

WORKSHOPS AND CASE STUDIES

17. BIOREGIONAL PLANNING IN A MARINE AND COASTAL ENVIRONMENT

Joan Phillips,
Great Barrier Reef Marine Park Authority, Townsville

Introduction

The Great Barrier Reef Marine Park is widely recognised as providing an outstanding example of coastal and marine management, derived from a strong legislative framework, the establishment of a separate statutory agency with responsibility for management, and a multiple use management approach providing specifically for conservation and “reasonable use”. Some of the success of the Great Barrier Reef management approach is based on its status as a natural icon, reflected in its World Heritage Listing, and is unlikely to be transferable to marine environments in general. However, examining the management of a marine area as large as the Great Barrier Reef (350 000 square kilometres) provides some insights into bioregional planning for the conservation of marine biodiversity.

The case study also demonstrates the strong role of the Queensland Government, local government and the wider community in protection of the natural values of the Great Barrier Reef, despite the clear legislative precedence of the *Great Barrier Reef Marine Park Act* over most Commonwealth and State legislation.

The Great Barrier Reef

The Great Barrier Reef is the largest system of coral reefs in the world. The Reef covers an area of approximately 350 000 square kilometres and includes more than 2900 reefs extending along 2000 kilometres of the coast of Queensland. About 93 per cent of the Great Barrier Reef Region is included in the Great Barrier Reef Marine Park. Its natural significance at a national level has long been recognised, and relates to the following factors:

- (a) geomorphological significance
- (b) a broad range of types of barrier and fringing reef types
- (c) biological significance for the diversity of coral forming organisms, marine vegetation and other marine organisms
- (d) widespread diversity of tropical and subtropical fish and marine mammals
- (e) major habitat for dugong and turtles
- (f) inter-relationship of the reef systems with coastal ecosystems
- (g) a diverse range of offshore islands
- (h) formations and marine life of great visual and scenic beauty
- (i) biological resources of potential value to humanity (Whitehouse 1993).

The Great Barrier Reef is scientifically significant because it is in the centre of the vast Indo West Pacific coralline region and the reef building corals extend further south than they do elsewhere.

Although the cultural significance of the Great Barrier Reef is less well documented there is strong evidence of long and continuing use of the coastal and marine environments by indigenous peoples.

There are 12 large towns or cities and a number of smaller population centres on the adjacent coast.

Major activities taking place within the Great Barrier Reef Marine Park include tourism, commercial fishing, recreation, and shipping.

Management of the Great Barrier Reef Marine Park

The impetus for conservation and management of the Great Barrier Reef came in the late 1960s, driven by concerns over the likely impacts of petroleum exploration and production, mining for limestone and other minerals, and the need for environmental and other controls as a consequence of likely expansion of commercial fishing, development of a major tourism industry and impacts on the Reef stemming from terrestrial activities (Kenchington 1991). Concern at possible human impacts upon, and lack of understanding of, the reef ecosystem was exacerbated by the occurrence of large populations of the coral eating crown-of-thorns starfish.

The outcome of the various controversies, and differences between the Commonwealth and Queensland Governments on development of the Great Barrier Reef and jurisdictional responsibilities, was a widespread view that new Commonwealth legislation was needed to provide for the protection and management of the Great Barrier Reef. The unanimous passage by the Commonwealth Parliament of the *Great Barrier Reef Marine Park Act* in 1975 marked the culmination of a long public campaign (Kenchington 1990). The Great Barrier Reef Marine Park is established by the Act. The boundary of the Great Barrier Reef Region is defined in a schedule to the Act. The Act establishes a statutory Authority and sets out the functions of the Authority, the objectives of the Act and the objects to have regard to when preparing a Zoning Plan. The Act also sets out the quite extensive Regulation-making powers.

The basis for Commonwealth involvement in the Great Barrier Reef Region lay originally in the assertion of Commonwealth sovereignty to the territorial sea. The implementation of the Offshore Constitutional Settlement (OCS) reached between the Commonwealth and States in 1979 in relation to the management of Australia's territorial sea is subject to the continued operation of the *Great Barrier Reef Marine Park Act*.

Following the OCS, an Agreement (known as the Emerald Agreement) was reached between the Commonwealth and Queensland Governments which established the framework for cooperative planning and management. The Agreement established a Ministerial Council to coordinate policy between the two Governments, agreed that Queensland would introduce complementary legislation for adjacent areas, and established the role of the Queensland Government as the day-to-day managers of the Great Barrier Reef Marine Park.

The jurisdictional context

In 1973, the Commonwealth Parliament enacted the *Seas and Submerged Lands Act 1973*, which established that the boundary of the jurisdiction of the Commonwealth was the low water mark. The legality of this Act was challenged by the States, but was upheld by the High Court. Although there have been disputes about boundaries and subtidal jurisdictions, it has never been in question that jurisdiction for areas above low water mark lies with Queensland, so it was always clear that protecting the entire marine ecosystem of the Great Barrier Reef region would involve Commonwealth-State cooperation.

Some areas of jurisdictional uncertainty persist. There is unresolved disagreement about the definition of low water; the Commonwealth defines low water as the mean low water whereas Queensland defines low water as lowest astronomical tide. There is a second definitional problem relating to low water, regarding where the low water is to be measured, along the coast or along the seaward edge of the drying reef. The Commonwealth and Queensland Governments are predictably divided in their opinions. The location and extent of "internal waters of Queensland", which are excluded from the Great Barrier Reef Region, can only really be established with certainty by a Court.

The Great Barrier Reef was inscribed onto the World Heritage List in 1981. The listing includes the Great Barrier Reef Region plus "internal waters" and all the islands within the boundary of the Region. The Great Barrier Reef World Heritage Area (GBRWHA) is thus larger than the Great Barrier Reef Marine

Park. While few laws under the *World Heritage Properties Conservation Act 1983* are in force in the GBRWHA, the potential exists for them to be brought into existence at short notice.

Other legal and management frameworks existing in or adjacent to the Great Barrier Reef include:

- the Torres Strait Protected Zone to the north of the Great Barrier Reef Region and other provisions of the Torres Strait Treaty between Australia and Papua New Guinea. There is no clear northern end to the Great Barrier Reef system because it merges with the coastal and island reef systems of Papua and the New Hebrides, but the Murray Islands in the Torres Strait is regarded as the northern limit.
- international conventions that protect the innocent passage of foreign vessels
- as GBRMPA is a Commonwealth Authority, its permitting powers are subject to the provisions of the *Commonwealth Environment Protection (Impact of Proposals) Act 1974*.
- coastal planning schemes and development approval systems
- fisheries management arrangements

Planning framework and hierarchy

The Great Barrier Reef Marine Park Act requires the Authority to prepare a zoning plan for a section of the Marine Park as soon as practicable after proclamation. The essence of the Authority's approach of conservation and reasonable use is set out in the Act, which defines objects to which the Authority must have regard in preparation of a zoning plan. Zoning plans use a combination of areal, temporal, permit, equipment and quota controls.

A Zoning Plan specifies the purposes of use and entry into a number of zones, ranging from General Use Zones to highly protected Preservation Zones. The uses may be as of right, after notification, by permit, or not allowed. The zoning framework invites comparison with town and land use planning, although the common property nature of the marine environment and the strong connectivity of marine ecosystems may limit the application of town planning models.

The provisions of the Act deliberately make zoning plans relatively inflexible. The issue of permits to conduct activities in the Marine Park provides an instrument which is more flexible and can respond with case-by-case consideration, establishment of controls and monitoring of impacts. Additional planning approaches can provide specific guidance on preferred forms of use within the strategic overview of the Zoning Plan. Area Statements or Area Strategies provide guidance on the desired usage setting and provide a coordinated regional basis for the development of individual Reef Management Plans. In early 1995 the Act was amended to allow for statutory Management Plans to be developed for areas, species or ecological communities.

In 1994 the 25 Year Strategic Plan for the Great Barrier Reef World Heritage Area was finalised, providing broad direction and guidance for organisations, such as the Authority, in developing corporate, business and management plans.

Bioregional planning for marine environments: issues

The development of representative reserve systems for nature conservation in terrestrial environments is underpinned by biophysical classifications. Various classifications have been produced for Australia's marine environments and in early 1995 a draft Interim Marine and Coastal Regionalisation for Australia (IMCRA) was produced by State and Commonwealth agencies, building on the earlier classifications. The draft IMCRA is the preliminary result of the best available data and specialist advice on the ecological patterns and processes in coastal and marine environments.

The Great Barrier Reef is in some ways a distinct ecological system, almost all of which is protected in a single management regime. However, most of the species found in the Marine Park are found throughout the Indo West Pacific biotic province. The area has very low levels of endemism, unlike temperate marine areas. Preliminary biophysical classifications of the Great Barrier Reef include several "bioregions", distinguished by variation both across the Reef and from north to south.

Many of the threats to Reef biota and ecological processes on the Reef come from land-based activities. Adjacent terrestrial environments have been classified into a number of distinct bioregions, such

as the Wet Tropics. Another natural environmental unit is the catchment; there are several large catchments adjacent to the Great Barrier Reef.

The Great Barrier Reef Marine Park represents a system of regional planning and management, which includes a range of environmental protection from very highly protected preservation areas to areas approximately equivalent to terrestrial national parks, to areas in which high levels of commercial extraction may occur.

Workshop Questions

Do biophysical regionalisations lead to an over-emphasis of the “representative” criterion for biodiversity conservation, at the expense of other criteria such as endangeredness, species richness, scientific significance, productivity, endemism, integrity etc?

What is the appropriate scale for bioregional planning? The Indo-West Pacific province, the Reef as a whole, the bioregional sub-units of the Reef, the adjacent terrestrial bioregions, or the individual catchments?

How can planning for production/extraction oriented use be incorporated into bioregional planning for marine areas?

References

- Honchin, D. (1994) *Providing for reasonable use: jurisdictional issues*. Unpublished paper.
Kenchington, R. A. (1990) *Managing marine environments*. Taylor & Francis, New York.
Whitehouse, J. F. (1993) *A review of the Great Barrier Reef Marine Park Authority*. Department of Environment, Sport and Territories, Canberra.

WORKSHOP RESULTS: BIOREGIONAL PLANNING IN A MARINE AND COASTAL ENVIRONMENT - GREAT BARRIER REEF PARK CASE STUDY

Workshop leader: Joan Phillips

LESSONS FROM GREAT BARRIER REEF

Outcomes

- Political, legislative, community support
- Economic benefit
- Community ownership
- Need to resource community involvement
- GBRMP model appropriate for Great Barrier Reef
- Public awareness of marine environment critical to support management
- Need for continued community support and involvement

Marine regionalisation

Priority issues only

- Difficulty of identifying pelagic systems eg temporal/spatial
- Sectoral considerations eg fish stocks jurisdictions
- Need to consider the four dimensional nature of marine planning - length, width, depth and temporal considerations.
- How much needs to be set aside for high conservation and protection
- Need for off-reserve protection (buffering)
- Management of adjacent land use to ensure protection

Marine regionalisation as a basis for

- Equity in financial resource sharing eg research

Marine regionalisation - 2

- Primary data should be captured widely and aggregated on a regional basis
- Marine regionalisations have a range of applications in addition to the selection of marine parks
- Implications of cross-boundary bioregions involving other countries - PNG, Indonesia (resource sharing)
- Natural ecological stability in selecting marine park areas
- Dynamic nature of environmental boundaries
- Framework for implementing ESD
- Facilitate involvement of local government in process

Marine regionalisation - 3

- Need to link terrestrial (eg Interim Bioregionalisation of Australia - IBRA) with marine approaches (eg IMCRP) through local government planning and other similar mechanisms and opportunities
- Scale of regionalisations need to be appropriate for purpose
- Regionalisation should take into account customary marine tenure ie. "Set Country"

18. INTEGRATED CATCHMENT MANAGEMENT - THEMURRAY-DARLING BASIN COMMISSION CASE STUDY

Don Blackmore and Brian Lawrence
Murray Darling Basin Commission, Canberra

Introduction

It is pleasing to be given the opportunity to share with you the Murray-Darling Basin experience in Integrated Catchment Management. An integrated approach to management of the Murray-Darling Basin commenced in 1985 and built on the arrangements for water sharing between the three southern states which commenced in 1915. This paper deals with what has been achieved and what still needs to be done to sustain the natural resources of the Murray-Darling Basin. It outlines the path the Murray-Darling Basin Commission and its Council are treading towards a more sustainable future in the Murray-Darling Basin.

The Murray-Darling Basin Initiative, involving the five jurisdictions of the Commonwealth Government, New South Wales, Victoria, South Australia and Queensland, provides for integration of policies and programs at the political and bureaucratic level. It is based on a catchment approach to the planning and management of natural resources.

The most important level at which integration is pursued is at the local and regional level, where agency and land owner representatives must combine across disciplines to tackle the natural resource problems that now face them. The Murray-Darling Basin Commission has developed and implemented a Natural Resources Management Strategy which recognises that the majority of the land is privately managed and successful long term change is dependent on a high degree of community involvement to both advise and carry out the necessary works and measures to address natural resources degradation.

The Murray-Darling Basin

The Murray-Darling Basin covers 1.06 million square kilometres or approximately one seventh of the total area of Australia and is equivalent to the area of France and Spain combined.

The Basin is Australia's most important agricultural region, accounting for approximately half of the nation's gross agricultural production. It contains or supports one quarter of the cattle herd, half of the sheep flock, half the crop land and almost three quarters of the irrigated land in Australia. The climate and topography vary dramatically from a mountain range along its eastern fringe to extensive flat, semi-

arid to arid areas in the west. Significant areas of the Basin are degraded; with soil erosion, land and water salinisation, soil acidification and eutrophication of waterways and lakes becoming increasingly common.

It is clear that these problems need to be managed on a catchment basis if sustainable use of the natural resources of the Basin is to be achieved. In 1985 the Governments formed a Ministerial Council to coordinate and oversee the development of natural resources programs. The objective of Council is to *promote effective planning and management for the equitable, efficient and sustainable use of the water land and environmental resources of the Basin*. In 1988 an agreement was reached between three State Governments, and the Federal Government to facilitate joint management of the high priority natural resources issues.

Management structure for the Murray-Darling Basin initiative

The critical development at the political and bureaucratic level over recent years has been the establishment of a management structure that enables matters of common interest to be developed, discussed, resolved and implemented.

This management structure comprises three layers. Firstly, there is a Ministerial Council with representatives from the Federal and three State Governments. Each Government is represented on Council by Ministers representing between them the land, water and environment portfolios. The second layer is the executive arm of Council. This has two components: firstly, the Murray-Darling Basin Commission which has two representatives from each Government, representing land, water and environmental issues. Commissioners are usually the head of each agency, for example, State Director of Water Resources. The Commission is supported by a technical executive, known as the Office of the Commission. The Office of the Commission carries out a number of statutory functions with regard to operation of the Commission's storages, sharing of water between the States and developing long-term natural resources management plans for the Basin's resources. The third component of the Initiative is a Community Advisory Committee. This Committee, which consists of both regional and special interest group representatives, reports directly to the Ministerial Council. The Committee's role is to advise Council of the effectiveness of the policies and programs being developed.

The Natural Resources Management Strategy

The Natural Resources Management Strategy is the cornerstone of the Murray-Darling Basin Commission and Council's efforts to sustain the natural resources of the Murray-Darling Basin. The Strategy, which was developed over a period of four years, involved a significant consultation phase both within State and Federal Government agencies and with the wider community. The building block for the Strategy was an assessment of environmental resources of the Murray-Darling Basin. This was completed in July 1987 and contained an assessment of the status and options for improved management of these resources. This study was followed by further work to develop an integrated approach to natural resources management. However, early attempts to develop an integrated strategy failed because of the lack of a delivery mechanism. That is, there was no structured way for the government to deliver an integrated program to the community. A failing with many strategies has been that, while they were able to articulate the right aspirations for the management of the resource, they were not able to deliver the product on ground. In the Murray-Darling Basin the majority of land is freehold and for any strategy to be effective it must be able to provide this group in the community with the knowledge and resources to improve the management of the natural resources under their control. Community involvement and commitment are the key to successful natural resources management.

The Commission and Council adopted this premise and set about developing a strategy which would empower the Community to address local issues in a coordinated and integrated way. Each individual community's action would be a component of the action necessary to improve overall natural resources management in the Basin. The matters and issues considered in reaching this position are discussed below.

Problems identified

The problems identified and given priority for attention in the Natural Resources Management Strategy are:

- rising salinity levels in soils and streams
- deteriorating quality of water supplies
- land degradation, for example, soil erosion and acidification
- decline and loss of native vegetation
- loss of native habitats
- over-commitment of, and competing demands for, water supplies
- cultural losses (for example, Aboriginal heritage sites).

Strategic aims

To address these issues, the following strategic aims were developed for the Strategy:

- prevent further degradation of natural resources
- promote sustainable user practices
- ensure appropriate resource use planning and management
- ensure a long term viable economic future for the Basin's dependents
- minimise adverse effects of resource use
- ensure self-maintaining populations of native species
- preserve cultural heritage
- conserve recreation values
- ensure community and government cooperation.

The sheer size of the Basin and its problems means that community and government must cooperate in their efforts to achieve these strategic aims. The key ingredients of the Strategy are that it:

- relies on the community to lead and participate in the planning and implementation of onground works and measures and to adopt natural resources management practices consistent with sustainable use
- provides a coordinated framework for community led action supported by government
- identifies responsibilities of the community and government at both Basin and regional levels
- seeks to accelerate action through a program of works and measures and community education
- provides a mechanism for ongoing planning and review of policy and legislation.

The Strategy does not contain a solution for every resource issue, it provides a framework within which such issues may be addressed.

Community action

The Strategy provides for the implementation of onground works and measures to be largely the responsibility of individuals and communities. It provides for the recognition or establishment of community groups, some of which will be small, while others will form to tackle larger and more complex issues. The key ingredients for community involvement in the Strategy are for the community to:

- identify local natural resources issues which need management/intervention
- enlist government support funds to complement its own resources for its activities, through the funding program which supports the Natural Resources Management Strategy and any other source
- develop and implement action based management plans for its locality
- promote the adoption of improved management practices
- communicate to government its aspirations and concerns for the management of natural resources at the local, regional and Basin-wide level.

Government action

To support the community-led action, coordinated government action is required to service the needs of the community. The guiding principles for addressing major issues are established through strategies such as the Algal Management Strategy and the Water Audit, where an approach that is agreed by all

governments, through the Ministerial Council, is distributed as the basis for informed public debate and sound management action. Government support is focussed on the following areas:

- community education and information - community understanding of the key issues is necessary to support and encourage landholder activity
- policy and legislative framework - government will encourage preferred management practices and discourage inappropriate ones using legislative powers as necessary
- research and investigations - to initiate the necessary research and investigations to support the community effort
- monitor and review implementation of programs to address resource degradation - a common basis for identifying, assessing and monitoring resource degradation is required which enables the degree of success of the various community groups to be assessed.

Managing the Strategy

Any strategy requires two key elements for success: one is a delivery mechanism; and the second is the resources to support change. The Natural Resources Management Strategy has been supported by a funding program. Funds are provided for knowledge-based activities and for onground works and measures. Approximately 40 per cent of the funds are directed to the knowledge based activities and 60 per cent to the onground works. In the 1994-95 financial year, the total program amounted to about \$22m, with \$8m going to the knowledge based component of the program and \$14m to the onground works and measures.

Knowledge based activities

Knowledge based activities principally deal with applied research and investigations required either to implement onground works or measures or to develop Basin-wide policy initiatives. The following areas are considered for funding in the knowledge based category:

- aquatic and riverine management
- groundwater management
- land and vegetation management
- salinity and drainage
- cultural and historic site management
- native flora and fauna management
- education and information.

Onground Works

The Natural Resources Management Strategy Integrated Catchment Management (ICM) Program provides funds for the development and implementation of action plans as the means of achieving priority outcomes for the Basin. The Program addresses issues of concern in an integrated way, so that in addressing one issue, the impacts on other natural resources and on the rest of the Basin are taken into consideration. For instance, an issue of overriding local concern in a catchment, such as dryland salinity is integrated with management of other related issues such as water quality, soil erosion, and tree decline.

In 1994 -95 the ICM Program funded individual projects according to the degree to which they were consistent with action plans, regional strategies, and State and Murray Darling Basin Commission priorities. This focus enabled funds to be more closely targeted to achieving priority outcomes at sub-catchment, regional, State and Basin scales.

In 1995-96 the ICM Program will concentrate on achieving priority outcomes - 95 per cent of new funding is directed to developing or implementing action plans which address regional strategies and are consistent with State and Basin priorities. The remaining five per cent of new funds is available for individual projects dealing with emerging issues, community development and cultural heritage.

The continuing move to funding the implementation of action plans will provide catchment management committees with the increased responsibility for decision making which they have been seeking. It will also, over time, release resources at the State and Basin levels, as there will be less documentation and time involved in assessing individual projects at those levels. These resources can be better used to evaluate and monitor the outcomes being achieved.

The improved process will:

- provide the ICM Program with a strong and consistent framework within and between regions and States for evaluating applications, targeting funds and measuring on-ground results at sub-catchment scale. The process will achieve this by facilitating objective comparison of plans and applications which quantify problems, consider a range of actions and set targets for implementation and outcomes;
- provide regional and sub-regional communities which have well developed plans with increased autonomy in the decision-making by devolving to them responsibility for assessing individual projects and comparing the merits of plans; and
- encourage communities which have been less involved in natural resources management to take a more strategic and catchment-based approach, while enabling them to obtain funds to commence plan preparation and implementation thereby maintaining their commitment.
- provide regional communities with a framework for demonstrating that the ICM Program is achieving strategic outcomes, and that both community and Government investment in the natural infrastructure is soundly based, responsible and justifiable.

This is a useful and practical model for a mechanism by which the principles of bioregional planning and management can be delivered all the way to the ground.

Conclusions

Cooperation and coordination between individuals, communities and governments is crucial to managing natural resources towards sustainability through an integrated catchment approach. The Natural Resource Management Strategy has been in operation for five years and all those involved have been heartened by the community acceptance and enthusiasm for the concept. The management structure employed under the Murray-Darling Basin initiative provides a model for securing the adoption of a bioregional planning approach.

Planning and managing within natural boundaries such as catchments provides for a proper assessment of the impacts of various policies and actions, an assessment which would otherwise be fragmented and diminished by jurisdictional boundaries. Pooling of resources and effort also amplifies the gains that would normally be made by individual actions.

