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## On a collection of stink bugs (Hemiptera: Pentatomidae) in and around Pune, Maharashtra

**DD Jadhav and VD Hegde**

### Abstract

Stink bugs are belonging to the order Hemiptera and family Pentatomidae. These are found in a variety of habitats like under the bark, stone, leaf litter etc. Efforts were made to collect and identify the stink bugs in and around Pune, Maharashtra and National Zoological Collections, Zoological Survey of India, Pune were also taken into consideration. The study yielded 18 species of 16 genera of stink bugs belonging to 12 tribes under single subfamily of the family Pentatomidae and the genus *Erthesina* & *Halys* are dominant and belong to the tribe Halyini.

**Keywords:** Stink bugs, Pentatomidae, Pune

### 1. Introduction

Pentatomidae is the largest family of insects belonging to order Hemiptera which are generally called stink bugs or shield bugs. The name Pentatomidae is from Greek *pente* meaning five and *tomos* meaning *section*, which refers to the five segments of their antennae. The representatives of this family are hard to differentiate but can be identified by these characters. The large, triangular scutellum, which is well extended to cover half of their back but do not cover the abdomen. The antennae are five segmented. Their body is usually broad and shield-shaped. Head is relatively small and often "tucked into" a concavity in anterior margin of pronotum. Ocelli present. These insects eject a foul smelling glandular substance secreted from pores in the thorax when disturbed. The chemicals involved include aldehydes, making the smell similar to that of coriander.

As far as the Pentatomidae fauna of Maharashtra is concerned, an account of 58 species belonging to 42 genera under two subfamilies of family Pentatomidae has been reported [1]. Even though there are several studies on the different fauna of Maharashtra state [1] including some families of Hemiptera by different research workers, no comprehensive report has been done on the Stink Bugs (Hemiptera: Pentatomidae) of this area. Earlier work was done in the whole Maharashtra state, which encompasses the western ghat area also and this work was mainly concentrated on the urban area of the Pune (Pimri- Chinchwad) which is devoid of hilly region and eastern plateau. Since the Pentatomid bugs are considered to be economically important, an attempt has been made to throw some light on the diversity of Pentatomidae in and around Pune district, Maharashtra.

### 2. Materials and Methods

Before sorting of the collections present in the Zoological Survey of India, Western Regional Centre, Pune, some Pentatomidae collections were made locally. At the outset of sampling, habitats of the areas sampled were noted. The bugs were collected by hand picking, with the fine forceps, by sweeping, by dusting/beating, by laying light traps. Collections were also made from leaf litters and under the barks. Bugs were brought to the ZSI laboratory and preserved in alcohol. Specimens were sorted out and the collection data like, date of collection, name of the collector, locality of the samples collected, no. of examples were noted down. The insects were relaxed, set pinned with the help of entomological pin no.01, 02 and 03 based on their size. Identification was done on the basis of their morphological characters and photographs were clicked by Nikon D 300s camera. The synonyms, material examined, morphological characters and distribution of studied Pentatomid species are also given. The Fauna of British India [2] and Hegde and Venkataraman [3] were referred for the synonyms, morphological characters and distribution.

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### 3. Results and Discussion

The study contains 18 species of 16 genera of stink bugs belonging to 12 tribes under single subfamily of the family Pentatomidae. The genus *Erthesina* & *Halys* are the dominant genus and belong to the tribe Halyini. The members of tribe Halyini are very large (about 1.5 to 2.5 cm). Since the species belonging to these genera are very large in size also they might have adapted for the prevailing conditions of the study area.

The *Erthesina* & *Halys* species are characteristic elements of open land and closed mature forests. They can be found in cultivated land along fields and roads in bushlands and also in open grassland habitats. They can be found mostly in dry places such as leaf litter and under bark of rotten trunks in association with the bugs of other subfamilies or tribes or even other families.

Further, the collection data revealed that the genus *Nezara* was available in all the grassland habitats. Recent collection of *N. viridula* from ZSI campus revealed that these might have been attracted by light. The abundance/collection of Pentatomidae depends on the season also. Further, study of Pentatomidae of the same study area may reveal many more interesting facts also. The genus *Halyomorpha*, which has caused nuisance by entering the houses during evening by the attraction of light are less in this area. Only two species were so far reported from the Maharashtra state <sup>[1]</sup>.

