

A Zoological Revolution?

IN May, I attended a one-day forum arranged by the Royal Zoological Society of New South Wales and The Australian Museum in Sydney, Australia. The purpose of the forum was to discuss proposals to use native fauna to assist in their own survival. The forum was titled *A Zoological Revolution*. The idea of a revolution in zoology, much less in biological conservation was novel, the proposals to be debated were controversial, and the Hallstrom Theatre was packed. The number of animal activists in the audience promised an enthusiastic exchange of ideas and I was not disappointed.

Since the late 1980s, a number of conservation scientists in Australia have proposed the commercial use of native wildlife (fauna, as well as flora) as a means of increasing the funds available for conservation and giving reason to land owners and governments to conserve and manage biodiversity outside conserve reserves.

The first and most prominent of these proposals was put by Gordon Grigg (University of Queensland) and others. Grigg's proposal was to encourage the development of the kangaroo industry to provide a line of revenue for land owners and enable the pastoral industry to shift away from the environmentally damaging sheep and cattle on which the industry is based. Kangaroos would be harvested humanely for skins and meat with the numbers taken carefully regulated by annual surveys to ensure an ecologically sustainable harvest. Although prohibitions on the human consumption of kangaroo meat in Australia have been eased, opposition from other meat producers and animal activists has meant that kangaroo remains a poorly used resource. Kangaroo numbers are much higher than in pre-European times and large numbers are killed as pests under licence from state conservation agencies. The issue is a perennial one in the Australian press, but the failure of the industry to develop its full potential has meant no gain to biodiversity conservation.

Two other ideas presented at the forum have gained prominence in the Australian media. The first relates to the conservation benefits that can be derived from "bioprospecting" and the discovery of compounds that are effective in treating disease. The value of biodiversity as sources of new medicines and crops, genetic material for improving existing plant and animal varieties, and for horticulture are well recognized and not especially controversial (putting aside the debate on genetic engineering and the health and environmental risks of genetically modified organisms). Pharmaceutical companies already pay large sums for the rights to prospect

for potential medicines and even politicians can understand the possible gains.

At the forum, Kirsten Benkendorff described the benefits to be derived from marine organisms as sources of new medicines. Benkendorff's concern was that the development of coastal habitats was proceeding faster than biologists could survey the biota and there was a significant risk that not only would there be losses of biodiversity and the extinction of species, but resources of potentially greater commercial and social value than marinas and canal estates would also be lost. This has already happened to the biodiverse marine intertidal habitats near Wollongong in New South Wales where Benkendorff screened mollusc egg masses for chemicals as antibiotics with promising results (see Benkendorff 1999).

A second idea for using native fauna to assist their own survival has been promoted by Mike Archer, Director of The Australian Museum, and Paul Hopwood (Sydney University). Both advocate encouraging greater use of native Australian animals as pets and companions. Partly, there is the hope that this will lead to a reduction in the numbers of the environmentally damaging dogs and cats which are the traditional pets in Australian society, but by keeping native fauna more people may also come to understand and value native animals. Australia is highly urbanized.

More than 90% of Australians live in cities and large towns and have no direct contact with natural, or even rural, ecosystems in their daily lives. Because of this, most Australians have little knowledge of native plants and animals. Hopwood pointed out that many native Australian mammals were easily tamed and small enough to be suitable as pets even in apartments. Part of Hopwood's proposal is that, by encouraging the breeding of native animals for the pet trade, the numbers of many endangered species can be increased (albeit, *ex situ*) and the risk of species extinction reduced. In reply, others at the forum documented the risks of keeping and breeding of native fauna, including hybridization, introduction of disease to wild population, and the translocation of species outside their natural range all of which have already happened in Australia.

Other proposals to use native fauna to assist their own survival included the promotion of eco-tourism, recreational hunting and fishing, and educating people on how they can share their homes and backyards with native animals without keeping them as pets in captivity. The

last idea is being promoted as "wildlife as neighbours" and is slowly being incorporated in the design of green spaces in Australian towns and cities (e.g., Majer and Recher 1994).

The question I asked at the forum was "Are these ideas revolutionary?". The answer I gave was that they were not revolutionary, nor even radical. While the proposals to harvest kangaroos and keep native fauna as pets are opposed by animal activists and many in the environmental lobby, their protests are based entirely on their opposition to killing or imprisoning animals and not for reasons of conservation. By way of contrast, I am prepared to support proposals to use native wildlife commercially so long as the fees, taxes and royalties derived from such activities are returned to the conservation of biodiversity, but I do think they will help conserve Australia's wildlife in any meaningful way. As part of a programme of actions, all of which are needed, they will make a contribution, but it is the rest of the package that is vital for success.

Far more important for Australia than relaxing regulations prohibiting keeping native wildlife, as pets or developing a conservation focused kangaroo industry is the imperative of ending land clearing. Land clearing is the single greatest direct threat to continental biodiversity. Ending land clearing is only the start. It is also necessary to return more than 30% of existing cleared land to native vegetation with as much as an additional 40%, depending on local conditions, put under deep-rooted perennial vegetation.

Rather than replace sheep with kangaroos, it is more important to phase out the pastoral industry in Australia. I doubt whether Australia's rangelands, in their present degraded condition, can maintain an ecologically sustainable pastoral industry regardless of the herbivores on which the industry is based. Far better to destock and close artificial watering points to reduce total grazing pressure from all herbivores, including feral species (goats, camels, horses, donkeys) and kangaroos.

Nor is simply extending the conservation reserve system likely to help more than retard the inevitable. Not that Australia does not need more reserves, but Mike Archer used the forum to point out that only areas exceeding 300 000 square kilometres (the size of islands like New Guinea and Madagascar) have proven capable of retaining old mammal lineages and where natural evolutionary processes could be expected. Five such areas, or about 20% of the land area of the continent, would be required to even coarsely sample the biodiversity of Australia. When it is considered that Kakadu, Australia's largest national park, is only 20 square kilometres, it is clear that much more radical and revolutionary action is required than just having more reserves. Of course, this

assumes that Archer is approximately correct in his assessments, but I suspect he is and that Australians are a long way from being radical in their efforts to conserve continental and global biodiversity.

So long as so much energy and resources are consumed by animal activists concerned more for the rights and welfare of individual animals than the survival of nature or species, and by misanthropic environmentalists who confuse a wilderness designation with conservation and refuse to consider alternatives to an inflexible system of conservation reserves, nature conservation will not progress in Australia. More is needed than programmes to plant 50 billion trees on degraded lands for Landcare as jointly proposed just prior to the forum by the Australian Conservation Foundation and the National Farmer's Federation. They and all Australians need to accept that, as practiced, "Landcare" is what you are forced to do after you failed to care for the land. The farmers doing damage and clearing their land today are tomorrow's new generation of "Landcarers".

Instead of reacting to environmental collapse and land degradation, governments and land managers need to anticipate problems and take steps to prevent them. Hence, the urgent need to end clearing and over-grazing. For aquatic environments, it means an end to building dams, a more critical assessment of an expansion of aquaculture, prohibition of translocating marine and freshwater fish and invertebrates, and, as Pat Hutchings told the forum, treating fish trawling as the marine analogue of land clearing.

Proposals to end land clearing or to stop building dams are revolutionary; they mean a change in direction for Australian society.

Australian conservation needs to be an integrated package of caring for the land coupled with a reduction in the size of the population and in the consumption of resources and energy while creating a conservation reserve system based on ecological and evolutionary principles. Only by integrating action across this breadth of change in economic and social direction can we guarantee that evolution will survive and that humanity will achieve ecological and social sustainability with equity for future generations and other species.

REFERENCES

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