The economic, environmental and social aspects of resource use and conservation are best integrated on the ground, through the practical implementation of policies and actions. The principles of biodiversity conservation, and the approach of bioregional planning, need to be interpreted into simple language and transformed into practical actions, if their adoption is to be increased.

WORKSHOP RESULTS: INTEGRATED CATCHMENT MANAGEMENT - THE MURRAY-DARLING BASIN EXPERIENCE

Workshop leaders: Don Blackmore and Brian Lawrence

The model for integrated catchment management as applied in the Murray-Darling Basin (MDB) was reviewed and strengths and weaknesses were identified.

The major strength of the MDB model was the extent to which the community had been empowered and participated in the planning and management process.

The major weakness of the MDB model was the limited extent to which objectives and performance indicators had been clearly identified. The objectives and performance indicators could have been applied both earlier in the process and more extensively. This would have significantly increased the achievements of an integrated catchment management approach and the extent of integration achieved at all levels and between all attributes and stakeholders. Another problem was the impact (or legacy) of former management responsibilities and actions that focused on water resource allocation and salinity control.

A handful of 'lessons learnt' were identified:

- there is a need to give biodiversity objectives the same value as other objectives such as for production;

- it is commonly observed that personal and economic needs will prevail in any trade-off with biodiversity needs;
- the costs of biodiversity conservation may need to be shared by all Australians as they are beyond the capacity of the current generation of primary producers to carry.

19. WORLD HERITAGE AREA MANAGEMENT IN AUSTRALIA - THE WET TROPICS MANAGEMENT SCHEME MODEL

Peter Hitchcock,
Wet Tropics Management Authority, Cairns

The Wet Tropics World Heritage Area was world heritage listed in 1988 and comprises some 900,000 hectares of tropical forests in northern Queensland.

The management arrangements adopted for the Wet Tropics is the product of a negotiated partnership between the Australian (Commonwealth) and Queensland (State) Governments. The negotiated intergovernment agreement (The Wet Tropics Management Scheme) was formalised and published in 1990.

The Wet Tropics Management Scheme established a working model which facilitates:

- joint Commonwealth-State control and financing
- a single purpose management authority whose primary focus is protection and management of the World Heritage Area
- protection by specific legislation for lands of all tenure
- protection and coordination across a complex array of land tenures and ownerships
- community participation in decision making.

The majority of the Wet Tropics Management Scheme has been implemented. The structure is illustrated in Appendix 1. The core elements are summarised below.

1.0 Legislation

1.1 Commonwealth

The World Heritage Properties Conservation Act 1983 does not apply directly to the Wet Tropics World Heritage Area but three regulations under that Act are specific to the Wet Tropics and provide specified protection.

The Wet Tropics of Queensland World Heritage Area Conservation Act 1993 is minor legislation enacted to complement the Queensland legislation. The Act requires, inter alia, that at least one of the Commonwealth appointed Directors to the Board of the Wet Tropics Management Authority is an Aboriginal person.

1.2 Queensland

The Wet Tropics World Heritage Protection and Management Act was enacted in 1993 and is the principal legislation underpinning the Wet Tropics Management Scheme. Most of the Act was proclaimed in 1993. As at 1995, proclamation of Sections 56 and 57, the main protection provisions, had been deferred pending development of necessary regulations.

2.0 Ministerial Council

The Wet Tropics Management Scheme established a Wet Tropics Ministerial Council comprising two Ministers representing each Government to be chaired by the Queensland Minister for the Environment.

The Wet Tropics Ministerial Council is not established in legislation but is referred to in the Queensland Legislation.

Ministerial Council meets twice per year. The Board Chairperson, Executive Director and key staff also attend meetings.

3.0 Statutory Authority

The Wet Tropics Management Authority (WTMA) was established as a statutory authority by Queensland legislation in accordance with the intergovernment agreement. The Authority comprises a Board of Directors and staff.

3.1 Board appointment

The Board comprises six persons, including five part time Directors and one fulltime non-voting Executive Director.

The Commonwealth and State are entitled to appoint two directors each and must agree on the appointment of the Chairperson. The part time directors cannot be public servants or be in the employ of either government.

3.2 Executive Director and Staff

The Executive Director and staff are employed as Queensland public servants within the Queensland Environment and Heritage portfolio. The Executive Director is responsible to the Board for policy and operational matters but is accountable to the Director-General of the Department of Environment and Heritage for human resource management, financial management and for audit purposes.

3.3 Community Committees

The Queensland legislation requires that the Authority establish two community based committees to advise the Board and provides for additional committees to be appointed on a needs basis. All committees are appointed by the Board.

3.3.1 Community Consultative Committee: Whilst the legislation is silent on the composition of committees, the current committee was selected from applications to broadly reflect community interest sectors and also have regard for gender and geographic equity across the region.

3.3.2 Scientific Advisory Committee: The scientific committee is broadly representative of the scientific disciplines relevant to the Wet Tropics.

The Board refers official agenda papers to the committees and expects the Chairpersons of the committees to attend and report to Board meetings.

No Aboriginal people have as yet been appointed to either committee. Instead, at the request of Aboriginal people, WTMA is sponsoring a number of fora to facilitate Aboriginal people deciding how they wish to advise the Authority. It is apparent that there is a preference for a separate incorporated body to coordinate advice to the Authority.

4.0 Field Management

Whereas WTMA has overall responsibility for management of the WHA, on-ground or field management is the responsibility of the respective land owners and land managers.

A feature of the Wet Tropics WHA is the multiple ownership, including private freehold lands. As at 1996 only 30 per cent of the WHA is national park but it is Queensland policy to convert other State owned lands to national park.

The Wet Tropics WHA comprises more than 600 separate parcels of land including approximately 200 freeholds and 246 leases, though the freeholds represent only about two per cent and leases 15 per cent of the total area.

It is expected that native title will be found to exist over substantial parts of the Area. Four claims have been lodged but none has yet been determined.

5.0 Financing

The original intergovernment agreement incorporated a financial agreement for the first three years of operation of WTMA. The two partner governments agreed to contribute recurrent funds on a \$ for \$ share basis up to a ceiling of \$4 million each. In addition, the Commonwealth contributed a one-off capital contribution of \$10 million over three years, later extended to \$11.3 million over four years. Renegotiation of the financial agreement will confirm the share funding arrangement for recurrent funds. No agreement exists for capital funds.

A separate funding package of \$23 million for the Daintree Rescue Program was negotiated in 1994 for the Daintree section of the Wet Tropics. Funding is being provided on a \$ for \$ shared basis by the partner governments over the four years of the program.

6.0 Development Control and Management Planning

Development control in the Area will be principally achieved through the provisions in the Wet Tropics legislation for statutory management plans, including the Wet Tropics Plan, a strategic plan for the whole Area.

Development control via the Plan will be supplemented by other existing and proposed Queensland legislation including an existing provision for all significant developments within and adjoining the Area to be referred to WTMA for advice on waiving of an otherwise mandatory requirement for environmental impact assessment.

The legislation sets out a process for management planning, including public consultation and referral to Ministerial Council.

7.0 Community Participation

The community participates in the protection and management of the Wet Tropics in a variety of ways:

Landholders

The owners of the more than 200 freehold blocks and the lessees of more than 246 leases, collectively comprising some 17 per cent of the WHA do in a real sense have an opportunity to participate in the protection and management of the WHA. Most are positively disposed towards protection and management of their lands consistent with WTMA management objectives. Properties continue to change hands and few owners have requested purchase by WTMA, suggesting that there is a sector of the community prepared to actively participate in the WHA.

WTMA Board

The Board of WTMA provides the opportunity for community participation. The legislation prohibits appointment as Directors any public servant or government employee thereby providing the opportunity for direct non-government/community participation in decision making at Board level.

WTMA Committees

The two committees provide opportunities for community involvement in the management process.

Volunteers

WTMA pursues a policy of working in partnership with the community, such partnerships ranging from informal arrangements to formal contractual arrangements e.g. joint venture visitor information centres and cooperative management agreements (Cams) for protection and management of private lands.

8.0 Advantages and Disadvantages of Wet Tropics Management Scheme Model

A simple evaluation of advantages and disadvantages of the Wet Tropics model is provided at Appendix 2.

SUMMARY

The Wet Tropics WHA differs markedly from other WHAs in Australia, most notably in complexity of ownership and tenure. A management scheme has been implemented to accommodate the peculiarities of the Area. Aspects of the Wet Tropics model may be applicable in other WHAs in Australia.

Appendix 1

Appendix 2

Advantages and Disadvantages of Wet Tropics Management Scheme Model

Advantages

1. Partnership between State and Commonwealth is institutionalised
 - buffered from changing politics.
 - joint funding assured.
2. Community participation institutionalised in
 - Board
 - Committees

3. Area specific agency ensures focus on World Heritage Area management
 - avoids the distraction suffered by multi function departments.
 - buffered from political control.
4. A single statutory authority which is itself not a land owner or field manager provides a very appropriate focus for multitude of landowners in WHA
 - reduces divisions between neighbouring landholders
5. Area specific legislation superior to reliance on general legislation.
6. Single function agency provides a better focus for wider community than that of multi-function departments.
7. Existence of a Ministerial Council is an ongoing reminder to governments of their specific commitments to WHA.

Disadvantages

1. Greater bureaucratic process in decision making, greater complexity.
2. Potential for friction between single function statutory authority and traditional line management agencies (a common feature where departments and statutory authorities are co-located in the one portfolio).
3. Potential for the statutory authority becoming the 'ham-in-the-sandwich' between the two governments.
4. Potential for ambivalence of political control, roles and mandates of various players.
 - eg. QDEH is both a client of WTMA and a provider of administrative support.
5. Role of advisory committees not (presently) adequately defined.

WORKSHOP RESULTS: WORLD HERITAGE AREA MANAGEMENT IN AUSTRALIA - THE WET TROPICS CASE STUDY

Workshop leader: Earl Saxon

THE DRAFT WET TROPICS MANAGEMENT PLAN AS A BENCHMARK FOR BIOREGIONAL BIODIVERSITY PLANNING

A. Strengths of draft Wet Tropics management plan as a tool for protecting and managing regional biodiversity

- Indigenous people given the opportunity to be involved in management
- Use can be made of traditional local knowledge
- Sufficient time was allowed for community involvement
- Traditional hunting rights respected
- A single, powerful, rich management agency with strong legislative mandate
- High profile area - nationally and internationally
- Size and rainforest focus gives flexibility in choice
- Relatively small areas of conflicting uses
- Tourist value strengthens capacity to manage by supplying finance
- Size of area protects catchments and reduces downstream effects
- Indicates multiple use opportunities on the basis of biodiversity information
- Provides guidelines for use
- Quantitative data base as basis for fauna/flora conservation

B. Weaknesses of Wet Tropics management plan as a tool for protecting and managing regional biodiversity

- Indigenous people do not yet have decision-making power

- More or less arbitrary boundary of the area, hence limited capacity to conserve biodiversity at regional level
- Relates (strictly) to only part of a bioregion
- Omits mention of Wet Tropics Management Authority (WTMA) activities, such as revegetation, outside the immediate planning area
- Full (original) extent of the whole bioregion is not shown (which would reveal regional patchiness of rainforest)
- Untested management model
- Tourist pressure causes land values to rise - hence costs of compensation for infringement of existing use rights also rise
- Scale of policing required, given the size of the area to be managed

C. Opportunities to influence and be influenced by activities outside the world heritage area

- For indigenous people to negotiate a share in economic returns
- For Aboriginal culture to be recognised
- Integrate into Far North Queensland (FNQ) 2010
- FNQ 2010 planning provides for WTMA inputs to planning adjacent areas including biodiversity conservation
- High security for long term research on tropical forest ecology and biota
- Potentially useful model for other extended conservation areas

D. Threats from outside and threats arising from activities within the region

- There is a concern that native title many not recognise both traditional and historical associations
- Could be viewed in isolation from wider region in which it is embedded
- Peculiar boundaries of current World Heritage Area
- Local government resentment and political backlash
- Political disagreements between Commonwealth and State
- Growth in demand for power and water in FNQ (ie hydro electric development)
- Climate change targets - leading to increased hydro development (in lieu of coal/gas)
- Funds may dry up and lead to inability to manage/police
- Increase in tourism will put pressure on key sites

20. THE LAND CONSERVATION COUNCIL

Don Saunders,
Land Conservation Council, Victoria

The Land Conservation Council (LCC) was established and operates in accordance with the *Land Conservation Act 1970*. It is a statutory authority and its major role, as defined by the Act, is to “carry out investigations and make recommendations to the Minister with respect to the use of public land in order to provide for the balanced use of land in Victoria”. In framing its recommendations on public land use, the Council is required to have regard to the social and economic implications relevant to the recommendations.

Initially, the State of Victoria was divided into 17 areas or districts for the purpose of the LCC studies. The boundaries of these areas were chosen on various criteria, the end result in most cases being similar to bioregional boundaries. The areas differed widely in the amount of public land: at one end of the scale there is East Gippsland with 88 per cent public land, at the other end Murray Valley with nine per cent (38.5 per cent of Victoria is public land). Commencing in 1971, each of these was studied and recommendations made to the Government for more than 20 different categories of public land use, including reference areas, wilderness areas, national parks, forestry, agriculture, community use and services. Subsequently, some of these study areas were reviewed in the light of new information or changing community demands.

More recently the Council has, at the request of the Victorian Government, undertaken Statewide studies and provided final recommendations on rivers and streams (including heritage rivers) and wilderness. One of the most challenging Statewide studies is the current investigation into Victoria's entire marine, estuarine and coastal environments.

In the 24 years of its operation, Council has provided over 6,400 recommendations to Government. A measure of its success is that, of the 5,745 recommendations which have been subject to Government decision, only 131 of these have not been accepted, while 104 have been varied.

Public consultation is a very important component of the LCC process. Some of the procedures to be followed are set out in the Land Conservation Act, but these are supplemented by a range of additional consultation and communication efforts.

The Council's investigations are largely independent of Government. The role of the Government is limited to setting the terms of reference for Council's studies and, of course, considering Council's Final Recommendations at the end of the studies. The Government does not get involved in the Council's process during an investigation. While eight of the 14 members of Council are the heads of Government agencies, these members are appointed on the basis of their expertise. They participate in accordance with the general rule that members must promote the objectives of the Land Conservation Council, rather than the interests of their agency or nominating body.

An objective of the workshop will be to consider the effectiveness of the LCC's consultation program, looking at the level and type of community responses to various studies, including the Alpine (two studies), Wilderness, Mallee (two studies) and the Marine and Coastal.

The workshop will also consider

- whether the study process could be improved;
- the advantages/disadvantages of having separate processes for planning of public and private lands;
- the advantages/disadvantages of conducting land-use planning through a statutory authority which is "at arms-length" from Government;
- the relevance of the process to wider use in Australia.

WORKSHOP RESULTS: VICTORIAN LAND CONSERVATION COUNCIL CASE STUDY

Workshop leader: Don Saunders

Strengths

- Proven, credible, publicly accepted process
- Public consultation is a strength
- Highly visible process
- Flexible
- Has been able to meet most targets for representativeness in conservation reserve system on public land
- Process which enables public land use to be re categorised efficiently

Weaknesses

- Unable to consider private land and public land in cities
- Stops at State boundaries
- Unclear relationship with National Forest Policy process
- Decisions taken on a State-wide basis will inevitably cause local concern
- Regular reviews of study areas have been discontinued
- Scope for more sociological studies as part of the investigations
- Problem of placing a dollar value on conservation reserves, in contrast to value of timber, fish etc
- Adjoining States do not have a complementary process

Opportunities

- LCC to work with catchment and land protection boards, coast and bay management boards and local government to achieve good planning across public and private land
- Other States and Territories to adopt a complementary approach to natural resource inventory and land use categorisation

21. AN ENVIRONMENTAL FRAMEWORK FOR MANAGING GROWTH - SOUTH EAST QUEENSLAND CASE STUDY

Ian Schmidt
SEQ 2001 Regional Resource Unit, Brisbane

INTRODUCTION

I was recently reminded of some alarming statistics.
the world population is now 5.6 billion;
the annual growth rate is 1.7 per cent;
we are adding 11,000 people each hour;
the world population is now doubling every 41 years.

(Dr Norman Abbott 1995)

To some extent, Australia has been protected from the most devastating impacts this population growth is having on the world environment. However, there is no room for complacency in this country which now has a population of around 17 million people and is increasing steadily at around one per cent each year.

In Queensland we are experiencing population growth at an annual rate of around 2.5 per cent. In 1994, Queensland accounted for over 40 per cent of the nation's total population growth which was greater than Victoria and New South Wales combined.

The impacts of this growth are most noticeable in the south east corner, in the far north, and more recently in the Wide Bay region to the north of Noosa. In the South East Queensland region which stretches from the New South Wales border to Noosa on the Sunshine Coast and west to Toowoomba, the population growth is expected to increase by 50 per cent in the next twenty years.

The release of new population projections for the region in 1990 sent alarm bells ringing in the region. For the first time, concern was expressed over how the region would cope with the expected growth and what this meant for the environment. The region had been growing strongly for twenty years, however, what had happened was the scale of growth had broken through the comfort zone.

It is proposed to address these issues and the coordinated response by the governments in the region to the population growth and critique that response in three specific areas which are relevant to this conference and which are currently emerging in planning in Queensland and elsewhere. These are:

- community participation;
- management or control;
- systems of planning and administration.

South East Queensland - growth issues and response

Current population predictions in South East Queensland are that the population in the region will increase from a current figure of 1.9 million to three million by the year 2011. The current growth equates to an approximate increase of 50,000 people per week and it has been estimated that this increase will consume some 2,600 hectares of new land each year for the next two decades.

The 2,600 hectares required will necessarily result in the alienation of that equivalent of bushland, agricultural land or other currently non-serviced land. The concerns over the loss of valued agricultural areas, bushland and coastal environmental areas, and the fear that the region would develop into a Los Angeles type urban sprawl from the Gold Coast to Noosa, finally prompted government action.

For those of you who are familiar with Queensland, you will be aware that Queensland does not have a long and distinguished history in the area of environmental and regional planning. The region contains eighteen separate local government areas. Up until the late eighties, growth was led by a vigorous private development industry with support from these separate local governments with little interference from the State Government with the exception of the odd rezoning to facilitate further development.

This began to change at the end of 1989 with the election of a new government. The Goss Labor Government was elected and inherited what has been described as the most laissez faire development regime in the country. In 1990, the Queensland Government convened a growth management conference which was attended by 250 representatives from the three tiers of government, business, industry, trade union, professional, environmental and human service organisations.

The significant outcomes of the conference related to major concerns over the environment and the lack of an effective coordinated administrative structure to address the issues. A Regional Planning Advisory Group (RPAG) was established to develop a regional framework to guide the management of growth in the region which would include a set of principles to achieve agreed social, environmental and economic objectives, and an ongoing administrative structure to manage the framework.

The RPAG included representatives of all major sectors in attendance at the conference. RPAG established five working groups with representation from all governments and non-government interest groups. These groups developed a series of position, draft policy and policy papers on fifteen sectoral issues including nature conservation, rivers and coastal management and open space.

In April 1994, RPAG released the Regional Framework for Growth Management (RFGM) (1994) for South East Queensland and recommended the RPAG be replaced by a Regional Coordination Committee (RCC) consisting of representatives of the three tiers of government and supported by a non-government reference group.

These regional administrative structures have now been established. The RFGM has been reviewed and refined at a more detailed sub-regional level and endorsed by the RCC. The focus will now move to implementation with support from all governments. The acceptance of the benefits of the strategy has been demonstrated over the past twelve months through a series of SEQ 2001 initiated actions that included:

- Cabinet direction for the development of a regional transport plan to support the RFGM;
- the establishment of a regional open space system;
- work commenced on a regional water resources management study; and
- local governments reviewing planning schemes integrating the RFGM objectives.

It is difficult to describe a policy development process which involved the three tiers of government and several non-government sectoral groups, and which progressed over a four year period in a few words.

It has been a very intense negotiation process where the stakeholders having been offered a chair at the table, argued most strongly for their positions. However, there was one issue on which there was agreement and which was pivotal to the project. Early in the process there was general recognition among participants that environmental factors provided important constraints to the nature and pattern of future growth.

There was also agreement that the areas containing regionally significant environmental and economic resources would be treated as “no go” areas for urban growth and that the pattern of urban development had to fit around the “no go” areas. Areas of environmental significance including good quality agricultural land, nature conservation areas and water catchments were identified and mapped.

The SEQ 2001 Geographic Information System (GIS) has facilitated this in relation to environmental constraints that can be defined spatially. The GIS has provided a focus for the collection and dissemination of environmental information between State and Commonwealth departments, councils and community groups.

This free flow of environmental information has enabled the base data to be reviewed by all sectors and to be updated and improved and generally agreed as the definitive basis for the regional planning framework. For the first time we had captured the most comprehensive collection of environmental information on one data base. The openness with which this information was shared proved to be invaluable in building trust and demonstrated our genuine desire for all stakeholders to work as equals in the project.

I should add that the openness of this work was carried throughout the SEQ 2001 project and has contributed significantly to the ownership of the outcomes and the commitment to implementation.

How successful has SEQ 2001 been?

It is probably too early to judge, however, we have already seen a number of achievements. What I propose to do is to examine our process in the light of three emerging issues, community participation, growth management or control and systems of planning and administration. I do not have a definitive answer for these issues but I will briefly explore each of them and hopefully, the opportunity will be there for further discussion.

Community participation

I recently attended an international planning congress in Sydney with the theme of adaptation and mediation in urban planning. It seemed to me that the planning profession, undergoing yet another identity crisis, has finally discovered the issue of community participation in planning.

As one whose background is in community development and social planning, I find this rather extraordinary. Communities and their advocates have been knocking on the planner's door for decades only to be confronted by a rational and technically complex planning system which has been most unsympathetic to those outside the profession.

I am greatly encouraged by the recent trends to not only put the issue of participation on the agenda, but to also attempt to design planning processes which facilitate a broad range of community sector input.

SEQ 2001 has attempted to involve a wide range of stakeholders through sectoral representation, targeted consultation and public input to draft papers. At the growth management conference in 1990, the Premier welcomed the involvement of all stakeholders and this has been one of the real successes of the project. It has facilitated a high level of ownership and commitment to the project.

It does, however, raise questions about how well we consult, the extent to which consultation does or should influence decision making, and does it really strengthen the outcomes. Consultation is resource intensive and how well we consult and the extent of participation in any planning project is not only dependent on a pro-participation philosophy but also the resources available.