The comparison of number of collections of specimens by the earlier surveys (more than 50 years back) and the recent surveys revealed that the Pentatomids can be found all over the year. Further extensive survey may reveal few more species and even new species, since the study area is having varieties of ecosystems.

#### Systematic Account

Order – Hemiptera

Suborder - Gymnocerata

Superfamily – Pentatomoidea

Family - Pentatomidae

Subfamily – Pentatominae

Tribe – Agonoscelidini

1. *Agonoscelis nubilis* (Fabricius)

Tribe – Antestiini

2. *Plautia crossota* (Dallas)

Tribe – Cappaeini

3. *Halyomorpha halys* (Fabricius)

Tribe – Carpocorini

4. *Codophila maculicollis* (Dallas)

Tribe – Degonetini

5. *Degonetus serratus* (Distant)

Tribe – Eysarcorini

6. *Carbula insocia* (Walker)

7. *Eysarcoris guttiger* (Thunberg)

8. *Eysarcoris montivagus* (Distant)

Tribe – Halyini

9. *Dalpada versicolor* (Herrich Schaeffer)

10. *Erthesina acuminata* (Dallas)

11. *Erthesina guttata* (Fabricius)

12. *Halys dentatus* (Fabricius)

13. *Eupaleopada concinna* (Westwood)

Tribe – Menidini

14. *Phavorinus indicus* (Rao)

Tribe – Nezarini

15. *Nezara viridula* (Linnaeus)

Tribe – Pentatomini

16. *Placosternum taurus* (Fabricius)

Tribe – Strachiini

17. *Bagrada hilaris* (Fabricius)

Tribe – Eurysaspidini

18. *Eurysaspis flavescence* (Distant)

#### Species Details

##### 1. *Agonoscelis nubilis* (Fabricius)

(Cimex) *Syst. Ent.* P.712 (1775); *Fabr.* (Halys) *Syst. Rhyng.* p. 183 (1803); *Hahn* (*Aelia?*), *Wanz. Ins.* iii, p.29, t. 82, f. 251 (1835); *Dall. List Hem.* i, p. 179 (1851).

*Pentatoma grata*, *Palis. de Beauv. Ins.* p. 129, *Hem.* t. 9, f. 5 (1805).

*Agonoscelis indica*, *Spin. Ess.* P.329 (1837).

*Aelia crucifera*, *Westw. in Hope Cat.* i, p.32 (1837).

*Nevrosia sulciventris*, *Ellenr. Nat. Tijdschr. Nederl. Ind.* xxiv, p.144, pl. ii, f. 11 (1862).

**Material examined:** 01 Ex.; Loni, Pune; R.N. Chopra Coll.; 24.vi.1968 Reg. No. Ent-3/75 A/426: 03 Ex.; Saswad, Pune; B.S. Lamba Coll.; 20.viii.1968 Reg. No. Ent-3/76 A/434.

**Distribution:** India: Jammu & Kashmir, Uttar Pradesh, Karnataka, Meghalaya, Nagaland, Tamil Nadu, West Bengal, Maharashtra - Pune.

**Elsewhere:** Myanmar, China, Japan, Malayan Peninsula, Pakistan, Sri Lanka.

##### 2. *Codophila maculicollis* (Dallas)

*Dall.* (Pentatoma) *List Hem.* i, p.234 (1851); *Stahl, En. Hem* v, p.76 (1876).

*Pentatoma arabica*, *Stahl, Ofv. Vet.-Ak. Forh.* 1854, p.233

**Material examined:** 02 Ex.; Vetali hills, Pune; B.S. Lamba Coll.; 20.viii.1968 Reg. No. Ent-3/94 A/433: 01 Ex.; Talegaon, Pune; R.N. Chopra Coll.; 20.vi.1970 Reg. No. Ent-3/95 A/562.

