

2 June, 2006

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Standing Committee on Planning and Environment  
ACT Legislative Assembly  
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Dear Hanna,

**RE: CSIRO Submission to the ACT Legislative Assembly's  
Standing Committee on Planning and Environment  
Inquiry into the ACT as a UNESCO Biosphere Reserve**

CSIRO is pleased to provide the following Submission to the Inquiry into the ACT as a UNESCO Biosphere Reserve. The ACT is home to many of CSIRO's staff, so not only do we have a scientific interest in urban sustainability and biosphere reserves, but also a vested concern for the sustainability and quality of life where many of us work and reside.

We believe this Inquiry is quite timely given the active dialogue between CSIRO and the ACT Government around the issue of urban sustainability. We note that the Biosphere Reserve concept as described in the Seville Strategy is one of the very few conservation concepts that recognise the value of urban systems. As such, we suggest there is a unique opportunity for the ACT Government to take leadership in developing one of the few Urban Biosphere Reserves in the world and the only one in a planned city.

CSIRO has a growing portfolio of urban research projects in the ACT and is interested in the notion of investigating Canberra as a living laboratory for understanding urban ecosystems and related issues of sustainability.

The growing synergy among these collective initiatives between CSIRO and the ACT Government auger well for the establishment of a significant long-term collaborative research effort on Canberra's urban environment.

Thank you for the opportunity to present this submission to the Inquiry.

Yours sincerely,

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ACT Legislative Assembly's Standing  
Committee on Planning and Environment

# ***Inquiry into the ACT as a UNESCO Biosphere Reserve***

## **CSIRO Submission**

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**June 2006**

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## Overview of the Issue

In Australia, twelve biosphere reserves (BRs) were added to the World Network of Biosphere Reserves (WNBR) between 1977 and 1982. That initial flurry of activity has been followed by twenty-five years of limited interest and development in BRs in this country. The lack of an overarching Biosphere Reserve Program at a national level caused the designations to lose relevance, for instance by not keeping pace with the changes that were occurring at an international level within the WNBR, such as the recommendations of the Seville and Seville +5 Biosphere Reserve Conferences (1995 and 2000 respectively). The current government-led model for Australian BRs has focussed on passive, science based goals tied to the protected area network of national parks and nature reserves, rather than integrated cross-disciplinary prerogatives, as successful mark II BRs now mandate. However, exceptions do exist, for example the Bookmark and Fitzgerald BRs, have had greater success due to i) financial input from government and industry partners and ii) exceptionally dedicated volunteers (champions), respectively.

The recent designations of two more Australian BRs, Mornington Peninsula Western Port and Barkindji, represent the more recent thinking behind biosphere reserves in Australia, re-directing focus on the intended cross-disciplinary prerogatives akin to their successful WNBR affiliates. These are driven by local community in partnership with local councils and state government toward a coordinated bioregional planning and management vision. For its size and bio-geographical diversity, it would appear Australia still has too few BRs.

Regions throughout Australia have been especially vocal about the need to provide more opportunities for community partnerships. This call has been partially answered through an institutional focus on the Australian Government's Natural Heritage Trust (NHT) Program, particularly Rivercare, Coastcare, Landcare and Bushcare. While important for many conservation, monitoring, and rehabilitation purposes, the 'care' programs do not represent a comprehensive attempt at locally based sustainable development around the three pillars of social, economic and environmental sustainability: this is the domain of biosphere reserves. With such significant public education, involvement, funding and publicised success associated with these 'care' programs, it is not surprising that BRs, perceived as a competitor to NHT, remain rather obscure (Matysek, Stratford et al. 2006).

We believe the best opportunity for the ACT is to pursue the idea of an 'urban' biosphere reserve. There is growing interest in this idea with many cities around the world facing similar challenges to the ACT region in trying to balance environmental conservation with economic and social development. We note the BR concept as outlined in the Seville Strategy is one of the very few conservation concepts that recognise the value of urban systems. A recent conference held at the New York Academy of Sciences in October 2004 has examined the flexibility of the BR concept for urban application and determined that it is generally compatible with the UNESCO BR intent (Alfsen-Norodom 2004).

