *Eucypris indica* Deb, 1983
 95 *Eucypris inaequalis* Deb, 1983
 96 *Eucypris munia* Deb, 1983
 97 *Eucypris sonia* Deb, 1983

Subfamily: **Herpetocypridinae**

- 98 *Chrissia achandii* (George & Martens, 1993)
 99 *Chrissia biswasi* (Deb, 1972)
 100 *Chrissia canaliculata* (Hartmann, 1964)
 101 *Chrissia dyalpurensis* Battish, 1998
 102 *Chrissia fasciculata* (Daday, 1910)
 103 *Chrissia formosa* (Klie, 1938)
 104 *Chrissia fuelleborni* (Daday, 1910)

- 105 *Chrissia goddeerisi* (George et al., 1993)
 106 *Chrissia halyi* (Ferguson, 1969)
 107 *Chrissia humilis* (Klie, 1932)
 108 *Chrissia humilis indica* Hartmann, 1964
 109 *Chrissia khopoliensis* (Deb, 1983)
 110 *Chrissia krishnakantai* (Deb, 1972)
 111 *Chrissia spinosa* (Tressler, 1937)
 112 *Herpetocypris ludhianensis* Battish, 1982
 113 *Humphocypris sewelli* (Klie, 1927)
 114 *Stenocypris derupta* Vavra, 1906
 115 *Stenocypris distincta* Victor & Fernando, 1978
 116 *Stenocypris hislopi* Ferguson, 1969
 117 *Stenocypris jabalpurensis* Harshey & Patil, 1988
 118 *Stenocypris major* (Baird, 1859)
 119 *Stenocypris malayica* Victor & Fernando, 1981
 120 *Stenocypris sohni* Deb, 1983
 Subfamily: **Megalocypridinae**
 121 *Sclerocypris rajasthaniensis* (Deb, 1973)
 Family: **Candonidae**
 Subfamily: **Candoninae**
 122 *Candonopsis (Candonopsis) putealis* Klie, 1932
 123 *Candonopsis (Candonopsis) urmilae* Gupta, 1988
 124 *Fabaeformiscandona subacuta* (Yang, 1982)
 125 *Indocandona krishnakanti* Gupta, 1984
 126 *Indocandona nagarjuna* Karanovic & Ranga Reddy, 2008
 Subfamily: **Cyclocypridinae**
 127 *Cypria brevisetigera* Cole, 1965
 128 *Cypria javana javana* G.W. Müller, 1906
 129 *Cypria sharmai* Battish, 1985
 130 *Physocypria armata* (G.W. Muller, 1897)
 131 *Physocypria crenulata* (Sars, 1903)
 132 *Physocypria devai* Arora, 1931
 133 *Physocypria minuta* (Victor & Fernando, 1975)
 134 *Physocypria furfuracea* (Brady, 1886)
 Family: **Ilyocyprididae**
 Subfamily: **Ilyocypridinae**
 135 *Ilyocypris australiensis* Sars, 1889
 136 *Ilyocypris bradyi* Sars, 1890
 137 *Ilyocypris dentifera* Sars, 1903
 138 *Ilyocypris gibba* (Ramdohr, 1808)
 139 *Ilyocypris mckenziei* Bhatia & Mannikeri, 1975
 140 *Ilyocypris nagamalaiensis* Victor & Michael, 1975
 Family: **Notodromadidae**
 Subfamily: **Indiacypridinae**
 141 *Indiacypris chalakkudensis* George & Martens, 2004
 142 *Indiacypris dispar* Hartman, 1964
 Subfamily: **Notodromadinae**
 143 *Centrocypris bhagirathiae* Battish, 1981
 144 *Centrocypris horrida* (Vavra, 1895)
 145 *Centrocypris indica* Gupta, 1991
 146 *Centrocypris madani* Battish, 1981
 147 *Centrocypris matthaii* (Arora, 1931)
 148 *Gurayacypris kangraensis* Battish, 1987
 149 *Newnhamia dumonti* George & Martens, 2004
 150 *Newnhamia fenestrata* King, 1855
 151 *Notodromas serrata* Deb, 1984

Subfamily: **Oncocypridinae**152 *Oncocypris bhatiai* Battish, 1982153 *Oncocypris voeltzkowi* G.W. Muller, 1898Super family: **Darwinuloidea****Family: Darwinulidae**154 *Darwinula stevensoni* (Brady & Robertson, 1885)**References**

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Stenocypris hislopi Ferguson, 1969



Stenocypris major (Baird, 1859)



Stenocypris derupta Vavra, 1906



Chrissia formosa (Klie, 1938)