

# NBAIR Newsletter



ICAR - National Bureau of Agricultural Insect Resources

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## 'Kikiki' tale and our new name



Expeditions are key to explorations in natural history including insects. Hitherto, to a large extent, we awaited insects coming onto our crops, homesteads and domestic animals. These insects became economically important drawing our attention to their collection and identification. This approach in essence is shifting. Insects are now being viewed as a 'resource', of unexplored potential value. So, our expedition teams perform cross agrarian frontiers into other ecosystems to collect, characterise and utilise myriads of insects that can influence (and are influencing) our agro-ecosystems. In fact, agro-ecosystems, desert/scrub jungles, woody forest, etc. are all one continuum – a gradient along which insects move. So all habitats, along all ecological scales, ultimately influence agro-ecosystems. Therefore, our expeditions have been to the many unexplored mountains of Himalayas, Western and Eastern Ghats, the Kutch and Malnad regions, etc. Each

expedition led by our committed scientists, which also includes trained competent 'insect collectors', yield anywhere from a 1,000 to 5,000 insects at one go of a week's tour. The backend work then begins cleaning and curating them. After processing in dry or wet forms, the morphological, molecular and ecological characterisation begins. And, that is our main mandate! Let me remind our readers we have an estimated one lakh more unnamed insects to be 'caught'. So our focus and endeavour are of high steely resolve. No wonder then that we recently had one of the world's smallest insects, *Kikiki* (0.16 mm long!), documented in the Yercaud hills. Kudos to our team who added this to our repository and even photographed it! Our scientists and staff are an enthusiastic bunch.

And, with our rechristened name National Bureau of Agricultural Insect Resources (NBAIR), our repository, digital documentation and live bio-cultures will be a big resource pool to serve Indian agriculture and our beloved *kisan* friends.

Abraham Verghese  
Director

## DDG (Crop Science) inaugurates 'Mite Repository'

Dr Swapan Kumar Datta, Deputy Director-General (Crop Science), inaugurated the newly added 'Mite Repository' at NBAIR on 17 July 2014. The repository caters to the modern research needs in mite collection, taxonomy and characterisation. In future, NBAIR hopes to provide identification services of mites. Mite collections at NBAIR include important phytophagous species in the families of Tetranychidae, Tenuipalpidae, Tarsonemidae and Eriophyidae. Specimens of predatory mites are also part of the repository. Addressing the scientists, Dr Datta stressed that research efforts must be focused on deciphering the evolutionary linkages of mites using genomic tools. Dr Abraham Verghese, Director, NBAIR, presented a memento to Dr Datta in appreciation of his outstanding contribution to crop sciences.





## Research Highlights

### Aphids on *Rubus* spp.

Two aphid species, *Matsumuraja capitophoroides* (Fig. 1) and *M. rubifoliae* (Fig. 2), were recorded on *Rubus* spp. near Doddabetta peak, Udthagamandalam, Tamil Nadu. The second species is a new record for south India. These two species can be separated based on the shape of the siphunculi. In *M. capitophoroides*, they are cylindrical, whereas in *M. rubifoliae*, they are distinctly swollen at the distal end.



Fig. 1: *Matsumuraja capitophoroides*



Fig. 2: *Matsumuraja rubifoliae*

### *Kikiki* found in Tamil Nadu

*Kikiki* (Hymenoptera: Mymaridae) (Fig.3), the smallest known flying insect, was collected in Shevaroy hills in Yercaud, Tamil Nadu. It is about 150–170  $\mu\text{m}$  long. *Kikiki huna* is the only species known in this genus at present, and it remains to be seen if the Indian specimens are conspecific or not.



Fig. 3: *Kikiki* sp.

## Brainstorming on biosecurity and celebration of success of biocontrol of eucalyptus gall wasp

On 26 August 2014, plant protection scientists met at NBAIR's Yelahanka campus for "Brainstorming on Biosecurity Issues in Relation to Insects and Quarantine & Celebration of the Success of Biological Control of Eucalyptus Gall Wasp". At the outset, Director of NBAIR, Dr Abraham Verghese, brought forward the currently existing issues on biosecurity and explicated the key focal points for brainstorming. He also listed out the successes in biocontrol of various pests in the country, and particularly recounted the eucalyptus gall wasp story. Director-General of National Institute of Plant Health Management Dr K. Satyagopal, IAS, was present along with Dr S.N. Sushil, Plant Protection Advisor (PPA) to the Government of India.



The chief guest Dr Satyagopal, in his address, highlighted the importance of biosecurity and how his organisation has been addressing various issues. The guest of honour Dr Sushil's speech was focussed on potential invasive pests and their mitigation and management. The PPA contended that a strong network of agricultural universities, research institutes and government agencies concerned with plant protection and quarantine was required to regulate pest invasions.

The inaugural session was followed by technical sessions focussing on the theme area of the meeting. There were questions, lengthy discussions and recommendations on biosecurity issues. An extension folder on "Integrated Pest Management of Mango Fruit Fly (*Bactrocera* spp.)", published by the Indian Institute of Horticultural Research, was released during the function.

Earlier in the day, Dr J. Prasanth Jacob from the Institute of Forest Genetics and Tree Breeding, Coimbatore, presented an account of the successful biological control of eucalyptus gall wasp in India. Dr N. Bakthavatsalam and Dr A.N. Shylesha of NBAIR; Mr H.K. Kulkarni of Indian Paper Manufacturers Association; and Dr Jacob were honoured on the occasion for their contributions towards the successful management of eucalyptus gall wasp in the country.