A distinguished international academic recently said that if we can develop processes to tax three million people in a city, we should be able to consult with them. I think, however, that as a society we have a long way to go before we will see a commitment to consultation equivalent to that of tax collection.

SEQ 2001 did not undertake a broad community participation and visioning process. I believe this was unfortunate as not only can that process provide the vision and build ownership, but it also provides important guidance when the negotiators at the table cannot agree.

We have, however, within our resources sought community and sectoral involvement at every opportunity and will continue to do so. A further issue which arises in a multi-party negotiated outcome is the extent to which that outcome is compromised. It has been said before that in negotiation processes you can have everything you want - you just can't have all of it. This might or might not be so but it does put a positive note on any outcome.

On the negative side, however, it is also said that in such processes, all parties are frequently unhappy about their position, feeling that they have compromised too much. In this scenario, what we can end up with is that all parties go away happy with the outcome only because they believe the other parties are all equally unhappy.

To what extent then does this dilute the outcomes? I know that in the purest sense of mediation, this is not the case, given we seek a win win outcome. I'm not sure though, that we are that pure and the final test is probably not what we can live with but what we have ownership of and commitment to.

Control or management

In relation to the issue of whether projects such as ours should be concerned with managing growth as distinct from restricting growth, the terms of reference for SEQ 2001 imply growth management rather than control. However, at a mid term review of the project it was agreed that the concept of environmental

carrying capacity should be investigated to determine if there were strong grounds for considering a population ceiling.

This issue was considered at a workshop attended by a range of experts in 1993. The workshop concluded that there was a current lack of data and agreed criteria against which environmental quality can be measured to determine whether unacceptable limits had been reached. On that basis, determination of carrying capacity for the region was considered not possible at the time.

The issue is emerging again in Queensland. Two local government councils, Noosa in our region and Douglas in the far north, have both suggested it is time to put a halt to growth. This has again raised the issue of when enough is enough. This concept clearly has some support. In Douglas, the Mayor, Mike Berwick, was recently returned on a platform of no growth.

In Noosa's case there has been a touch of arrogance from some in the environmental sector who have suggested Noosa should remain an elitist world heritage listed enclave with the Fraser Coast their front yard for relaxation and the Maroochy Shire to the south their backyard and provider of employment. Although this may be tongue-in-cheek, it has put the issue on the agenda.

Our process has been to limit growth in some areas because of environmental and resource constraints. In SEQ 2001, we expect that we will need to review this issue again in the future as more data becomes available particularly in relation to the vulnerable air and water qualities in the region.

If in the future we do have the technology to determine a carrying capacity, and we reach that capacity, the interesting question that will arise is how do we manage to control growth politically, technically and in a manner consistent with the principles of social equity.

Systems of planning and administration

The final issue I wish to address concerns the most appropriate systems of regional planning and administration. Our South East Queensland region forms part of a broader biophysical region extending from about Coffs Harbour in New South Wales to just south of Rockhampton in Central Queensland.

There are around twelve part or whole water catchments in the region and there is evidence to suggest that not all stakeholders have the same interests, with headwater users having different interests to those downstream. The region is governed (or over-governed) by eighteen local governments and the State and Commonwealth Government.

In State Government agencies there are as many administrative regions as there are departments; that is 18 in total, and I am unsure of the Commonwealth position. In life, we generally have two choices: we can adapt to what we have and make the best of it or we can seek to radically change our structures and processes. In SEQ 2001, we have adapted the existing governmental systems, I think in a very effective way, to achieve mutually agreed outcomes.

It is a voluntary and cooperative process that seeks to accommodate the interests of all stakeholders at the regional level with all governments implementing their responsibilities through their respective planning and program activities. But it does raise the question of how we might restructure the systems to achieve more effective outcomes.

The Lord Mayor of Brisbane, Jim Soorley, together with a range of academics has argued we need regional governments, and to achieve this we need to abolish State governments. Now while I don't think that is likely in the near future, as a planner and would-be academic, I have some sympathy for the idea. I understand that in New Zealand the *Resource Management Act* provides for regional council boundaries to coincide with major water catchments.

Whilst I hear the call for regional governments in Australia, I have not heard on what basis this government might be formed. Local governments in South East Queensland have formed four Voluntary Regional Organisation of Councils (VROCs). These are based on geographic convenience and do not suggest any thought to bio-physical planning.

My colleague, Phil Heywood, has argued the case for metropolitan governments for more effective administration of growth strategies. Brisbane City Council most closely represents this form of government but it also falls short of the required capacity being heavily impacted upon by growth in local government areas to the north, west and south.

The issues of boundaries and public and political administrative units are clearly very important to our environmental planning processes and Jim Soorley's vision for regional government might well provide the best answer.

Conclusion

This paper has outlined the SEQ 2001 process to develop a framework for managing growth in the region. This process is innovative and original in its intention and approaches. This has facilitated ownership of a commitment to the outcomes. It has involved all stakeholders and has provided an ongoing process to resolve conflicts. It is an integrated package and is demonstrating how we can adapt structures and processes to achieve desired outcomes.

I believe SEQ 2001 is proving to be an effective framework for biodiversity conservation and ecological sustainability. The question remains, how can we improve these types of frameworks? I have raised issues relevant to such projects and I trust that further discussion of them will be helpful as we seek to improve our planning processes.

WORKSHOP RESULTS: AN ENVIRONMENT FRAMEWORK FOR MANAGING GROWTH - SOUTHEAST QUEENSLAND CASE STUDY

Workshop leader: Ian Schmidt

The workshop considered the SEQ 2001 regional planning process and identified the following as:

- a) Strengths of the process, and;
- b) areas where improvements could be made in future processes

Strengths

- The SEQ 2001 process framework attempted to bring together community groups and different levels of government, although there is still room for improvement
- The planning process covered a wide range of issues (eg transport, environment, agriculture, social, economic) and interest groups
- The SEQ 2001 Geographical Information System is a good example of the collection and storage of data for bioregional planning
- Inclusion of identification of environmental constraints in the mapping and planning process
- Recognition of the current responsibilities of levels of government and the community as a starting point for the planning process

Improvements

- In approaching bioregional planning there needs to be clarity and focus in goals and objectives in order to ensure clear outcomes
- Need to incorporate national strategies (eg national biodiversity strategy), international agreements and other policies into the process
- Need to take the broader bioregional context into account (eg continuation of species ranges outside planning area)
- Need for involvement of Aboriginal people and the realistic allocation of resources to enable this involvement
- Need to continue public participation in the implementation phase
- Need for strong and ongoing commitment by government at the policy level
- Need to seriously consider growth control options
- Need to continue to provide data access to the community in an equitable manner
- The process was perhaps too oriented towards growth issues

- Need for better participation by the Commonwealth
- Wider representation of environment groups

22. BIOREGIONAL PLANNING IN AGRICULTURAL REGIONS - WESTERN AUSTRALIAN CASE STUDY.

Denis Saunders and Robert Lambeck
CSIRO Division of Wildlife and Ecology, WA.
Mike McFarlane, Doodlakine, WA

Why bioregional planning?

The soon to be released Federal State of the Environment Report states that *unless Australia develops management systems which integrate the conservation of biodiversity with production on the land and in the sea, the future for much of its unique flora and fauna is bleak.*

The brochure advertising this national conference provided the following statements:

“Bioregional planning aims to effectively plan and manage for biodiversity conservation, using natural boundaries to facilitate the integration of conservation and production oriented management.

Clearly, the success of biodiversity conservation will depend upon how well the overall landscape is sustainably managed to minimise biodiversity loss. Protected areas alone are far too small and scattered to maintain biodiversity, and the remaining wilderness is diminishing. Human needs and activities must be reconciled with the maintenance of biodiversity, and protected areas must be integrated into natural and modified surroundings. Farms, forests, grazing areas and towns belong in the same planning processes as land restoration projects, protected areas and species-conservation efforts. The scale of such efforts must be tailored to both ecological processes and the needs of human communities. This integrative approach is termed bioregional management.”

Regional planning must not however ignore the requirements of land users who are making management decisions at local scales. It is therefore necessary to develop procedures which link regional and local management strategies. These procedures must enable the identification of appropriate local actions for addressing regional objectives, and must enable an assessment of the extent to which those local actions contribute to regional solutions.

We therefore need to develop management systems which are primarily based on ecological realities, but which also take into account the social and economic considerations which have traditionally dominated the planning process.

Workshop objectives

The National Strategy for the Conservation of Australia’s Biological Diversity (ANZECC 1995) sets out a number of objectives necessary for conserving biological diversity and achieving ecological sustainability. A number of these are relevant to this workshop on bioregional planning in agricultural landscapes. In order to draw participants’ attention to the range of objectives to be considered, and the complexity of the issues involved, the objectives are set out below against the number given in the draft National Strategy. A case study from the wheatbelt of Western Australia is also presented below to provide some background to the issues relevant to agricultural regions.

The overall objective of bioregional planning is to develop integrated solutions which address these issues. This workshop aims to examine the implications of addressing these issues at both the regional and local scales, and will explore mechanisms for their integration.

1. Conservation

- 1.1 Identify important biological diversity components and threatening processes.
- 1.2 Manage biological diversity on a regional basis, using natural boundaries to facilitate the integration of conservation and production-oriented management.

- 1.3 Improve the standards of management and protection of Australia's biological diversity by encouraging the implementation of integrated management techniques.
- 1.4 Establish and manage a comprehensive, adequate and representative system of protected areas covering Australia's biological diversity.
- 1.5 Strengthen off-reserve conservation of biological diversity.
- 1.6 Ensure the maintenance of, and where necessary strengthen, existing arrangements to conserve Australia's native wildlife.
- 1.7 Enable Australia's species and ecological communities threatened with extinction to survive and thrive in their natural habitats and to retain their genetic diversity and potential for evolutionary development, and prevent additional species and ecological communities from becoming threatened.
- 1.8 Recognise and ensure the continuity of the contribution of the ethnobiological knowledge of Australia's indigenous peoples to the conservation of Australia's biological diversity.

2. Integrating conservation of biological diversity and natural resource management

- 2.1 Develop and implement national integrated policies for the ecologically sustainable use of biological resources.
- 2.2 Achieve the conservation of biological diversity through the adoption of ecologically sustainable agricultural and pastoral management practices.
- 2.5 Manage water resources in accordance with biological diversity conservation objectives and to satisfy economic, social and community needs.
- 2.6 Achieve the conservation of biological diversity through the adoption of ecologically sustainable management practices for tourism and recreation.
- 2.7 Achieve the conservation of biological diversity through the adoption of other ecologically sustainable wildlife management practices.

3. Managing threatening processes

- 3.1 Monitor, regulate and minimise processes and categories of activities that have or are likely to have significant adverse impacts on the conservation of biological diversity and be able to respond appropriately to emergency situations.
- 3.2 Ensure effective measures are in place to retain and manage native vegetation, including controls on clearing.
- 3.3 Control the introduction and spread of alien species and genetically modified organisms and manage the deliberate spread of native species outside their historically natural range.
- 3.4 Minimise and control the impacts of pollution on biological diversity.
- 3.5 Reduce the adverse impacts of altered fire regimes on biological diversity.
- 3.6 Plan to minimise the potential impacts of human-induced climate change on biological diversity.
- 3.7 Repair and rehabilitate areas to restore their biological diversity.
- 3.8 Ensure that the potential impacts of any projects, programs and policies on biological diversity are assessed and reflected in planning processes, with a view to minimising or avoiding such impacts.

4. Improving knowledge

- 4.1 Provide the knowledge and understanding of Australia's biological diversity necessary for its effective conservation and management.

5. Community involvement

- 5.1 Increase public awareness of and involvement in the conservation of biological diversity.

7. Implementation

- 7.1 Implement the Strategy through priority actions within established time frames.
- 7.3 Ensure that the National Strategy is complemented by State and Territory and bioregional strategies, supported by effective legislation where necessary.

7.4 Ensure that the costs of biological diversity protection are equitably shared, such that they reflect contributions to degradation and benefits from protection or use.

When addressing these issues in the context of the agricultural landscapes, it is important to consider the following questions: How do we generate mechanisms to integrate the conservation of the biota with production management, while addressing the other issues outlined above?

Given that 85 per cent of the potential conservation estate is managed by private landholders, and that management will be at the scale of the individual landholding within a subcatchment, how do we set priorities for action? While farmers are part of the problems outlined above, they are also an integral part of the solution. Conservation agencies operate at the regional scale. What should their priorities for conserving and managing biological diversity in these agricultural landscapes be? How should these priorities be derived?

Individual managers and landcare groups operate at the subcatchment scale within the region. What should their priorities for conserving and managing biological diversity in these agricultural landscapes be? How should these priorities be derived? What mechanisms should be developed to allow these different scales of management to complement each other and allow decisions on land use and their potential impacts on biological diversity to be assessed?

Western Australian case study

Lambert and Elix (1996) set out seven steps which they called a model process for bioregional planning for conservation of biodiversity.

1. Definition of an appropriate bioregion, based on scientifically identified boundaries.
2. Identification of the biodiversity to be protected within a “community of interest.”
3. Identification of the threats to biodiversity to be protected within the “community of interest.”
4. Expert advice sought on the best means of combating the threats.
5. Community agreement on a vision for the future of biodiversity in the region and the best strategies to combat the threats.
6. Incorporation of strategies into ongoing activities and existing planning processes.
7. Ongoing monitoring and reporting.

These steps provide a useful basis to examine bioregional planning for the integration of the conservation of biological diversity with the development of ecologically sustainable production within the agricultural area of southwestern Australia.

Development for broadscale wheat and sheep farming in Western Australia has produced a landscape that superficially resembles a biogeographic zone and Landsat images of this part of Australia clearly demonstrate this (Saunders and Ingram 1995). However, this area, commonly called the wheatbelt, consists of at least four biogeographic regions identified in the Interim Biogeographic Regionalisation of Australia (IBRA) (Thackway and Cresswell 1994).

The four IBRA regions making up the wheatbelt are the Geraldton Sandplains, Avon Wheatbelt, Mallee and Esperance Plains, a total area of 24,766,406 square kilometres. The region selected for this workshop is the central wheatbelt represented by the Interim Biogeographic Region known as the Avon Wheatbelt. The issues raised in this case study are relevant to most of Australia’s wheat-sheep zone which occupies about 15 per cent of the country and where some of the most severe conservation problems occur.

The Avon Wheatbelt occupies 9,414,776 square kilometres which comprises 3.8 per cent of the land area of Western Australia. It is an area of active drainage dissecting a Tertiary plateau in the Yilgarn Craton (Thackway and Cresswell 1994). The landscape is gently undulating with low relief. It has a mediterranean climate of hot, dry summers and cool, wet winters. The region receives around 600 mm of annual average rainfall in the west, dropping to about 300 mm in the east.

The soils of the Avon Wheatbelt are poor in nutrients and heavily leached. It is biotically rich and its floral diversity is extraordinary by international standards. There are about 8000 species of higher plants in southwestern Australia and about three-quarters of these are endemic; many have restricted ranges and are rare. Over 40 per cent of Australia’s higher plants are found in the southwest which occupies less than five per cent of the continent. The area is one of the world’s biological “hotspots”. The vegetation

consists of heathlands and shrublands on the deep sands and laterites of the uplands, mallee and woodlands on the lower slopes and fresh water and salt-lake systems on the valley floors.

Problems to be addressed in planning

Biotic impoverishment

Rapid and extensive removal of native vegetation for agriculture has meant that the Avon Wheatbelt is the most extensively cleared IBRA region and only about 12 per cent of the area still retains native vegetation. The remaining native vegetation is distributed among thousands of patches of varying sizes (mostly less than 20 ha), shapes, positions in the landscape, biotic composition, ownership, management histories, and degrees of degradation.

Eighty-five per cent of the area of remnant vegetation is on private property and still being degraded because of weed invasion, grazing by domestic livestock and rabbits, and by changing ecological conditions in the surrounding agricultural land. In the Kellerberrin area of the Avon Wheatbelt only about three per cent of the area of original vegetation could be considered to be in good condition (Lambeck and Wallace 1993).

Clearing was not a random process and woodland associations occurring on good agricultural soils are poorly represented in the landscape, while associations occurring around granite outcrops are relatively well-represented. This pattern of change has resulted in species decline and loss, and has altered important ecological processes.

In the wheatbelt three hundred and forty-eight species of plant are listed by Hopper et al. (1990) as rare and endangered; one of the highest number for any IBRA region. At least 24 species of plant are believed to be extinct (Leigh et al. 1984). Many species which may have existed as small or isolated populations before clearing for agriculture are now surrounded by a hostile matrix, and the remnants on which they survive are degrading.

Native animals have been similarly affected. Thirteen mammal species of the original complement of 43 species (excluding bats) occurring in the wheatbelt prior to clearing have disappeared from the region (Kitchener et al. 1980) and only about 12 are abundant or moderately common. There are several endangered species still occurring on several larger remnants. Mammals are still being lost from the region.

One hundred and thirty one species of bird have been recorded in the central wheatbelt since clearing began and 38 (29 per cent) have declined in range and/or abundance since clearing began and half of these are extinct in the area (Saunders and Curry 1990). More species dependent upon native vegetation will go extinct in the region because their populations are too fragmented and isolated at present to be viable. Apart from mammals and birds, there are few data available on other animal groups, particularly invertebrates and their role in ecological processes. The point is that we have little knowledge of what we have lost or of the ecological consequences of those losses (eg, interruption to pollination processes).

Changes in ecological processes:

The large scale clearing of native perennial vegetation and its replacement with shallow-rooted annual exotic vegetation has resulted in major changes in ecological processes, particularly the hydrologic balance. Water tables are rising, in some cases by more than 20 m since clearing began (George et al. 1995), bringing salt to the surface. Current estimates by George et al. (1995) are that up to 25 per cent of many landscapes and up to 40-50 per cent of the lower slopes and valley floors will become salt affected within the next century. They predict that most native vegetation in susceptible areas, and adjacent lakes and wetlands will either decay or be permanently altered by salinity.

There is evidence to suggest that the changes imposed on the Avon Wheatbelt have resulted in changes in the climate, particularly in rainfall. Between 1913 and 1986 the region had a four per cent decrease in winter rainfall, while the uncleared Goldfields woodland to the east had a six per cent increase (Pittock 1988). Changed radiation balance over cleared land may mean that rainfall, which before clearing would have been induced to fall on the wheatbelt, may now be passing further inland and falling on the uncleared Goldfields (Smith et al. 1992).

Agricultural sustainability

The increased water runoff and groundwater recharge that has resulted from the widespread clearing of native vegetation has caused serious water erosion, waterlogging, flooding and salinity. The resultant loss of arable land results in a loss of agricultural production and potentially threatens the economic viability of many farming enterprises. Without the development of sustainable agricultural systems there will be an ongoing decline in the economic viability of the region.

References

- ANZECC (1995) *National Strategy for the Conservation of Australia's Biological Diversity*. Department of Environment, Sport and Territories, Canberra.
- George, R. J., McFarlane, D. J., and Speed, R. (1995) 'The consequences of a changing hydrologic environment for native vegetation in southwestern Australia'. *Nature conservation 4: the role of networks*. Saunders, D. A., Craig, J. L., Mattiske, E. M. (eds) Surrey Beatty and Sons, Chipping Norton, NSW. Pp 9-22.
- Hopper, S. D., van Leeuwen, S., Brown, A. P., Patrick, S. (1990) *Western Australia's endangered flora and other plants under consideration for declaration*. Department of Conservation and Land Management, Perth, Western Australia.
- Kitchener, D. J., Chapman, A., Dell, J., Muir, B. G., Palmer, M. (1980) 'Conservation value for mammals of reserves in the Western Australian wheatbelt - some implications for conservation'. *Biological Conservation* 18, 179-207.
- Lambeck, R. J., Wallace, J. F. (1993) *Assessment of the conservation value of remnant vegetation in the central wheatbelt of Western Australia using Landsat TM imagery*. Report for Australian National Parks and Wildlife Service "Save the Bush" program.
- Lambert, J., Elix, J. (1996) 'Bioregional planning for biodiversity conservation'. In: *Approaches to Bioregional Planning, Part 2, Background Papers. Biodiversity Series Paper No. 10*, Biodiversity Unit, Department of the Environment, Sport and Territories, Canberra.
- Leigh, J., Boden, R. and Briggs, J. (1984) *Extinct and endangered plants of Australia*. MacMillan, Melbourne, Victoria.
- Pittock, A. B. (1988) 'Actual and anticipated changes in Australia's climate'. *Greenhouse. Planning for climate change*. Pearman, G. I. (ed) CSIRO, Australia. Pp 35-51.
- Saunders, D. A., Curry, P. J. (1990) 'The impact of agricultural and pastoral industries on birds in the southern half of Western Australia: past, present and future'. *Proceedings of the Ecological Society of Australia* 16: 303-321.
- Saunders, D. A., Ingram, J. A., (1995) *Birds of southwestern Australia: an atlas of changes in distribution and abundance of the wheatbelt avifauna*. Surrey Beatty and Sons, Chipping Norton, NSW.
- Smith, R. C. G., Huang X, Lyons, T. J., Hacker, J. H., Hick, P. T. (1992) *Change in land surface albedo and temperature in southwestern Australia following the replacement of native perennial vegetation: satellite observations*. Paper No. IAF-92-0117. 43rd Congress of the International Astronautical Federation, Washington, DC (28 August-5 September 1992). International Astronautical Federation, France.
- Thackway, R. and Cresswell, I. D. (eds), 1994. *Toward an interim biogeographic regionalisation for Australia; a framework for setting priorities in the national reserves system cooperative program*. Draft document 3.1. Australian Nature Conservation Agency, Canberra.

WORKSHOP RESULTS: REGIONAL PLANNING IN AGRICULTURAL REGIONS - WESTERN AUSTRALIA CASE STUDY

Workshop leaders: Denis Saunders, Robert Lambeck and Mike McFarlane

Objectives

To review landholder and institutional perspectives of the importance of biodiversity
To identify disparities between these perspectives
To develop links which bridge these disparities
To link bioregional and local objectives

Background

Issues of WA wheat belt apply to 15 percent of the continent

Major issues are:

- Agricultural sustainability
- Nature conservation
- Land degradation

Much of the conservation value is on private land which comprises 80 percent of the region. Therefore, economic viability of farmers is fundamental in conservation planning.

