

realizing which she laid the foundation for the National Wildlife Action Plan and formulated the National Conservation Strategy (1983).



Figure 1. *Hyphaene indica* Becc., a threatened plant of the family Arecaceae and a climber *Antigonon leptopus* (Coral vine) of Polygonaceae growing in Vadodara. The tree known as branching palm (Ravan Tad) is threatened by loss of habitat.

In order to identify plants and animal species, there is need of trained manpower. Plant taxonomists for instance, play an important role in identification of medicinal and other economic plants. However, inadequate course structure in various colleges and universities has failed to produce efficient workers. Recently, Dharmapalan¹ argued that dissection is essential to restore the interest of students in zoology. Similarly, botany is a subject which cannot wholly depend on classroom teaching as it does not help students to absorb the ethos of the natural habitat of plants. It is important for botanists to learn about the flora growing in their natural habitat and the kind of vegetation found in their vicinity. For example, some plants such as the epiphytic orchids have symbiotic relationship with mycorrhiza.

Botany is a subject being taught to students pursuing environmental sciences, plant biotechnology, agriculture and forestry. Much emphasis is laid on environmental education at various levels. Timely field trips to agricultural fields, natural parks and botanical gardens help in strengthening observational and identification skills in students. At

the same time, a good teacher should infuse love of plants among the young students/botanists, which will help to protect many unique plant species from extinction (Figure 1). Many believe that herbarium could serve as better teaching tools than field trips. I opine that one may not learn much from computer-generated models or the literature available on the Internet.

There is a proposal to exclude field trips from the botany curriculum. However, it should be considered that a large number of plants are uprooted during preparation of herbarium, and a few among them may be rare or endangered species.

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Indian flying fox in Hamirsir Lake, Bhuj city needs conservation attention

The Indian flying fox (*Pteropus giganteus*), locally known as *Vagol*, is the only large-sized fruit bat species found in Kachchh District of Gujarat (Figures 1 and 2). It belongs to the family Pteropodidae under order Chiroptera of class Mammalia¹. This species is mostly confined to forests and fringes of water bodies nearby human habitation. The flying fox is well distributed throughout South-east Asia²; however, the Indian flying fox is rare among bat species found in the Kachchh region³. It is categorized as Least Concern species under the Red List of threatened species of IUCN and its population is declining alarmingly due to habitat degradation².

The Hamirsir Lake is a historically important lake located in the heart of Bhuj city made by Maharao Hamir Singhji in AD 1500. It encompasses a small garden in the middle and provides

an ideal habitat for this bat species for roosting. The garden is also the roosting site for a number of bird species.

During the devastating earthquake in 2001, most of the old buildings of Bhuj city were destroyed and buried underground. The reconstruction and developmental initiatives have resulted in the cutting down of large trees which had provided shelter to the flying fox population in the past.

The natural habitat like forest patches and larger trees are disappearing due to rapid industrialization, urbanization and the encroachment of invasive woody plant *Prosopis juliflora*. Increasing number of visitors, laser light shows during ceremonial functions (such as 'Kutch Carnival' organized every year around the Hamirsir Lake) and increasing vehicular traffic pose threats to the flying fox population of this lake.



Figure 1. The Indian flying fox, *Pteropus giganteus*.

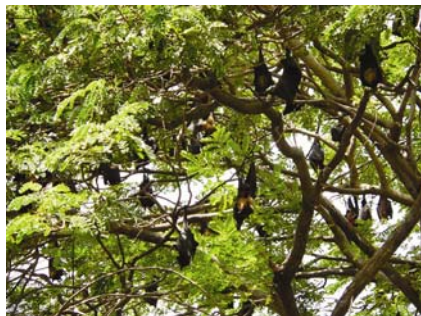


Figure 2. A colony of Indian flying fox.

Bats and small invertebrates have been given conservation significance in many countries in the world. However, in this

region they are given the least conservation priorities and hardly any studies have been conducted for status assessment and conservation of bat population in this region. The time has come for the conservation of all animal groups, including the flying fox for maintaining ecological balance and conservation of biodiversity.

1. Chakraborty, S. and Agrawal, V. C., In *State Fauna Series No. 8 – Fauna of Gujarat (Part-1)*, Director, Zoological Survey of India, Kolkata, 2000, pp. 15–83.
2. IUCN Red List of Threatened Species, Version 2011.2; www.iucnredlist.org, downloaded on 5 May 2012.

3. Prater, S. H., *The Book of Indian Animals*, Bombay Natural History Society & Oxford University Press, Bombay, 1973.

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Funds for grant applicants

I am certain that many readers agree with the points that Gowrishankar¹ has raised in his well-argued letter on the roles of experts and finance officials in deciding the amount and composition of funds to be allotted to grant applicants. The fact that he had to resort to the RTI route (twice) in order to get details on a research grant is saddening in itself. More troublesome is the fact that the finance people overrule the subject experts in deciding what equipment the applicant is allowed to acquire for his research and what amount for laboratory consumables. In the instant case, the poor applicant had to agree to the reduced budget (asked for Rs 78 lakhs, finally offered Rs 25 lakhs, no to the desired equipment), ‘akin to obtaining consent at gunpoint’ (as Gowrishankar puts it eloquently).

Has the expert committee played its role well here? Did the agency officer attempt to argue with the finance officials and convince them, or simply acquiesce? Having been ‘unmoved’ by finance, could he/she not have gone to higher officials such as the Department Secretary, and sought intervention and correction? Who rules the roost? In contrast, I note that the budgets presented by an applicant to the Wellcome Trust or the NIH are evaluated and modified by

the expert group (in consultation with the applicant), and the finance people simply send off the cheques.

There are other issues related to grant applications and the currently practised evaluation methods. Is it worthwhile having the referees anonymous, or should their names and affiliations be disclosed? Agencies such as the NIH publish the names of their ‘study groups’ and also do not require personal presentation by the applicant. (The DBT website does list Task Force members, which needs to be updated.) Can the applicant request not to have certain names as reviewers (as with some journals)? Is a personal presentation before an expert committee required, and has it proved to be useful? I find it disconcerting to be asked to present the application, and rushed to do so within 15 min before an overworked expert group which has to run through a dozen such presentations in a day.

Having moved from a Government laboratory into a non-profit, non-government (but DSIR recognized) research centre, I notice several anomalies. First is the issue of overheads on grants. This appears to be a flexible figure, depending on the agency, the actual grant proposal, and whether the application comes from

a publicly funded institution or a private (even non-profit) centre; the latter are not given any overheads anymore. This is unfair. Next is the issue of customs duty on imports. Research foundations like ours, which are involved in health research but not providing patient care, are required to pay 20% customs duty, based on the Department of Revenue’s notification that our activities fall within the definition of ‘hospital’!

I join Gowrishankar in the lament that examples such as these apparently are less the exception than the norm in the science departments of our Government. Should the scientific community not attempt to have these anomalies corrected, through the Academies, advisory committees to the various ministries, Principal Scientific Advisor to the Cabinet, and the Scientific Advisory Council to the Prime Minister?

1. Gowrishankar, J., *Curr. Sci.*, 2012, **102**, 1499.

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