NBAIR Newsletter

ICAR - National Bureau of Agricultural Insect Resources

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Dead insects and 'biodiversity'

In November 2014, we were at the WORLD BIODIVERSITY CONGRESS in Colombo, Sri Lanka. Organized by Global Scientific Research Foundation and University of Colombo, the meet saw a large gathering of scientists from all over the world. Being proximal to India there was a large participation from our country. Biodiversity is still a vague term. The great ecologist T.R.E. Southwood even dubbed it a 'spiritual concept'! To me, biodiversity means all living species. Once dead they get out of the ambit of biodiversity. Yet, paradoxically, the dead taxonomic specimens are on the radar of 'biodiversity' regulations. This has stalled the progress of taxonomy as taxonomists are struggling to break frontiers of science and geography in a quest to name new species, especially insects.

In India alone we have more than a lakh species to be described and diverse experts have to be sourced. Help from such experts can now be enlisted only on 'memorandum of understanding' basis. This is extremely difficult as each expert is a specialist in a family or two, and many a time even a subunit of a family. This may entail generating 100's of MoUs – a gigantic, full-time job. Further, as we are in need, international experts though too willing to help, shirk from endorsing unsolicited agreements of no direct benefit to them.

Even the revised notification of the National Biodiversity Authority prescribes this. If free movements of dead insect specimens between experts are not relaxed we stand to lose on that science. The myriad groups of Class Insecta require not less than 200 taxonomists. With just about one-fifth the number, Indian biosystematics (interchangeably systematics/taxonomy) with respect to insects will remain stifled! Describing new pests, new parasitoids, predators, pollinators and other agriculturally important insects (read arthropods) will be slower, affecting the much-needed pace of nomenclaturing to serve the cause of insects in relation to farmers.

In the years to come the economic impact of insects as pests, vectors, tools in integrated pest management, food, pollination, ecological sensors, decomposers, etc. will be even more evident and the obvious question will be as to which are the species that matter. Unless accurate identifications are available, contribution to science related to insects will be stumped all over India. Insect taxonomy has always grown on a swath of international networking. In the last 10 years or so, restriction on exchanges of 'type' insects have considerably decelerated, adding to the woes of a science already bereft of specialists. So we need to make exchanges of dead insects between India and other countries without much paperwork.

At the World Congress in Colombo, my colleagues Dr Chandish Ballal and Dr Sreerama Kumar, and I stressed on these, ensuring that insects as dominant part of biodiversity is also heard amidst the din of other bigger biota – the mammals, birds, reptiles and so on. The bottom line is by what name each new insect species is called or named is key to all biodiversity-related dispensations. Therefore, we at the Bureau are looking forward to easier international biosystematics networking for the cause of agriculture and biodiversity. Optimistically, this would ensue sooner as we are working towards this.

Wishing all our readers a happy and enjoyable pursuit of science in 2015!

Abraham Verghese
Director

Research Highlights

New distribution records

Platygastrid *Nixonia krombeini* (Fig. 1), hitherto known only from Uttarakhand, was collected from Valparai, Tamil Nadu.

The melon lady bird, *Henosepilachna elaterii* (Fig. 2), a serious pest in Europe and Africa, has been recorded for the first time in Gujarat on lucerne.

Fig. 1: ***Nixonia krombeini***

Fig. 2: ***Henosepilachna elaterii***

Outbreak of lantana defoliator

A severe outbreak of the noctuid defoliator, *Hypena laceratalis* (Fig. 3), has been noticed on lantana weed in and around Bengaluru. The larvae are solitary external leaf feeders, causing large windows in the leaves leading to skeletonisation. Though *H. laceratalis* is naturally distributed in India, it has not been exploited for the biological control of lantana in India.

