

some of the academies and societies mushrooming in the country. The nominations are invited, the candidates are pre-decided, formalities are done and results announced. The pages of the CVs are not even turned.

- Hijacking of projects is a common phenomenon.

All the above are some examples, which I consider, should be treated as scientific corruption.

Now the most important aspect is financial corruption in science. Many scientific departments in our country are totally funded by the Government using public money. In the present era of electronic media and communication, the highest of the authorities and Indian Judiciary are advocating and are trying to implement

transparency in government departments. This would not only enable the masses to know how the public money is utilized, but also inhibit the bureaucracy from making extravagant expenditures and misutilising public money.

Recently there was a news item that several MPs were going to give the details of utilization of money on development of their constituencies from the MP's grants given by the Government. This is a very healthy sign in order to start transparency in our system.

Several organizations and their labs have their own websites. These websites provide very superficial information, such as an organizational chart and some activities. Some of the sites provide only information about the Director's bio-data whereas not even the list of all scientists is given, let

alone their specific areas of research. These sites are being used, in many cases, to only highlight the chief of the organization. If the Govt. of India and the Indian Judicial System are really serious about wiping out corruption from such organizations, it should be made mandatory that they put on their websites account of each and every paisa spent by them from public funding. Particularly phone, mobile, electricity, fuel, tour bills and all consumable and non-consumable expenses should be available on the website to bring transparency and check corruption.

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## Cataloguing Indian biota

Chavan *et al.*<sup>1</sup> elaborated that database of more than 93% (84,000 species) of the known taxa (89,451) of Indian fauna have been compiled. I appreciate Vishwas Chavan and his team for undertaking such a stupendous task for the use of public domain and hope that the remaining 5,451 species of IndFauna<sup>3</sup> will be completed in the next few months.

When the Indian fauna was accessed randomly to know the status of the genus *Oligotoma* (Order: Embioptera; Class: Insecta), 29 records with valid scientific names and 6 records of synonyms were displayed on 3 October 2004, the group on which experts from the world taxonomists were communicated. But after verifying the published data on the same by the Zoological Survey of India, the number of valid species of the genus *Oligotoma*<sup>2</sup> was found to be only 16, which shows that 13 more species of the genus are also present in India, but that is not the case, since these 13 species are entered in the database mostly with spelling mistakes and synonyms, without consulting any expert on the group or any taxonomist. If all these valid names are included in 84,000 species, there is an increase of 81.25% records in the database of single genus belonging to order Embioptera, the order includes only 33 species from India. This itself raises the question of documentation of 84,000 valid species in ECAT. Cha-

van *et al.*<sup>1</sup> also mentioned that in some cases, single species may even have as many as 100 synonyms, but so far 47,405 synonyms of 84,000 species are included, therefore, this number is expected to be more than valid names.

Despite stating that 'the information provided in (<http://www.ncbi.org.in/biota/fauna>) is not guaranteed to be correct or complete and conclusion drawn from or actions undertaken on the basis of information are the sole responsibility of the user', it is general practice that information retrieved is used for the publications and drawing the inferences not only by the lay workers but even by the experts. These references even become the baseline for the future workers and are quoted at various places, and it then becomes very difficult to return to the same fold.

With experience of working on faunal diversity for the last 22 years, I have a suggestion for the readers of *Current Science*, that such information from websites should not be followed blindly and that the subject clarifications must be sought from the experts before being published and also a submission to Chavan to adopt some methodology for screening the data of individual species through experts before entering the website. This will then result in available information being utilized by the future workers and the site may further create in-

terest in this field of taxonomy, which has almost become a neglected subject while taxonomists are also dwindling in number.

1. Chavan, V., Watve, A. V., Londhe, M. S., Rane, N. S., Pandit, A. T. and Krishnan, S., *Curr. Sci.*, 2004, **87**, 749–763.
2. Mitra, T. R., *Embioptera, Faunal Diversity in India* (eds Alfred, J. R. B., Das, A. K. and Sanyal, A. K.), Zoological Survey of India, 1998, pp. 204–207.
3. Retrieved from NCBI-Indian Fauna <http://www.ncbi.org.in/biota/fauna>.

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## Response

While commenting on our article<sup>1</sup> on the electronic catalogue of known Indian fauna (IndFauna), Chandra<sup>2</sup> has strongly made a case for increasing involvement of taxonomists in development of such catalogues. Electronic catalogues (ECAT) development is always a 'work in progress' and dynamic in nature.