Landholder perspectives of priorities

Economic viability is bottom line

Remnant vegetation is seen as having little “value”

Nature conservation is, in general, not a priority

Farmers do not budget for landcare

However, farmers are prepared to be convinced of the importance of biodiversity

Farmers need support in the following areas:

Knowledge - implementable and understandable
- co-ordination

Financial support - incentives
- policy instruments

Farmers will only consider nature conservation if it is part of an integrated solution and can be demonstrated to have secondary agricultural benefits

Flagship species or communities will focus community interest

Need to know the costs and benefits of implementing conservation

Lifestyle, identity and amenity are important to rural communities

Demonstration of solutions valuable

Government landscape partnerships

Government perspective

Priorities:

Conservation of biodiversity

Endangered species a priority

Halt land degradation

Meet international obligations

Comprehensive, adequate and representative reserve system

Major off-reserve initiatives

Actions:

Inventory - need good knowledge

Controlling threats

Partnerships with other agencies and landholders

Rural adjustment

Linking the two perspectives

Review of the costs and benefits of nature conservation

Requirement for attitudinal change

Both government and farmers saw themselves as responding to external pressure, ie. urban voters. Need to harness urban interest groups to deliver more than votes

Need to develop strategies which deal with farmer suspicion and perceived costs of nature conservation

Need for shared responsibility

Target key individuals but prevent burn-out and ensure that they are compensated for or assisted in their effort

Need regional strategy with links identifying how local actions contribute to a regional solution

Funding is a major impediment - Do we have an understanding of the true cost and benefits of agriculture ?

Requirement for financial institutions to accept broader social responsibilities

23. REGIONAL FOREST AGREEMENTS

National Forests Task Force,

Department of the Prime Minister and Cabinet, Canberra, Presented by Tony Bigwood

The problem

There has been an ongoing battle over use of Australia's forests during the past twenty or so years. Attempts to resolve this issue have, up till now, met with little success with constant disputes about how much to reserve and how much to use. Governments have tended to respond to particular pressures in an *ad hoc* manner, and the forests industry, conservationists, and the public have been less than satisfied with the result.

Coupe by coupe evaluation for woodchip export licence renewals led to the political fracas at the end of 1994. The National Forest Policy Statement clearly envisaged a regional approach and this case study will show how the Comprehensive Regional Assessment/Regional Forest Agreements process includes the key elements of bioregional planning.

The resolution of the problem

The Commonwealth Government and State and Territory governments agreed to a National Forest Policy Statement in 1992. This Statement set out the measures to be undertaken to resolve the debate about use of the forests by:

- providing for a comprehensive, adequate and representative reserve system which will protect old growth forest, wilderness and biodiversity;
- providing for a range of other forest values including water supply, tourism, and recreation in an ecologically sustainable management framework;
- coordination of decision making between the Commonwealth and the States and Territories;
- development of an efficient, value adding, internationally competitive and ecologically sustainable wood products industry;
- the expansion of hardwood and softwood plantations;
- assistance to communities faced with structural adjustment as a result of the implementation of these measures.

The process

The Regional Forest Agreement (RFA) process is initiated by a State government inviting the Commonwealth to participate in the assessment of a specific region with a view to developing a

Commonwealth-State Forest Agreement for that region. The first step is to develop a Scoping Agreement. The Scoping Agreement will identify government objectives and obligations, and regional objectives and interests. It will also specify arrangements for managing the RFA, including timing and methodology and will include an outline of the plan for public consultation.

It is expected that RFAs will operate for ten to twenty years, subject to regular review. Consultation arrangements set up during the RFA process will allow for the interests of forest users to be taken into account.

Given the time required to complete the necessary assessments in all forest regions, it is important that interim arrangements are put in place to ensure that options for a reserve system are not foreclosed. To this end, the Commonwealth, together with each State, is in the process of identifying forest areas which could potentially be included in a National Reserve System. Identification of areas for interim protection has been through a Deferred Forest Assessment (DFA) process.

Broad assessments of old growth, wilderness and forest biodiversity values are being used to determine areas to be included in DFAs. The DFA process applies the precautionary principle of protecting areas until more detailed assessments of their environmental and heritage values are completed.

Implementation

RFAs will be based on cooperative and comprehensive regional assessments of environmental, heritage, social and economic forest values. These assessments will be used to establish a comprehensive, adequate and representative reserve system and appropriate standards for the management for commercial purposes of forests outside the reserve system. They will provide for the integration and coordination of Commonwealth and State/Territory processes, accrediting State and Territory mechanisms and data wherever possible.

Bioregions

It has long been recognised that ecosystems and species do not stop at State borders or at government administrative boundaries. A new way of dealing with natural systems that recognises this fact, but still allows for information to be grouped in a manageable way, is required. This has been achieved by the use of bioregions which classify the landscape according to similarities in a number of aspects.

The fine scale of patterns in forest biodiversity makes continental scale consideration of a comprehensive, adequate and representative reserve system difficult. Smaller and more manageable regional units are necessary. The regions being used for the process are the Interim Biogeographic Regionalisation for Australia (IBRA) regions developed as a framework for setting priorities in the National Reserves System Cooperative Program. These regions have been developed as a cooperative effort between the Commonwealth and the States and Territories. IBRA regions represent a landscape based approach to classifying the land surface, including attributes of climate, geomorphology, landform, lithology and characteristic flora and fauna.

For administrative convenience, and to accommodate the realities of data collection and management, agreements have been reached in some States to either treat the State as one region for the purpose of the RFA or to conduct an RFA for all the regions in a State at one time. However, the IBRA regionalisation remains crucial to the process, particularly in terms of biodiversity analysis and the development of a comprehensive, adequate and representative reserve system. The regional analyses are the link to the National Reserves System, which is applying a consistent biogeographic approach across the nation.

The biogeographic regions which have been agreed as the national approach, ensure that an appropriate level of reservation is achieved. For example, the criteria being used by the Commonwealth requires reservation of a minimum of 15 per cent of the pre 1750 extent of forest. The analysis is carried out by forest type, but it is important to relate this to biogeographic regions so as to ensure the adequacy and representativeness of the reservation. In most States, the regions roughly approximate the IBRA bioregions. For example, while Victoria will have an RFA for the whole State, the report on biodiversity for the DFA process has used the IBRA regions and provided analysis by bioregions. In Tasmania, again

being treated as a single unit for the RFA, analysis for the DFA was conducted by bioregion or sub-region, and reserve criteria were examined by bioregion.

Key elements of the RFAs

Environmental

The Commonwealth is working with the States and Territories to reach agreement on criteria for the development of the National Reserve System and to reach agreement on structures for off-reserve management pending agreement, Commonwealth reserve criteria have been developed for use in the interim. The criteria cover biodiversity, old growth forests and wilderness. These include:

- a regional approach;
- all native forest tenures to be assessed;
- a broad benchmark of 15 per cent of the pre-1750 distribution of each forest community to be protected within conservation reserves;
- retention in reserves of at least 60 per cent of existing old growth, increasing up to 100 per cent in some cases for rare old growth;
- protection of 90 per cent or more wherever practicable of high quality wilderness;
- all known elements of biodiversity to be represented in reserves;
- areas of reserved forest should include a range of successional stages and a range of the environmental variation typical of the communities' distribution;
- reserve design should, where possible, incorporate ecologically meaningful boundaries and seek to maintain ecosystem functions and processes;
- recognition of the role of 'off-reserve management' in meeting conservation objectives.

Naturally rare and vulnerable forest communities and species will warrant higher levels of protection.

Biological diversity

The National Strategy for the Conservation of Australia's Biological Diversity has now been signed by every State and Territory government and the Commonwealth Government. This signifies Australia's commitment to implementing the Convention on Biological Diversity.

Biological diversity includes diversity at the genetic, species and ecosystem levels. The main aim of biodiversity conservation is to maintain viable populations of species and the ecological processes upon which they depend.

Genetic and species diversity target groups for biodiversity assessments include: threatened species; declining species; rare species; species with disjunct distributions; migratory species; regionally endemic species; genetically distinct species; economic and culturally important species (eg for traditional or commercial reasons); scientifically important species and indicator species.

The goal of ecosystem conservation is to maintain viable samples of each ecosystem in each biogeographic region. Ecosystem diversity target groups include: threatened, rare or declining ecosystems; representative ecosystems; and ecosystems important for research, monitoring and as benchmark sites.

The biodiversity assessment process will involve:

- compiling data on fauna, flora, disturbance history and other relevant information;
- surveying to fill gaps in target species, ecosystem and disturbance history data;
- undertaking a conservation options analysis and viability analysis to identify options for spatial arrangement of management zones;
- identifying major conservation threats to regional biodiversity and measures to reduce threats;
- reviewing current management guidelines for different zones; and
 - o proposing management, research and monitoring guidelines for zones.

The development of the reserve system sits in the context of the overall strategy for biodiversity conservation in the Australian forest estate.

Endangered species

The *Endangered Species Protection Act 1992* requires the Commonwealth to promote the recovery of species and ecological communities that are listed as endangered or vulnerable, and to prevent other species from becoming endangered. Under the Act, the Commonwealth must not take any action that contravenes an approved recovery plan for a listed species.

Endangered species forest assessments will:

- identify the occurrence of endangered flora and fauna in the region;
- assess the conservation status of these species under present land uses;
- identify and assess impacts of present and proposed resource uses;
- identify the key threatening processes;
- prepare recovery plans for priority species and ecological communities; and
- report on the options for promoting the recovery of endangered species and ecological communities and for preventing further species from becoming endangered.

National Estate

The *Australian Heritage Commission Act 1975* provides for the identification and protection at the Commonwealth level of aspects of the natural and cultural environments which are of national significance. Under the Act, places may be entered in the Register of the National Estate if they meet specific criteria. The Commonwealth is then required to ensure that it does not take any action which will adversely affect a National Estate place unless there is no prudent or feasible alternative.

National Estate forest assessments will involve:

- compiling existing data and collecting new data as required;
- identifying places for inclusion in the Register;
- assessing the extent to which National Estate values are represented in the reserve system;
- assessing the resilience of unreserved National Estate values to forestry operations;
- developing options for protecting National Estate values within multiple use forests;
- identifying which values require further research for assessment; and
- reporting on the options for protection of unreserved National Estate values.

World Heritage

Australia has an international obligation under the World Heritage Convention to identify and protect places of outstanding natural and cultural heritage. The *World Heritage Properties Conservation Act 1983* requires the Commonwealth to control activities which would affect World Heritage values of listed places.

Assessments of forest for World Heritage value will:

- analyse data on World Heritage values against the criteria for natural and cultural nominations;
- undertake additional data collection required to establish international significance of areas;
- prepare a report on possible World Heritage significance of areas, including recommendations for protection and management.

National Strategy for Ecologically Sustainable Development

The National Strategy for Ecologically Sustainable Development defines ecologically sustainable development as ‘using, conserving and enhancing the community’s resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be increased.’

The Strategy evolved over several years and received the endorsement of the Council of Australian Governments in 1992. The objectives of the Strategy in relation to forest resource use and management are:

- to manage and utilise Australia’s forest estate for all forest values on an ecologically sustainable basis;
- to maintain ecological processes within the forests, maintain biodiversity, and optimise benefits to the community from all uses, within ecological constraints; and,
- to enhance the quality of life for successive generations of Australians by protecting and enhancing all of the values available from Australia’s forests, and development of an ecologically sustainable and internationally competitive forests products industry.

The Strategy commits governments to manage forests in an ecologically sustainable manner and to promote complementary management in State and Territory native forests outside reserves and sympathetic management by private forest owners.

Aboriginal and Torres Strait Islander concerns

Aboriginal and Torres Strait Islander people have a range of rights and interests related to native title and cultural and heritage values of forests which will be considered in the RFA process.

Forested areas contain places of particular spiritual, archaeological, cultural and historical value to indigenous Australians. The *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* enables the Commonwealth to provide effective protection for places of significant heritage value to indigenous people. Under the *Native Title Act 1993* the Commonwealth has a responsibility for the protection of native title interests.

Forest assessments will involve:

- consultation with local and regional Aboriginal communities regarding the objectives and procedures of assessments;
- identification of objects, sites, areas and features of cultural significance;
- identification of threats to these; and
- ongoing consultation with communities in the development of management objectives and recommendations.

Economic and social assessments

Economic and social assessments for a RFA will involve developing a full inventory of forest resources and their sustainability, forest industries and their future, and the demography and vulnerability of communities that use and value forests.

At a regional level the economic assessment will identify the implications of the RFA process for:

- quantity of wood resources;
- quality of wood resources;
- changes in flows of wood resources;
- mill capacity;
- mill employment;
- product mix;
- gross value of production, at forest, mill door and ex mill door; and
- regional, national and international markets
 - possible effects on prices,
 - product substitutability.

Implications at a State level for employment and income from changes to forest production will also be analysed.

The social assessments deal with the impacts on local communities of the RFA process. The general aim of the social assessments is to provide information on:

- the demographic and socio-economic structure of local communities;
- the impact of changes on forest use on local communities, including an assessment of the overall resilience of those communities in the face of change; and
- the impacts on industries and social infrastructure within timber regions.

It is expected that much of the information required for the social impact assessments will be collected through workshops, consultation and appropriate statistical and other research. The data collection will focus on:

- identification of particular social structures in which forest industry families are involved;
- social costs of unemployment; and
- the functionality of communities.

The economic and social impact assessments will be integrated to provide a comprehensive picture of the effects of the RFAs on commercial and community interests within the affected regions. In essence the economic assessment will provide information of the likely impacts on commercial interests and timber markets at a State and regional level. The social assessments will take this assessment one step further and

analyse the impact of these commercial effects on local communities and families. In other words, the economic assessments will give an indication of the changes in employment and income and the social impact assessments will indicate the effect at a household level and the capacity of household and communities to cope with the changes imposed by the RFAs.

Impact assessment

The *Environment Protection (Impact of Proposals) Act 1974* requires the Commonwealth, in making decisions or taking actions, to fully examine and take account of matters affecting the environment to a significant extent. A decision by the Commonwealth to be involved in a RFA will provide the trigger for environmental impact assessment under the Act.

The forest assessments and draft RFAs will incorporate considerations required for environmental impact assessment. These will include potential impacts on the natural environment, cultural impacts, social and economic impacts, resource availability, and proposed forest management practices to minimise potential impacts.

Options for forest management

Governments will develop and assess a range of forest resource use options to determine an outcome that minimises social and economic impacts and maximises sustainable industry development, whilst also meeting environmental protection objectives. The economic costs and benefits, employment implications and structural adjustment costs of the options will then be evaluated. Social and community impacts of the options, and possible measures to reduce these, will also be considered.

The final step will be to negotiate the Regional Forest Agreement between governments.

At the completion of the RFAs in all regions, the Commonwealth will need to be satisfied that the regions are moving rapidly to an efficient, innovative wood and paper sector with increasing investment in value-adding. The Commonwealth will also need to be satisfied that the region has a comprehensive, adequate and representative reserve system which protects old growth forest, wilderness and biodiversity on a bioregional basis.

References

- Commonwealth of Australia (1992) *National Strategy for Ecologically Sustainable Development*. AGPS, Canberra.
- ANZECC (1995) *National Strategy for the Conservation of Australia's Biological Diversity*. Department of Environment, Sport and Territories, Canberra.
- Commonwealth of Australia (1995) *National forest conservation reserves Commonwealth proposed criteria a position paper July 1995*. Canberra.
- Commonwealth of Australia (1995) *Regional forest agreements—the Commonwealth position*. Canberra.
- Department of the Environment, Sport and Territories (1995) *Guidelines for the assessment of biological diversity*. AGPS, Canberra.
- Joint ANZECC-MCFFA NFPS National Forest Policy Statement Implementation Sub-committee (1995) *Broad criteria for the establishment of a comprehensive, adequate and representative forest reserve system in Australia draft report July 1995*. Canberra.
- Joint ANZECC-MCFFA NFPS National Forest Policy Statement Implementation Sub-committee (1995) *The development of consistent Nationwide baseline environmental standards for native forests draft report July 1995*. Canberra.
- Lesslie, R. Taylor, D. and Maslen, M. (1995) *National wilderness inventory: handbook of procedures, content and usage*. (Second Edition) AGPS, Canberra.
- National Forest Policy Statement 1992* Canberra.
- Thackway, R. & Cresswell, I.D. (eds) (1995) *An interim biogeographic regionalisation for Australia*. Australian Nature Conservation Agency, Canberra.

WORKSHOP RESULTS: REGIONAL FOREST AGREEMENT - THE FOREST ASSESSMENT PROCESS AND ITS CONTRIBUTION TO BIOREGIONAL PLANNING

Workshop leader: Tony Bigwood

- Regionalisation is not the key issue, it's what occurs within them.
- Little congruity likely between biological and social/economic regions.
- May be more sensible to use social/economic within biogeographic regions (context). Ensure cross region interaction across the social/economic regions to ensure biological processes are adequately accounted for.
- That using the numbers approach (eg 15 per cent of pre-European forests in reserves) within a bioregion is a start and should be done but management practices and the overall biodiversity management is more important to ensure long term biodiversity conservation.
- Information and decisions may need to be at different scales
 - larger scales for information collection (context and needs requirements)
 - local scales for local decisions [the how?]
 - need 'infrastructure' to support those local decisions eg government agency support with information and expertise.

In answering the question "Has the RFA process helped regionalisation?"

- Yes, it sets goals for regions
- It would be useful to get a couple up quickly to be criticised and improved
- Using the first process as an example of what not to do in other regions
- Using elements to be proactive in other systems eg, rangelands etc.

RFA = Regional planning exercise and how to put into bioregional framework

- Information available to stakeholders
- Government to provide back-up/skills - technical experience - provide interpretation skills
- Educated, informed and facilitated community
 - provide options that are ecologically sustainable
- Time
- Consultation mechanisms
 - festivals etc to sell management plans
 - grants programs to enable local government/communities and industry to contribute
 - unions and other workers
 - social strategy to complement evolution of industries which may need to precede the move to change management
 - link with certification and eco-labelling
 - the adaptive management approach push the RFA
- Constraints
 - RFAs must be socially, economically and ecologically sustainable

24. PRE-CONDITIONS FOR EFFECTIVE INVOLVEMENT OF ABORIGINAL AND TORRES STRAIT ISLANDER PEOPLES IN BIOREGIONAL PLANNING

Henrietta Fourmile

Bukal Consultancy Services, Gordonvale, Qld

Under the Convention on Biological Diversity Australia has accepted a number of obligations detailing the involvement of the nation's Indigenous Peoples in biodiversity conservation. These have been further articulated in the National Strategy for the Conservation of Australia's Biodiversity and concern the

acknowledgement of Indigenous knowledge of biodiversity and the contribution such knowledge can make to biodiversity conservation; Indigenous communities being able to equitably benefit from any commercial developments in which Indigenous knowledge has had a part; their involvement in cooperative arrangements to manage areas protected for their biodiversity values; and their right to harvest certain species within the parameters of ecologically sustainable use.

In general, Australia's Indigenous communities support the notion of bioregional planning for biodiversity conservation as essential to the maintenance of biodiversity, but see it as an essentially traditional practice "dressed up in new words". Concern was expressed about the lack of an holistic approach to Indigenous cultural heritage generally, and that when programs concerning natural heritage are developed, other aspects of culture are overlooked. Therefore Indigenous communities want to see culture remain the primary focus of any programs, such as bioregional planning, which affect their heritage.

Indigenous communities world-wide regard self-determination as the cornerstone of their political and cultural survival. Indigenous people in Australia are very aware of the disparity which exists between international concepts of self-determination as defined in such instruments as the Draft Declaration on the Rights of Indigenous Peoples, and what governments in Australia see as fulfilling the concept. Essentially self-determination is seen by government as empowering local Indigenous communities to manage their own affairs, but there is a failure to articulate the concept in relation to departmental and agency involvement with the Indigenous community.

A primary reference is s.21 of the *Native Title Act 1993* (C'wth) in regard to the application of regional agreements to bioregional planning and biodiversity conservation. However, it was considered that Indigenous involvement in bioregional planning should be framed within the wider context of the Commonwealth Government's three part response to the High Court's decision in *Mabo*. This response was necessitated because it was realised that only about ten per cent of the Indigenous population might have their native title recognised. The creation of the Aboriginal and Torres Strait Islander Land Fund and the Social Justice Package therefore should be taken into account with regard to the effective involvement of Indigenous communities in bioregional planning.

Based on the premise that regional (and local) agreements can be anything that the negotiating parties want them to be, regional agreements can be seen in "mega", "macro" and "micro" terms. While the Torres Strait Treaty between Australia and Papua New Guinea might be seen as a "mega" agreement, most of the analysis on the applicability of international models of regional agreements to Australia is at the "macro" level. Such models might be relevant to the Indigenous domains (defined in terms of majority Indigenous population and Indigenous communities being major land holders) of the Torres Strait, Cape York Peninsula, the Kimberley, Arnhem Land and various regions in central Australia.

Within this form of regional agreement bioregional planning would be but one consideration among many. However, many "micro" agreements exist at the local level and might also be seen as precursors for Indigenous involvement in bioregional planning. These exist in the form of joint-management arrangements for Indigenous involvement in national parks. Of these the Uluru/Kakadu model is seen by Indigenous communities as the blue print for such involvement. It is pointed out that most of these forms of agreement were negotiated before the *Mabo* decision and the implementation of the *Native Title Act 1993* (C'wth), and while the potential survival of native title in regard to particular areas of land must remain a consideration, regional agreements are not contingent upon its existence.

Six different community contexts within which bioregional planning agreements might be negotiated were identified. Each of these situations has different implications for the involvement of Indigenous communities in bioregional planning.

- 1) Indigenous domains comprising large areas or regions in which Indigenous people constitute the majority of the population and have title to (or have been granted an interest in land, eg, hunting and gathering rights on pastoral leases, national parks, etc.) over the greater proportion of the land and within which one or more bioregions and parts of others exist (eg, Cape York Peninsula, Torres Strait, Arnhem Land, the Kimberleys and large areas of central Australia);
- 2) Bioregions wholly covered by lands to which Indigenous communities have title (inalienable free-hold, free-hold, pastoral lease, Deed of Grant in Trust, etc);

- 3) One or more bioregions partly covered by substantial areas of lands (ie, more than 10,000 hectares) to which Indigenous communities have title or have been granted an interest;
- 4) Bioregions which include Indigenous lands leased back as national park and national park in which Indigenous communities have been granted an interest (eg, a lease, a role in management, habitation rights, hunting and gathering rights, access to sites);
- 5) Bioregions in which Indigenous communities are landholders along with other classes of land-holders (governments, farmers, pastoralists, mining companies, etc);
- 6) Bioregions in which Indigenous communities currently do not have title to any land but in which they maintain an interest by virtue of traditional association.

