

## Diversity of the Bugs (Insecta : Hemiptera) in Salt Lake City, Kolkata

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Hemiptera is the fifth largest group of insects, after Coleoptera, Diptera, Hymenoptera and Lepidoptera. It is most diversified group of exopterygote insects. These insects are of much economic importance causing direct and indirect injuries to various plants, as almost all of them are phytophagous and feed on roots, leaves, stem, fruits and seeds. These insects are commonly known as bugs.

Salt lake was recommended as an ideal place for nature study, till 1960. This marsh-land was being the homeland of innumerable species of birds, snakes, toads, frogs and variety of invertebrates, including insects in particular. The East Kolkata Wetland, a Ramsar site, nurtures the World's largest waste water fed aqua-culture system located at the borders on the Salt Lake Township. So, diverse aquatic floral and faunal ecosystem have been found (Kundu et. al., 2008). In 1962, an area of 3.75 sq. miles was declared as residential area and the city was built on a reclaimed salt water marsh- hence the name "Salt Lake". The first work on the faunal diversity have been done by Seymour-Sewell (1934) from this salt marsh. The physiography of the Salt Lake city is completely changed due to rapid urbanization and other developmental works (Maity et al., 2016). Except the only documentation on true bugs of Salt Lake City by Maity et. al. (2016), nothing is there as base line information on these most economically important group of insects. Therefore, an attempt has been made to know the present status of hemipteran faunal diversity in Salt Lake City (22.58° N, 88.42° E), the satellite township of Kolkata (West Bengal). In order to explore hemipteran diversity, surveys were conducted in 12 localities during the year, 2015-2016. The identification of the materials have been done with the help of standard literature (Distant, 1902, 1903, 1907), under Leica EZ4 stereo zoom microscope.

Altogether, 50 species under 24 families of hemipteran insects are reported here, of which 26 species (under 25 genera of 13 families) are recorded for the first time from the

Salt Lake City. Among them, 40 species belonging to 18 families are terrestrial and 10 species of 6 families are aquatic.

Among the terrestrial bugs of the Salt Lake city, family Pentatomidae is more diverse with 9 species, followed by Reduviidae and Lygaeidae (each 5), Membracidae and Scutellaridae (each 3), and Coreidae and Alydidae (each 2). Rest of the family are represented with single species. Considering the aquatic bugs of this area, Gerridae is the predominant families with 3 species, followed by Belostomatidae and Nepidae (each 2) and Mesovellidae, Corixidae and Notonectidae with single representative (Table 1).

Table 1. List of Hemipteran species from Salt Lake City, Kolkata.

Family	Scientific name
1 Aphididae Latreille	<i>Aphis craccivora</i> (Koch)
2 Pseudococcidae Heymons	<i>Adelosoma phragmitidis</i> Borchsenius
3 Aphrophoridae (Evans)	<i>Clovia puncta</i> (Walker)*
4 Membracidae (Germar)	<i>Otinotus mimicus</i> Distant
5	<i>Oxyrhachis lefroi</i> Distant
6	<i>Oxyrhachis rufescens</i> Walker
7 Cimicidae Latreille	<i>Cimex lectularius</i> (Linnaeus)
8 Coreidae (Leach)	<i>Notobitus meleagris</i> (Fabricius)*
9	<i>Cletus punctiger</i> (Dallas)*
10 Alydidae Amyot & Serville	<i>Leptocoris acuta</i> (Thunberg)*
11	<i>Leptocoris oratorius</i> (Fabricius)*
12 Rhopalidae Amyot & Serville	<i>Leptocoris augur</i> (Fabricius)*
13 Miridae Hahn	<i>Ragmus importunitus</i> (Distant)
14 Reduviidae (Latreille)	<i>Ectrychotes dispar</i> (Reuter)

