

A vertebrate person in an invertebrate court¹

GLEN INGRAM²

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THERE are some benefits to lying in hospital recovering from neurosurgery. Not many, but some. One is all the time you have to think. A few years ago, while I was on my back recuperating, it occurred to me that there had never been a conference in Australia on the conservation of invertebrates. True, there were many conferences proclaiming to be on conservation generally, but these nearly always turned into celebrations of vertebrates and flowering plants.

Many of my colleagues found the thought peculiar too. Not because it was interesting but because I, an invertebrate vertebrate chauvinist, thought it. And, moreover, that I was determined to run such a conference. They also thought it of interest that my head had been recently operated on. However, with the help of my co-organizers, Robert Raven and Peter Davie of the Queensland Museum, the conference became a reality in July 1993. Fifty-five papers were presented and ninety delegates attended from as far afield as South Africa, USA, Brunei, Fiji and New Caledonia, but mostly from Australia. It was an interesting experience for me and several other vertebrate zoologists who attended. I stress the "vertebrate" bit because of my training and comparisons with that world view are informative.

Firstly, I was surprised at the comparatively small number of delegates. Similar affairs on vertebrates attracted hundreds. When I voiced this observation, several delegates were amused by my naïvety. They stressed that fewer people worked at conserving invertebrates: much of the human effort was directed towards their elimination because of damage they did to human health and industry.

Secondly, very few vertebrate people attended. This was not unexpected by some of the delegates but was noted with much cynicism. Even so, I found their absence strange: how could one miss a conference that was discussing

the conservation and biodiversity of nearly all the animal kingdom? Was the artificial, linguistic partitioning of zoology into "vertebrate" and "invertebrate" indicative of a deeper, sociological division? Did people have more empathy with animals with backbones? I suspect one delegate hit the nail on the head: "There's more money in the 'warm and fuzzies', mate. Invertebrates are not good prospects for grants or jobs."

This was probably too hasty. There is little doubt that humans do have more empathy for vertebrates and the granting systems only reflect that. After all, it is mostly humans who run the system. However, "warm and fuzzies" or "warm and fuzzies" were decidedly pejorative phrases for "vertebrates" during the conference. To be fair, "charismatic megafauna" was another synonym. It was used to indicate the importance of vertebrates as political tools in convincing the powers that be to save large tracts of habitat. Thanks to vertebrates many invertebrates were saved by the bye. Vertebrates also featured as hosts for a diversity of endemic parasites. When a species of vertebrate becomes extinct its fauna goes with it into oblivion. But parasites featured in more important ways. As well as composing a large part of the diversity of organisms, they are also key elements in maintaining the viability of ecosystems. Successful conservation practices require their preservation.

In this is the most important point to come out of the conference. Models for conservation based just on vertebrates are incomplete. They can mislead because we are not paying attention to all the elements of ecosystems. The inclusion of invertebrates gives a sharper, if not new, focus.

The most pleasant surprise of the conference was the lack of conflict between taxonomists and ecologists over conservation. This can be most marked with vertebrate workers where the conflict between "preserving species"

or "preserving ecosystems" can get out of hand as each discipline pushes its own barrow. What was evident was the agreement amongst invertebrate people that theirs was an enormous task: they had to cover nearly all of the animal kingdom. It was important to work together: ecologists needed to know the entities and taxonomists could tell them what they were. The ecologists and managers also acknowledged that, because of the very large number of species, their need for identifications placed great demands on taxonomists. In the past, their information was expected to be forthcoming without any consideration of their resources. This had to change: the price of taxonomy had to be costed in projects.

I could never understand the conflict anyway. Surely it is obvious that we have to do both: preserve species and ecosystems. You need to preserve the phylogenetic entities, through which genealogical information flows — and ecosystems and their ilk, through which matter and energy flows: the informational and economic hierarchies of evolution.

After the conference was over, I was left with a lasting impression of sadness. I could not see how we could save all the species of invertebrates (and their habitats) because of the sheer numbers — millions and millions of them. It was not because we could not handle the information — "millions and millions" is not a problem with modern computer technology. We just do not have enough trained people, money or interest to generate the information.

There lies the difference for the future of vertebrates. They have far, far fewer species with many more people working with them. Their future is brighter than that of invertebrates. Maybe Darwin missed something when he postulated natural selection as the major mechanism for evolution. Human affinity for only part of the

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REBUTTAL

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MR. MACFARLANE and Mr. Loyn have failed to recognize the main thrust of the recent article comparing the development of management strategies for the conservation of the Northern Spotted Owl in the Pacific Northwest of the USA and Leadbeater's Possum in Central Victoria (Lindenmayer and Norton 1993). The key issue was **not** to compare the biology of the respective taxa; that would be nonsensical. Rather, it was to highlight that, unlike the management of Leadbeater's Possum (Macfarlane and Seebeck 1991), conservation strategies for the Northern Spotted Owl have now been developed that are ecologically defensible and scientifically valid (Murphy and Noon 1992).

The acceptance of the management strategies for Leadbeater's Possum by the Timber Industry does not mean that they are ecologically sound. Indeed, the scientifically-based criticisms elucidated by Lindenmayer and Norton (1993) are valid and they underpin concerns expressed by Smith and Lindenmayer (1992) that Leadbeater's Possum could be totally eliminated from timber production forests. Montane ash forests where Leadbeater's Possum occurs, or has the potential to occur, continue to be logged using the clearfelling technique — a practice that has **not** changed with the implementation of the management strategies. The short rotation time and the amount of forest that is logged make clearfelling a major threatening process which is incompatible with the conservation of the

species. Furthermore, there is no evidence to show that present prescriptions will mitigate the impacts of logging on Leadbeater's Possum, particularly as the existing management zones create only deferred timber harvesting areas (see Lindenmayer and Norton 1993). Finally, there is no indication that the Government of Victoria is willing to either: (1) continue to appropriately fund studies of alternative logging practices under the Silvicultural Systems Project (Wilson 1991; Barnett 1993), and/or (2) implement key findings from such studies and employ modified timber harvesting techniques; probably as a result of a legislated over-commitment to produce timber and pulpwood (Barnett 1993).

Clearly the attempts to conserve Leadbeater's Possum are hampered by the speed of landscape modification and habitat destruction that far outstrips the pace of bureaucratic change. I hope that in the near future these difficulties will be remedied and the management strategies for the conservation of the species will evolve to a more advanced level, as has occurred in the case of the Northern Spotted Owl.

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animal kingdom is just as potent for selecting what survives.

In 1995, we will have another chance to see how the conservation of invertebrates is progressing. Another conference on the theme will be held in Melbourne. For registration of interest contact: Dr Alan Yen, Invertebrate Survey Department, Museum of Victoria, 71 Victoria Crescent, Abbotsford, Victoria 3067, Australia. The book of the 1993 conference papers will be available in early 1994. If you interested in purchasing a copy, do not hesitate to contact me.