Majority of the times errors in such ECATs are mere reflections of the errors (such as spellings, synonyms, taxonomic opinions, etc.) that exist in the sources of literature. For instance, species *Oligotoma annandalei* has been spelt by Mitra<sup>3</sup> (p. 205), Das<sup>4</sup> and Kapur and Kripalini<sup>5</sup> as *Oligotoma annandalei*, while Mitra and Srivastava<sup>6</sup>, on p. 293 have spelt it as *O. anandalei* and on p. 294 as *O. annandalei*.

Therefore, developing ECAT is a dynamic and on-going process for which periodic reviews are essential to maintain the quality, authenticity and current taxonomic opinion. Further, this is crucial as changes in taxonomic opinions need to be archived in such catalogues. ECAT thus forms a baseline dataset that can expedite the process of taxonomic revision<sup>1</sup>, as it forms the much required collaborative environment for taxonomists to initiate dialogue for much essential taxonomic scrutiny involving taxonomic data authentication and validation, as well as taxonomic revision.

Our experience of IndFauna suggests that because of its web-based nature, distributed taxonomic expertise can share and exchange their views and get themselves involved in the virtual process of data authentication, curation, and quality control. In fact, over 100 taxonomists (both within India and

overseas) representing major faunal systematics agencies and individuals have volunteered themselves for taxonomic scrutiny of data collated in IndFauna. During the next 2 years, we have planned to hold several taxonomic scrutiny workshops, which, we believe, will complement and expedite the process of web-based collaboration. However, the process of taxonomic scrutiny being collaborative and participatory in nature, is expected to take longer.

Further, even widely used global and regional ECATs such as Integrated Taxonomic Information System (ITIS)<sup>7</sup> and others are also not entirely scrutinized. ITIS currently collates data of about 334,000 scientific names. Out of this, about 45% remains to receive taxonomic scrutiny or verification<sup>8</sup>. This only stresses the urgent and increasing involvement of taxonomists in development and updating of ECATs, which can act as 'digital registry of names of organisms' once taxonomic treatment is received. Hence, we wish to congratulate Chandra<sup>2</sup> for this, as such a statement from a seasoned and reputed taxonomist would certainly encourage fellow colleagues to actively participate and collaborate.

1. Chavan, V., Wavte, A. V., Londhe, M. S., Rane, N. S., Pandit, A. T. and Krishnan, S., *Curr. Sci.*, 2004, **87**, 749–763.

2. Chandra, K., *Curr. Sci.*, 2004, **87**, 1321.
3. Mitra, T. R., *Embioptera, Faunal Diversity in India* (eds Alfred, J. R. B., Das, A. K. and Sanyal, A. K.), Zoological Survey of India, 1998, pp. 204–207.
4. Das, A. K., *Rec. Zool. Surv. India*, 2003, **208**, 530.
5. Kapur, A. P. and Kripalini, M. B., *Trans. Entomol. Soc., London*, 2003, **109**, 111–134.
6. Mitra, T. R. and Srivastava, V. D., *Embioptera, Animal Resources of India (Protozoa to Mammalia)*, Zoological Survey of India, Calcutta, 1999, pp. 291–296.
7. Integrated Taxonomic Information System, <http://www.itis.usda.gov/>.
8. Retrieved from Integrated Taxonomic Information System, 5 January 2005 ([http://www.itis.usda.gov/itis\\_primer.html](http://www.itis.usda.gov/itis_primer.html)).

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## Rice–wheat cropping system

In the rice–wheat cropping system (RWCS) in India wheat is taken soon after rice. Since there is not much time gap between the two crops, rice stubble after harvesting is burnt *in situ*. The authors have rightly pointed out<sup>1</sup> that burning besides causing loss of precious plant nutrients also creates environmental pollution. I understand that in Russia, where RWCS is followed, rice

stubbles are ploughed into the soil after harvesting the grains and wheat is sown after that. Soil microorganisms decompose the stubbles and thereby enrich soil with nutrients. Perhaps, we can follow this in our country together with the addition of some decomposing organisms at the time of ploughing in rice stubbles in order to hasten the process of decomposition.

1. Rajendra Prasad and Nagarajan, S., *Curr. Sci.*, 2004, **87**, 1334–1335.

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## Nano-energy

The observation of a measurably small voltage generated by some liquids/gases flowing through a single or multiwalled carbon nanotube, or over the surfaces of such semiconductors as Ge and Si has been reported by Sood and coworkers<sup>1,2</sup>.

Of course, these are elegant experiments. The results of the experiments have been viewed by the Department of Science and Technology (DST) to be a new source of energy. While highlighting the significant achievements in science and tech-

nology last year in paid advertisements in national newspapers, the DST hailed the observations as a significant achievement of Indian science, and supported its statement graphically by showing an observed linear plot of voltage generated as