

Beneficial fauna of Stink bugs of India

Introduction: Stink bugs belonging to subfamily Asopinae of Pentatomidae are exclusively predatory and are distributed throughout the world. Around 30 species belonging to 17 genera are recorded from India. Though quite a few species received considerable attention throughout the world in regard to their potential to suppress important agricultural pests, their use as biocontrol agents is limited in India mainly due to the lack of knowledge and familiarity in this group of insects. An account of most commonly occurring species associated with various agricultural ecosystem is given in the following sections.

Asopinae are characterized by having a crassate or thickened rostrum. *Amyotea malabarica* (Fabricius) (Fig.1), is a brilliantly reddish coloured insect with black markings on dorsal surface and alternate white and black transverse lines on ventral side of abdomen. It is a very common species mostly associated with rice and cotton ecosystems. *Andrallus spinidens* (Fabricius) (Fig. 2), is another useful and widely spread predatory species which was found feeding on Fall army worm (Fig.7) and associated with rice and maize ecosystems. It can be recognized by the two white longitudinal stripes on lateral margins of brownish corium.



Fig. 1

Fig. 2

Fig. 3

Cazira verrucosa (Westwood) (Fig. 3) is a bizarre looking species with dilated foretibiae and wart-like tubercles on scutellum. This species is distributed throughout India, though the exact prey of this species remains unknown. *Cecyrina platyrhinoides* walker (Fig. 4) resembles weevils in its external appearance. Members of this species are mostly black or castaneous with elongate head and dilated foretibiae. Even though they are known as predators, the information on its prey and predation potential are largely unknown. This species is known to occur in high altitude areas.



Fig. 4

Fig. 5

Fig. 6

Eocanthecona furcellata (Wolff) (Fig. 7) is one of the most common predatory bugs associated with several cropping systems especially useful in managing larvae of lepidopteran pests (Fig. 8) like *Hyblaea puera*, *Pericallia ricini* and *Antheraea mylitta*. This is a brown coloured bug with expanded foretibiae and bispinose humeri.

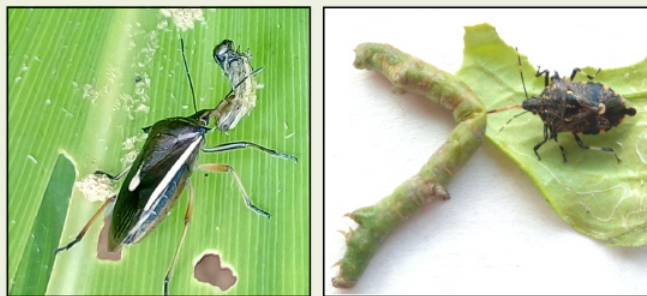


Fig. 7, Photo courtesy:

Fig. 8

Dr. Y. Lalitha

Eocanthecona concinna (Walker) (Fig. 6) is another species, which is a promising candidate for biological control of looper pests like *Biston suppressaria* (Guenee) in tea plantations. Fourth and fifth instar nymphs attacked faster on the prey. Present distribution of this species is restricted to Maharashtra and Tamil Nadu. It can be differentiated from the previous species by the moderately produced broad humeri, with truncated apex as compared to the spinose humeri in *E. furcellata*. This species can be successfully reared on *Corcyra cephalonica* with a total life cycle of 33-36 days.



Fig. 9

Fig. 10

Blachia ducalis Walker (Fig. 9) is a pale ochraceous bug with black spots on dorsum of the body. They are distributed in Sikkim and Naga hills. The information on its preys is unknown. *Perillus bioculatus* (Fabricius), (Fig. 10) also called two-spotted stink bug, is a new world species of Asopinae. This species is recorded from Meerut, Uttar Pradesh. They commonly feed on eggs or young grubs of coleopteran pests especially Chrysomelidae. This species was introduced to several European countries for the management of Colorado Potato beetle. The rearing procedures for the mass multiplication of this species were attempted and successfully adopted in many European countries. It is proved that this species can be multiplied on frozen larvae of its prey insects.



Fig. 11

Fig. 12

Fig. 13

Troilus luridus (Fabricius) (= *Podisus luridus*) (Fig. 11) is also called the bronze shield bug, is a widely distributed Palearctic species. It is distributed in the northern part of India especially in Himachal Pradesh and Uttarakhand. It is brown coloured bug with scattered ochraceous and black markings on dorsum. It is a predator of larvae of both Lepidoptera (Geometridae) and Coleoptera.

Picromerus griseus (Dallas) (Fig. 12) is a brownish bug with head and lateral margins of pronotum including humeri, black; lateral margins of pronotum is prominently serrated. This species is distributed in Sikkim, Naga Hills, Tripura and Himachal Pradesh. They prey upon a wide array of insect pests especially larvae of leaf feeding lepidopteran and coleopteran pests. This is yet another species which is amenable for multiplication as other species of *Picromerus* like *P. bidens* (Linnaeus), which was successfully



Fig. 14



Fig. 15



Fig. 16

multiplied in the laboratory, on larvae of lepidopteran host like *Galleria mellonella* in European countries.

Zicrona caerulea (Linnaeus) (Fig. 13) is a metallic blue coloured, medium sized bug (7-8 mm) resembling beetle in its external appearance. They are widely distributed in India and are associated with rice and ornamental plants like rose. Both adults (Fig. 14) and nymphs (Fig. 16) feed on leaf beetles belonging to *Altica* spp. (Fig. 15) especially stages like adults and grubs. Though it is particularly noted as a predator of Chrysomelidae, it has been reported to prey on larval forms of Coleoptera, Lepidoptera, Heteroptera and Diptera.

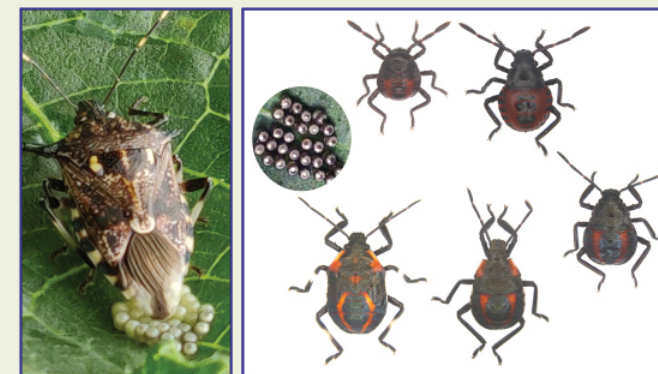
Asopinae as biocontrol agents and future challenges

It is reported that the first instars often feed on plant juices, which provide them moisture and supplementary nutrients at critical times. But unlike other predatory heteropterans, plant feeding asopines have not been reported to injure crops. They are usually generalist predators attacking prey belonging to various taxa.

Though India is represented by nearly 30 species of Asopinae, majority of these remain unexplored for their potential to use as biological control agents in managing pests of various crop plants. Biological control using predatory pentatomids can be effective mainly in augmentative release method, for which the major challenge is the artificial production of quality predators in large numbers at reasonable cost.

Standardization and mechanization of rearing procedures, improvement of storage facilities for the predators, development of suitable application systems and compatibility of predators with commonly used pesticides are other future challenges for their effective use as biological control agents in the field.

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