The potential also exists for native title, or some native title rights, to survive in areas of land within all six contexts, however in the south eastern half of the continent these areas are likely to be small, restricted to areas of Vacant Crown Land and possibly to some government owned lands such as national park, water and forest reserves.

In order for Indigenous involvement to be effective in bioregional planning there must be fundamental recognition by all levels of government that it is the right of all Indigenous communities to be involved in biodiversity conservation. This right has been recognised by Australia in regard to its obligations under the Convention on Biological Diversity specifically regarding **in situ** conservation, sustainable use of components of biological diversity, and technical and scientific cooperation.

These rights have been further articulated in instruments which are not legally binding on Australia, some of which Australia has been integrally involved in developing (for example, ILO Convention 169 and the Draft Declaration on the Rights of Indigenous Peoples), and which set standards to which governments should aspire. These standards have also been articulated in terms of social justice and reconciliation. Furthermore, effective Indigenous involvement in bioregional planning and biodiversity conservation would assist in fulfilling some of the recommendations of the Royal Commission into Aboriginal Deaths in Custody, in particular Recommendation 315.

Acknowledgement of these rights may be contained in a preamble to any legislation established to protect biodiversity by formalising the bioregional planning process, in the objectives to the plans themselves, or incorporated throughout any strategic plans designed by conservation agencies and other planning groups to carry out biodiversity conservation. These expressions can then act as reference points or criteria by which the effectiveness of Indigenous involvement can be assessed.

For bioregional planning to have any relevance to Indigenous communities they must be involved in the determination of not only what constitutes a bioregion in terms of both cultural and natural criteria, but also in the determination of the boundaries of bioregions.

Indigenous communities must be treated as stake-holders who have an equal right to be involved in bioregional planning and biodiversity conservation and therefore all planning groups associated with a bioregion are obligated to involve the local indigenous communities in all activities incorporating these processes and their implementation.

Planners must respect the fact that in any one bioregion there will be a number of local Indigenous communities involving a number of clans, families and other land affiliated groups. Relationships between these groups are intricate and need to be respected. Some responsibilities in biodiversity conservation will necessarily involve matters internal to the communities and therefore should be left to those communities to manage. An example might be the allocation of quotas between family groups for the harvesting of a particular species, or the taking into account of traditional rights and obligations to particular areas of country, particularly where sacred sites are involved. Respecting the diversity of Indigenous communities necessitates that a “bottom up”, or grass roots approach to Indigenous involvement in bioregional planning be taken. Consultation and negotiation must also necessarily reflect this approach.

Bioregional planning and biodiversity conservation must accommodate Indigenous subsistence rights, understanding that the enjoyment of such rights involves far more than just subsistence activities and therefore is fundamental to the maintenance of each Indigenous community’s way of life. Local Indigenous communities must therefore necessarily be involved in determining what constitutes the economically and ecologically sustainable levels of all activities associated with natural resource use which impact on biodiversity conservation within a particular bioregion.

To create the conditions necessary for effective Indigenous involvement in bioregional planning, and as a matter of social justice and to promote reconciliation, structural reform is necessary in all departments and agencies concerned with biodiversity conservation and at all levels of government. Legislation should be the starting point, and at the very least should entail amendment to any Acts which are in some way relevant to biodiversity conservation, to require Indigenous representation on any statutory bodies charged with duties under such legislation.

The creation of Federal and State statutory Indigenous cultural heritage authorities, whose basis for existence is the holistic management of Indigenous cultural heritage is strongly advocated as part of the structural reform. This is necessary to reintegrate the cultural and natural components of Indigenous heritage which have been historically separated for mainstream administrative convenience. Such authorities should be involved with inter-agency networking in order to facilitate this holistic approach to Indigenous cultural heritage management.

Structural reform should also extend to the establishment of Indigenous units within departments and agencies involved with biodiversity conservation; in consultation with Indigenous peoples, incorporation of Indigenous interests in departmental and agency strategic plans; and employment of Indigenous people throughout a range of positions within those departments and agencies (for example, as rangers, researchers, administrators, etc.).

Indigenous communities must be adequately resourced in order to effectively undertake bioregional planning and biodiversity conservation responsibilities. This applies particularly to Indigenous community ranger services in their day-to-day responsibilities of “caring for country”. Such services should be established as full-time professional services (and not reliant on CDEP status) with the same status, employment conditions, etc., as their mainstream counterparts.

Biodiversity conservation cannot be effectively carried out “on the cheap” by the continued application of short term grants to address serious landcare and environmental problems, through such programs as CEPANCRM and the application of National Estate and ATSIC land management grants, however meritorious these programs may be. This also includes having adequate secretariat services/support to enable local, regional and State Indigenous consultation and networking structures to operate.

Agreements at regional and local level must have a statutory basis. In some cases bioregional planning and biodiversity conservation may form just one component of a comprehensive regional agreement negotiated to address a range of needs. In other instances agreements may be negotiated to specifically address biodiversity conservation and may take the form of joint management agreements in which case the Uluru/Kakadu management model deserves respect as the model widely preferred by Indigenous communities.

Indigenous intellectual property rights in biodiversity must be acknowledged, respected and compensated. The western industrial system of protecting knowledge (primarily through patents) is inappropriate and discriminates against Indigenous knowledge systems. Alternative systems of knowledge protection appropriate to the protection of Indigenous intellectual property rights must be established as a matter of priority.

Indigenous communities must be involved in research. A code of research ethics should be formally established to guide all research in Australia which involves Indigenous interests. Indigenous involvement in research must include participation in such activities as mapping out research agendas, setting research priorities, initiating community based research programs, and being fully informed of the results of research (and if needs be in a form or language understood by the local community).

Conservation agencies must remain diligent of the fact that their programs, where Indigenous communities are involved, must retain Indigenous culture as their primary focus and resist formulating nature conservation programs which further their own purposes at the expense of those of Indigenous communities.

And finally, the wider community must accept that Indigenous ownership and control of lands is not a lesser form of ownership than that enjoyed by other land-owners and therefore can be treated with less respect. Indigenous community land-owners feel under continual assault by governments wanting to encroach on Indigenous lands in ways which they would not do if the land-owners were non-Indigenous. Indigenous communities have their own priorities and particular ways of enjoying and managing their

lands and these must be respected. Agendas concerning biodiversity planning and conservation will not always match local community aspirations for their lands and where this occurs negotiations should take place on a basis of respect for Indigenous rights.

WORKSHOP RESULTS: BIOREGIONAL PLANNING AND THE INTERESTS OF ABORIGINAL AND TORRES STRAIT ISLANDER PEOPLE

Workshop leader: Henrietta Fourmile

The workshop considered that bioregional planning should be developed in a way where it encourages indigenous self determination and empowerment and should recognise the importance of land and sea ownership for indigenous people.

The following key issues were identified, and the workshop recommends that these be taken to indigenous communities for their consideration, for example through a workshop in each State or Territory.

1. The profile of indigenous peoples' involvement in land management and bioregional planning be raised by:
 - a) recognition of indigenous people as key stakeholders and land managers within and across local, State, Territory and Commonwealth Government departments;
 - b) employment and training of indigenous people in the bioregional planning process and land management;
 - c) representation in decision-making bodies.
2. Recognition that a large population of indigenous people also reside outside indigenous domain areas, therefore, all indigenous people need to be given the opportunity to be involved in bioregional planning.
3. Review indigenous involvement at all levels in government agencies:
 - Many government agencies do not yet have adequate indigenous employment
 - This must include : Policy development
 - : Planning
 - : Research
 - : Implementation
4. Review indigenous involvement in decision-making bodies to ensure
 - adequate numbers
 - correct process
 - adequate resourcing : information access and dissemination
 - : employment - jobs
 - : equipment
 - : travel (for consultation etc)
 - devolve power to appropriate local decision-making bodies, eg land councils in some areas.
5. Continuous commitment to an equitable level of resources for effective indigenous bioregional planning and land management in existing groups and in groups arising with the bioregional planning process by local, State, Territory governments and the Commonwealth Government with:
 - finance
 - infrastructure
 - planning and training.
6. Respect for recognition of indigenous knowledge and expertise, as parallel to western knowledge
 - as legitimate in its own domain
 - particularly by scientists
 - in the education system
 - proper compensation
 - indigenous intellectual property rights system.
7. Review of legislation

- Intellectual property rights
 - copyright
 - as a means to ensure representation on decision-making bodies, eg Wet Tropics Management Authority, Great Barrier Reef Marine Park Authority
 - power for government bodies to delegate power to indigenous management groups
 - in appropriate bioregional planning legislation so decision-making bodies take account of involved indigenous communities.
8. Emphasise the importance of indigenous social, cultural and economic factors in the definition of bioregions and bioregional planning.
 9. Appropriate training and information exchange and education for indigenous and non-indigenous people involved in bioregional planning including resources for indigenous communities.

25. PUBLIC PARTICIPATION AND COMMUNITY INVOLVEMENT

Roland Breckwoldt
Candelo, NSW

Introduction

One of the consequences of public education programs in natural resource management is that there now exists a very well informed public that may demand a say in how those resources are managed. We have encouraged the public to be aware of environmental issues but have not always found the will, the appropriately trained staff, the techniques, and the resources to include it in the planning and decision making process.

This in itself puts pressures on resource managers but another consequence of a demanding public has been legislative changes that have institutionalised public participation. In many natural resource management issues there are now very clear, and sometimes quite onerous, legislative responsibilities to ensure that public participation and community consultation takes place.

Most will agree that public participation is something that is worthwhile in itself and has a place in planning for people. However, public participation and community involvement also has a special place in bioregional planning. Many of the earlier initiatives that led to bioregional planning as a planning concept came from community groups that related to biogeographical regions rather than much wider and more arbitrary State and Federal jurisdictions. Bioregional planning is strongly grounded in the sense of place and community that can be related to the characteristics of the physical environment and how we live in it.

The 'tried and true' methods of public participation

Many attempts at public participation are superficial and can exacerbate controversy rather than lead to mediation and conflict resolution. Another problem is that so many people seem to consider themselves an expert in public participation. Those of you in public life or who work in a natural resource management agency or local government will recognise one or more of the following:

- a) 'let's call a public meeting'
- b) 'There's no need, I know them all and they told me...'
- c) 'A referendum would be better'
- d) 'Why not send out a survey?'
- e) 'I've been asked to table a petition from the community about this and it's got nine hundred and fifty signatures'
- f) 'We'll hold open forums in each of the towns and advertise them in the press'
- g) 'It will go on public display and they can put in submissions'
- h) 'Its only a political stunt to delay the decision'
- i) 'I was at the meeting and its clear to me that they all want...'
- j) 'If they were really interested then they would have put in a submission'

- k) 'You can't take any notice of that mob, there're just a noisy rabble'
- l) 'Sure the resolution might have been passed by an overwhelming majority but the meeting was stacked'

To be able to apply a more critical analysis to debate such as this surrounding public participation, and to develop better programs, it is useful to discuss some of the underlying issues.

1 Staff training, expertise and resources

Whether they be guided by goodwill, political pressure or Act of Parliament, few resource management agencies are properly equipped or staffed for many of the demands made by an adequate, let alone comprehensive, public participation program.

An analysis of the staff positions, duty statements, and qualifications of personnel in most planning and natural resource management agencies will show a heavy bias towards resource managers qualified in the natural sciences and technical skills as against social science and communication and consultative expertise and training. An examination of budgets and the direction of expenditure might also be instructive.

2 The level of power sharing should be stated

Just as there are management objectives and outcomes and strategies for achieving them in natural resource management and planning, so should there be stated objectives and performance criteria for public participation. In the absence of clearly stated objectives much of what is passed off as public participation amounts to little more than tokenism.

Advertisements inviting public submissions on an environmental impact statement or planning issue are now commonplace. If you are one of the managers who placed the ad you might believe that this is a magnanimous act of inclusion. If you are a member of the public unaffected by the proposal you might register it as appropriate that such steps are taken. But if you are directly and adversely affected by the proposal then you might well be cynical and disappointed that the closest you can get to influencing the outcome is to prepare a submission that may or may not be taken notice of. This is apart from the very important issue that good submissions require a great deal of work that members of the public must do at their own cost.

An objective analysis of many public participation programs places them very low on most measures of full inclusion and involvement in decision-making. Most stop at the initial consultation and do not proceed to sharing power in planning. There may be good reason for this in certain cases but in order to avoid tokenism it is worthwhile to explicitly state the purpose of the public participation program in question.

Another reason for stating at the outset what the objectives of any public participation program will be is that it is far easier to measure performance and ensure that the results are incorporated in the management and planning processes.

3 Identification of stakeholders

The identification and then the inclusion of all the stakeholders can be extremely difficult, time consuming and costly. Some groups in the community are often left out of the natural resource planning and management network. Ethnic groups, the disadvantaged and minority groups are the obvious examples among many.

However, even within the more readily identifiable stakeholders it is still easy to overlook individuals or groups that may be affected. "Inclusion of stakeholders" has become something of a cliché in recent times. Achieving that broadly stated goal within reasonable time frames and cost structures for any major planning and management initiative can be extremely difficult.

One of the steps that decision-makers in bioregional planning could take is to develop strategies that help stakeholders identify themselves and then welcome them into the planning process. This might take place through a public information/education program that becomes part of bioregional planning. In this

way the community can become involved in bioregional planning and this is also a recognition that bioregions are socially defined as well as being biogeographic entities.

4 Who decides, and what issues should be open to public participation

Natural resource managers constantly make decisions that affect the public. What is it about certain decisions or issues that sets them apart and motivates us to embark on a public participation program ?

- Community consultation is enshrined in certain resource management legislation and gives no option to the relevant Federal or State agency or local government
- Goodwill on the part of managers and decision makers
- Nervousness about making controversial decisions
- Search for expertise and knowledge outside the organisation
- The need for cooperation of landholders, other land managers and/or the general public
- A method of involving volunteers in aspects of planning such as data collection
- Awareness that the issue concerned is one in which the community will demand to be involved
- Achieving a different outcome than might otherwise occur
- To introduce a new program that has not yet gained public acceptance

Again, it would make many public participation programs more effective and cost efficient if the reasons for mounting them were clearly stated at the outset.

5 Public education as well as public participation

In certain cases the resource managers or decision makers will be much better informed about an otherwise controversial decision than members of the public. If it is decided to undertake a public participation program in such cases then it will also be necessary to devote resources to a public education program. Even something as an adequate 'yes' and 'no' case in a referendum can be expensive and time consuming.

Conclusion

These are some of the major issues that I have encountered in public participation programs, or the lack of them, at Federal, State and local government level. The purpose of our workshop will be to discuss these issues and build on them from the experience and expertise of the participants. We will take a perspective imposed by a bioregional approach to planning and decision-making in resource management and prepare a report on our workshop that helps those involved in the conservation of biodiversity include public participation and community consultation in their planning and management programs.

WORKSHOP RESULTS: PUBLIC PARTICIPATION — IDENTIFYING AND INVOLVING THE STAKEHOLDERS IN BIOREGIONAL PLANNING

Workshop leader: Roland Breckwoldt

The first half of the workshop focussed on answering some of the key issues involved in public participation and community consultation.

1. Is there a difference between 'public participation' and community consultation?
Yes, community participation plays a role in decision making whereas consultation is often seen as simply going through the motions. Cultural change is required to achieve proper participation in planning and legislation is not the complete solution.
2. What do we really mean by stakeholders? Are they people or groups who have an interest in the successful outcome of a program or does it include those who are in opposition? How are stakeholders identified and how can we be sure that they are all involved in the planning process at the outset rather than have them identify themselves after the event?

Community of interest are people who will be affected by the outcome of a planning program or development. People affected by outcomes are also referred to as 'stakeholders', although some members of the workshop did not like this term.

It is important to identify networks and community leaders in the process and have a flexible approach. There is a range of mechanisms and media available - TV, radio, videos, papers etc, face to face. It is important to remember that some of the more apparent and vocal stakeholders will be those with a pecuniary interest.

3. What do we really mean (and do we really mean it) when we say that we will consult 'the community'? Is there such a thing as 'the community'? To what extent do we pursue an impossible dream of planning and management of natural resources being free of conflict?

Yes - it is made up of many parts (plural not singular) Remember that there is no such thing as 'the community'. There are many different aspirations - from local to national. Conservation representatives often have to represent many points of view that fall under the ambit of conservation. How can conservation groups canvas community opinion?

Local community - easy to participate - effects are obvious. Broader community, future generations and many of the things we appeal to, are extremely difficult to gauge and take into account.

Urban dwellers now represent 86 per cent of the population but they often don't understand the complexity and scope of environmental problems. Education is vital. The media reduces complex problems to basic (often perplexing) themes. An editorial problem.

Relative impact on quality of life. Local much more than State rights (eg benefits) and responsibility (but many people don't vote in municipal elections). Legality of soil degradation. Statutory frameworks are not enforced.

Define residents within a planning region because they will be living with outcomes.

4. How do we deal with conflict when we may not have authority to make decisions that will lead to resolutions? Perhaps more to the point, how in bioregional planning, do we deal with conflict for which there is no resolution?

Consensus is unrealistic. Should be more use of mediation. The wider community could be consulted when resolution can't be reached locally but consultation at a regional level (or any level) is expensive and time consuming and will require adequate resources (well beyond the means of NGOs). But even if consensus is an impossible dream in many planning and development processes public participation is still important and it depends very much on what you expect to get out of it - there will be positives and perhaps some negatives.

The second half of the workshop was devoted to examining some of the issues that arise in the following fictitious case study:

A COMMUNITY CONSULTATION CASE STUDY IN BIOREGIONAL PLANNING

A region in the south east is to be managed as a bioregion to promote the wider adoption of bioregional planning in Australia.

The region is based on the Alps and their eastern fall to the coast. It includes three IBRA bioregions. The aim is to include the Alps in a transect to the coast. The proposed region begins at the foothills of the Alps in the west but extends right to the coastline in the east (should it also extend out to sea to include the marine environment ?) It extends from Mallacoota, Victoria to Narooma, New South Wales.

YOUR TASK

You have been contracted to develop a complete community consultation program. It is quite clear to you that the underlying strategy is to gain community support for a bioregional plan for the region. The concept needs strong support from local government, the New South Wales and Victorian State Governments and the Federal Government if it is to have any chance of success.

THESE ARE SOME OF THE THINGS YOU KNOW AT THE OUTSET

a) LAND USE ISSUES

- 1) A large part of the area is National Park that is under increasing pressure from tourist development and there are differing opinions as to how this area should be managed. They range from more wilderness zonings to allowing more grazing. Planning and land use controls over rural subdivision surrounding the parks are also very controversial issues.
- 2) There has been considerable controversy over forest management in the region. Over one third of the entire region is forested and is managed as either national park or commercial forest.
- 3) The agricultural community has been very vocal in its opposition to the recent introduction of SEPP 46 that aims to control the clearing of native vegetation. Monaro graziers have been among the most vocal opponents because they believe that it will impede the conversion of native grasses to improved pasture.
- 4) The south east is facing rapid growth compared to the past rate of development but in times of high unemployment this is regarded by many as not fast enough. Consequently, proposals such as the Very Fast Train and the oil and gas pipeline from Bass Strait to Canberra and Sydney are generally given a favourable reception.
- 5) Many of the local governments in the region are not enthusiastic about greater conservation controls. They are influenced by the amount of unrateable land that is held by national park or forest management agencies.
- 6) There is a public perception that because a large proportion of the region is forested and managed by government natural resource agencies there is no need for any further measures to conserve biodiversity.
- 7) Coastal planning is another controversial issue.

b) THE POLITICAL AND GOVERNMENT CONTEXT

- 1) The region includes the jurisdictions of the Government of Victoria, the New South Wales Government and numerous local governments. The Federal Government is involved in various ways such as the control over export licences and funding. Consequently, there is a plethora of government authorities to negotiate with.
- 2) The region includes two federal electorates. The New South Wales seat of Eden Monaro (one of the State's most marginal seats) and the Victorian seat of Gippsland.
- 3) The region includes three State electorates. Two of the electorates are in New South Wales and one is in Victoria.
- 4) The region includes at least six local government areas. This means that there will be about seventy elected Councillors who believe very strongly that they have been elected to represent the community.
- 5) Because of the number of controversial issues in the region it is well represented by industry and environment organisations.

Case study results - group 1

- Identify stakeholders.
- Identify advantages for each of interest groups.
- Agreed process/mechanism for discussing differences of opinion.
- Sources of information as basis for plan - how do we access their info?
- Workshops for individual interest groups eg graziers, local councils, forest workers, green groups to work out values, threats, solutions and prioritise them. Discuss basic needs.
- Ask interest groups to nominate one or two negotiators/spokespersons to attend meeting with all interest groups.
- Present examples of successful bioregions - benefits to community.
- Advantages of plan for reassessing land use eg park - grazing, public land for economic use.
- How is plan to be implemented and what agencies need to be consulted and involved? Integrate the key elements into other plans and processes.
- Form advisory/steering group for plan and nominated key people.
- Sustainable development concept for local population - win over politicians via electors.

- Skilled mediation and facilitation essential.

Case study results - group 2

- Need a substantial budget for at least two years to achieve proper consultation. Given the number of local government and State and Commonwealth Government implications it would be necessary to disassociate ourselves from government and be seen as independent.
- List of issues to be addressed in evolving the plan
 - Population growth - setting limits
 - State boundaries, other jurisdictional boundaries
 - Health and housing
 - Land use conflicts
 - Land use planning
- Data exists but needs to be disseminated and distributed to inform decision making including detailed representations of all uses by promoting concept of bioregional planning + biodiversity + interrelated economy/ecology + encouraging participation.
- Radio, TV, local papers, schools, existing community groups, industry group meetings, public fora, Landcare groups, councils.
- Canvas groups and individuals to ascertain their own perception of their regional/community identity.
- Ask sectoral groups to nominate leaders but it is important to check that the views expressed do reflect the broader membership of the sector.
- Identify preconceptions that may stall the process.
- Form working groups for mediation, common understanding between groups that have a perceived conflict of interest eg forestry, farmers, farmers, fishers, ecotourism, graziers, government agencies, industry (ensure right level of hierarchy).
- Publicise positive outcomes in resolving differences.
- Organise meetings with the peak conservation and industry groups etc to extend consultation into the broader community.
- Develop a common vision.
- Allow obdurate groups to leave process but leave door open.
- Publicise attitudes that may disrupt the process/outcomes and stress the positive benefits of the community deciding its own future rather than leaving it for governments to impose their will.