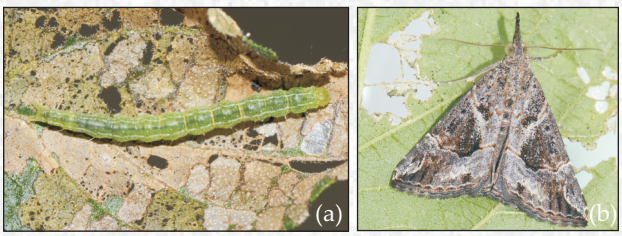

Fig. 3: ***Hypena laceratalis*: (a) Larva; (b) Adult**

First record of *Pseudococcus calceolariae*

Pseudococcus calceolariae (Fig. 4) was recorded infesting the collar region of *Rubus* spp. in Udhagamandalam, Tamil Nadu. This is the first record of this mealybug species in India. This pest is considered invasive in the US and it has been intercepted at US ports-of-entry from nearly any warm area of the world. It is known to occur on 55 host plants belonging to 46 families. It has been recorded on several economically important host plants species, including *Citrus*, *Pyrus*, *Solanum* and *Vitis*.

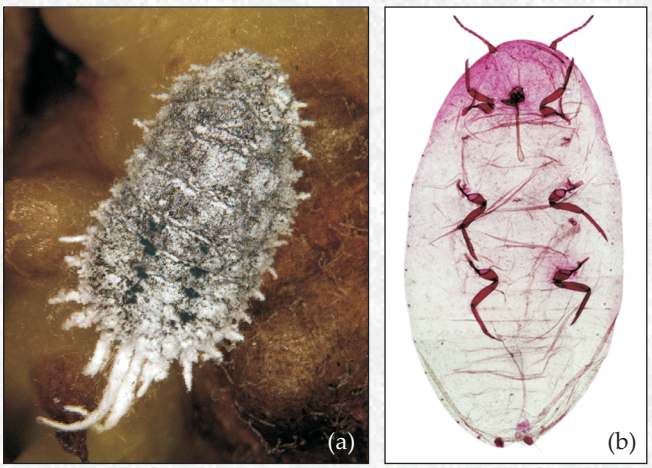

Fig. 4: ***Pseudococcus calceolariae*: (a) In nature; (b) Mounted**

New wasp taxa

In the comprehensive rearing of lepidopterans from peninsular and central India, 11 species of Lycaenidae were parasitised by 10 species of wasps. Four new taxa of lycaenid-associated microgastrine wasps *Parapanteles eros* Gupta, *Parapanteles arka* Gupta, *Parapanteles esha* Gupta and *Parapanteles regale* Gupta were reared from *Chilades pandava*, *Curetis thetis*, *Prosotas dubiosa* and *Tajuria cippus*, respectively.

Biocontrol in the field

During this quarter, Dr Abraham Verghese, Director, NBAIR & Project Coordinator of AICRP on Biological Control, monitored the biocontrol experiments and demonstrations being conducted by AICRP centres in Punjab and Tamil Nadu.

"Swachh Bharat Mission" – Action initiated at NBAIR

As per the directives received from ICAR with reference to the launch of "Swachh Bharat Mission" (National Sanitation Campaign), a five-year plan to be undertaken till October 2019 was prepared. Routinely, both Hebbal and Yelahanka campuses of NBAIR get cleaned every day. Extra emphasis on cleaning has been put in place from 20 December 2014. In addition to campus cleaning, the outside walls of the main institute and farm were cleared of all the advertisement posters. The garbage dumped near the farm entrance was cleaned and disposed of. All the staff members were involved in the cleaning drive. Special emphasis has been given to landscaping and beautifying both campuses.


Outside NBAIR Research Farm

"Vigilance Awareness Week" at NBAIR

Director welcoming the CBI officer

Marking the celebration of "Vigilance Awareness Week" (27 October 2014 to 1 November 2014) at NBAIR, Director Dr Abraham Verghese administered the pledge at 11 a.m. on the first day to bring about corruption-free working environment. Dr M. Nagesh, Vigilance Officer, presented a talk on the current status of corruption in India relating the data with that from other countries. Mr T.P. Ananthakrishnan, DySP, Vigilance & Anti-Corruption Wing, Central Bureau of Investigation, presented a special lecture on the occasion. Debate and elocution competitions were organised for staff members and students. During the valedictory function on the final day, prizes were distributed to the winners of competitions.