## Addressing the Terms of Reference

### i) management of the nomination process

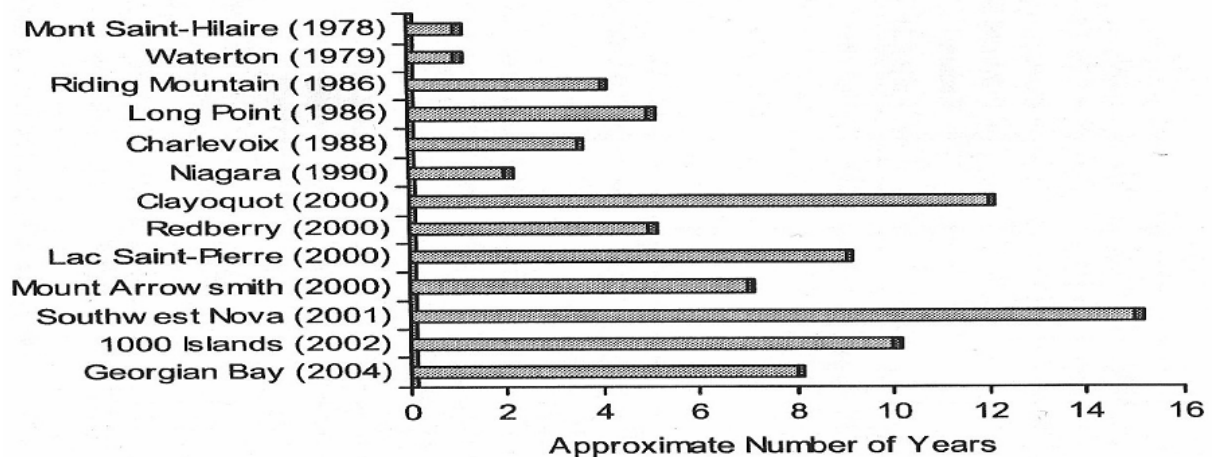
### vi) the timeframe and viability of the proposed nomination

Here we address two items of the 'terms of reference' together as they both deal with related aspects of the nomination process – **timeframe**, **management** and **viability**. We

will start with a discussion of timeframe, as this will influence the suitability and selection of appropriate management structures and the overall viability of the nomination process.

All biosphere reserves require community participation to be eligible for nomination. As we can readily attest, based on CSIRO's experience with the development of regional sustainability partnerships throughout Australia, it takes considerable time and effort to build the kinds of coordinating frameworks and community involvement required to support such endeavours. This point has been stressed by Ravindra (2004) in the context of Canadian BRs (see Figure 1). Ravindra's work shows the time it takes to move from stakeholder acceptance of the BR idea through to UNESCO designation of BR status. Of particular note, is that in recent times (designations from 2000 onwards) this timeframe is growing – 7 designations between 5 to 15 years with an average of 9.5 years.

**Figure 1: Approximate time in Canadian BRs between acceptance of biosphere reserve idea and designation by UNESCO following completion of the BR nomination process (Ravindra 2004).**



Clearly the commitment that is needed and timeframes involved to pursue BR nomination are not something to be underestimated or taken lightly. **We would suggest that a ‘no regrets’ approach is the best way for the ACT to proceed.** That is, to see value and benefit in the establishment of the coordinating frameworks and community liaison for pursuing urban sustainability objectives, irrespective of the success of BR nomination. This is the approach that has been adopted in all Canadian BRs, whereby the proposed BR works towards the goals set out in the nomination, fully establishing a BR in all but name, prior to submission to UNESCO. In this way, the work of the BR stakeholders is towards a set of mutually agreed regional sustainability goals rather than just designation. **Given the Canadian experience, Canberra’s centenary celebrations in 2013, just seven years away, would be a realistic timeframe for a well considered nomination.**

Organising and managing the nomination process should be based upon, or at least working towards, the eventual model that would be used to organise and manage the BR if nomination is successful. In a review of BR governance, Francis (2004) has identified three common models worthy of consideration and these are now summarised as follows:

- ***Administered through existing organisation(s)*** that are already exercising responsibilities for certain functions, or for a geographic component, of the BR.

The advantage is the availability of staff time and other support. A disadvantage is the tendency to ignore activities falling outside the organisation(s) central mandate.

- ***Steering committee representing stakeholder organisation's*** in the BR. The advantage is representation from the main stakeholders within a consensus driven decision-making framework. The disadvantage is some participants may require approval from their own organisation for decisions of the committee, especially if funding is called for, resulting in delays or vetoes outside the committee's control.
- ***Incorporate as a non-profit association with charitable status.*** This has the advantage of allowing the organisation to plan and implement its own program and activities. A disadvantage is constant fund-raising may become an overriding preoccupation while agency and other support falls, leading to an organisation that is driven more by the availability of funding than a focus on strategic BR priorities.

In Canada, the non-profit association has been the most popular management model, and perhaps akin in many respects, to the incorporated bodies responsible for community-based natural resource management in Australia (e.g. Landcare, Bushcare, Coastcare etc.).

