

## "Conservation through sustainable use of wildlife" Conference Report

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**S**USTAINABLE use of wildlife was the topic of a resolution adopted unanimously by the 18th Congress of the IUCN in Perth in December 1990. The Congress resolved that "... ethical, wise and sustainable use of some wildlife can provide an alternative or supplementary means of productive land use, and can be consistent with and encourage conservation, where such use is in accordance with adequate safeguards, namely:

- a. sound, scientifically-based monitoring mechanisms to ensure that such use is maintained at levels which can be sustained by the wild populations . . . ;
- b. compliance with national and international legal obligations and policies;
- c. provision for the protection of wild animals from avoidable cruelty and suffering;
- d. conformity with the IUCN guidelines based on scientific, socio-economic and traditional knowledge, the principle of equitable allocation of resources and distribution of benefits . . .".

This resolution was used by the Centre for Conservation Biology at the University of Queensland and the Australian and New Zealand Environment and Conservation Council (ANZECC) in planning the conference, held in February this year, which aimed to examine the potential for wildlife use as a conservation tool and to develop strategies for conservation through the use of wildlife.

The need for the conference grew from a recognition that in Australia and elsewhere wildlife and its habitats will not be adequately conserved over the long-term in national parks and reserves. In order to meet long-term conservation objectives there is a need for substantial off-reserve conservation. For the landholding community and the sceptical urban public to see value in conservation, wildlife and habitats must be seen to have more than just intrinsic value.

The scope of the conference included both consumptive and non-consumptive uses of native and introduced terrestrial fauna, flora (including forest products apart from timber), marine turtles and dugongs. The response from participants was largely about the consumptive use of native and introduced fauna, towards achieving conservation, economic and social aims.

Participating interest groups included pastoralists, the game meat industry, economists, conservation and resource managers, wildlife ecologists, indigenous peoples, animal welfare organizations, government policy makers and recreational hunters.

Key aspects of sustainable use discussed at the conference were the economics of industries based on wildlife use, management and monitoring strategies, the use of introduced species, the rights of indigenous peoples in multicultural societies to harvest wildlife and the conservation benefits of harvesting.

### THE ECONOMICS OF SUSTAINABLE USE

What extrinsic value is necessary for wildlife to be considered worth conserving? Keynote speaker Grahame Webb from Wildlife Management International in Darwin argued the importance of extrinsic value in conservation. Thus, economic value, as a sustainable use industry or as subsistence food source, provides an incentive for users to conserve wildlife.

The key element of a successful sustainable use enterprise was identified as the establishment and maintenance of markets. This process entails finding the market, promoting the product, ensuring the quality is right and maintaining a regular and on-going supply. Speakers stressed that other elements of the process, namely ecological sustainability and conservation benefit, could only be ideals without economic success.

A focus for the discussion on sustainable use economics was the current proposal to expand the kangaroo industry, outlined by Paul Sattler from the Queensland Department of Environment and Heritage. Any expansion will depend on the price of kangaroo products, which is also the key to achieving the conservation aim of reducing total grazing pressure. Peter Clark, a grazier from Longreach, demonstrated with the results of a 10 year trial that kangaroos could be a profitable alternative to sheep and result in a conservation gain. But at current prices kangaroo harvesting is only marginally profitable for the grazier. In an expanded industry equity would be shared amongst all stakeholders, in particular graziers who are missing out at present.

Other papers were presented on the potential monetary value of the kangaroo industry and the value needed to make kangaroos a more viable proposition than sheep. There was strong argument for the easing of existing regulations controlling the kangaroo industry, especially in relation to the processing and sale of products. It was argued that restrictions and interference can create insecure and indefinite rights for participants, unduly restrict markets and block incentive.

A potential conflict between short-term economic aims and long-term conservation aims was identified. It was concluded that emphasis in the industry should be placed on management to meet long-term conservation objectives.

The contribution that recreational hunting of deer and other introduced species can make to regional economies and the income of landholders was discussed by Myron Cause from the Australian Deer Association and Bob Davis from the University of Colorado. Both argued that this introduced species was beneficial to off-reserve conservation because it can provide a significant return to landholders and so encourage them to maintain its forest habitat.

