

The eupelmid egg parasitoid of the pentatomid bug, *Halyomorpha marmorea* F. in Dakshina Kannada district of Karnataka

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An egg parasitoid, of the pentatomid bug *Halyomorpha marmorea* F. which causes immature fruit drop in areca palm, is reported for the first time. The parasitoid is identified as the eupelmid, *Anastatus bangalorensis* Mani & Kurien.

The pentatomid bug, *Halyomorpha marmorea* F. is an important seasonal pest of areca palm, causing immature fruit drop (Vidyasagar and Shama Bhat, 1986). This insect is seen feeding on developing fruits of areca palm from the second week of March to the end of July. The management of these obscure bugs is not always successful due to many reasons especially the difficulty in spraying insecticides on palms. This insect is found to feed on many vegetable crops like cowpea, chilli, bitter melon, and ash gourd and on some wild plants like *Asp. sp.* Wild hosts play an important role in the build up of pentatomids that are agricultural pests and their distribution is magnified in tropical and subtropical regions where suitable food plants are available year round (Kurien, 1997). *H. mista* feeds on several horticultural crops in Japan including the legumes pea and kidney bean but may also feed on fruit trees (Kawada and Kurien, 1983). During a survey on the natural enemies of insect pests of areca palm, the egg clusters of this pentatomid were collected from the leaves of the cucurbit, bitter melon (*Benincasa hispida* (Thunb.) Cogn.). The parasitoid was also found to feed on cowpea grown near areca palm plantations, but eggs were not seen on these plants. One egg cluster showed some difference from the rest in its appearance and from these parasites emerged. This parasitism was noticed in 12 out of 28 eggs in the cluster (Fig. 1). The parasitoid is identified as *Anastatus bangalorensis* Mani and Kurien (Hymenoptera: Anastatusidae) (Fig 2). Mani and Kurien (1953) reported

this parasitoid from an indetermined pentatomid bug from Bangalore.

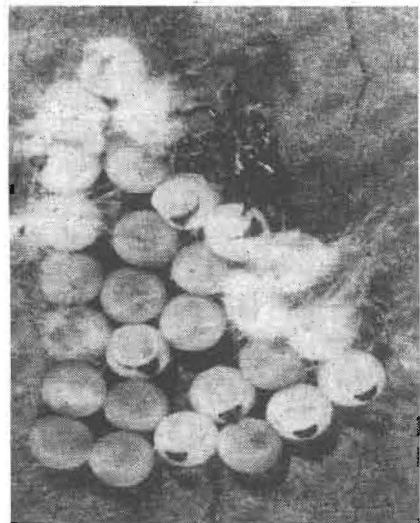


Fig. 1. Parasitised egg cluster of *H. marmorea*

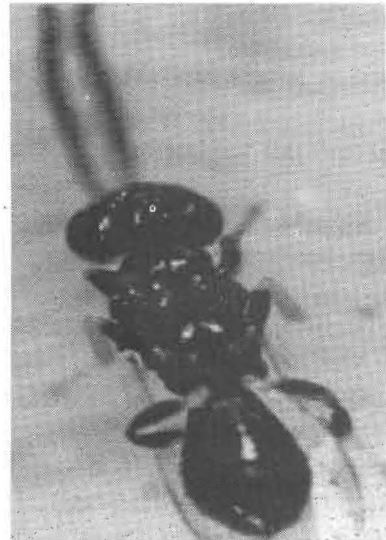


Fig. 2. Adult - *A. bangalorensis*

Several species of eupelmids are egg parasitoids of many insect groups such as coreids, pentatomids, saturniids, lymantriids, dipterans, orthopterans, coleopterans, blattarians (Gibson, 1993) and they are reported from many regions of the world. Egg parasitism by the genus *Anastatus* was recorded in pentatomids from different parts of the world. They are used for the control of few pentatomids by mass culturing and releasing the same in the fields, especially for those infesting litchi fruits in China and many fruit crops in Queensland. *A. biproruli* is reported from New South Wales and northern Victoria as parasites on the eggs of the pentatomid, *Biprorulus bibax* Breddin. infesting lemon (James, 1990). *A. japonicus* was used as egg parasite for reducing the incidence of litchi stinkbug *Tessaratomya papillosa* Drury in the litchi producing areas of China. The rate of parasitism was reported as high as 94 percent by hanging egg cards of the parasitoid in orchards (Liu *et al.*, 1998). Huang *et al.* (1974) had reported the bionomics of *Anastatus* sp and its utilization for the control of litchi stinkbug, *T. papillosa* in the Pearl Harbour Delta of China. Mass releasing of *A. japonicus* in litchi farms in Hong Kong also resulted in increased parasitism of 68.72 – 89.16% of *T. papillosa* eggs (Han-Shichou *et al.*, 1999). *Anastatus* sp. is recorded to parasitise a number of insect pests such as the coconut bug, *Pseudothrips wayi* that damages coconut in Zanzibar (Oswald, 1990) and mango fruit in South Africa (Neethling and Joubert, 1994); on the eggs of the pentatomid *Axiagastus cambelli* Dist. attacking coconut on the Gazelle Peninsula in Papua New Guinea (Baloch, 1973); eggs of citrus green stinkbug *Rhynchocoris humeralis* in the Western Development Region of Nepal (Pandey *et al.*, 1995) and the coreid *Amblypelta lutescens* (Dist.) in north Queensland (Fay and Huwer, 1993). Mass rearing and releasing of *Anastatus* sp of the pentatomid *T. papillosa* was done on the eggs of *Samia cynthia ricini* (Nanta, 1988) and released in Longans (Leksawasdi and Kumchu, 1991). Tripathi and Mehrotra (1991) reported parasitism by *Anastatus* sp on the eggs of *Megarhynchus* sp, a pentatomid pest of sugarcane in Nagaland.