26. INFORMATION FOR BIOREGIONAL MANAGEMENT

Bob Pressey

New South Wales National Parks and Wildlife Service, Armidale, NSW

The literature on bioregional management is dominated by references that make a case for bioregional management being a good idea. There is no doubt that this is true. The challenge is to make it work on the ground and there is very little literature on operational procedures.

Attached are some extracts from a book chapter I am working on. The title is "An operational framework for implementing *in situ* protection of biodiversity". Four sections are included here:

1. Bioregional management - what is it and why is it important?
2. Levels of management for biodiversity
3. A framework for implementing *in situ* protection in the context of bioregional management
4. An action register for *in situ* protection of biodiversity

The first section is mainly for interest. If you have little time to read for the workshop, you can skip this one. The next three sections try to shape up some ideas on how we might actually go about bioregional planning, including a proposed operational framework. With these sections as background, the workshop will explore the idea of an action register. This is a spreadsheet that summarises key information on parts of the region and indicates desirable and feasible actions.

The main job of the workshop will be to draw up the types of information that should be included to make effective, co-ordinated decisions on conservation management. At the beginning of the workshop, I'll summarise the background material and suggest some preliminary models for the action register. Then it will be up to participants to flesh out the early ideas.

This is not a pretend problem - it's a real-world problem that has to be solved. I'm hoping the workshop can make some real progress toward solving it.

Bioregional management - what is it and why is it important?

Most landscapes are diverse, not only in their biophysical components and processes, but in the purposes for which individual areas are managed. Landscapes are a mosaic of elements including natural habitats, only some of which are in protected areas, semi-natural areas that have been altered for extractive uses, agricultural areas, mining sites, and urban and industrial complexes (Noss 1987, World Resources Institute 1992). Typically, the individual pieces of a landscape are managed for particular purposes that are largely independent of the management goals for other pieces, and often independent of any regional perspective of management needs (Hobbs et al. 1993). This is despite the known functional interrelationships between patches in a landscape mosaic (Forman and Godron 1981, McIntyre and Barrett 1992, Wiens et al. 1993, Wiens 1994) and the difficulties of achieving regional conservation goals with management that lacks a regional context (Noss 1983, Noss and Harris 1986, Noss 1992).

The last decade or so has seen an increasing recognition of the need for a more integrated management of all parts of the landscape if the enterprise of nature conservation is to achieve its potential. The Global Biodiversity Strategy gives an overview of the future direction of *in situ* protection of biodiversity:

“... the success of biodiversity conservation will depend upon how well the overall landscape is managed to minimise biodiversity loss. Human needs and activities must be reconciled with the maintenance of biodiversity, and protected areas must be integrated into natural and modified surroundings. Farms, forests, grazing areas, fisheries, and villages belong on the same planning grid as land restoration projects, protected areas, and species-conservation efforts. The scale of such efforts must be tailored to both ecological processes and the needs and perceptions of local communities. This integrative approach is here termed bioregional management” (World Resources Institute 1992).

Bioregions define a context for conservation management, bounded in some way by watersheds, biophysical boundaries, or the area of concern of local communities. At least as important as the regional context, however, the term ‘bioregional management’ also connotes an integrated approach to management. Integration has two aspects: the need for coordination of diverse management approaches and, to some extent, the need to achieve multiple goals simultaneously (Hobbs and Saunders 1991). An increasing number of authors recognise that nature conservation will not be achieved in a world where there are two states of nature: protected and unprotected, a system of “environmental apartheid” (Saxon 1983) in which many species and communities have no rights outside reserves.

Protected areas are defined by IUCN (1994) as areas especially dedicated to the conservation of biodiversity. They exist in a matrix composed, not only of natural and semi-natural areas without protected area status, but of highly altered areas such as cities and agricultural fields. The definition of protected areas excludes often numerous and extensive areas of natural habitat that are too small or too altered to be considered for listing, that lack any formal management objectives, or that are formally covered by protective mechanisms that do not give precedence to nature conservation.

The persistence of all natural and semi-natural areas outside the IUCN system of classification is not left entirely to chance. Many of these areas have been given protection in the form of zonings or management regimes which vary in their security and effectiveness for maintaining regional biodiversity (Soulé 1991, Pressey et al. submitted). Some are retained for traditional or religious reasons (Gadgil and Vartak 1976). In addition, many areas without any formal classification for nature conservation, including many on private land, are, in fact, managed to retain or regain at least some of the elements of biodiversity. Examples are attempts at habitat reconstruction, control of weeds and feral animals, constraints on clearing, and management of fire and flooding regimes.

These areas outside protected areas but with some level of conservation management, together with many others in natural, semi-natural and highly altered states, make up the “unreserved matrix” (Franklin 1993). There are several reasons why areas without formal classification under the IUCN system are critically important to the conservation of biodiversity. These are also reasons for the importance of the integrated approach to *in situ* protection taken with bioregional management:

- Many of the processes and services that are valued, at least implicitly, by humans depend on the sheer extent of natural habitats, not only on the variety of organisms that occur in them (Cousins 1994). These include processes such as atmospheric regulation, the functions of watersheds in producing potable water over extended periods, and the formation and retention of soil (Ehrlich and Ehrlich 1992). The quantity of natural habitats is also important for the rapidly growing numbers of people who will need functioning natural areas from which to obtain the resources for basic survival (Gadgil 1992).
- Protected areas are only partly effective in separating components of biodiversity from the processes that threaten their persistence in nature (Pressey 1995). Protected areas can be very effective in excluding clearing, logging or grazing by domestic stock. They are limited in their effectiveness in preventing damage from feral animals, weeds, erosion, and altered fire regimes, depending on management and boundaries. They have no influence over problems arising outside their boundaries, such as air pollution, changed river flows, and encroaching human settlements, even though these factors can determine the future of many of the features within protected boundaries.
- Protected areas will never be extensive enough to contain, far less maintain, all of biodiversity. This problem has been recognised for some time in planning reserves. Noss (1987) referred to a ‘coarse filter’ approach in allocating reserves to represent, for example, a range of the vegetation types in a region. This approach recognises that species will fall through the framework of protected areas and require ‘fine filter’ or species-specific management. If the hierarchy of biological organisation (Noss 1990) is taken down far enough, every area has something different in it. Current reserve systems are generally far from representative even at the level of vegetation types, and even less so for species and populations. The problem is exacerbated by the tendency for reserve coverage in arable regions to be biased toward the least productive land (Pressey 1994).
- The maintenance of the present diversity and functions of protected areas is subsidised or compromised by the unreserved matrix. As natural and semi-natural parts of the matrix are reduced and as the management of highly altered areas becomes more hostile to the regional biota, each of the following problems worsens:
 - protected areas are subject to edge effects, including changed microclimate, runoff, sedimentation, chemical pollution, and increased abundance of species more typical of the surrounding, altered matrix (Saunders et al. 1991); they are also subject to more pervasive external influences such as large-scale hydrological changes (Noss and Cooperrider 1994) or salinization;
 - decreasing size and increasing isolation of protected areas involves the loss of space-demanding organisms and increasing risks of extinctions of other species from chance; species are also lost because of truncation of the habitat matrix, removing or making inaccessible some of the resources that some species require outside the original boundaries of the reserves (Terborgh 1992);
 - because of natural or altered disturbance regimes, protected areas cannot be considered as closed, self-supporting systems (Noss and Harris 1986); events such as storms, fires, landslides and floods create patch dynamics in natural landscapes; the maintenance of regional biodiversity relies on the range of post-disturbance successional states being present; isolated reserves can be completely transformed from one state to another by a disturbance event, making them unsuitable for some of the regional biota;
 - not all the features that require formal protection and management are fixed in the landscape; some foci of conservation efforts, such as occurrences of rare plants or bird rookeries, occur only temporarily in any one place (Noss and Harris 1986) and many species rely on resources that are dynamic in both space and time (Eby 1991, Woinarski et al. 1992);
 - within the geographical ranges of species, genetically diverse populations can be important for the long-term persistence of the species by spreading the risk from unfavourable events and increasing

the likelihood of the species evolving in response to long-term environmental changes (Ehrlich 1988, Diamond 1989); only some of this genetic diversity can ever be secured in reserves;

- the distributions of many organisms might have to move latitudinally and altitudinally in response to changing climate over the next century; many species with limited dispersal abilities might be unable to match the possibly very rapid rates of climatic change; any adjustments in distribution will be made still more difficult by genetic impoverishment within species (by selective habitat destruction) and anthropogenic barriers to dispersal (Peters and Darling 1985).

Levels of management for biodiversity

The basis of bioregional management is not that formal protected areas are irrelevant; it is that protected areas are part of a range of management approaches for maintaining biodiversity in a region and that the right approaches should be applied to the right places. Part of the task is to establish protected areas in places where they are needed, part is to “soften” the unreserved matrix or make it less hostile to dispersal and more complementary to the more natural, reserved parts (Franklin 1993), and a large part is to manage the matrix for its own inherent values. The broad goal is therefore not to represent a sample of every species, community or ecosystem in a system of reserves but to maximise the persistence of biodiversity in the landscape, whether it is reserved or not.

Bioregional management, by definition, is the integrated application of a range of management approaches to promote the persistence of biodiversity in a region. What is the range of management approaches? Some of them are listed in the Global Biodiversity Strategy (World Resources Institute 1992): strict reservation, management of natural resources for recreation, sustainable management of native rangelands, production forest, and fisheries, management of agricultural land to promote long-term productivity as well as benefits to biodiversity, management of urban and industrial areas, and restoration of degraded lands.

This list of management approaches actually varies in two ways. First, it involves a variety of formal classifications of the landscape and marine environments. Second, it involves activities on the ground or in the sea that fall along a spectrum of interventionist management necessary to prevent natural or anthropogenic processes from affecting biodiversity. Examples of interventionist management are control of weeds and feral animals, structural works to prevent soil erosion, and adjustments of fire or flooding regimes to simulate or achieve particular mixes of species or habitats, although these will often be at a smaller scale than the natural patch dynamics.

Formal classifications vary from strict nature reserves or wilderness areas (IUCN Category I), through other IUCN categories involving increasing recreation or extractive use, to a multitude of zonings and classifications outside the IUCN system, although still intended at least partly to retain biodiversity, to private land with no formal restrictions on use and essentially unprotected by formal means.

In this broad context, there is no necessary correlation between formal classification and level of interventionist management that is possible or desirable, even though IUCN (1994) considers there is a relationship within its system of classification of protected areas. Both protected areas and the land or sea outside the IUCN categories will require a variety of levels of interventionist management. Bioregional management therefore involves more than recommending a desirable level of classification for conservation. It requires both the classification and the level (and specific approach) of interventionist management to be specified.

A framework for implementing *in situ* protection in the context of bioregional management

In this section, I propose a preliminary framework for implementing *in situ* protection within bioregions. I use the Global Biodiversity Strategy as a guide to the nature of bioregions and the scale at which this framework would be applied:

‘A bioregion is a land and water territory whose limits are defined not by political boundaries, but by the geographic limits of human communities and ecological systems. Such an area must be large enough to maintain the integrity of the region’s biological communities, habitats, and ecosystems; to

support important ecological processes, such as nutrient and waste cycling, migration, and stream flow; to meet the habitat requirements of keystone and indicator species; and to include the human communities involved in the management, use, and understanding of biological resources. It must be small enough for local residents to consider it home.

A bioregion would typically embrace thousands to hundreds of thousands of hectares. It may be no bigger than a small watershed or as large as a small state or province. In special cases, a bioregion might span the borders of two or more countries' (World Resources Institute 1992).

There is no doubt that the success with which bioregional management is applied will depend on two very important things: (1) the cooperation of individual land managers and a wide range of interest groups; and (2) institutional changes to facilitate a much greater level of coordinated management. I take these as given but am concerned here about how we might apply a bioregional approach, assuming that these two broad requirements are being taken care of.

Operational steps in implementing in situ protection

The attached framework of operational steps (Table 1) is proposed for implementation within bioregions covering thousands to hundreds of thousands of hectares. The steps in the framework are not inflexible; they could easily be split, combined or rearranged. Likewise, the list does not imply a simple sequential process in conservation planning within a bioregion. Table 1 could be crowded with all the feedback loops and conditional steps that apply in the real world. The list of steps is simply an attempt to make explicit the types of information and types of decisions that are needed to effectively allocate conservation management to particular parts of the landscape in an integrated way.

Most of the steps outlined in Table 1 are necessary if explicit decisions are to be made on any form of *in situ* protection, although a bioregional planning approach leads to more complex decisions because, by definition, it attempts to coordinate the management of different parts of the landscape, many of which need to be managed in different ways.

Table 1. A preliminary framework for *in situ* protection of biodiversity in the context of bioregional planning

Compile data on components of biodiversity

1. *Define regional boundaries* (according to watersheds, biophysical discontinuities, boundaries of socio-cultural areas, administrative/political boundaries, or a mixture of these)
2. *Subdivide region into planning units to which will be allocated levels of classification and management* (these could include patches of remnant habitat, units of tenure, subcatchments, agricultural fields, wetlands, sections of floodplain, or a mixture of these)
3. *Compile data on the biodiversity of each of the planning units* (this should ideally be at more than one level, for example vegetation communities and species; the occurrence of these biodiversity attributes in a context broader than the region should be recognized, for example the extent to which species or communities are restricted to, or peripheral to, the region)

Assess threatening processes and their effects

4. *Assess the distribution of past, current and likely threatening processes in the region* (major processes will be clearing, grazing by domestic livestock, and logging; others will be sedimentation, chemical pollution, altered fire regimes, invasion by weeds and feral animals, water diversion, settlement patterns, poaching, and gathering of fuel wood)
5. *Identify the biodiversity attributes that have been affected by threatening processes or are vulnerable to them* (and recognize effects and vulnerability in a context broader than the region so, for example, the decline of vegetation types or species outside the region is taken into account)

Identify levels of management required and mechanisms available

6. *Identify levels of management required to control extractive or destructive land uses and other threatening processes* (this relates partly to the spectrum of management arrangements that come under IUCN's categories of protected areas, but can involve a much wider range of approaches,

including management for sustainable grazing and logging of native habitats, changes to agricultural practices, planning of waste disposal, water allocations for wildlife, and reconstruction of habitats)

7. *Review the availability, security and effectiveness of existing mechanisms to implement levels of management* (particular levels of protection and management can often be implemented in more than one way; a review of the alternatives produces a 'toolkit' for use in the region and might highlight gaps in the range of mechanisms that are likely to be necessary)

Set targets for levels of management

8. *Decide on the specific planning units that need specific forms of management or set targets for the areas or number of occurrences of each biodiversity attribute to receive each level of management* (in most regions it will not be possible or desirable to contain all the remaining natural and semi-natural habitats in protected areas; decisions are therefore needed on how much, or how many occurrences, of each biodiversity attribute should be under each level of management)
9. *Decide whether and how conservation management should be applied to discrete replicates* (spatial replication of some attributes under protective management might be desirable as insurance against chance losses of one or more examples or to increase the range of biological variation protected within landscape subdivisions such as vegetation types)
10. *Decide whether effective application of a management level requires a particular spatial configuration of that level* (the persistence of some attributes under certain levels of management is likely to depend on the size, shape and connectedness of planning units)
11. *Decide whether effective application of a management level requires a particular spatial configuration relative to other levels* (the effectiveness of some levels of management will depend partly on their juxtaposition with other management approaches; strict reserves, for example, could benefit from buffer zones of semi-natural land under multiple use; local management to protect estuarine habitat will be less effective if, at the regional scale, land uses in catchments promote sedimentation and chemical pollution)

Select the specific planning units to which management levels will be applied

12. *Assess to what extent the goals for each level of management have already been achieved* (in most regions, some or all of the proposed management levels will already be applied to some extent; the challenge for implementation is then to close the gap between the existing and targeted applications)
13. *Identify optional planning units to achieve representation and replication targets* (unless all the occurrences of an attribute are to be managed at a particular level, choices will be available as to the specific planning units allocated to that level; the extent to which options are available can be shown by the irreplaceability of the units for a particular target and level of management)
14. *Viability and manageability criteria for making choices: condition, size, shape, connectedness, nature of boundaries, local and regional support, impinging land uses and natural processes* (a variety of criteria for resolving choices - where options are available - determine the likely persistence of attributes under conservation management and the likely management problems that will be encountered)
15. *Spatial criteria for making choices: relationships between planning units with the same levels of management* (one of the considerations for resolving the choices available for a given management level will be design criteria such as size, shape and connectedness)
16. *Spatial criteria for making choices: relationships between planning units with complementary levels of management* (there will be many situations in which levels of management require, or benefit from, a particular spatial configuration relative to one another; examples in addition to those listed in step 11

are logging practices designed to minimize soil erosion and unlogged filter strips beside streams, or logging practices designed to make production forest areas effective links between protected areas)

Implement management levels

17. *Decide on the feasibility of applying to specific planning units each of the possible mechanisms for achieving each level of management* (the initial selections from the previous steps might need to be changed when the feasibility of applying management levels is assessed)
18. *Decide on the relative timing of application of management levels to specific planning units* (relative timing of implementation will depend on the urgency with which particular planning units require action; it might also be necessary to alter initial selections if the available resources are not sufficient to cover all high priority units)

Maintain attributes in planning units

19. *Assess and, if necessary, enhance political, bureaucratic and financial security, and the support of local and regional residents* (the viability of the attributes under a particular level of management will depend not only on the quality of the data and decisions made in previous steps but on the defensibility of the management against demands for funds and natural resources that conflict with the goal of management)
 20. *Assess and, if necessary, enhance size, shape, connectedness, types of boundaries, and buffer zones* (the persistence of biodiversity attributes in units under particular forms of management will also depend on improvements to spatial design of that management and the extent to which surrounding activities impinge)
 21. *Manage units to retain biodiversity values within them and monitor results* (in many planning units, the primary purpose of management will need to be complemented by on-ground activities to maintain biodiversity; for example, in protected areas, the persistence of biodiversity attributes will depend to some extent on the maintenance of natural disturbance regimes and the actions to minimize the impacts of recreation; in native rangelands or harvested forests, on-ground maintenance will include the control of weeds and erosion from roadsides; monitoring is essential to gauge the success of maintenance activities)
 22. *Manage units to adjust their influence on other units due to natural or anthropogenic processes* (the management of many planning units will influence the condition of adjacent or nearby ones, through processes such as water flow, movement of chemicals, and the spread of fire and exotic species; the movements of some animals will mean that some planning units will be linked ecologically, even if they are in different parts of the region; it follows that some maintenance activities must be directed at managing these interactions)
-

An action register for *in situ* protection of biodiversity

The framework in Table 1 is a conceptual model of the bioregional planning process as it relates to the management of biodiversity. For the process to actually work, information and decisions are needed on specific management units - what attributes occur in them, what levels of management and what particular mechanisms are appropriate, what is the spatial and functional relationship of units to other units, and what actions are necessary and feasible on the ground? Management of information and decisions such as these requires more than a conceptual picture of the whole process. It requires a detailed guide for action.

An action register, as proposed here, is basically a spreadsheet of information on the management units in a whole region or in parts of a region. It has two main functions:

- * to display and regularly update information on management units with respect to items such as values, threats, use and condition, management needs, appropriate actions, and constraints on implementation;
- * to synthesise information from supporting data bases that keep track of:

- current information on the elements of biodiversity in the region (attributes) cross referenced to individual management units;
- information on the linkages between different attributes and different management units in terms of conservation needs or interdependencies.

The role of an action register is not to automate decisions on the allocation of conservation management but to serve as a decision-support system that provides information on which to base decisions. It should then present the potential outcomes of decisions so that they can be compared with alternative ones and reversed if necessary. Ideally, action registers would be linked closely to geographic information systems for these functions so that any new GIS analyses could be incorporated quickly and any new interpretations displayed graphically. Systems for natural resource planning that are linked to GIS are now being developed and at least one is intended specifically for biodiversity conservation (Pressey et al. 1995).

The goal of Workshop W10 is to develop a feasible action register for implementing the steps in Table 1.

References

- Cousins, S.H. (1994) 'Taxonomy and functional biotic measurement, or, will the Ark work?'. *Systematics and Conservation Evaluation*. (eds) Forey, P.L., Humphries, C.J., Vane-Wright R.I. . Clarendon Press, Oxford. pp. 397-419.
- Eby, P. (1991) 'Finger-winged night workers : managing forests to conserve the role of Grey-headed Flying Foxes as pollinators and seed dispersers'. *Conservation of Australia's Forest Fauna*. Lunney, D., (ed) Royal Zoological Society of New South Wales, Sydney. pp. 91-100.
- Ehrlich, P.R., Ehrlich, A.H. (1992) *The value of biodiversity*. *Ambio* 21, 219-226.
- Forman, R.T.T., Godron, M. (1981) 'Patches and structural components for a landscape ecology'. *BioScience* 31, 733-740.
- Franklin, J.F. (1993) 'Preserving biodiversity: species, ecosystems, or landscapes?' *Ecol. Appl.* 3, 202-205.
- Gadgil, M. (1992) 'Conserving biodiversity as if people matter: a case study from India'. *Ambio* 21, 266-270.
- Gadgil, M. and Vartak, V.D. (1976) 'The sacred groves of Western Ghats in India'. *Economic Botany* 30, 152-160.
- Hobbs, R.J., Saunders, D.A. (1991) 'Re-integrating fragmented landscapes - a preliminary framework for the Western Australian wheatbelt'. *J. Env. Manage* 33, 161-167.
- Hobbs, R.J., Saunders, D.A., Arnold, G.W. (1993) 'Integrated landscape ecology: a Western Australian perspective'. *Biological Conservation* 64, 231-238.
- IUCN (International Union for the Conservation of Nature and Natural Resources) (1994) *Guidelines for protected area management categories*. IUCN, Gland, Switzerland and Cambridge, UK.
- Kerr, A. (1995) 'Ecosystem management must include the most human of factors'. *BioScience* 45, 378.
- McIntyre, S., Barrett, G.W. (1992) 'Habitat variegation, an alternative to fragmentation'. *Conservation Biology* 6, 146-147.
- Myers, N. (1979) *The sinking ark: a new look at the problem of disappearing species*. Pergamon Press, Oxford.
- Noss, R.F. (1983) 'A regional landscape approach to maintain diversity'. *BioScience* 33, 700-706.
- Noss, R.F. (1987) 'From plant communities to landscapes in conservation inventories: a look at The Nature Conservancy (USA)'. *Biological Conservation* 41, 11-37.
- Noss, R.F. (1990) 'Indicators for monitoring biodiversity: a hierarchical approach'. *Conservation Biology* 4, 355-364.
- Noss, R.F. (1992) 'Issues of scale in conservation biology'. In, P.L. Fiedler and S.K. Jain (eds) *Conservation Biology*. Chapman and Hall, New York. pp. 240-250.
- Noss, R.F. and Cooperrider, A.Y. (1994) *Saving nature's legacy: protecting and restoring biodiversity*. Island Press, Washington DC.