"Rashtriya Ekta Diwas" observed at NBAIR

NBAIR observed "Rashtriya Ekta Diwas" or National Unity Day on 31 October 2014, the birth anniversary of Sardar Vallabhbhai Patel. After administering the pledge to all staff members, NBAIR Director Dr Abraham Verghese explained the importance of the event. The event ended with the singing of our national anthem.

Awards for NBAIR scientists

Dr Abraham Verghese, Director, NBAIR, was bestowed with the *Lifetime Achievement Award* at the World Biodiversity Congress - 2014 in Colombo, Sri Lanka, on 26 November 2014.

Dr K. Subaharan, Senior Scientist, NBAIR, won the *Best Oral Presentation Award* at the National Symposium on Entomology as a Science and IPM as a Technology: The Way Forward, Pasighat, 13–15 November 2014. He also won the *Best Oral Presentation Award* at the International Conference on Changing Scenario of Pest Problems in Agri-Horti Ecosystem and Their Management, Udaipur, 27–29 November 2014.


Dr Verghese receiving the award

Biocontrol luminary Dr S.P. Singh departs

Dr Surinder Pal Singh (b. 11 August 1941), affectionately called 'Dr Singh' by one and all, passed away aged 73. Born in Faridkot, Punjab, he spent most of his research and administrative career in Bengaluru, before settling down in Chandigarh post retirement.

In his resolute quest to popularise biocontrol, the Russian-trained Dr Singh first took over the reins of the All-India Coordinated Research Project on Biological Control of Crop Pests and Weeds in 1984. After being elevated to the Head, Biological Control Centre, in 1988, he saw the opportunity to establish an independent Project Directorate of Biological Control (PDBC, now NBAIR) for full-fledged biocontrol research. That materialised in 1993, and within five years of establishment, PDBC won the prestigious *Best Institution Award* of ICAR. It was his unshakeable steadfastness to find biocontrol solutions to invasive pests and weeds that stood out while he was at the helm of biocontrol research.

His repertoire had biocontrol-based technologies for managing mealybugs, scales, psyllids and lepidopteran pests of maize, sugarcane, tomato, tobacco, cabbage, cotton, rice and several other crops. His allegiance to biocontrol was evident when he reposed faith in entomopathogenic nematodes and entomopathogenic fungi for insect control; in fungi and bacteria to suppress plant parasitic nematodes; in host-specific fungal pathogens to manage weeds; and in fungal pathogens to bring phytophagous mites under control.

Immediately after retirement in 2002, his services were sought by FAO for consultancy on coconut IPM in the Asia-Pacific region, based in Jakarta. After returning from Indonesia, he still retained his connection with biological control and IPM by providing consultancy to farmers and by being on panels and scientific review committees. In short, he was synonymous with biological control in India. He is survived by his wife and son. Our heart goes out to them.

Technologies Transferred

In November-December 2014, NBAIR transferred six technologies to Ponalab Biogrowth Private Limited and five technologies to Ambrosia Crop Enrich (India) Private Limited.

Ms Rama is our new AO

Ms S. Rama joined NBAIR on 3 December 2014 as the new Administrative Officer. She took over charge from **Mr J.N.L. Das**, who was transferred to ICAR-Indian Institute of Horticultural Research. NBAIR's Staff Welfare Association arranged a function to bid adieu to Mr Das and to welcome Ms Rama, on 8 December 2014.

Selected Publications

Rajmohana, K. & Veenakumari, K. 2014. *Chakra*, a new genus of Scelioninae (Hymenoptera: Platygastridae) from India, along with description of a new species. *Zootaxa*, 3821(2): 285–290.

Srinivasa Murthy, K., Ramya, S.L., Venkatesan T., Jalali, S.K. & Verghese, A. 2014. Biochemical basis of insecticide resistance and determination of esterase enzyme patterns in field collected population of *Cotesia vestalis* (Haliday) (Hymenoptera: Braconidae) from India. *Annals of Biological Research*, 5(11): 7–15.

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