

Valuing natural environments to achieve ecologically sustainable development:

The Australian Museum's FATE program

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Abstract

The FATE (Future of Australia's Threatened Ecosystems) program offers potential for significant change to Australian agriculture. Its central idea is that the development of commercial activities based on the use of wildlife can create a more sustainable pattern of land-use than our past and present reliance on introduced species. If this is correct, FATE should result in improved social, economic and ecological sustainability.

The program will involve working with participating land-holders and their local communities to identify potential wildlife enterprises. A marketing and enterprise plan will be devised for selected enterprises. These enterprises will then be adaptively managed by participating land-holders over a period of 5-8 years. During this time marketing chains will be developed and the economic, social and environmental effects of the new enterprises will be monitored.

A key enterprise in appropriate areas will be the harvest of wild kangaroos since the populations of several species have increased significantly as a result of past and present land-use. FATE is researching the existing and potential demand for kangaroo products and the economics of the existing industry and will actively encourage a marketing chain, which can provide an income stream for land-holders.

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The scientific research component of FATE has two broad aims. The first is to test whether the partial or complete replacement of domestic stock by enterprises based on wildlife will enhance ecological sustainability. This will involve investigating both structural (species richness and species composition of flora and fauna) and functional (through Landscape Function Analysis) aspects of ecosystems. The second aim is to optimise the net benefits to humans through complementarity analysis. This involves mapping species distributions on a regional scale so that unique (high complementarity) areas can be identified and protected.

Communication strategies will also be employed, utilising the strengths of the Australian Museum to encourage broad community participation and the communication of the progress and outcomes of the program.

The program has already attracted the support of a wide range of people and organisations including individual land-holders, farmer groups, scientists, relevant government agencies and private companies.

What is the FATE Program?

The FATE Program is an Australian Museum initiative that aims to investigate the value of sustainably¹ using native species in Australia's threatened ecosystems to enhance the long-term conservation of Australian biodiversity² and through this process to increase the resilience and economic viability of rural and regional Australia. It seeks to encourage the development of commercial activities by rural communities that involve the sustainable use of wildlife, and to monitor the ecological, economic and social consequences of these activities.

The initial geographic focus of the Program will be the rangelands of NSW where past and present land use has contributed to environmental damage. The commercial activities developed through the FATE Program will be evaluated to determine if they have potential to partially replace existing rangeland enterprises. The time scale for the FATE Program is at least 5 years per location, but longer-term monitoring is preferable.

FATE is the first Australian land management program—and one of very few in the world—that sets out to assess, through scientifically managed experiments, whether land management programs that include sustainable utilisation of indigenous species will enhance regional biodiversity and the economy of rural and regional communities.

1 Sustainability, as used here, includes biological, economic and social factors

2 The concept of biodiversity, as used here, means richness of native species, in particular species that are not opportunistic and may have declined as a result of land-use practices focused on monocultures of introduced species such as sheep, cattle or wheat.

Other innovative features of the FATE Program include:

- FATE will involve the integration of cooperative wildlife management with existing grazing strategies;
- FATE will explore strategies for, and investigate the effects of devolving responsibility of wildlife management on commercial land to land-holders;
- FATE will involve the development and evaluation of cooperative land management strategies as a mechanism by which land-holders can derive income and maintain/enhance the economic return from wildlife enterprises;
- FATE seeks to work with Indigenous land-holders to investigate indigenous wildlife management strategies and adapt them, where and as appropriate, to commercial enterprises;
- FATE bundles the compatible strengths of many Government and non-Government organisations, and individuals through a Friends organisation to achieve more than any of these partners could do on their own; and
- FATE will coordinate rural/regional as well as urban educational programs utilising the credibility and communication strengths unique to the Australian Museum.

Why is the FATE Program needed?

We continue to damage Australia's habitats and lose species at an alarming rate despite the best will in the world by many conservation-focused organisations. As a result, the biological, economic and social sustainability of many rural areas is under significant threat. The cost in terms of degradation of rural lands has been estimated at \$2-5 billion dollars per year and up to \$70 billion to date (Archer et al 1998). Before significant progress can be made, new strategies that are compatible with traditional conservation strategies are needed on private land.