## MANAGEMENT AND MONITORING FOR SUSTAINABLE USE

The importance of flexibility or corrective capability in management to achieve sustainable use was emphasized by speakers on this topic. Keynote speaker Rowan Martin from Zimbabwe Parks and Wildlife argued that management must be closely linked to monitoring of the harvest or other use and have the flexibility to adapt to the results of monitoring. It was recognized that the ability to manage any given wildlife population or ecosystem will improve as information about it becomes available and to this end management should contain adequate response mechanisms. Management programmes must have clear aims which are prioritized and underpinned by measurable objectives. Criteria, thresholds and other appropriate management actions should be established within the management programme prior to implementation. The legislative framework should be clearly expressed within the management programme and linked to it.

As for the stakeholders in the sustainable use operation, all should be educated about the management framework and a general commitment to the aims of management obtained. Strategies should be developed to ensure good communication among all stakeholders with special emphasis placed on the establishment of close links between scientists, managers and operators, representing all relevant agencies involved in the management programme.

Management programmes must be allocated sufficient resources. The tag levy system operating in the kangaroo industry is useful in this respect as it provides a means of monitoring off-take and obtaining revenue for other monitoring and management. It was argued that to help achieve conservation aims, the sale of tags be dependent on the adoption by graziers of appropriate property management plans. The aim of these plans, within an integrated rural recovery programme, is to reduce total grazing pressure towards achieving conservation objectives. The graziers present objected to this aim, claiming that it would lead to even more government control.

It was recommended that separate government departments be responsible for conservation and industry management, with the conservation agency

having ultimate responsibility for the setting of quotas of whatever native species is to be used.

## USE OF INTRODUCED SPECIES

Speakers including Mary Bomford from the Bureau of Resource Sciences, David Choquenot from NSW Department of Agriculture and Lee Allen from Queensland Department of Lands outlined the problems of managing vertebrate pest species, now viewed in terms of control rather than eradication.

They emphasized that the reduction in introduced fauna density required to meet conservation objectives must be quantified. The necessity to determine whether or not the level of harvesting needed for a viable industry constitutes effective control for conservation purposes was stressed.

In many locations where control of introduced pests is needed, it would not be economically feasible to harvest them due to problems of access. It was also recognized that conflicts of interest could arise with harvesting of a pest species, in that landholders or professional hunters may harvest in such a way that the need for continuity of supply overshadows conservation objectives. Harvesting was, however, seen as a potential pest control measure which could form part of an integrated pest control strategy.

In the case of deer, recreational hunters argued that the impact of the various deer species on the forest ecosystems they occupy is minimal. It was noted that deer populations are growing and where they are underutilized damage to crops and competition with domestic livestock has been documented.

The conference recommended that unless a land use conflict could be demonstrated, recreational hunting and professional harvesting of introduced fauna should be permitted on public lands and encouraged on private lands.

## INDIGENOUS PEOPLE AND SUSTAINABLE USE

The conference recognized that the principles of conservation through sustainable use are at the centre of the relationship between indigenous people and the wild resources they use for food and the maintenance of culture and tradition.

Speakers included Dorothy Tunbridge from the University of New England who spoke about the cultural significance of Aboriginal Peoples' traditional relationship with the environment. Rauru Kirikiri from Landcare Research in New Zealand discussed attempts to re-establish Maori traditional harvesting rights in the face of conflicting legislation and the possible conservation gains. Rose Turner from the Bureau of Resource Sciences argued the continuing importance in both economic and cultural terms of the use of wildlife to Aboriginal and Torres Strait Islander Peoples, a theme which was stressed by all speakers on this topic.

Participants recognized that the contribution by indigenous peoples to conservation could be further enhanced by their involvement in the sustainable use of wildlife, an action which would further increase the benefits they derive from wild resources.

The conference recommended that the use of wild resources for subsistence should be a basic right of indigenous peoples and that their rights over wild resources in appropriate areas should be formally established and strengthened. Also, as a matter of extreme urgency, traditional knowledge of wild species should be permanently recorded and the ownership of this knowledge should be retained by indigenous people. It was recognized that mechanisms must be developed which ensure that indigenous peoples realize an equitable portion of the returns from commercial products whose development has resulted from their special knowledge of wild species.