- Noss, R.F., Harris, L.D. (1986) 'Nodes, networks and MUMs: preserving diversity at all scales'. *Environmental Management* 10, 299-309.
- Peters, R.L., Darling, J.D.S. (1985). 'The greenhouse effect and nature reserves'. *BioScience* 35, 707-717.
- Pressey, R.L. (1994) 'Ad hoc reservations: forward or backward steps in developing representative reserve systems?' *Conservation Biology* 8, 662-668.
- Pressey, R.L. (1995) Protected areas: where should they be and why should they be there? In: *Conservation Biology*. (ed) I.F. Spellerberg. Longman Higher Education, Harlow, England (in press).
- Pressey, R.L., Ferrier, S., Hager, T.C., Woods, C.A., Tully, S.L., Weinman, K.M. (in press). 'How well protected are the forests of north-eastern New South Wales? - analyses of forest environments in relation to tenure, formal protection measures and vulnerability to clearing'. *Forest Ecology and Management*.
- Pressey, R.L., Ferrier, S., Hutchinson, C.D., Sivertsen, D.P., Manion, G. (1995) 'Planning for negotiation: using an interactive geographic information system to explore alternative protected area networks'. In, *Nature Conservation 4 - the Role of Networks*. Eds. D.A. Saunders, J.L. Craig and E.M. Matiske. Surrey Beatty and Sons, Sydney. pp. 23-33.
- Saunders, D.A., Hobbs, R.J., Margules, C.R. (1991) 'Biological consequences of ecosystem fragmentation: a review'. *Conservation Biology* 5, 18-32.
- Saxon, E.C. (1983). 'Parks and reserves'. In, *What Future for Australia's Arid Lands?* J. Messer G. Mosley (eds.). Australian Conservation Foundation, Melbourne. pp. 165-168.
- Slocombe, D.S. (1993) 'Implementing ecosystem-based management'. *BioScience* 43, 612-622.
- Soulé, M.E. (1991) 'Conservation: tactics for a constant crisis'. *Science* 253, 744-750.
- Wiens, J.A. (1994) 'Habitat fragmentation: island v landscape perspectives on bird conservation'. *Ibis* 137, S97-S104.
- Wiens, J.A., Stenseth, N.C., van Horne, B., Ims, R.A. (1993) 'Ecological mechanisms and landscape ecology'. *Oikos* 66, 369-380.
- Woinarski, J.C.Z., Whitehead, P.J., Bowman, D.M.J.S., Russell-Smith, J. (1992) 'Conservation of mobile species in a variable environment: the problem of reserve design in the Northern Territory, Australia'. *Global Ecology and Biogeography Letters* 2, 1-10.
- World Resources Institute (1992) *Global biodiversity strategy*. WRI, Washington DC.

WORKSHOP RESULTS: INFORMATION FOR BIOREGIONAL PLANNING

Workshop leader: Bob Pressey

A better title for the workshop might have been "Towards an Operational Framework for Bioregional Management". The participants first considered a proposed list of 22 major steps needed to gather information and make decisions in bioregional planning (see summary list in attached Table 1). They broke up into three groups to separately produce 'action registers' or guides for making decisions and allocating resources to individual 'planning units' or parts of the landscape.

Table 1 -A Preliminary list of tasks to make bioregional planning operational

Compile data on components of biodiversity

1. Define regional boundaries.
2. Subdivide region into planning units to which will be allocated levels of classification and management.
3. Compile data on the biodiversity of each of the planning units.

Assess threatening processes and their effects

4. Assess the distribution of past, current and likely threatening processes in the region.

5. Identify the biodiversity attributes that have been affected by threatening processes or are vulnerable to them.

Identify levels of management required and mechanisms available

6. Identify levels of management required to control extractive or destructive land uses and other threatening processes.
7. Review the availability, security and effectiveness of existing mechanisms to implement levels of management.

Set targets for levels of management

8. Decide on the specific planning units that need specific forms of management or set targets for the areas or number of occurrences of each biodiversity attribute to receive each level of management.
9. Decide whether and how conservation management should be applied to discrete replicates.
10. Decide whether effective application of a management level requires a particular spatial configuration of that level.
11. Decide whether effective application of a management level requires a particular spatial configuration relative to other levels.

Select the specific planning units to which management levels will be applied

12. Assess to what extent the goals for each level of management have already been achieved.
13. Identify optional planning units to achieve representation and replication targets.
14. Viability and manageability criteria for making choices: condition, size, shape, connectedness, nature of boundaries, local and regional support, impinging land uses and natural process.
15. Spatial criteria for making choices: relationships between planning units with the same levels of management.
16. Spatial criteria for making choices: relationships between planning units with complementary levels of management.

Implement management levels

17. Decide on the feasibility of applying to specific planning units each of the possible mechanisms for achieving each level of management.
18. Decide on the relative timing of application of management levels to specific planning units.

Maintain attributes in planning units

19. Assess and, if necessary, enhance political, bureaucratic and financial security, and the support of local and regional residents.
 20. Assess and, if necessary, enhance size, shape, connectedness, types of boundaries and buffer zones.
 21. Manage units to retain biodiversity values within them and monitor results.
 22. Manage units to adjust their influence on other units due to natural or anthropogenic processes.
-

Problems recognised by the participants in the information used as the basis for the workshop

The issue to be addressed was framed too generally. Progress in the workshop would have been faster if the problem had been focused on a particular area or region with specific data and conservation issues.

Subdividing the region into 'planning units' is a complex task. Ideally, it should be based on extensive consultation with interest groups so that their goals and concerns are reflected in the way the region is subdivided.

The process of goal setting like that of defining regional consideration goals is a complex task in itself. It should be given primacy in the list of 22 tasks (Table 1).

Group 1

Decided not to use the suggested spreadsheet structure for the action register but instead to use a decision tree process. (See list of assumptions, criteria and actions in Table 2.)

Table 2. action register

Assumptions
Biodiversity and planning data already collected
Preliminary community consultation has occurred
Working to a 12-month one-off budget
Data is current at time project begins
Criteria
Priority for protection
Conservation significance - national, state, regional
Conservation status - fixed, non-fixed
Tenure
Conservation commitment of landholder
Future intentions of landholder
Management constraints and ability
External threats eg development threat/political threat
Actions/achievable priorities
Develop dialogue with landholders
<u>Assist landholders with jointly agreed to conservation projects eg fencing, feral animal and weed control</u>

Group 2

Also decided to use a decision tree structure for allocating conservation actions to particular parts of the landscape (see attached Figure 1).

Group 3

Stayed with the matrix idea. Had reservations about using decision trees because they establish a hierarchy of decisions which could be inappropriate (see Table 3).

Table 3

Possible matrix/structure for operational planning
Information
- Characteristics of planning units
- Objectives (with input from stakeholders)
- Threats
- Constraints
- Scale
- Legislative
- Administrative
- Logistic
- Location
Analysis/decisions
- Management options (based on land use)
- Priorities

Overall outcomes

There are several possible ways of developing operation frameworks for bioregional planning.

If any one model is the 'best', it has yet to prove itself.

Preliminary frameworks are necessary as a basis for community involvement and to begin the process of bioregional planning.

27. STORING, ACCESSING AND USING INFORMATION FOR BIOREGIONAL PLANNING

Tricia Kaye,
Environmental Resources Information Network
Department of Environment, Sport and Territories, Canberra

This workshop is particularly designed to cater for the needs of people who want to use Geographic Information Systems (GIS), environmental databases, and other developments in information technology relevant for bioregional planning.

At the end of this workshop participants should have an understanding of:

- the role of GIS and spatial modelling tools for data analysis;
- current national biodiversity databases;
- relevant data standards for storage of bioregional information; and
- the potential of Internet as an information access and delivery mechanism.

No prior knowledge of GIS is assumed for participation in this workshop, although knowledge of GIS would not be a disadvantage. The workshop does not seek to train participants in the use of GIS, but rather to introduce a range of analytical concepts, which could be practically applied using a GIS. The workshop will illustrate that GIS, and other analytical methods, are tools to assist decision-making.

Ultimately, decisions are made by people, not computers, and for a range of social and political factors, as well as environmental ones.

A set of guidelines for selecting an appropriate GIS software package will be available for participants who are currently seeking to acquire a GIS. These guidelines will not be specifically addressed in the workshop, unless required by participants.

1. Using information for bioregional planning

Spatial analysis

This session will use the BioRap methodology as a case study to introduce some of the analytical concepts which can be explored using GIS and spatial modelling tools. The BioRap methodology was developed for the rapid assessment of biodiversity resources, and uses a range of analytical methods. Participants will form sub-groups, which will look at assessing biodiversity in a region, and designing a network of reserves to manage biodiversity in that region.

The sub-groups will be presented with maps and analyses to assist with their decision-making. The challenge will be to draw this information together, understand the trade-offs, and make decisions accordingly. The sub-groups will be dealing with different methodologies - each sub-group will report its findings back to the whole group, and the results compared.

Regional assessment

The Cape York Peninsula Land Use Study (CYPLUS) will be presented as an example of an intensive regional study, requiring interaction of a range of groups. Whilst some data was already available, much more was gathered specifically to meet the requirements of CYPLUS.

Many of the methodologies developed for CYPLUS are being used in the Comprehensive Regional Assessment program, to deliver the National Forests Policy. Bioregional planners could benefit from developments arising from these processes.

2. Storing Information for bioregional planning - data standards

This will be an open group forum dealing with standards. Several questions will be put to the group:

- Why should we deal with information in a standardised way?
- What standards are available, and alternatively, what standards are not available?
- How can the gaps in standards be addressed?

The session will seek to emphasise the benefits of using a standardised approach, and the need to maintain good communication with all the players, to ensure that high quality outputs are being delivered.

Information standards are continually evolving, and are never absolute. The evolution must proceed in a direction which maximises the benefit to the users of the information.

3. Accessing information for bioregional planning

This session will focus on the use of Internet as a method of information access and delivery. Other issues such as policies for information provision and exchange will be addressed in passing.

The Internet is now being used by Commonwealth Government and State and local governments. At the regional level there have been several Internet initiatives - Councilnet, Landcarenet, and now Regionlink. Access to Internet is now relatively simple, and the Internet infrastructure in Australia is currently providing sufficient bandwidth to meet demand.

ERIN manages the Environmental On-line Service (EOS) on behalf of the Federal environment portfolio. Through EOS, the portfolio is actively using Internet to disseminate policy information, as well as environmental databases for use by planners and decision-makers. The capabilities of EOS, and the potential to further meet the needs of bioregional planners through EOS will be discussed.

WORKSHOP RESULTS: STORING, ACCESSING AND USING INFORMATION FOR BIOREGIONAL PLANNING

Workshop leader: Tricia Kaye

1. Data collection

- Different types of data were examined: primary and secondary data from biological and environmental sources
- Data collection is not an end in itself. Decisions have to be made based upon that data. These decisions are often made in an atmosphere of political expediency.
- Priorities for conservation of species in bioregions could be assisted by data collection advised by Department of Environment, Sport and Territories and the Australian Nature Conservation Agency
- Community involvement in data collection helps communities to understand decisions flowing from them.

2. Data storage

- Primary data must be kept and stored in primary/raw form and analyses are then applied to that data. This approach ensures that data will be able to be applied to a range of regional analyses and is not tied to one particular level. Collections should be georeferenced. Scale should be documented in data collection.

3. Data access and usage

- There are dangers in interpretation of electronic data. They should be tools not arbiters.
 - Separation of data from expertise
 - Relationship between scale and usage must be considered
 - More resources in primary data collection could lead to better quality data

- Decision to reserve corridors should be made on individual basis. Reservation of corridors should be justified.
- Corridors may in some instances be detrimental to biodiversity conservation, eg Noisy Miner birds benefit from narrow corridors.
- Decisions should be based on sound data and justified where possible.
- However, the precautionary principle should be used where possible or examined as an option in decision making.
- Monitoring programs should be set up for evaluation of decisions to conserve biodiversity. Community groups, schools, NGO conservation organisations can be used to assist with monitoring.
- Full cost recovery on data collections is not compatible with the free use of data, as promoted by the IGAE and the NSESD
 - mechanisms to facilitate cost reduction should be explored
 - cooperative arrangements could be used
 - data integrity must be preserved
 - separation of data from expertise.
- There can be disadvantages in making data available, eg the distribution of rare and endangered species may be sensitive data.
- Access to data is a major problem for local government and community
 - how can info sharing policy mechanisms be established
 - ALGA could be used as a high level lobby group.
- DEST and ERIN have a commitment to free on-line data and information on the WWW.

28. BIOREGIONAL PLANNING AT THE LOCAL LEVEL

Rob Thorman and Martin Brennan
 Australian Local Government Association,
 Canberra

Background

There is a growing awareness of the need for regional approaches to environmental planning and sustainable economic development. This is highlighted by several current examples of natural resource management. For example, moves towards a “devolution” of Landcare will increase the level of integrated planning and priority setting at a regional level, and the development of a sustainable commercial plantation forest industry will also require co-operative regional planning.

Successful planning and development at the regional scale requires greater integration of Commonwealth and State natural resource programs, with the full involvement of local government. The region may be represented by Voluntary Regional Organisations of Councils (VROCs), Regional Development Organisations (RDOs), Catchment Management Committees or Boards, Land Councils or other regional organisations. Whatever the basis of the region, it is essential that the definition of the region be determined at the local level.

The Australian Local Government Association (ALGA) has prepared guidelines for the development of Regional Environmental Strategies (RES). They have been developed as part of a project funded by the Department of Housing and Regional Development (DHRD) to provide a link with the Regional Environmental Employment Project (REEP) program. Under the project, a series of nine pilot projects are being undertaken based on Voluntary Regional Organisations of Councils (VROCs). Similar projects are also being funded by the Australian Nature Conservation Agency (ANCA) for other regions (Details of all these regions are provided later in the document in Table 1)

One of the areas highlighted in the guidelines is the need for an action oriented strategy and for ongoing monitoring to provide practical feedback to management. Although much good work has been carried out in programs such as Landcare, it is often difficult to know how effective works have been.

With the enormous environmental problems and opportunities that face us, and the limited resources available, there is a need to become more strategic at the regional level. It is necessary to define clearly

the objectives and targets at the outset, and to assess regularly whether the projects are achieving the desired outcomes. If they are not, we need to be able to identify required changes in management.

The RES guidelines provide the framework for such a monitoring process, with feedback to management. With the benefit of experience from the pilots, the guidelines will be developed further, for more widespread use in other regions.

What is the role of a Regional Environmental Strategy?

A strategy sets out the vision for the future of a region. It provides a set of clear objectives and key actions that are required to achieve that vision. The strategy should serve as a guide to all managers and interested parties in determining appropriate actions, and should provide a basis for coordinating diverse activities.

A strategy must provide long term direction. Planning and strategy development should not be a response to short term issues and fluctuations in the environment (natural, social or economic). For this reason it is important to identify the values of a region. What is it that the community values about the area, what makes it special to them and for their children? What is the shared vision of the community for the future?

A values based approach to planning ensures that the things that make the region special are not lost. It provides the long term framework for planning within which we can deal with the issues of the day. If planning is to focus only on the issues of the day, we may continue to drift along with little strategic direction, and without solving the underlying cause of those issues.

A strategy must be realistic, action oriented, and understood through all spheres of management. A strategy must be more than a cluster of ideas in the minds of a few decision makers, rather the concepts must be disseminated and understood by all managers. Unless there is widespread understanding and acceptance, and commitment, there will be little progress towards achieving strategic goals.

Strategic planning generally involves a high degree of future uncertainty, and there will not always be agreement between the various parties. The strategy must therefore involve an ongoing cooperative approach that motivates all interested parties to bring about coordinated moves towards the shared vision. Ongoing evaluation is essential to assess the effectiveness of the implementation of the strategy and to ensure there is a feedback mechanism so that management actions remain responsive to changing circumstances.

Although it is important that the strategy be generated at the regional level, efforts should be made to ensure consistency with other neighbouring regional strategies, and with State and national priorities.

Links with environmental employment opportunities

There are strong linkages between regional environment planning, regional economic development and employment generation. The guidelines for RESs are aimed at strengthening this relationship by linking with the REEP program. REEP is a component of the New Work Opportunities labour market program. It aims to provide employment and training opportunities for long term unemployed people through the implementation of RESs developed by regional groups.

The aim of a RES is to link environmental objectives with labour market programs through projects which address identified regional environmental problems and opportunities.

How to prepare a Regional Environmental Strategy ?

There are several basic steps in preparing a Regional Environmental Strategy. These are outlined below.

It may be useful to structure the strategy into several volumes or compile a loose leaf document. For the purpose of this exercise three main volumes will be referred to, as well as separate supporting material, and display posters. Although the three documents are numbered 1-3, they are not completely in sequence, Volume 3 - Monitoring and Evaluation, actually commences during the preparation of Volume 1 - Management Strategy.

Volume 1 Management Strategy

The management strategy for the region provides an effective policy and planning framework for decision making. This document would be expected to have a life span of five -10 years. It should identify:

- The values and vision for the region
- Assessment of current situation
- Assessment of problems and opportunities towards achieving the vision
- Priority issues to be addressed
- Strategy development (including the basis of a monitoring framework)

Volume 2 Action plan

This can be a separate document in table format, which can be updated annually. It outlines specific actions that need to be undertaken to achieve the overall objectives of the strategy. This should identify:

- Actions
- Priorities and timeframe for implementation
- Responsibilities
- Costs and source of funding
- Staff time and labour input

For an action plan to be outcome oriented, it should be prepared within the context of an evaluation framework as outlined below.

Volume 3 Monitoring and evaluation framework

This must be fully integrated throughout the process of strategy development, action planning and implementation. The first steps must be undertaken during the strategy development phase, and prior to the development of the action plan. These are to:

- Clearly define objectives
- Identify key indicators and method of monitoring
- Compile baseline data
- Define targets for those indicators

Upon completion of these steps, detailed action planning can occur (Volume 2 above), then implementation, and then the final stages of monitoring and evaluation as follows:

- Monitor the actual outcome
 - Evaluate and assess the cause of change
 - Provide input to management
- This process is shown in Figure 1.

Supporting material

Any background material that has been collected in the development of the strategy should be kept as a separate reference document. It may also include computer data bases and GIS systems.

A map of the region, highlighting major environmental issues and locations where actions are to occur could be put on the walls of Councils' works depots, schools and community halls. An interactive approach could be taken, particularly with schools, where targets are presented and later compared with actual outcomes.

Using this approach means that the document is kept to a manageable size, and it can be updated annually through the action plan and evaluation framework.

Where are the pilot Regional Environmental Strategies?

There are a number of projects currently underway, or about to commence, which link regionally based environmental strategies with labour market programs such as REEP (Regional Environmental Employment Program). These are listed in **Table 1**.

Table 1 Location of regional environmental employment strategies

Project	Basis of region	Responsible agencies	Progress to date
Northern Rivers Regional Organisation of Councils (NSW)	VROC	DHRD, ALGA	Proposal submitted and approved
Northern Region Commission (VIC) submitted		VROC	DHRD, ALGA Proposal submitted and approved
Eastern Downs Regional Organisation of Councils (QLD)	VROC	DHRD, ALGA	Proposal submitted and approved
Southern Region of Councils (SA) submitted		VROC	DHRD, ALGA Proposal submitted and approved
South West (WA) Regional Council submitted		VROC	DHRD, ALGA Proposal submitted and approved
Northern Land Council Caring for Country project	Land Council	ANCA, NLC	Framework for strategy established
Hume Province Regional Economic Development Organisation (NSW/VIC)		REDO	ANCA Proposal submitted
Greater Green Triangle Region Association (SA/VIC)	REDO	ANCA	Proposal submitted, project underway
Central Queensland (Brigalow Belt) being developed		Bioregional approach	ANCA Project
Southern Tasmanian Regional Council	VROC	DHRD, ALGA	Scoping undertaken. Not yet approved
Far North Queensland Regional Organisation of Councils	VROC	DHRD, ALGA	Not yet approved
Central West Queensland Regional Organisation of Councils approved		VROC	DHRD, ALGA Not yet approved
Illawarra Region of Councils (NSW) submitted		VROC	DHRD, ALGA Proposal submitted
Northern Tasmania	Northern Tasmanian Regional Development Board	DHRD	Not yet approved Proposal submitted Not yet approved
Sydney ROC Regional Revegetation Plan	VROC	ANCA, ALGA, with GA	Proposal submitted

VROC Voluntary Regional Organisation of Councils
REDO Regional Economic Development Organisation
DHRD Department of Housing and Regional Development
ALGA Australian Local Government Association
NLC Northern Lands Council
GA Greening Australia

WORKSHOP RESULTS: BIOREGIONAL PLANNING AT THE LOCAL LEVEL

Workshop leader: Rob Thorman

Regional groupings of councils provide a logical basis for bioregional planning. There are over 50 Voluntary Regional Organisations of Councils (VROCs) in Australia.

The Australian Local Government Association is coordinating a series of nine pilot regional environmental strategies throughout Australia based on VROCs.

To assist this process guidelines have been prepared for preparing action-oriented strategies with a framework for ongoing monitoring and evaluation.

Regional environmental strategies should provide a shared action plan which provides the basis for cooperation. This is currently being developed in the Yarra catchment.

Problems identified by workshop participants included:

- Lack of awareness and commitment by elected representatives - even if council staff are working towards biodiversity conservation.
- Lack of awareness of national strategies.

Opportunities identified

Establishment of minimal standards or code of conduct so that no sphere of government can undermine the minimum standard.

Encourage best practice environmental management standards.

Industry to assist in developing best practice land management practices not only governments (eg the Sugar Industry in allocating sugar assignments).

Professional institutes to assist in raising awareness, eg landscape architects.

To translate national strategies, eg the biodiversity strategy in local action plan manuals (similar to the Municipal Conservation Association's Agenda 21 Guide).