It is anticipated that the FATE Program will result in increased positive attention to degrading natural environments. If land-holders see these environments as a sustainable source of value-added income, they should commit to their care or risk jeopardising that new income. Focus on sustainable use of specific natural resources should then lead to increased conservation of the 99% of species that are *not* the focus of commercial interest in the same natural habitats. The Murray-Darling Basin Ministerial Council (2001) has mandated the use of an innovative mix of mechanisms, particularly market mechanisms (p17) to achieve catchment targets. This has been reflected in the Draft Catchment Blueprints (2001) for areas where FATE intends to operate (Central West, Lower Murray Darling and Western Catchments).

There is international (Anon 2000a) as well as national support (eg. the Ecological Society of Australia and the Australian Mammal Society) for the sustainable use of wildlife as an increasingly important and compatible way of conserving and rehabilitating ecosystems through commercial activities. Experiments in sustainable use were also

supported by a Senate Inquiry into Commercial Utilisation of Australian Native Wildlife (Senate Rural and Regional Affairs and Transport References Committee, 1998). There are sufficient examples of sustainable use initiatives developed on private lands here and overseas (Ashley et al. 1996 and Geach, H et al. 1999) that have resulted in conservation gains to encourage further trials of initiatives of this kind in Australia.

What will be investigated?

There are five key interrelated research questions that are of critical importance to the overall outcomes of the Program. They will be investigated concurrently throughout the duration of the Program. These are:

1. Is the sustainability of threatened ecosystems enhanced by increased reliance on sustainable use of wildlife and reduced reliance on exotic species?
2. What are the reliable and valid measures for assessing changing environmental health in the rangelands and how can these measures enhance the provision of ecological services?
3. Can enterprises based on the sustainable use of wildlife be developed in Australia to the point where they benefit rural communities and the environments in which they exist?
4. Can responsibility for wildlife management on commercial land be successfully devolved to land-holders?
5. Can viable markets be developed for new products and services derived from the sustainable use of wildlife?

What are the anticipated outcomes?

Through sustainable use of wildlife, it is anticipated that land-holders and their communities will be able to progressively reduce their reliance on enterprises and practices that are detrimental to threatened ecosystems by obtaining direct economic benefit from the regeneration and conservation of natural ecosystems. As a consequence, it is expected that there will be:

- an expansion of the total area available for wildlife conservation due to improved biodiversity conservation on private land ;
- more diverse and economically viable rural industries;
- more resilient and sustainable rural communities; and
- progressive reduction of the factors that lead to land and environmental degradation and extinction of native species.

As the FATE Program is implemented there will be a number of supplementary outcomes:

- the development of reliable, accurate and cost-effective methodologies for monitoring biodiversity gains and ecological services on a local and regional level;
- the development and monitoring of cooperative legal and commercial structures through which groups of land-holders can work together;
- the potential for land-holder groups outside of FATE focus areas initiating similar strategies in their area encouraged by the anticipated success of the first FATE Project.

What are the roles of the Australian Museum and its partners?

The Australian Museum has initiated this program because of its:

- Transcendent goal of learning from the past to understand the present to develop a sustainable future for Australia;
- Unique collections and knowledge about the prehistory of the continent and its biota which enables a ‘deep-time’ understanding of the factors that effect survival of, and drive change in, species and their environments;
- Extensive collections and knowledge about Indigenous land management practices;
- Expertise in measuring and monitoring changes in biodiversity; and
- Commitment to public education and to working with all Australian communities to increase the likelihood of a sustainable future.

The Australian Museum will continue to take a project management, governance and coordinating role in the FATE Program, inviting participation and involvement from relevant government and non-government organisations. In November 2000 a high level workshop was conducted to help define the FATE agenda. Additional workshops were held to further define aspects of the Program during 2001. Partner organisations and individuals will take an increasing role in FATE with the Australian Museum having a continuing role in areas in which it has expertise.