**Distribution:** India: North India, Maharashtra - Mumbai, Pune.

**Elsewhere:** Saudi Arab.

##### 3. *Eysarcoris guttiger* (Thunberg)

(Cimex) *Nov. Ins. Sp.* ii, p.32, t.2, f. 47 (1783); *Stahl* (Stollia), *En. Hem.* v, p.81 (1876); *Dall. List Hem.* i, p.228 (1851)

*Pentatoma nepalensis* & *punctipes*, *Westw. in Hope Cat.* i, p.36 (1837).

**Material examined:** 01 Ex.; Saswad, Pune; B.S. Lamba Coll.; 02.vii.1968 Reg. No. Ent-3/108/ A/520.

**Distribution:** India: Sikkim, West Bengal, Uttar Pradesh, Nagaland, Maharashtra- Pune.

**Elsewhere:** Myanmar, China, Japan, Sri Lanka.

##### 4. *Eysarcoris montivagus* (Distant)

**Material examined:** 01 Ex.; ZSI (WRC) garden, Pune; D. Vasantha Kumar Coll.; 21.x.2014 Reg. No. Ent-3/ A/653

**Distribution:** India: Sikkim, Assam, Meghalaya, Nagaland, Uttar Pradesh, Maharashtra- Pune.

##### 5. *Phavorinus indicus* (Rao)

**Material examined:** 04 Ex.; Koregaon, Pune; R.N. Chopra Coll.; 15.xi.1967 Reg. No. Ent/111 A/677.

**Distribution:** India: Maharashtra - Pune.

##### 6. *Erthesina guttata* (Fabricius)

(Cimex) *Mant. Ins.* ii, p.291 (1787); *Stahl, Hem. Fabr.* i, p.23 (1868).

**Material examined:** 01 Ex.; ZSI WRC campus, Pune; C.B.

Prasad Coll.; 07.ix.1970 Reg. No. Ent/118 A/563.

**Distribution:** India: Maharashtra - Pune.

**Elsewhere:** Myanmar.

### 7. *Erthesina acuminata* (Dallas)

*Dall. List Hem. i*, p.183 (1851)

**Material examined:** 02 Ex.; Mulshi Dist. Pune; M.J. Jadhav; 06.i.2012 Reg. No. Ent/3 A/572:

11 Ex.; Durgatekdi, PCMC, Pune; D.D. Jadhav Coll.; 12.xii.2017 Reg. No. Ent/3-776: 01 Ex.; Ganesh Talav, Akurdi, Pune; D.D. Jadhav Coll.; 11.i.2018 Reg. No. Ent/3-777: 01 Ex.; Sai garden, Chikhali, Pune; D.D. Jadhav Coll.; 28.i.2018 Reg. No. Ent/3-778.

**Distribution:** India: Sikkim, West Bengal, Maharashtra-Pune.

**Elsewhere:** Myanmar.

### 8. *Halys* sp. (Fabricius)

*Halys, Fabr. (part) Syst. Rhyng.* p.180 (1803)

**Material examined:** 10 Ex.; Udham Engg. Works, Pune; R.N. Chopra Coll.; 04.xii.1963 Reg. No. Ent/109 A/520: 01 Ex.; SPPU Campus, Pune; S.M. Ketkar Coll.; 16.ix.1963 Reg. No. Ent/3 A/652: 01 Ex.; Akurdi, PCMC, Pune; D. Vasantha Kumar Coll.; 16.ii.2018 Reg. No. Ent/3-779. : 05 Ex.; Parvati, Swargate, Pune; D.D. Jadhav Coll.; 20.i.2018 Reg. No. Ent/3-780.: 08 Ex.; Sai garden, Chikhali, Pune; D.D. Jadhav Coll.; 28.i.2018 Reg. No. Ent/3-781.

**Distribution:** India: Sikkim, Meghalaya, West Bengal, Assam, Uttar Pradesh, Andhra Pradesh, Kerala, Andaman & Nicobar Islands, Maharashtra- Pune.