Based on CSIRO's experience, a 'champion' organisation and set of individuals will be required to drive the nomination process. The ACT Government is in a good position to initiate this process, but ultimately the community needs to take ownership over the process. The Australian National University Centre for UNESCO has maintained a keen interest in BRs over the years, and provides an excellent non-government headquarters for driving the ACT BR proposal. Through the Centre's community-based networks and links to other universities and research institutions, along with its accessibility to other interested parties, a platform exists for inserting the BR nomination process into the community forum. While the ACT Government would clearly have responsibility for much of the stewardship of the proposed BR, our understanding of the Mornington Peninsula Western Port BR where a single Shire has taken on a major administrative role is that they contribute vastly both in-kind and financially, while other partners participate in name only. **Community ownership and custodianship must thus be paramount.**

With regard to the viability of the proposed nomination, this is difficult to determine without knowing the underlying motivations and the nomination strategy to be employed. What we would suggest, however, is that **the proposed nomination is unlikely to be successful if it is based on ACT administrative rather than ecological boundaries.**

We would recommend that the Committee consider the Upper Murrumbidgee Basin (UMB), which would be the logical landscape boundary for considering water as an integrator of land use and land management decisions within the region. Key directions from the Seville Conferences (see Appendix A) stress that BRs include a wide variety of environmental, biological, economic and cultural situations, going from largely undisturbed regions and spreading towards cities. We suggest that a BR including the ACT would apply this concept, but in a non-conventional 'reverse' manner, with the core comprising the urban rather than the protected areas. **We would see a BR for the ACT region as being complementary to, but significantly different from, such regional and thematic networks of existing reserves such as comprise the Australian Alps National Parks of which Namadgi National Park is an important component.**

From the perspective of Canberra's urban ecological footprint, the National Capital Region boundaries previously utilised for State of the Environment (SoE) reporting purposes would serve to capture many of the resource demands and flows that Canberra exerts on its surrounding region defined by the ACT, Victorian Border, and South Coast.

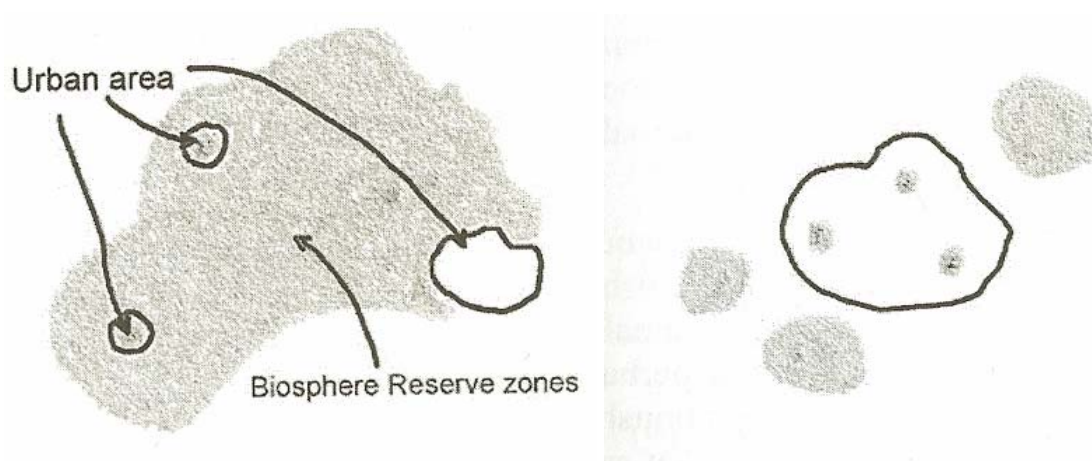
It is also worth noting that of the 440 biosphere reserves in the world network, only ten of these include cities or are adjacent to major urban areas – the Mornington Peninsula Western Port BR is one of these (Dogse 2004). With urbanisation now a major driver of global environmental change, **there is growing interest in urban-oriented biosphere reserves, but few successful precedents**, and only a handful close to major urban areas.

## ii) status and possible boundaries of the core, transition and buffer zones

Biosphere reserves are typically based on a concentric zonation system with core, buffer and transition areas. Deliberation on the location of these areas would be an essential part of community consultation during the process of garnering BR support and buy-in.

We would suggest, however, that there is little benefit in a conventional BR focus with Namadgi National Park as the core, surrounding agricultural and peri-urban areas as the buffer, and Canberra with its urban development and industry as the transition. Instead, we would recommend the reverse, a non-conventional approach whereby **Canberra is part of the core of what could be known as the National Capital Urban Biosphere Region (NCUBR), promoting sustainable urban development, enhanced human well-being and quality of life, and a reduction in Canberra's ecological footprint.** Dogse (2004) has developed four possible categories of urban BRs. Of these we have selected two we believe hold the most promise for the ACT, presented in Figure 2 below.