Many Government and non-Government organisations have expressed interest in being involved with FATE. These include: National Parks and Wildlife Service, NSW Agriculture, Department of Land and Water Conservation, Murray Darling Basin Commission, NSW Farmers, Department of State and Regional Development, Meat and Livestock Association, CSIRO, a range of universities including the University of New England, Royal Botanic Gardens of Sydney, Kangaroo Industry Association of Australia, Westpac, Planet Ark and Landcare.

As the Program develops, partners will have a number of avenues for involvement including:

- membership in the FATE Steering Committee;

- roles in developing and putting FATE initiatives into practice;
- establishing biodiversity and economic monitoring on properties;
- participation in developing and implementing communication strategies focused on the goals, progress and outcomes of the FATE Program;
- participation in Rural Appraisals in FATE focus areas; and
- participation in the development and implementation of marketing strategies.

What are potential wildlife enterprises for FATE?

There are already many enterprises focused on sustainably utilising Australian wildlife and natural landscapes that are compatible with FATE. These include eco-tourism (Missing link tourism consultants 2001) and industries based on kangaroos, edible plant products, wildflowers, native timber (Joint Venture Agroforestry Program 2000) and pharmaceutical products derived from native species.

People in each FATE focus area will work with the FATE team to identify the most promising enterprises for their location, looking at factors such as the nature and abundance of the resource, as well as interest, expertise and infrastructure within the local community. The final choice of enterprise will also depend on broader issues such as the presence of an existing industry and the market potential of the product/s or service/s.

While FATE will investigate the market potential for a range of native plant and animal products as well as tourism-linked activities, kangaroo harvesting is the wildlife enterprise that is most likely to be a focus in each FATE area. Kangaroo numbers continue to increase in the rangelands, an existing industry is in place and there is potential for both domestic and export market expansion (Foreign Affairs and Trade, 1997). The rationale behind kangaroo harvesting as a way of conserving rangelands has been strongly elucidated (Grigg 1995 and Lunney 1995) and the economics of land-holders joining in the action have been explored (Alchin 1995), although further work in this area is needed.

FATE's intention is not to replace existing land use enterprises but rather to explore ways in which fragile incomes derived from traditional enterprises can be supplemented and made more resilient by a progressive shift in focus towards sustainable enterprises based on native species. In degraded areas the provision of ecosystem services by land-holders through rehabilitation activities may also attract funding (NSW Department of Land and Water Conservation, 2001).

How will the FATE Program be implemented?

The Australian Museum will act as the coordinator of this implementation process. Two AM staff members are presently dedicated to this task. A number of research staff are also involved in experimental planning and implementation. A FATE Steering