**Elsewhere:** Bangladesh, China, Japan, Sri Lanka.

### 9. *Eurysaspis flavescence* (Distant, 1920)

*Eurysaspis, Sign. Ann. Soc. Ent. Fr. (2)* ix, 1851, p.342

*Eurysaspis, Stahl. En. Hem. v*, p.95 (1876).

**Material examined:** 01 Ex.; Pune (other details are not available).

**Distribution:** India: Tamil Nadu, Maharashtra- Pune.

**Elsewhere:** Ethiopia.

### 10. *Carbula insocia* (Walker)

*(Eysarcoris) Cat. Het. iii*, p.556 (1868); *Dist. P. Z. S.* 1900, p.812.

*Pentatoma bimaculata, Westw. in Hope Cat. i* p.35 (1837)

**Material examined:** 01 Ex.; Katraj tank, Pune; B.K. Tikader Coll.; 17.vii.1976 Reg. No. Ent/3 A/284: 01 Ex.; Loni, Pune; R.H. Kamble Coll.; 01.ii.1982 Reg. No. Ent/3 A/682.

**Distribution:** India: Karnataka, Maharashtra- Pune.

### 11. *Dalpada versicolor* (Herrich Schaeffer)

*(Halys) Wanz. Ins. v*, p.76, t. 169, f. 520 (1839); *Dall. List Hem. i*, p.185 (1851).

**Material examined:** 01 Ex.; Ambey valley ghat, Pune; B. Dutta Coll.; 01.vi.1962 Reg. No. Ent/3 A/685.

**Distribution:** India: North India, Maharashtra- Pune.

### 12. *Bagrada hilaris* (Burmeister)

*(Cimex) picta Fabr., Syst. Ent.* p.715 (1775); *Dall. (Strachia) List. Hem. i*, p.259 (1851); *Kirby (Strachia) J Linn Soc., Zool.* xxiv, p.85 (1891); *Stahl, Stett. Ent. Zeit.* xxiii, p.105 (1862).

*Bagrada hilaris Rider, Zoosyst. Rossica*, 2, p.137 (2002)

**Material examined:** 05 Ex.; Loni farm, Pune; R.H. Kamble Coll.; 01.ii.1982 Reg. No. Ent/3 A/681.

**Distribution:** India: Uttar Pradesh, Uttarakhand, Manipur,

West Bengal, Maharashtra- Pune.

**Elsewhere:** Sri Lanka.

### 13. *Nezara viridula* (Linnaeus)

*(Cimex) Syst. Nat. ed.* 10, p.444 (1758)

*Nezara viridula: Distant, Fauna Brit. India*, v, 1, p.220 (1902)

**Material examined:** 12 Ex.; Pawana dam, Pune; K. Mathew Coll.; 15.xii.1979 Reg. No. Ent/3 A/138: 01 Ex.; Paud, Pune; P.D. Gupta Coll.; 10.xii.1974 Reg. No. Ent/3 A/353: 01 Ex.; Loni farm, Pune; R.H. Kamble Coll.; 01.ii.1982 Reg. No. Ent/3 A/697: 01 Ex.; ZSI (WRC) campus, Pune; V.D. Hegde Coll.; 15.i.2018 Reg. No. Ent-3/782.

**Distribution:** India: Maharashtra - Pune & throughout British India.

**Elsewhere:** Australasian, Ethiopia, Nearctic, Neotropical & Palearctic region.

### 14. *Degonetus serratus* (Distant)

*(Abeona ?) Tr. E. S.* p.350 (1887)

**Material examined:** 02 Ex.; Parvati, Swargate, Pune; D.D. Jadhav Coll.; 20.i.2018 Reg. No. Ent-3/783.

**Distribution:** India: Maharashtra - Pune.

### 15. *Placosternum taurus* (Fabricius)

*(Cimex) Spec. Ins. ii*, p.344 (1781); *id. (Eddessa) Syst. Rhyng.* p.145 (1803); *Amy. & Serv. Hem.* p.174 (1843)

**Material examined:** 01 Ex.; Parvati, Swargate, Pune; D.D. Jadhav Coll.; 20.i.2018, Reg. No. Ent-3/785.

**Distribution:** India: Sikkim, Nagaland, Tamil Nadu, Maharashtra- Pune.

**Elsewhere:** Myanmar.

### 16. *Plautia crossota* (Dallas)

*(Cimex) Mant. Ins. ii*, p.295 (1787); *Dall. (Pentatoma) List Hem. i*, p.251 (1851); *Stahl, Hem. Afr. i*, p.191 (1864).