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|----|---|--|--|
| 15 | <i>Ectrychotes abbreviatus</i><br>Reuter*                                 | 48   | <i>Limnogonus (L.) nitidus</i><br>(Mayr)               |
| 16 | <i>Polididus armatissimus</i> Stal*                                       | 49   | <i>Gerris thoracicus</i> (Schummel)                    |
| 17 | <i>Rhynocoris costalis</i> Stal*  | 50   | Notonectidae (Latreille) <i>Nychia sappho</i> Kirkaldy |
| 18 | <i>Triatoma rubrofasciata</i><br>(De Geer)*                               | <hr/>  |  |
| 19 | Pentatomidae (Leach) <i>Agonoscelis nubilis</i> (Fabricius)               | *reported for the first time from Salt Lake.   |  |
| 20 | <i>Erthesina fullo</i> (Thunberg)   | <i>Acknowledgement:</i> Authors are grateful to Dr. Kailash Chandra, Director, ZSI, Kolkata for providing necessary facilities. Thanks are also due to Shri K. C. Gopi, Scientist-F and Dr. Bulganin Mitra, Scientist-C, ZSI, Kolkata, for their support in preparation of the manuscript. Authors also acknowledge Dr. Gautam Kr. Kundu, Principal, Vidyasagar College, Kolkata and Dr. Subhas Jana, Officer-in-Charge, Bidhannagar College, Kolkata, for their help and support. Second author wishes to acknowledge Shri Debajyoti Patra, P. G. student, Vidyasagar College, Kolkata, for helping during field collections. |  |
| 21 | <i>Halys dentatus</i> (Fabricius)*  | <b>References:</b>   |  |
| 22 | <i>Nezara viridula</i> (Linnaeus)   | Distant, W. L. 1902. <i>The Fauna of British India including Ceylon and Burma—Rhynchota (Heteroptera)</i> . Vol. I. Taylor & Francis, London: 331-420.   |  |
| 23 | <i>Halyomorpha picus</i><br>(Fabricius)*                                  | Distant, W. L. 1903. <i>The Fauna of British India including Ceylon and Burma—Rhynchota (Heteroptera)</i> . Vol. II. Taylor & Francis, London: 196-402.  |  |
| 24 | <i>Eysarcoris montivagus</i><br>Distant*                                  | Distant, W. L. 1907. <i>The Fauna of British India including Ceylon and Burma—Rhynchota (Homoptera)</i> . Vol. IV. Taylor & Francis, London: 79-156.   |  |
| 25 | <i>Stenozygum speciosum</i><br>(Dallas)*                                  | Kundu, N., Pal, M., & Saha, S. 2008. <i>East Kolkata Wetlands: A Resource Recovery System Through Productive Activities</i> . Proceedings of Taal, The 12th World Lake Conference: 868-881.  |  |
| 26 | <i>Plautia crossota</i> (Dallas)*   | Maity, P., Roy, S., Chakraborti, U., Biswas, O., Ghosh, J., & Gayen, A. K. 2016. Insect faunal diversity of Salt Lake City an urbanized area adjacent to Kolkata, India. <i>Biosci. Discovery</i> , 7(2): 101-112.   |  |
| 27 | <i>Cazira verrucosa</i> Westwood*   | Seymour-Sewell, R. B. 1934. A study of the fauna of Salt Lake, Calcutta. <i>Rec. Indian Mus.</i> , 36: 45-121.   |  |
| 28 | Scutelleridae (Leach) <i>Chrysocoris stollii</i> (Wolff)                  | <hr/>  |  |
| 29 | <i>Chrysocoris purpureus</i><br>(Westwood)                                | <b>Gene Behind Grey Hair Found</b>   |  |
| 30 | <i>Cantao ocellatus</i> (Thunberg)*                                       | Scientists, including one of Indian-origin, have discovered the first gene responsible for greying hair, a breakthrough that could lead to new treatments to delay or block the process. The finding confirms that greying has a genetic component, researchers said.  |  |
| 31 | Dinidoridae (Stal) <i>Coridius brunneus</i><br>(Thunberg)*                | The gene identified for grey hair—IRF4—is known to play a role in hair colour but this is the first time it has been associated with greying of hair.  |  |
| 32 | Tessaratomidae (Stal) <i>Tessaratomia javanica</i><br>(Thunberg)*         |  |  |
| 33 | Cydnidae (Billberg) <i>Macroscytus subaeneus</i><br>(Dallas)*             |  |  |
| 34 | Urostylididae (Dallas) <i>Urostylis punctigera</i><br>(Westwood)*         |  |  |
| 35 | Lygaeidae (Schilling) <i>Paromius trivialis</i> (Stal)*                   |  |  |
| 36 | <i>Rhyparothesus orientalis</i><br>(Distant)*                             |  |  |
| 37 | <i>Metochus uniguttatus</i><br>(Thunberg)                                 |  |  |
| 38 | <i>Oncopeltus nigriceps</i> (Dallas)*                                     |  |  |
| 39 | <i>Nysius inconspicuus</i> Distant*                                       |  |  |
| 40 | Pyrrhocoridae Dohrn <i>Dysdercus koenigii</i><br>(Fabricius)*             |  |  |
| 41 | Belostomatidae Leach <i>Lethocerus indicus</i><br>(Lepeletier & Serville) |  |  |
| 42 | <i>Diplonychus rusticus</i> Fabricius                                     |  |  |
| 43 | Nepidae (Latreille) <i>Laccotrephes griseus</i><br>(Guerin & Meneville)   |  |  |
| 44 | <i>Ranatra sordidula</i> (Dohrn)  |  |  |
| 45 | Mesovellidae <i>Mesovelia indica</i> Horvath<br>(Douglas & Scott)         |  |  |
| 46 | Corixidae Leach <i>Micronecta punctata</i> Horvath                        |  |  |
| 47 | Gerridae (Leach) <i>Limnogonus (L.) fossarum</i><br>(Fabricius)           |  |  |