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INTEGRATING KANGAROO (*MACROPUS* SP.) AND OTHER WILDLIFE WITH AGRICULTURE IN AUSTRALIA

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ABSTRACT

*Many past agricultural practices have caused significant damage to Australia's natural landscapes, wildlife and biodiversity. If Australian agriculture is to achieve sustainable use of natural resources and abate current land degradation and declining agricultural viability, a dramatic shift in perceptions and use of natural resources is required. In addition, Australia does not currently have effective long-term conservation areas for wildlife, and there is an urgent need to increase the area devoted to biodiversity conservation to complement the National Park network. Incentives and market-led inducements are needed to encourage biodiversity conservation and to promote sustainable production on private lands. Wildlife-based tourism and commercial use of native plants and animals (such as kangaroos, *Macropus* sp., and emus, *Dromaius novaehollandiae*) can bring in extra income, be an incentive for landscape rehabilitation, and give landholders a reason to manage threatened landscapes such as rangelands and wetlands for the long term. Detailed planning is now underway for a series of trials to test the proposition that provides landholders with greater responsibility for wildlife, within strict rules and guidelines, can increase farm incomes and long-term productivity. Trials of Sustainable Wildlife Enterprises (SWE) initiated by the Rural Industries Research and Development Corporation (RIRDC) are being supported by the Australian Government National Landcare Program and the Department of Agriculture, Fisheries and Forestry. The trials do not seek to purchase properties or ask landholders to forego their existing agricultural enterprises, but they are designed to assist landholders to create new enterprises and diversify income streams through the adoption of production systems that may or may not include conventional agricultural activities.*

I. BACKGROUND

Australia's landscapes are under increasing pressure of degradation (NATIONAL LAND AND WATER RESOURCES AUDIT, 2004). Loss of species,

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dryland salinity, soil erosion and water quality have generated heightening concern amongst agriculturalists, government and conservationists alike, as their impact threatens the productivity and health of Australia's ecosystem. Australian agriculture is largely based on imported species, sheep and cattle, wheat, cotton, etc. These introduced species have led to, or been associated with large ecosystem and habitat change, removal of predators, and tree clearing. Soil salinity is increasing due to rising water tables and there is a widespread loss of soil fertility. Overgrazing is leading to erosion of top soil and tree dieback.

At the same time, some species such as the larger kangaroos have become very abundant, often reaching densities of more than 5 per km² (CAUGHLEY *et al.*, 1987). The red kangaroo, *Macropus rufus*, eastern grey kangaroo, *M. giganteus*, and western grey kangaroo, *M. fuliginosus*, are the most abundant. Their combined population size has fluctuated between 15 and 50 million animals over the past 20 years, depending on seasonal conditions. In terms of the total population of kangaroos in Australia these estimates are considered to be very conservative. They subject to a commercial harvest of more than two million per year (DEPARTMENT OF ENVIRONMENT AND HERITAGE AUSTRALIA, 2005). Other species are rare or extinct, particularly the smaller mammals around 5 kg. They have been preyed upon by introduced predators, *e.g.* foxes, *Vulpes vulpes*, and their shelter has been removed by overgrazing.

Shooters in the commercial kangaroo industry operate for pest control using specially equipped vehicles. The meat and skins are of the highest quality and the total value of the product is estimated at \$ 200 millions (KANGAROO INDUSTRY ASSOCIATION OF AUSTRALIA, 2004). Some of the meat is used for human consumption, the remainder for pet food. One of the most striking aspects however is that landholders are not involved. Most tolerate low numbers of kangaroos and are even proud to support a few but they are relieved to have the excess removed. Landholders get no return or interest from wildlife. There is no tradition of sport hunting: kangaroo shooters enter at night as a pest control operation. The key reason for the pest status is lack of demand.