## Brainstorming on insects of veterinary and fishery sciences

A day-long “Brainstorming Session on Insects Related to Veterinary and Fisheries Sciences” was organised by NBAIR in association with the Society for Biocontrol Advancement on 2 August 2014. Dr S. Ayyappan, Secretary (DARE) & Director-General (ICAR), inaugurated the programme and flagged the issues. He stressed on the need to have nodal institutes from ICAR’s Animal Science and Fisheries divisions to work with NBAIR on taxonomy and characterisation of insects of importance to animal sciences. He asked the scientists to produce an identification guide for arthropods related to animals and fish. Dr Ayyappan also wanted the scientists to identify molecules for safe control of pests of animals and fish, as well as aquatic weeds. Dr C. Vasudevappa (Vice-Chancellor, University of Agricultural and Horticultural Sciences, Shimoga), Dr S. Yathiraj (Dean, Veterinary College, Bangalore), Dr C.A. Viraktamath (Chairman, Research Advisory Committee, NBAIR), Dr H. Rahman (Director, National Institute of Veterinary Epidemiology & Disease Informatics, Bengaluru), Dr R.Venkataramanan (Joint Director, Indian Veterinary Research Institute, Bengaluru) and Dr J.K. Jena (Director, National Bureau of Fish Genetic Resources, Lucknow) were present during the inauguration. Earlier, NBAIR Director Dr Abraham Verghese welcomed the delegates and introduced the theme of the session. Over 40 scientists from veterinary and fishery research institutions / universities participated in the meeting and their interactions culminated in chalking out the recommendations. The Director-General released the June issue of ‘NBAlI Newsletter’ on the occasion.



## NBAIR participates in farmers-scientists meeting in Sringeri, Karnataka

On the occasion of the foundation day of the University of Agricultural and Horticultural Sciences (UAHS, Shimoga), a farmers-scientists interaction meeting was held on 22 September 2014 at the Agricultural and Horticultural Research Station in Sringeri, Karnataka. The interaction meeting mainly focussed on problems plaguing arecanut and other plantation crops. Chief guest Dr. S. Ayyappan, Secretary (DARE) & Director-General (ICAR), assured the farmers that a joint project involving the university, Central Plantation Crops Research Institute (CPCRI, Kasaragod) and NBAIR will be initiated within a period of three months for tackling the problems of yellow leaf disease (YLD), white grubs and *koleroga* of arecanut. NBAIR scientists took this opportunity to highlight the technology of using entomopathogenic nematodes for managing the white grubs of arecanut. Samples were provided to interested farmers for use in root grub-infested plots. Dr C. Vasudevappa (Vice-Chancellor, UAHS), directors of several ICAR institutes, including Dr Abraham Verghese (NBAIR) and plant protection scientists participated in the meeting.





## NBAIR marks ICAR Foundation Day

NBAIR celebrated the “86th ICAR Foundation Day” on 16 July 2014. Director Dr Abraham Verghese, addressing the audience of scientists, administrative personnel and visitors, recalled the early days and reminded everyone of how ICAR was formed during the pre-independence



period. He underscored the significant role played by ICAR in ensuring food security in the country. This year’s highlight was an exhibition that showcased the vast insect collections of NBAIR. Various technologies developed at NBAIR were also displayed. The event was attended by several farmers and more than 400 students from Bengaluru schools. The insectarium,



housing about 28 live insect species, was kept open for the visitors. This important function was covered by both visual and print media.

## “Hindi Pakhwada” at NBAIR

NBAIR celebrated the “Hindi Pakhwada” from 15–29 September 2014. There was an overwhelming response from the staff members. An essay competition in Hindi (Topic: ‘Honey’ or ‘Organic farming’) was organised on the first day, in which nine staff members participated. The event began with the inaugural address by Dr Abraham Verghese (Director, NBAIR) who spoke on the importance of Hindi in day-to-day activities. He also read the appeal of Dr S. Ayyappan, Secretary (DARE) & Director-General (ICAR), in Hindi. Mr J.N.L. Das, Administrative Officer of NBAIR, emphasised the importance of this widely spoken language in official activities. On the concluding day, a lively Hindi singing competition was organised. During the valedictory function, Dr Verghese gave away prizes and certificates to all those who enthusiastically participated in the competitions. The events were coordinated by Dr Ankita Gupta, Scientist, with assistance from Mr Satandra Kumar, Mr B.K. Chaubey and Ms Nazia Anjum.



### Congratulations!

**Dr N. Bakthavatsalam**, Principal Scientist, Division of Insect Ecology, NBAIR, received the *Prof. T.N. Ananthkrishnan Award* for 2014 in Chennai on 15 September 2014.

**Dr S.K. Jalali**, Principal Scientist, assumed charge as the Head, Division of Molecular Entomology at NBAIR on 30 September 2014.

**Dr M. Nagesh**, Principal Scientist, Division of Molecular Entomology, NBAIR, has been selected as the Head, Division of Crop Protection, Central Potato Research Institute, Shimla.

### Selected Publications

Gupta, A., Churi, P.V., Sengupta, A. & Mhatre, S. 2014. Lycaenidae parasitoids from peninsular India with description of four new species of microgastrine wasps (Hymenoptera: Braconidae) along with new insights on host relationships. *Zootaxa*, 3827(4): 439–470.

Ojha, R., Jalali, S.K., Mushtak Ali, T.M., Venkatesan, T., Prosser, S.W. & Krishna Kumar, N.K. 2014. DNA barcoding of Indian ant species based on *cox1* gene. *Indian Journal of Biotechnology*, 13: 165–171.

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