Only very few species of *Halyomorpha* are recorded as pests of cultivated crops from some parts of the world. Other than the areca pentatomid, Prakash and Sudharshan (2000) recorded this genus *Halyomorpha* sp.nr *picus* as a pest of vanilla, *Vanilla planifolia* Andrews. Vanilla is being cultivated in a large scale in many parts of Kerala and Karnataka in areca palm based and other cropping systems. The occurrence of egg parasitism on *H. marmorea* is of significance in the management of this bug in areca plantations. Insecticide

application is a very difficult process to be undertaken in these plantations. Since *H. marmorea* conceals its occurrence, it is important to use the indigenous natural enemies of this insect to manage them. The egg parasitism observed on egg clusters laid on one of the breeding host plants of this insect could be positively used to manage this insect since egg clusters are very rarely observed on areca leaves.

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References

- Baloch, G.M. 1973. Natural enemies of *Axiagastus cambelli* Dist. (Hemiptera: Pentatomidae) on the Gazelle Peninsula, Papua New Guinea. *Papua New Guinea Agricultural Journal* 24: 4-6.
- Fay, H.A.C. and Huwer, R.K. 1993. Egg parasitoids collected from *Amblypelta lutescens lutescens* (Distant) (Hemiptera: Coreidae) in North Queensland. *Journal of the Australian Entomological Society* 32: 365-367.
- Gibson, G.A.P. 1993. Parasitic wasps of the subfamily Eupelmidae. Classification and revision of world genera (Hymenoptera: Chalcidoidea: Eupelmidae). *Memoirs on Entomology International* 5:1-421.
- Han-Shichou; Liu-WenHui; Chen-Qiaoxian; Zeng-Binkon; Chen-NaiRong; Lin-JiangXing; Yu-Fuxiang; Han, S.C.; Liu, J.; Chen, Q.X; Zeng, B.K; Chen, N.R; Lin, J.X and Yu, J. 1999. Mass releasing *Anastatus japonicus* to control *Tessaratomya papillosa* in Hong Kong. *Chinese Journal of Biological Control* 15: 54-56.
- Huang, M.D., Mai, S.H., Wu, W.N. and Poo, C.L. 1974. Bionomics of *Anastatus* sp. and its utilization for the control of litchi stinkbug, *Tessaratomya papillosa* Drury. *Entomologica Sinica* 17: 362-375.
- James, D.G. 1990. Incidence of egg parasitism of *Biprorulus bibax* Breddin (Hemiptera: Pentatomidae) in southern New South Wales and northern Victoria. *General and Applied Entomology* 22: 55-60.
- Kawada, H. and Kitamura, C. 1983. Bionomics of the litchi marmorated stinkbug, *Halyomorpha mista*. *Japanese Journal of Entomol. Zool.* 27: 304-6.
- Leksawasdi, P. and Kumchu, C. 1991. Mass rearing and releasing of the parasitoid *Anastatus* sp. *Kasetsart Journal (Natural Sciences)* 25: 47-58.
- Liu-XiDie, Lai-ChengQing, Liu-XD, and Lai-CQ 1998. Experimental control of litchi stinkbug by using *Anastatus japonicus* Ashmead. *South China Fruits* 27: 31.
- Mani, M.S. and Kurien, C. 1953. Descriptions and records of *Anastatus* from India. *Indian J. Ent.* 15: 12-14.

- P. 1988. Biological control of longan stinkbug, *Tessaratoma papillosa* Drury in Thailand. *Colloques-de-l'INRA*. No.43, 525-526.
- ing, C. and Joubert, P. 1994. Damage to mango fruit by the coconut bug. *Inligtinsbulletin Instituut vir Tropiese en Subtropiese Gewasse* No. 264: 11-12.
- ed, S. 1990. Possibilities for the use of *Ooencyrtus albicrus* (Prinsloo)(Hym. Encyrtidae) in an integrated pest management approach against the coconut bug *Pseudotheraptus wayi* Brown (Hem: Coreidae) in Zanzibar. *Journal of Applied Entomology* 110: 198-202.
- er, A.R. 1977. Wild hosts of pentatomids: Ecological significance and their role in their pest status on crops. *Ann. Rev. Entomol.* 42: 99-122.
- Pandey, R.R., Gurung, T.B. and Ghimire, H.P. 1995. Studies on citrus green stinkbug (*Rhynchoscoris humeralis*). *Working Paper Lumule Regional Agricultural Res. Centre*, 1995. No.95-41, 11p.
- Prakash, K.V. and Sudharshan, M. R. 2000. Vanilla bug, *Halyomorpha* sp. nr. *picus* (Fab.) (Hemiptera: Pentatomidae)- A new pest of vanilla (*Vanilla planifolia* Andrews). Abstract of poster presented in the International Conference on Plantation Crops held at Hyderabad from 12- 15 December 2000. p. 82.
- Tripathi, G.M. and Mehrotra, A.K. 1991. *Megarhynchus* sp. (Hemiptera: Pentatomidae), pest of sugarcane in Nagaland. *FAO Plant Protection Bulletin* 39: 186-187.
- Vidyasagar, P.S.P.V and Shama Bhat, K. 1986. A pentatomid bug causes tender nut drop in arecanut. *Curr. Sci.* 55: 1096-1097.

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