Overseas experience with native animals similar to kangaroos including the red deer, *Cervus elaphus*, springbok, *Antidorcas marsupialis*, impala, *Aepyceros melampus*, and eland, *Tragelaphus sp.*, indicate that alternative management regimes that enable landholders to integrate wildlife enterprises with pastoral enterprises lead to win, to win outcomes (ASHLEY and BARNES, 1996). Where landholders are able to benefit from wildlife, its value to them increases and provides a greater incentive to integrate conservation and sustainability with production and profitability in the interest of maintaining the valued wild populations (WILSON, 1988; GRIGG, 1996).

To achieve sustainable use of Australia's natural resources and abate current land degradation and declining agricultural viability, the private sector must be more engaged in wildlife management and have incentives to participate in remedial action. To facilitate this progression, strategies are needed to match land uses to land capacity, and integrate nature conservation with sustainable production systems (AUSTRALASIAN WILDLIFE MANAGEMENT ASSOCIATION, 2004). Sustainable Wildlife Enterprises (SWE) trials are an initiative by the Rural Industries Research and Development

Corporation (RIRDC) as part of its new Rangelands and Wildlife Program (RURAL INDUSTRIES RESEARCH AND DEVELOPMENT CORPORATION, 2005). They are testing innovative strategies based on the integration of Australia's native wildlife into existing agricultural enterprises and underpinned by the principles of ecologically sustainable development. They are the result of the recommendations of the SENATE RURAL AND REGIONAL AFFAIRS AND TRANSPORT REFERENCES COMMITTEE (1998) into the Commercial Utilisation of Native Australian Wildlife.

A Strategic Plan has been prepared with support from the Australian Government's National Landcare Program (NATIONAL LAND AND WATER RESOURCES AUDIT, 2004). Its implementation is testing mechanisms and alternative production systems that aim to (1) enable wildlife resources to operate as an incentive to protect and maintain habitat and enhance biodiversity on private lands; (2) increase the resilience and long term sustainability of the agricultural sector on the rangelands; and (3) increase the economic viability of land rehabilitation and the long term viability of rural communities. Nature-based tourism and commercial utilisation of native plants and animals will be assessed to determine whether assigning a value to these resources can provide an incentive for landholders to protect and restore wildlife habitat, landscapes and biodiversity, and therefore bring about positive changes in landscape health and agricultural sustainability. SWE is seeking collaboration from landholders, processors, markets and other funding agencies for a program due to start in 2005.

II. THE IMPLEMENTATION CYCLE OF THE SUSTAINABLE WILDLIFE ENTERPRISES

The implementation cycle of the Sustainable Wildlife Enterprises (Figure 1) will reflect an adaptive management process. This process is organized in four steps. (1) The creation of Wildlife Management Conservancies (WMC) and the development of wildlife management plans and habitat protection to support the development of sustainable industries based on wildlife. The WMCs will be formed from groups of landholders within a defined catchment or sub-catchment who wish to participate in the trial. (2) The production income. Groups of interested landholders will receive support in identifying and establishing enterprises to diversify farm income. They will not forego existing farming or grazing enterprises, but instead be provided with incentives to create new enterprises and integrate them with existing production. Landholders themselves will drive the process and make wildlife management decisions within broad guidelines and quotas set by regulatory authorities. The WMCs will gain income from sustainable industries based on both consumptive and non-consumptive use of wildlife (tourism) and ecosystem services. (3) The marketing. Produce from the Conservancies achieving positive outcomes will be marketed as having conservation benefits. (4) The adaptive management. Monitoring and evaluation of enterprises will be undertaken to assess the performance of enterprises based on a triple bottom line approach incorporating environmental, social and economic indicators. At the end of the cycle adaptive management scientific and advisory support will be fed