## BENEFITS TO CONSERVATION

Some participants spoke about the importance of forging a link between conservation benefits and sustainable use, through regulation. Others argued against the need for control, saying that wildlife could not be used sustainably unless it was adequately conserved. Participants agreed that regulation could not guarantee long-term sustainability in any use of wildlife. However, the ability of management to adapt to changing conditions would give the best chance of achieving sustainable use.

The conference recognized that the use of wildlife can increase the "value" of natural habitats to users, providing incentives to preserve them. Max King,

representing the Safari Club International, told of the contribution that wildlife use has made to the protection of wetlands in Victoria, many of which have been conserved due to pressure from recreational shooters. In the United States, landowners' economic interest in recreational hunting of deer has encouraged the maintenance of habitat which would otherwise have been cleared for cattle grazing. The retention of wildlife habitat on privately owned land is an addition to that

preserved in the national reserve system and thus effectively expands that system.

Sustainable use of wildlife presents an opportunity to raise revenue for conservation management. To this end, it was suggested that mechanisms be formulated to "capture" revenue deriving from both consumptive and non-consumptive wildlife use by applying the "user pays" principle and that this revenue

be redirected into nature conservation programmes to reinforce government expenditure.

The proceedings of the conference will be available by the end of 1994. This volume will include the keynote addresses, presentations from symposia and many of the contributed papers. It will certainly be compelling reading and provide readers with the latest in research, opinion and strategies on this topic.

## The CRC for Biological Control of Vertebrate Pest Populations: fertility control of wildlife for conservation

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IN the last four years there has been a growing awareness of fertility control as a means of reducing or eliminating pest mammals. It is the preferred option of animal welfare groups in Australia (Tyndale-Biscoe 1991) and in North America (Denver Wildlife Research Center 1993), and the expectations have accordingly been raised for its imminent use for the control of Australia's most intractable species, the rabbit, the fox and the cat. In this article I will outline the progress so far achieved in developing this approach for the fox and rabbit, the major obstacles that still remain including the perceived risks, and the long-term prospects for these and other species if fertility control is shown to be an effective means of controlling pest populations.

### THEORETICAL BASIS

The size of a population of animals is determined by the birth rate, death rate, migration and quality and suitability of the habitat for the particular species. In arid Australia the major factor in the decline and extinction of native species has been alteration of the habitat (Morton 1990), although increased mortality from introduced predators is more commonly cited as the major cause. Conversely, the very changes in the habitat, which worked

against the native species, favoured several introduced species, particularly the rabbit and the fox.

To control a mammalian pest species the commonest approach has been to use mortality agents, usually poisons. However, in the case of the rabbit it has recently been shown (C. K. Williams and R. J. Moore, in prep.) that the destruction of the warrens, where successful breeding occurs, is far more effective and long lasting than any poisoning regime; when the warrens were left intact the recovery of the rabbit populations after fumigation or line poisoning was very rapid because the warrens could rapidly be reoccupied. Similarly, after the initial highly successful reduction of rabbits in 1951–54 with the myxoma virus, rabbit populations recovered in some areas because reproduction of the survivors was not curtailed and resistance to the virus evolved (Fenner and Ratcliffe 1965). Clearly, the most important factor in pest control is the rate of recovery after a treatment has been applied; if that could be curtailed, as with warren ripping, the effect of all methods would be enhanced.

Fertility control is sometimes regarded as mortality applied at an earlier stage of the life cycle but for many species it could be much more

than this. Among social species reproduction by subordinate members of the group may be inhibited by dominant members (Mykutowycz 1959), while in other species there is active competition among males for access to breeding females. In both situations sterilization of dominant members could theoretically affect realized fecundity of the population disproportionately (Caughley *et al.* 1992). In the best known example of applied population control, using sterilization, the American Screw-worm Fly, *Callitroga hominivorax*, (Spradberry 1994) the important aspect is that the females mate only once; so by greatly increasing the male population with sterile but sexually active males, the probability of a female being fertilized is greatly diminished.

For both the above examples the essential components of fertility control are that the sterilized individuals remain sexually active and retain or improve their status in the social hierarchy of the population, and that a sufficiently high proportion of the population is sterile. While these conditions have long been recognized (Knipling 1959; Davies 1961), it is only in the past five years that advances in reproductive immunology and molecular biology have made it theoretically possible to achieve this in wild mammals.