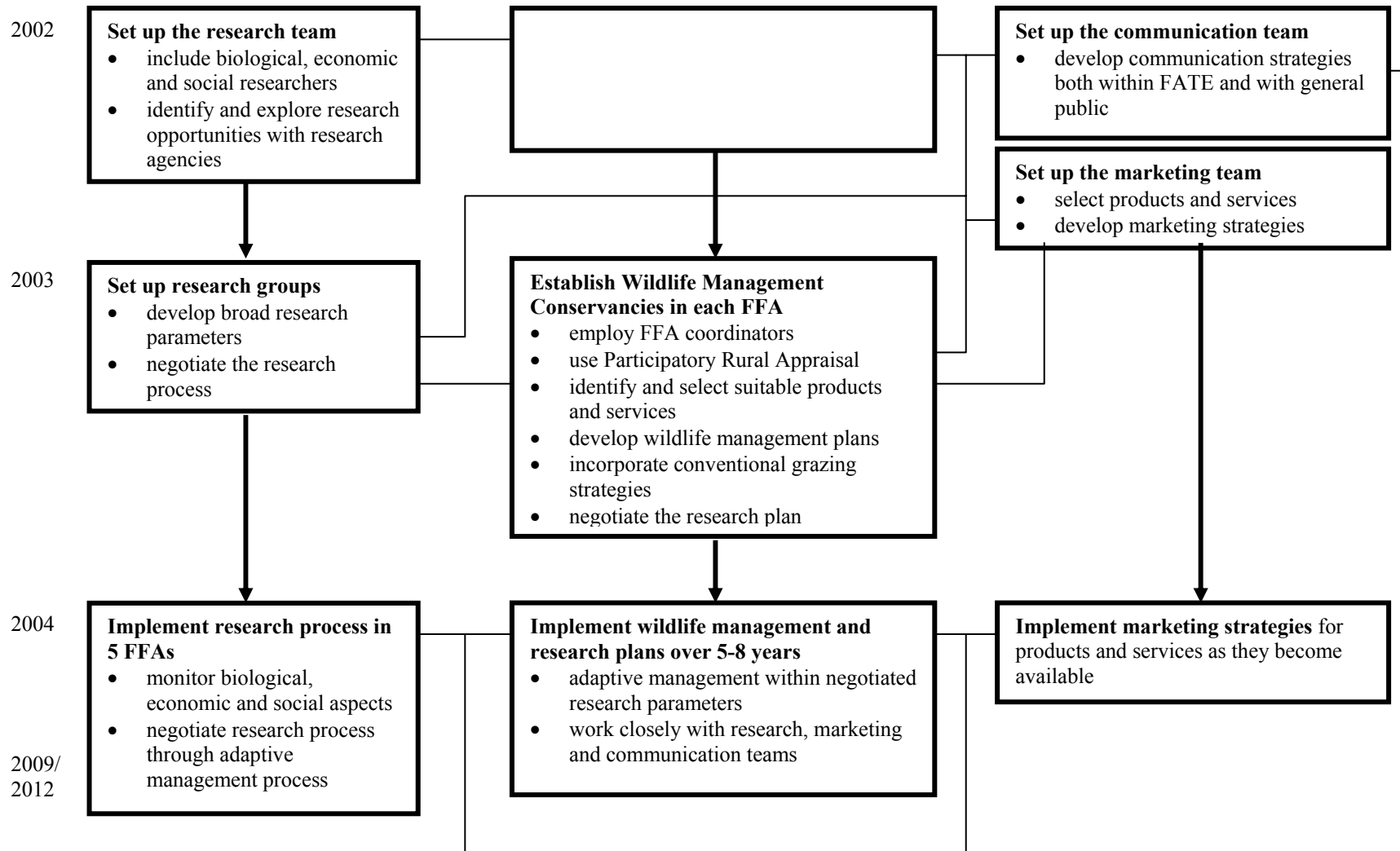
Committee will be established to oversee the program and a FATE Project Manager and one or more FATE Focus Area Coordinators recruited. Consultants will be engaged to investigate the economic parameters, to finalise the design of the ecological experiment and to develop and implement marketing strategies. Partner organisations will be involved at every level of implementation from conception to marketing.

Establishing Wildlife Management Conservancies

The FATE Program will be a large-scale rural experiment, to be conducted over a period of between 5 and 10 years in a number of FATE focus areas (FFAs) within the rangelands. FATE focus areas (between 3 and 5 depending on funding) will be bioregions that meet specified criteria and include a significant number of land-holders that are keen to work with FATE.

A team comprising local people and FATE personnel in each FATE focus area will conduct a participatory rural appraisal (PRA). Participatory appraisal methodologies have been evaluated and found to be relevant in pastoral areas (Ampt P. R. Ison R. L. 1992 and Ison R. L. Ampt P. R. 1992). Through the PRA process, groups of land-holders will be encouraged to form wildlife management conservancies (WMCs). Cooperative land management arrangements will be encouraged within each WMC following a similar approach to the UNESCO Biosphere Reserve program (Brunkhorst et al 1997). Through the PRA a wildlife management plan, which takes into account the social, political and ecological systems of each area, will be developed by each WMC in close consultation with FATE personnel. There is the potential for WMCs to act as ‘commons’ (Coop and Brunkhorst 1999) in which adjacent properties share of profits from sustainable harvests on an equity basis reflecting the share of resources that each property brings to the WMC. The staged process involved in the establishment of a WMC will need to be flexible and pragmatic.

Implementing the FATE program



FATE Science

A scientific model has been broadly outlined by the FATE team in collaboration with other researchers. Each WMC will work with FATE personnel to negotiate the experimental design within the WMC and an ecological, social and economic monitoring regime that is appropriate for the participating land-holders and that fits within the broad scientific model.