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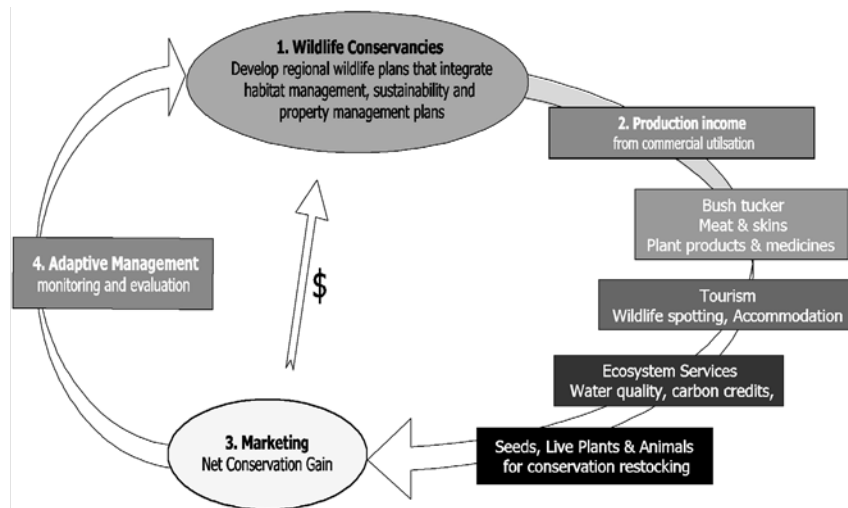


Figure 1: The adaptive management cycle for implementing Sustainable Wildlife Enterprises (SWE) in Australia.

Figure 1 : Le cycle de la gestion adaptative pour la mise en œuvre des exploitations durables de faune sauvage en Australie. 1. Les Conservatoires de faune sauvage développent des plans régionaux pour la faune sauvage qui intègrent des plans de gestion de la propriété, des plans de gestion durable et des plans d'aménagement de l'habitat. 2. Revenus provenant de la production utilisée commercialement (produits issus de la brousse : viandes et peaux, produits végétaux et médicaments; tourisme : vision de la faune sauvage, hôtellerie; services liés à l'écosystème : qualité de l'eau, crédits de carbone; semences, végétaux et animaux vivants pour des repeuplements destinés à la conservation. 3. Commercialisation : gain net pour la conservation. 4. Gestion adaptative : suivi et évaluation.

back to the Conservancies to provide updated information to inform management and to enhance environmental, economic and social performance.

II.1. CONSERVATION THROUGH COMMERCIAL WILDLIFE USE AND WILDLIFE OWNERSHIP

Nature-based tourism and commercial utilisation of native plants and animals could provide a cost effective incentive for biodiversity conservation and landscape rehabilitation. It could enable landholders to realise the value of the wildlife on their land, and so give them a reason to protect and restore the habitats and natural systems on which they depend.

Under current arrangements, native wildlife is a liability over which landholders have little control. Yet some wildlife, for example native fauna, produce high quality food and fibre products, and appear to incur less damage to the environment than equivalent numbers of conventional livestock.

Wildlife is also an asset to the tourism industry being a core component of the national heritage. Some native plant species have potential in the culinary industry, in addition to demonstrated value as alternative medicine and health products. Giving landholders the opportunity to capture and benefit from these values could provide an incentive to increase their presence in the landscape.

The establishment of mutually beneficial relationships with existing native

food, wildlife and tourism industries is seen as vital to the development of Sustainable Wildlife Enterprise model. The Wildlife Management Conservancies will not seek to compete with existing processors, but rather to add value to enterprises by emphasising the conservation benefits of their produce. SWE will aim to attract existing wildlife resource processors as clients and purchasers of its products. For example one or more of the existing kangaroo processors may be attracted to enter into a contract with the Conservancy in return for the marketing and credibility benefits which would flow to it from the arrangement.

A core principle in the Sustainable Wildlife Enterprise trials will be to test the outcomes of transferring "**ownership**" and management of wildlife from the State to Wildlife Management Conservancies, or landholders. Allowing landholders to benefit from wildlife within strict rules is an extension of current arrangements which apply to free range zoos, where the zoo is regarded as having "ownership" or property rights over the wildlife just as they have ownership and responsibility for management of habitat. Precedents in South Africa and Scotland will guide options in Australia.

