

## Expertise crisis in insect taxonomy: Need for introspection

Insects have been involved in many areas of biological research – agriculture, horticulture, forestry, vector biology in relation to plant, animal and human diseases – and deteriorating capacity to identify them is fast becoming a matter of serious concern, more so with increasing involvement in biodiversity studies. For consideration as to whether species are critical, endangered or vulnerable, a specific understanding of species diversity becomes obligatory and this increasing taxonomic impediment has also interfered with the proper recognition of endemic species. To know a species with authority requires years of hard work and which species to target for control or conservation requires expertise in systematics. An understanding of intraspecific diversity is needed based on population studies, distributional diversity, degree of sexual dimorphism, sex-limited polymorphism, cyclical polymorphism and various degrees of structural diversity, to mention only a few – since different groups have diverse parameters to be considered. Quick taxonomic assessment systems with interim names now advocated for biodiversity studies would in the long run be detrimental to the progress of recognized taxonomic research. The view that taxonomic research be relegated to the surveys is far fetched in view of hundreds of specialists being needed and the existing inadequacy of experts in every group in the survey is also a matter to be examined.

The advent of agricultural universities saw the exit of taxonomy. Those of yesteryears can proudly recall the erstwhile

Madras Agricultural College, which was noted for its insect collections and expertise in diverse groups including doyens such as the late T. V. Ramakrishna and Y. Ramachandra Rao. It is time that every agricultural university should re-examine the need for instituting a taxonomic division with adequate expertise.

Necessary action is called for in order to overcome the existing expertise crisis and the following action plan deserves consideration: (i) There is a need to review available expertise in relation to several insect groups and how this could be overcome to cater to the needs of basic and applied entomologists, not to mention of the equally desirable need for identifying the ever-increasing quanta of species accumulated in several biodiversity studies. In this connection, one cannot overlook Mayr's words, 'Each species has different biological characters, an analysis and comparison of which is a prerequisite for all other research in ecology, behavioural biology and comparative morphology and physiology'. (ii) Taxonomy should be introduced as a compulsory subject at the post-graduate level with adequate involvement in field work. (iii) Adequate grants for pure taxonomic research in universities and colleges with the view to promote the development of specialist cadres in the course of time, should be provided. (iv) Increased opportunities to visit international centres such as Smithsonian, British Museum of Natural History and the like should also be provided. (v) Annual meetings at different centres on taxonomy-based subjects should be held. (vi) The involve-

ment of behavioural, biological, biochemical and molecular studies of species should be encouraged subsequent to initiating a strong foundation in basic taxonomy.

Needless to emphasize that the dearth of expertise and poor allocation of funds and the step-motherly attitude towards funding pure taxonomic research are serious impediments which must be overcome before it is too late. The time is perhaps right for consideration of a National Institute for Entomological Studies which will be an integrated centre for taxonomic research with the combined support of agricultural, forestry, environmental and medical organizations. Interestingly some countries have installed 'a-sponsor-a-species scheme' under which the sponsor's name or the company's name is used in generic and specific nomenclature!!

It may perhaps be wise to quote Edward Wilson 'Humanity is exalted not because we are far above other living creatures, but because *knowing them well* elevates the concept of life'. Elsewhere he also says 'To attempt the absolute measure of diversity is a mission worthy of the best efforts in science'. Where is the expertise?

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## National vs international research

Given an opportunity, any Indian scientist can do excellent research compared to scientists working in the laboratories of developed countries. This is clearly evident from the honours/awards (even like Nobel prize) credited to India-born scientists in various fields. In the Indian context, the indicator of excellent work is quality publication, which implies publication in a good journal. In chemistry, the best Indian journal, *Indian Journal of Chemistry*, a CSIR publication, has an

impact factor (IF) of around 0.4, which is tremendously low when compared to other sister journals like *Bulletin of the Chemical Society of Japan* (IF ~ 1.2), *Australian Journal of Chemistry* (IF ~ 1.1), etc. Working in Indian laboratories, it is impossible to publish an article in good journals like *Angewandte Chemie International* (IF ~ 8.2) and *Journal of the American Chemical Society* (IF ~ 6.0). Indian scientists working in foreign laboratories have co-authored a large number

of papers in these journals. The same scientists while working in India find it difficult to publish articles in these journals. C. V. Raman published his first few (around 15) articles in good foreign journals and then published almost all the rest of his articles (~ 200) in an Indian journal (*Current Science*). Hence, some may think it appropriate to visit foreign laboratories every year, and co-author publication in good journals there than to work in Indian laboratories throughout

the year and publish articles in Indian journals. Twenty research articles in *Indian Journal of Chemistry* are equivalent to one publication in *Angewandte Chemie* (!).