Community education along with council staff and councillors.

Greater information flow through council net study tours and regional conferences to raise the awareness within local government.

Utilise NGO networks.

29. BIODIVERSITY MANAGEMENT AND REHABILITATION FOR BIOREGIONS

Hugh Possingham
Department of Environmental Science
University of Adelaide

Objective

The objective of this background paper is to initiate discussion on mechanisms for bioregional planning for biodiversity. I begin by considering the elements of biodiversity and suggesting feasible mechanisms for conserving biodiversity. The issue of rehabilitation is placed into the context of overall biodiversity management. This is particularly important as efforts of habitat restoration and construction are becoming increasingly common. One of the key challenges that faces biodiversity managers is not defining the list of objectives, but being able to prioritise these objectives. Here I provide some ideas about how priorities might be set for biodiversity management in a bioregional context.

A definition of biodiversity

The three tiered definition of biodiversity is an essential starting point for discussing biodiversity management in bioregions. The three parts of biodiversity are: habitat diversity, species diversity, and genetic diversity. The objective of biodiversity management is to conserve all elements of biodiversity. The definition of biodiversity helps us to determine management and rehabilitation objectives by subdividing the problem into three parts.

Conserving habitat diversity seems relatively straightforward - the standard recommendation is that we should set aside a fixed percentage, say ten per cent of every vegetation type in a bioregion. Similarly conserving species diversity should involve maintaining adequate numbers of every species that occur in a bioregion, but the question arises, what is an adequate number? Conserving the genetic diversity of each species in a bioregion is clearly difficult if we know very little about the genetic diversity of almost all species. How can this lack of information be overcome?

Operational objectives

1 Habitat diversity

For each bioregion the different “habitats” first need to be defined and then we should attempt to conserve representative samples of each. Because the word habitat is not well defined, it is important to have a number of methods for defining habitats. For each particular bioregion the following steps need to be taken:

- 1 Construct one or more methods of defining habitat. Such methods could include classical vegetation maps, environmental domain analysis and landform types. Use the most readily available information.
- 2 Determine the pre-European extent of each habitat type. This may involve some form of estimation/extrapolation.
- 3 Decide how much of each habitat type is in protected areas. If the percentage conserved is inadequate move to conserve, or at least secure from degradation, adequate areas.
- 4 If there is less than an adequate percentage of a habitat type in a “natural” state then rehabilitation and reconstruction of habitat should focus on that habitat types.

2 Species and genetic diversity

Species conservation proceeds on a species by species basis. This favours vascular plants and vertebrates because we know a lot about these groups. Although these groups are small elements of the total species biodiversity of an area they are worthy of some attention for a number of reasons.

Conservation efforts on single species invariably expose the inadequacies of a conservation strategy that relies on conserving a fixed percentage of each habitat type. For example some species will need large contiguous blocks of habitat, while others will require that we address special threatening processes, like nutrient flows in water systems or feral predators. As with habitat conservation, it is important we make interim decisions about biodiversity management. If such decisions favour certain groups because of information availability that should not be an excuse for inaction.

Threatened species restricted to particular bioregions require immediate action. Despite this priority the value of species that also occur in other bioregions should not be underestimated. The indigenous species diversity of each bioregion needs to be maintained. Isolated populations of widespread species are likely to be genetically different and may play a special role in the survival of a species and the evolution of new species.

We will not know about the genetic diversity of most species for a very long time. An expedient mechanism for conserving genetic diversity is to retain a species throughout as much of its geographical and environmental range as possible.

3 Wilderness - a special case

Areas that have been minimally impacted by human activities may have special values. At present we know little about the biodiversity value of wilderness. There is a chance that wilderness areas may be the only places where natural ecosystem processes remain relatively intact and a high compliment of indigenous species are retained in the long term. Unfortunately it will be a long time before we fully understand the biodiversity value of wilderness so at this stage it is prudent to assume that it is significant.

In each bioregion the areas with the highest wilderness value deserve special protection. This includes avoiding any development, like roads, that will diminish this value.

4 Connectivity and landscape patterns

There are two conflicting trends in popular thinking about the spatial arrangement of conservation areas. For reserves we favour areas that have a minimum boundary to area ratio - but for revegetation we are obsessed with corridors, areas that have the opposite shape. We still know very little about the optimal spatial arrangement of conservation areas and there is great need for empirical evidence. There is an urgent need to take an experimental approach to revegetation and habitat rehabilitation. For example we should initiate long-term trials that enable us to compare the comparative value of revegetation strategies like: corridor construction, creating buffers around existing areas of conservation value, or constructing conservation new nodes (Figure 1).

5 Ecosystem processes

Reserves cannot persist in isolation. Flows of water, air, soil and nutrients connect all parts of the landscape. A bioregional conservation plan must embrace the notion of whole catchment management (an appropriate within region subdivision).

6 Off-reserve management

A system of reserves is rarely adequate to conserve the biodiversity of a region. Even with ten per cent of a bioregion conserved we are likely to lose a large percentage of a regions biodiversity - probably around 50 per cent. A wide range of off-reserve measures must be considered. Although these are no substitute for a CRA reserve system they are important. Of particular importance is the role of buffers in maintaining natural ecosystem flows in conservation areas.

7 Threatening processes

Generic threatening processes need to be identified in each bioregion. Given these threatening processes are often human-induced, there are immediate possibilities of halting these processes.

Setting priorities

All species and all habitat types are not equal in a particular bioregion. Poorly conserved and endangered habitat types, that are unique to a bioregion, deserve the highest priority. They are likely to contain a relatively high number of endemic taxa and significant components of the genetic diversity of more widespread species.

Species should be ranked in terms of how threatened they are in a bioregion, and what percentage of the world population is in that bioregion. For example, a nationally endangered species that is endemic to a bioregion has the high priority. Research and management should be concentrated on species like these. Threats to high priority species should be immediately stopped. Threats like vegetation clearance can be easily stopped as their impact is on all levels of biodiversity and ecologically sustainable development.

Species that are threatened in a bioregion but are common in other bioregions are important. If selected carefully, bioregional boundaries will often define places where there is significant turnover in species, and genetic turnover within species. If this is the case then local populations in bioregions are important to the future evolutionary development of a species.

Changes to the wilderness status of an area are effectively irreversible and must be avoided.

A hierarchy of plans

To be able to place biodiversity issues in context we need to have a whole continent biodiversity management plan. This plan will provide a continental overview, like lists of nationally threatened taxa, that enables priorities to be set in bioregions. Within a bioregion there will be a hierarchy of plans down to the management of individual patches of bush. Each of these plans will use plans higher in the hierarchy as a source of basic information that helps to set local priorities. There will need to be other strategies that cut across the hierarchy, like pest control and water allocation.

Conclusion

Setting priorities for effort and action is the greatest challenge to bioregional planning for biodiversity. Revegetation strategies are an essential component of bioregional planning for biodiversity. They can be used for repairing damaged ecosystem processes, like erosion, reconstructing unusual and threatened habitat types, and conserving threatened species. Lack of complete information should not impede setting priorities. Each bioregion will need a hierarchy of interconnected flexible plans.

30. LA AMISTAD BIOSPHERE RESERVE, COSTA RICA

Kenton Miller,
World Resources Institute, Washington D.C.

The La Amistad Biosphere Reserve illustrates the challenges faced in Costa Rica when the government, public management agencies, local individuals and NGOs decided to establish a mechanism to help manage a region featuring jurisdictional overlap, competing interests, and alienated communities. It is the country's richest region in biodiversity, as well as a major source of freshwater and hydro power potential, and a homeland to the majority of the country's indigenous peoples. On initiating the project in the early 1980s, the region was governed by an array of uncoordinated public institutions, with weak communal and private groups. Key issues facing La Amistad included lack of managerial and technical capacity to guide the organisation of this ecologically and geomorphologically complex area, absence of opportunities for indigenous peoples to attain full involvement as stakeholders in the program, discontinuous funding for the program, and major natural disasters.

Brief description

Costa Rica and Panama established a boundary International Park in 1982, starting with an initial commitment of 200,000 ha in each country that embraces the majority of the Cordillera de Talamanca, a mountain range that extends from just above sea level to 3,800 m. The Reserve embraces the bulk of the Talamanca mountain massif in Costa Rica, including its various important watersheds and the Atlantic coastal zone. UNESCO accepted a proposal from the two Governments that a portion of the region be recognised internationally as the bi-country La Amistad Biosphere Reserve in 1982 and it was declared a World Heritage Site the following year.

The official mandate for the biosphere reserve is to manage for multiple use while continuing to protect the natural resource base. Focusing here on Costa Rica's portion of La Amistad Biosphere Reserve, it covers approximately 612,570 ha, and includes 12 per cent of that nation's territory (Government of Costa Rica, 1990). It is reported that 30 to 40 per cent of the flora in the area is endemic. Government studies suggest that given a harmonious management framework for the area, the potential for outstanding benefits in terms of tourism, hydro power, biodiversity conservation and exploration, and production of selected crops, would be high. The opportunity also includes the possibility of establishing an equitable relationship with the region's indigenous peoples through recognition of land rights, restoration of impoverished soils and forests, and a fair share from bio-prospecting on their lands.

Challenges of shifting to bioregional management

Fifteen distinct legally-mandated management units already had been established prior to forming the biosphere reserve. These include: two national parks, two biological reserves, one forest reserve, one wildlife reserve, one watershed protection area, seven indigenous reserves, and one botanical garden.

Furthermore, prior to biosphere reserve establishment, mineral exploration permits had been issued for nearly 35 per cent of the area, a figure that reaches nearly 50 per cent of the lands within the legally established Indigenous Reserves. An inter-oceanic pipeline across the Reserve continues to receive occasional consideration, along with a proposed road through the heart of the Talamanca, and some 25 potential hydro electric power plant projects in the area's watersheds.

In response to the growing conflicts among the various agencies with jurisdiction in the area, the La Amistad Coordinating Commission was established by Executive Order of Costa Rica's President to address these and other problems. Under the chair of the Minister of Natural Resources, Energy and Mines (MIRENEM), the Commission included representatives of all those agencies with activity within the Reserve including the Director of the National Park Service, the National Wildlife Service, the Executive Director of the National Commission of Indigenous Affairs, the Resident Director of the Organisation of Tropical Studies and the Director General of the National Parks Foundation. The aim of the Commission was to decide management policy for the biosphere reserve. Funding for the Commission, its General Coordinator and staff, came from a five-year debt-for-nature swap, supported by the Central Bank and Conservation International.

Initial leadership for the Commission was provided by the staff and logistical support of Costa Rica's National Park Service. Conceptually, this role exemplified the call by the 1982 Second World Congress on National Parks to park and protected area management authorities to focus portions of their budgets, personnel and capacities to help neighbours develop an ecosystem-wide area of cooperation and development surrounding their sites, to propel overall regional sustainability.

Shortly after, however, a newly elected government facing a fiscal crisis, took steps to shrink public budgets and enact a hiring freeze on government agencies. The Park Service found itself compelled by budget and staffing limitations, to withdraw from its expanded role in the bioregion in order to ensure its own jurisdictional commitment. This retreat was further endorsed by a narrow interpretation of the Park Service's mandate that implied restricting the deployment of the Service's staff and facilities to the institution's defined jurisdictional areas — the national parks and related protected areas. Thus, a change in government policy from establishing a bioregional program for the whole Talamanca ecosystem, to one featuring dramatic budget cuts, staff reductions, and a narrow interpretation of the agency mandates, resulted in the loss of leadership and the capacity for program development.

This initial loss of momentum fell at a time when the country was facing fast-paced change. Tourism lured primarily to the country's wildland areas was becoming the nation's number one foreign exchange earner. Biodiversity was receiving considerable attention from bio-prospecting opportunities for promising natural substances as resources for national and international pharmaceutical and biotechnology industries. Further, the region's rivers were slated for development of promising new hydro-energy sources. In political and economic terms, La Amistad as a geographic place, changed suddenly from being a remote hinterland to a place of high national and international economic and policy interest.

The Commission continued its efforts to develop a coordinating mechanism. Stakeholders called for an institutional mechanism with a solid leadership mandate. To private land owners, commercial agriculturists, Indigenous leaders, and the various public agencies, "informal dialogue", "enlightened self-interest", and "good ideas" were simply insufficient as motivating forces to get them to negotiate agreements for management of their resources, to formulate a common vision for the bioregion and agree how to co-manage it. To them, the "carrots" were insufficient without the "stick"; they wanted to be assured that behind the negotiating table and planning documents there was a mechanism to enforce compliance with their agreements, if and when necessary.

The government
responded in 1992, by
requesting the
Organisation of
American States and
Conservation
International to work
with the La Amistad
Coordinating Commission
to develop a
institutional
development strategy"
(Saunier et al. 1992).

In less than six months, and with out the need to gather additional data or information, a strategy was formulated with which proposes that the Commission evolve into a regional authority charged with the sustenance of the development of the “Talamanca landscape”.

Under this initiative, the Commission would manage both formal planning and informal dialogue throughout the region to balance the interests and power that characterise the different stakeholders. Conflict resolution is a key component of the proposal, especially since most problems in the region appear to be social, economic and institutional rather than technical. Other suggestions to the revamped Commission were: that its leadership be rotated, and additional public and private interests be added to its membership; it should undertake leadership in planning, and guide the implementation process, ensuring that the latter is dynamic and stable so that changing needs can be met through an ongoing process of planning.

In addition, the strategy offers concrete proposals, including: development priorities for the region; recognition of indigenous peoples’ territorial rights; preparation of management plans for each of the protected areas; definition of priorities for compensation where private lands are to be expropriated in the core areas of the Biosphere Reserve; and, recommendations for the management of development projects including the Trans-Talamanca Highway, mineral exploration concessions, pipeline, carbon and hydrocarbon exploitation, and hydro electric projects.

The Costa Rican Government took two important steps in response to this study, in order to address the problems of leadership and overlapping jurisdictions: first, the central integrative authority of government (planning board) was mandated to join the process; and second, the scope of the original Commission mandate was transformed to one that would now address development and conservation goals for the entire Talamanca mountain bioregion.

Getting Indigenous stakeholders involved

The Indigenous peoples of the bioregion found it particularly difficult to engage fully in the program because of their perceived lack of skills and organisational capabilities, and the failure of government and neighbours to recognise their land rights. In recent decades, the now Spanish-speaking indigenous peoples of the region have been transforming their way of life into a modern political and economic community. The pace of change had all but overwhelmed this transformation as roads, water works and other infrastructure entered the area. Military actions impacted the lands along the international boundary. Commercial crops were introduced, including pineapple, banana, coffee, cattle, and other agro-industrial commodities.

Faced with external market-driven pressures to grow commercial crops, and lease or sell their land rights to commercial interests, the Indigenous groups formed KANEBLO, an NGO meaning “towards Indigenous self-management”, in 1992. The purpose is to enable Indigenous communities located in the Biosphere Reserve to survive in this rapidly evolving context by developing access to information, negotiating skills, community organisation, credit, environmental education, cultural restoration, women’s development activities, forest nursery development and other activities of local design and interest, thanks to support from the Dutch, and CARE of Costa Rica (Talamanca, 1992).

The involvement of Indigenous people as stakeholders in the program was further challenged and facilitated as the Government took up the OAS/CI strategy recommendation to establish management zones within the formal Indigenous Reserves. These zones include: isolated areas — where commercial contact is minimal and traditional indigenous modes of life prevail; areas integrated into the commercial

economy — where the population essentially becomes integrated into the Costa Rican economy; and marginal areas — where the Indigenous people have suffered detrimental economic effects from development but have not been fully integrated into the commercial economy. Many of these latter areas have passed into non-Indigenous hands, have been deforested, or converted to commercial farms and other non-indigenous enterprises.

Finance

The costs of the La Amistad Commission, the salary of its coordinator and other program costs depend upon funding from various governmental and non-governmental sources. Obviously, to meet the commitments of its mandate, the coordinating office requires an uninterrupted operating budget to cover its technical staff, expenses for stakeholder meetings, support for stakeholder initiatives, and field project activities. Unfortunately, once the initial five-year fund underwritten by the original debt-for-nature swap was expended, no further operating budgets for the program were forthcoming.

Fortunately, various international donors found particularly attractive the integrated nature of the strategy and its vision of consensus building at the local level. These characteristics of the program have helped secure funding for the biosphere reserve, that by 1992 included contributions from Sweden, Holland, the Global Environment Facility, the MacArthur Foundation and the joint efforts of CI and the McDonald's Corporation, the OAS, and UNEP, which together totalled approximately US\$ 12 million.

Costa Rica has now established an “environmental fund”, as a national mechanism that can receive and disburse grants to relevant projects and entities in the country, including the La Amistad Biosphere Reserve program. That said, reliance for the management of one of the nation's most valuable assets upon external grants known to be time-bound, poses an uncertain future, unless met by growing local and national financial involvement.

Risk and uncertainty

On April 22, 1991, an earthquake precipitated the loss of more forest cover in Costa Rica than all the fires, illegal cutting and colonisation in the Talamanca region during the past quarter century. Some analysts suggest that more damage occurred to the Cahuita reef system than that caused by all the contamination from banana plantations. Looking back, in the three and one-half centuries since data have been kept, 137 earthquakes have rocked the region for an average of one major earthquake every 2.25 years. This 1991 quake cost the region its infrastructure, and affected the housing and jobs of its residents. Disaster relief and re-investments in infrastructure absorbed staff, facilities and equipment and budgets from all the region's government agencies, and other stakeholders. As a result, there remains the lingering question: to what extent can policy-makers and others involved in bioregional programs anticipate such dramatic cycles of nature, have prepared contingency plans in place, and adapt management accordingly?

Lessons learned from La Amistad Biosphere Reserve

La Amistad demonstrates that by shifting conservation programs outward in scale from the boundaries of several protected areas to the whole Talamanca bioregion that embraces these protected areas along with other public and private lands located in the matrix of the area, complex challenges arise:

- leadership — lack of mandates for public agencies to provide leadership, cooperate, and deploy personnel and budgets beyond jurisdictional boundaries to catalyse bioregional programs;
- access for stakeholders — lack of access to, and skills for participation by, Indigenous stakeholders;
- funding — lack of continuity in funding for the coordinating mechanism, once international sources were exhausted; and,
- natural disasters — lack of measures to anticipate and respond to nature's cycles.

The La Amistad experience provides several lessons:

First, on establishing a mechanism to coordinate public and private organisations, especially in a context that features a wide array of pre-existing jurisdictions, it may take more than a simple working group charged with fostering dialogue and agreement among involved parties. A government mandated “regional authority” may provide the leadership and strength of commitment and follow through that is needed. Policy inconsistencies, such as budget and personnel restrictions, can undermine the effectiveness of even the best coordinating mechanisms. Stakeholders wish to be assured that the agreements they help forge will in fact be implemented.

Second, where particular stakeholders are at a disadvantage in becoming full partners in the bioregional program, specific steps can be taken to enable them to participate. In this case, the Indigenous communities established their own independent non-governmental organisation, with limited external funding, to help them develop the needed skills and capacity to participate in the program, and at the same time, to promote their own development and conservation agenda. With these skills and activities, the Indigenous community moved towards becoming a serious player in the overall program.

Third, financial support to the overall program needs to be constant. Short-term start-up funds from external sources are extremely valuable to assist the initial phase of work, including personnel, transportation, organisational meetings, and initial field activities. However, other long-term internal and sustainable means of support are needed. With changing priorities of government, program support through public funding may be precarious. Recognising this challenge, Costa Rica took steps to establish a special environment fund through which public and private funds could be deposited, capitalised, and distributed for agreed purposes.

Fourth, even the best bioregional planning and implementation program can be interrupted by catastrophic events — nature’s great cycles — such as the 1991 earthquake in the Talamanca. While not predictable as to date and time, records show that such phenomena are common features in the region. Thus, the question remains open as to how bioregional programs, such as La Amistad, can build into their management program, the measures needed to forecast natural events, and be prepared to assist people and replace infrastructure in the face of disasters that sooner or later are bound to happen.

Finally, as a post script, this experience in Costa Rica had a spill-over effect: The Government of Panama requested similar cooperation from the Organisation of American States and the Conservation International. A strategic plan for the whole Panamanian portion of the Biosphere Reserve, including the needed institutional arrangements was prepared in 1993-1994.

References

- Government of Costa Rica (1990) *Strategy of the institutional development of La Amistad Biosphere Reserve : A Summary*. Government of Costa Rica, San Jose, Costa Rica.
- INBio (1994) *Terminal report from workshops : institutional development for biodiversity management, INBio’s pilot project in Costa Rica*. Instituto Nacional de Biodiversidad, Santo Domingo de Heredia, Costa Rica.
- Saunier, R.E., Meganck, R.A. (1995) (eds) *Conservation of biodiversity and the new regional planning*. Organization of American States and the World Conservation Union, Washington, D.C.
- Saunier, R.E., Castro, J.J., Meganck, R.A. (1992) “Regional Landscape Planning: The “La Amistad” Biosphere Reserve of Costa Rica and Panama.” in *Symposium on biodiversity in managed landscapes : theory and practice*. US Department of Agriculture, Forest Service, Washington, D.C.
- Talamanca. Boletín Informativo, *Reserva de la Biosfera La Amistad* Numero 5, Octubre 1992, San Jose.

WORKSHOP RESULTS: INTERNATIONAL CASE STUDY

Workshop leader: Kenton Miller

Suggested process for involving local communities in bioregional planning design

1. Community to identify own goals and how environment contributes to satisfying these goals.

2. Help communities to obtain more information to fill knowledge gaps (eg education).
3. Contact/operate with upstream and downstream communities.
4. Identify points of conflict/divergent views in community in non-threatening way.
5. Form common vision of bioregion or bioprovince free from jurisdictional confines or traditional roles/affiliations.
6. Identify bioregion/bioprovince or other land area and agree on policies/strategies to apply to this area.
7. Identify administrative boundaries/roles relevant to area, using existing arrangements where possible.
8. Put in place monitoring and review mechanisms.
9. Ensure best land management practice determines formal land use plans.

Economic and social sustainability

1. Land use becomes ecologically sustainable.
2. Bioregions feature homogenous land uses and are therefore useful for land use planning.
3. Natural systems need to be maintained as a prerequisite to biodiversity conservation.
4. Land uses need to be ecologically sustainable.
5. Human communities need to be sustained through ESD.
6. Transfer credits from bioregions that have positive economic benefits to those that require financial support. For example community subsidies for conservation outcomes.
7. Seek consistent sustainable enterprises, uses and activities.