The Sustainable Wildlife Enterprises trials will continue to consult with State and Territory regulatory regimes governing ownership and harvesting of wildlife, and with Australian Government statutory arrangements governing wildlife trade. They will address issues such as the potential to free range harvest emus, *Dromaius novaehollandiae*. Emu farming is currently not profitable (O'MALLEY, 1998). Birds are kept behind wire and intensively fed. There appears to be no logical opposition as to why they should not be harvested on a more extensive basis if the landholders are conserving their habitat and managing them.

II.2. DIVERSIFICATION OF AGRICULTURE AND PRODUCT DIFFERENTIATION

Diversification of farming enterprises to include the sustainable commercial use of wildlife has the potential to increase the resilience and economic viability of rural communities through the creation of additional and sustainable income streams. Native plants and animals, being inherently more resilient to the extremes of climatic conditions experienced in the Australian landscape, could provide additional income to landholders during periods of low productivity in mainstream enterprises. In addition, the strategic rehabilitation of degraded habitats has the potential to increase whole of farm productivity through restoration of natural systems that function to maintain soil and water quality, provide shelter for conventional stock and maintain predator-pest relationships.

Currently 65% of the Australian landscape is used for grazing and broadacre farming of monoculture crops. Such farming systems are struggling to maintain the natural ecosystems on which the future sustainability of the land relies, and are highly susceptible to changes in climatic extremes due to the reduced genetic scope of monocultures to adapt to changing conditions.

Successful agricultural products are those that have become price setters rather than price takers. Previously, commodities such as cheese, olive oil, and to a certain extent wine, were initially produced in large quantities with lit-

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tle emphasis on product differentiation. Today at the higher value end of the market, there is attention to detail, quality and regional differentiation, and landholders have greater control over the price they receive for their product.

Sustainable Wildlife Enterprises aim to achieve product differentiation and market access by emphasising the environmental performance of products, services and production techniques of Wildlife Management Conservancy members. It may also be possible to highlight regional differentiation where this forms a unique characteristic of both wildlife produce and other farm production.

II.3. MARKETING

Effective marketing is essential in ensuring market demand and premium prices are achieved for produce derived from WMCs. The trial will test if accreditation as a sustainable production system will enable the WMCs to obtain premium prices for their kangaroo products, tourism experiences and/or other bush food products.

Accreditation will be informed through assessment of the WMCs' wildlife management plans, which will include provisions for animal welfare where applicable to the WMCs' activities.

II.4. ADAPTIVE MANAGEMENT CYCLE AND SUCCESS FACTORS

Monitoring and investigation will be undertaken in an Adaptive Management Trial (DOVERS and MOBBS, 1997) as a collaborative activity with research organisations including the Commonwealth Scientific Industrial Research Organisation (CSIRO), universities and other research centres. Research results will be fed back to the Conservancies over a period of six years and will assist landholders implement best practice in the management of conventional farming enterprises, commercial use of wildlife and biodiversity conservation. Research results will also assist in enhancing the design of the project for potential future extension.

Implementation of SWE and a successful outcome at the end of the 6 year trial will depend on a number of critical success factors: (1) demand will be created for products from the Wildlife Management Conservancies by emphasizing their conservation benefit; (2) markets for bushtucker, in particular kangaroo meat, will strengthen; (3) members of the WMC will remain enthusiastic and continue to make their properties available for proposed manipulation and detailed scientific investigation; (4) natural events such as drought and commodity price fluctuations over a 6 year cycle will not be so extreme as to affect the capacity and willingness of members to participate; and (5) government and philanthropic support will be sufficient to establish the Wildlife Management Conservancies, to underpin the research, monitoring and evaluation and to back marketing of products as conservation friendly. The experience in other countries is sufficient to warrant an investment in the proposal. At the end of the trial the SWE should be self supporting.