*Pentatoma fimbriolatum, Herr-Schuff. Wanz. Ins. vii*, p.102, f.768 (1844).

*Pentatoma crossota, Dall. List Hem. i*, p.252 (1851).

*Rhaphigaster rufoviridis, Walk. Cat. Het. ii*, p.364 (1867).

**Material examined:** 01 Ex.; Parvati, Swargate, Pune; D.D. Jadhav Coll.; 20.i.2018, Reg. No. Ent-3/784.

**Distribution:** India: Sikkim, Nagaland, Tamil Nadu & West Bengal, Maharashtra- Pune

**Elsewhere:** Myanmar, Malayan Peninsula, China, Japan.

### 17. *Halyomorpha halys* (Fabricius)

*(Cimex) Ent. Syst. iv*, p.115 (1794); *id. (Eddessa) Syst. Rhyng.* p.153 (1803).

*Cimex marmoratus, Fabr., Ent. Syst. Suppl.* p.534 (1798); *id. (Eddessa) Syst. Rhyng.* p.153 (1803).

*Cimex cinnamomeus, Wolff. Ic. iii*, p.99, f.93 (1802).

*Halys timorensis, Westw. in Hope Cat. i*, p.22 (1837); *Dall. (Pentatoma) List Hem. i*, p.242 (1851); *Mayr (Halyomorpha), Reise Nov., Hem.* p.50 (1866).

*Pentatoma halys, Stahl, Ofv. Vet.-Ak. Forh.* p.182 (1855).

*Pentatoma trivialis, Dohrn, Stett. Ent. Zeit.* xxi, p.400 (1860).

*Poecilometis mistus, Uhler, Proc. Ac. Phil.* 1860, p.223.

*Dalpada brevis, remota, & proxima, Walk. Cat. Het. i* p.226-7 (1867).

**Material examined:** 01 Ex.; GPRA, Akurdi, Pune; V.D. Hegde Coll.; 10.i.2018, Reg. No. Ent-3/786.

**Distribution:** India: Karnataka, Nagaland, Tamil Nadu & West Bengal, Maharashtra- Pune.

**Elsewhere:** Myanmar, Malayan Peninsula, China, Japan.

### 18. *Eupaleopada concinna* (Westwood)

*Halys concinna* Westwood (1837)

*Halys concinna* Westwood *sensu* Dallas, 1851.

*Halys concinna* Westwood *sensu* Distant, 1902.

*Halys latipes* Westwood *sensu* Distant, 1902.

*Dalpada bulbifera* Walker *sensu* Distant, 1902.

*Dalpada consobrina* Walker *sensu* Distant, 1902.

*Dalpada concinna* (Westwood *sensu* Kirkaldy (1909).

*Cimex clapatius* Fabricius *sensu* Stahl (1868) and *sensu*

Distant (1902), *Halys latipes* Westwood, *Dalpada bulbifera*

Walker, and *Dalpada consobrina* Walker

**Material examined:** 01 Ex.; Ganesh talav, Akurdi, Pune; D.D.Jadhav Coll.; 11.i.2018, Reg. No. Ent-3/787.

**Distribution:** India: Tamil Nadu, Kerala, Karnataka & Andhra Pradesh, Maharashtra- Pune.

**Elsewhere:** Sri Lanka.

### 4. Conclusion

The Paper contains 18 species of 16 genera of stink bugs belonging to 12 tribes under single subfamily of the family Pentatomidae. By the analysis of data, it can be concluded that the Stink Bugs were found more under the bark of the trees that too where moisture was available. As the recent collections were made during a stipulated time period from December to February which is the winter season these bugs might have hidden under the bark to escape from the cold weather. Further survey for a long period, during different seasons and in different habitats may reveal more number of species in the same area, the new records and occurrence of new species also.

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