The key features of the scientific model are:

- An agreement to keep a designated area (approximately 10-20%) of each WMC free of domestic stock. This area will allow assessment of the impact of removing domestic stock in comparison to a range of grazing strategies employed alongside. Each WMC will then develop, in consultation with the FATE team, a wildlife management plan that incorporates a number of wildlife enterprises.
- Initial benchmarking of biodiversity levels followed by long-term monitoring of changes in the amount and nature of biodiversity on control properties as well as participating properties that are introducing FATE land management strategies.
- Use of Landscape Function Analysis (Ludwig et al 1997) to compare treatments and assess stage of succession toward self-regeneration.

Regional Focus

A key element of assessment is that it must be regional in focus. We hope to find biodiversity gains from sustainable harvesting that are complementary to biodiversity protection elsewhere in the region (Faith and Margules 2002). In this way, sustainable harvesting programs can become compatible parts of region-wide planning that also includes areas dedicated to conservation, agricultural, mixed use and other strategies which operating together will maximise benefits for society and the environment.

In addition, we will explore the possibilities of extrapolating localised Landscape Function Analysis to the regional or sub-catchment level.

Adaptive Management

Members of WMCs will be able to adaptively manage their properties within the experimental parameters agreed to by participants at the start of the project. This is necessary to ensure that the long-term effectiveness of the FATE strategies can be adequately assessed. However, it will be possible to modify aspects of the experimental programs if appropriate, following negotiation with the research team.

Public Education

Beyond the scientific and rural components of the Project, the Australian Museum envisions three other integrated areas of activity:

- A 'Friends of FATE' organisation to provide a network for the general public and interested land-holders outside the formal FATE focus areas. Through Friends of FATE, individuals from all walks of life will have the opportunity to become actively involved with the FATE Project, participating on a voluntary basis in the FATE-focused projects,;
- A communication strategy that involves semi-permanent and travelling exhibitions, school and university programs, Indigenous programs, local extension activities and the AM's award-winning website (amonline.net.au) which is utilised by more than 250,000 clients a month.; and
- Experiential programs including the 'Native Food Festival' currently planned for Sydney in 2002 to introduce the public and potential investors to the value of native products in order to enhance their market potential.

FATE progress

Since the NSW Premier, Bob Carr, launched the program in November 2000, the FATE team has been involved in the following activities:

- Working with stakeholders – high level workshops and consultation with research personnel from other agencies and land-holder groups
- Close collaboration with National Parks and Wildlife Service (NPWS) and other agencies
- Land-holder consultation project funded by Murray Darling Basin Commission (MDBC \$20,000) – reported to MDBC in late June 2002 – awaiting response
- Development of the scientific model, which will underpin the program, continues in consultation with CSIRO, NSW Agriculture, University of Queensland (UQ), NPWS.
- Linking with other relevant projects/initiatives such as RACAC, Bush Heritage, Landmark, and Bookmark.
- State Government agencies (Department of State and Regional Development (DSRD), NPWS, Department of Land and Water Conservation (DLWC) and Australian Museum (AM) are backing the preparation of business case analysis (\$40,000)
- Rural Industries Research and Development Corporation (RIRDC) is supporting FATE through the University of New England to do economic modelling and monitoring (\$235 000). FATE could also be a component of Landmark.
- Successful participation in World's Longest Buffet – outback theme, engage with the general public about the FATE agenda with overwhelmingly positive responses

In conclusion

The FATE Program is an important, timely, scientifically-based, collaborative land management initiative to be trialed in Australia's degrading rangelands to achieve:

- Enhanced environmental health and overall productivity of the land;
- More diversified, resilient and sustainable rural incomes;
- Scientific assessment of the hypothesis that sustainable use of native resources will lead to a significant increase in native biodiversity; and
- Increased public awareness of—and involvement in—the conservation benefits of valuing Australia's native resources.

The FATE program will offer opportunities to land-holders, researchers and agencies to contribute to a critical step in the long-term process of living sustainably in Australia.

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