III. CONCLUSION

Through the Sustainable Wildlife Enterprises (SWE) trials, initiated by the Rural Industries Research and Development Corporation as part of its new Rangelands and Wildlife Program, landholders are being encouraged to take responsibility for wildlife within strict guidelines, diversify enterprises and increase their incomes and long-term productivity. It is expected these actions will also see increased biodiversity through restoration and conservation of native habitat.

With support from the Australian Government's National Landcare Program, SWE will develop a strategic and implementation plan for commercial, sustainable biodiversity management (IUCN SSC, 2004) that can be implemented by landholders (including Indigenous communities) and rural industries. The plans will be based on integrating wildlife enterprises into existing land use systems.

The project is based on the observation to achieve sustainable use of our natural resources and abate current land degradation and declining farm viability, a dramatic shift in the way we perceive and utilise natural resources is required. Australia does not have effective long-term conservation areas for wildlife. There is an urgent need to increase the area devoted to biodiversity conservation on private lands in order to complement the National Park network. Incentives and market-led inducements are needed to encourage biodiversity conservation and to promote sustainable production.

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INTÉGRER LE KANGOUROU (*MACROPUS* SP.) ET D'AUTRES ESPÈCES SAUVAGES DANS L'ACTIVITÉ AGRICOLE EN AUSTRALIE

G. WILSON

MOTS-CLÉS : Kangourou, *Macropus* sp., émeu, *Dromaius novaehollandiae*, exploitation durable de faune sauvage, Conservatoire de gestion de la faune sauvage, marketing, diversification de l'agriculture, bénéfice écologique, Australie.

RÉSUMÉ

*De nombreuses pratiques agricoles anciennes ont causé d'importants dommages aux paysages naturels, à la faune sauvage et à la biodiversité en Australie. Si l'agriculture australienne veut réaliser une utilisation durable de ses ressources naturelles et stopper la dégradation actuelle de ses sols et le déclin de son agriculture, un changement radical des modes de perception et des modes d'exploitation des ressources naturelles est nécessaire. De plus, l'Australie n'a pas actuellement d'aires protégées pour la conservation à long terme de la faune sauvage, et il y a un besoin urgent d'agrandir l'aire destinée à la conservation de la biodiversité pour compléter le réseau des parcs nationaux. Des primes et des aides à la commercialisation sont nécessaires pour encourager la conservation de la biodiversité et pour promouvoir la production durable sur les terres privées. Le tourisme basé sur la faune sauvage et l'utilisation commerciale des plantes autochtones et des animaux (tels que les kangourous, *Macropus* sp., et les émeus, *Dromaius novaehollandiae*) peuvent apporter des revenus supplémentaires, inciter à la réhabilitation des paysages, et donner aux propriétaires terriens une raison de gérer durablement leurs terres menacées, telles que les prairies et les zones humides. Un programme détaillé est maintenant en cours d'essai pour tester une proposition destinée à accorder aux propriétaires terriens une plus*

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grande responsabilité envers la faune, selon des règles strictes et des lignes directrices, et destinée à augmenter les revenus de la ferme et assurer une productivité à long terme. Des essais d'exploitations durables de faune sauvage (Sustainable Wildlife Enterprises, SWE) entamés par le Groupe de développement et de recherche de l'industrie rurale (Rural Industries Research and Development Corporation, RIRDC) sont soutenus par le Programme national de l'utilisation des terres du Gouvernement australien et du Département de l'agriculture, de la pêche et des forêts. Les essais ne cherchent pas à acquérir des propriétés ou à demander aux propriétaires terriens d'abandonner leurs entreprises agricoles actuelles, mais ils ont pour but d'assister les propriétaires terriens dans la création de nouvelles entreprises et d'accompagner la diversification de leurs sources de revenu, en adoptant des systèmes de production qui peuvent inclure ou non les activités conventionnelles de l'agriculture.