Why do these observations bother our mind? For a true researcher, the primary incentive for research work is his mental satisfaction (!), the secondary incentives being an award or a promotion. For both the latter cases, the mathematics of impact factor works. Very little recogni-

tion is generally given to scientists in Indian laboratories. One important question that bothers is 'Does the candidate have any research training (experience) in a good research laboratory (work in any foreign laboratory, then come back to reputed institutions like IISc, IITs in India)?'. Sometimes this training without publication is rated higher than research publications of one's work from Indian laboratories. Though research in Indian laboratories is being encouraged, foreign

training and publication in foreign journals are still considered to be better, which may have a bad impact on research in India.

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## Blind folly?

This concerns an article published recently in *Current Science* (2000, **78**, 1136). As all of us know, we are a nation where compartmentalization has been carried to its ultimate in the specification of sub-sub-classes in all spheres of life ranging from the communal to the professional – and it is risky business to make any comment that might be construed as 'casting aspersions' on anything outside one's own sub-sub-class. However, the contents of the article have raised some questions in my mind that require airing.

The article concerned deals with the influence of photoperiod variations on the copulatory behaviour variables of certain mammals. One gathers that earlier studies have been performed on laboratory rats, prairie voles, Indian palm squirrels, cane mice and Indian desert gerbils, and therefore it is now the turn of South Indian gerbils (*Tatera indica cuvieri*).

It is perhaps a quite legitimate scientific objective to study this sort of problem in our endeavour to understand the grand design of life. One cannot seriously

object to taking these animals and subjecting some of them to varying periods of light and darkness, in order to study systematically what they do or do not do in the dark. If done in a reasonable fashion, the effects of such experimentation upon the animals concerned would probably be only temporary and reversible.

But *blinding* them by injecting absolute alcohol ('Merck, Germany', presumably to ensure real quality) into the vitreous chamber of the eye, 'following which the iris turned white'? I doubt whether the subjects could derive any satisfaction from the fact that they thereafter went from being inactive adult males to (hyper?) active ones with enhanced 'intromission frequency, thrust frequency, ejaculation frequency and [perhaps as a bonus] post-ejaculatory copulation frequency'.

I am no rabid animal rights activist, and in fact I find the extremes to which the fringe groups among the latter push their objections quite ridiculous. However, I find the nature of the present study and the means used somewhat

incommensurate with the advancement of real knowledge achieved as a result. One shudders to think of the possible extensions of such a study. Perhaps blinding by a series of increasingly more virulent agents would spur the poor creatures on to even greater efforts – hydrochloric acid, laser radiation, Chennai Metrowater? And now that we know that yes, gerbils have what it takes, what about mongooses, rabbits, cats, dogs, chimps, . . .? Eventually, does one expect to establish that Braille is an unnecessary distraction?

If I have overstated my point, it is because I feel that a certain level of discerning judgment and overall perspective is needed in choosing the *means* used to attack scientific problems.

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## NeemAzal-F

The paper entitled 'Control of coconut black-headed caterpillar (*Opisina areosella* Walker) by systemic application of 'Soluneem' – A new water-soluble neem insecticide formulation' by T. Shivashankar *et al.* (*Curr. Sci.*, 2000, **78**, 176–179) on the application of Soluneem to coconut through stem injections comparing other commercial preparations, included one of our products NeemAzal-F. In this regard, it is important to note that:

(i) Neem-Azal-F has been recommended only so far foliar application based on application research; (ii) Neem-Azal-F has not yet been recommended for stem injection in coconut; (iii) Neem-Azal-F has not been recommended for coconut at the concentrations the authors have cited.

With the above views, we strongly feel that is illogical and not in the interests of science to compare products which have not been recommended for specific appli-

cation with those products intended for the purpose. Further, we also bring to your notice that use of brand names citing negative attributes for a non-recommended crop application is inappropriate.

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