**Figure 2: Categories of urban BRs – urban region (left) and green cluster (right) (Dogse 2004).**



There are many documented cases of public disharmony at the suggestion of creating 'reserves' in lands already zoned for specific uses, as BRs are often unheard of, or misunderstood in the general public. The potential for a backlash against a BR proposal must be recognised, and thus, discussions on 'boundaries' and 'zoning' must be accompanied with the necessary effort for public consultation and education on facets of the BR concept, particularly emphasising their voluntary and non-legal 'reserve' nature.

### iii) funding needs and sources

No matter how successful an individual biosphere reserve may be (as in the cases of Bookmark and Fitzgerald River BRs), it will fail as an example or model if a national framework is not in place to share information and assist in promoting such efforts. Without a minimal contribution from the Commonwealth Government (financial and in-kind), it is extremely difficult for a comprehensive national BR program to be effective.

Our suggestion would be to take a ‘no regrets’ approach to the proposed BR nomination and to look to other similar or synergistic models of funding and management that could assist with achieving BR nomination. **The Long Term Ecological Research (LTER) network of ecological research sites in the USA may be one such model.** It fits well with the BR objectives of research, monitoring, education and training, but would allow the ACT to connect with another international network and source of potential funding. At present, there are two urban LTER’s – Phoenix and Baltimore – established in 1997. CSIRO has good links with both of these initiatives and has been encouraged to develop a comparable Australian Urban LTER of which Canberra is one city we are considering.

In our view, it may be difficult to attract the funding and support for an ACT BR if a conventional approach to the BR concept and zonation is taken. We firmly believe that with growing Federal interest in urban sustainability as evidenced by the Sustainable Cities 2025 recent Inquiry and current Inquiry into a Sustainability Charter, that the time might be right for an Urban BR nomination. The Commonwealth Department of Environment and Heritage (DEH) would be a logical place to look for funding as they have interest in the LTER concept and responsibility for Australian BRs. However, Canberra also has perhaps the highest density of researchers (per capita) of any Australian city, and thus coupled with industry participation, cash contributions from regional partners may be a good avenue of fund raising to supplement whatever could be sourced at territory and federal levels. Of course, the value proposition would need to be there, and we believe a long-term collaborative research focus on urban Canberra and its region will provide this.

### iv) how local stakeholders should be engaged in planning, education and training programs, and research and monitoring activities

**There is no single approach for engaging all the facets of a biosphere reserve, as by its nature, it is a model for organisational flexibility.** Central however, is a view of the biosphere reserve as a coordinating framework within which protected areas, town planners, resources users, local residents and others – all variously constrained by inflexibility in institutions, societal structure or tradition – can work together across boundaries to solve complex, multi-faceted problems (Ravindra 2004). In seeking a wide contingent of civil society stakeholders as well as government partners, the proposed BR must garner support to establish education and training programs, research and monitoring activities. Such a task would best be directed through an organisation outside of government, in concert with non-government, industry, education and other partners.

Without being too prescriptive, there are several models of stakeholder engagement that could be looked at – including the LTER Networks in the USA – but also drawing on the experiences of cities such as New York (Solecki and Rosenzweig 2004), Cape Town (Stanvliet et al 2004), Rome (Bonnes et al 2004) and São Paulo (Victor et al 2004), who have all put considerable time and effort into examining the UNESCO BR concept and

its application in an urban setting. This experience should be drawn on and analysed to determine what has worked and what hasn't in relation to planning, education, training, research and monitoring. While there are also models from Australian natural resource management that may be useful to look at as well, we would argue that very few explicitly address issues of urbanisation and urban sustainability, and are generally not as advanced as many of the integrated urban science partnerships of our international counterparts.

#### **v) communication strategies and activities**

UNESCO has been encouraging biosphere reserve coordinators to develop management or coordination plans to increase their effectiveness. In countries such as Australia and Canada, where coordinators have no authority over land use, all biosphere reserve activities depend on cooperation. For this reason, the term Cooperation Plan is more appropriate, where partnership and participation are emphasised. The plan is developed for the residents, businesses and other organisations and agencies of the biosphere reserve. In it the goals for the three functions of the biosphere reserve – conservation, development and logistic – reflect what is appropriate to meet local BR needs and desires.

This cooperative approach encourages innovation, fosters pride in local achievements, and creates a desire to share these experiences. Most BRs across Canada have created local Cooperation Plans. A cooperation plan provides a starting point or framework for biosphere-related activities that partners in a biosphere region choose to engage in. For example, discussion in the Niagara Escarpment biosphere region (Ontario, Canada) has centred on how a plan can be carried out given the complexity of the Niagara Escarpment BR due to its large scale, population, and diversity of stakeholders. Their cooperation plan is accessible at [http://www.escarpment.org/biosphere/nebr\\_cooperation.htm](http://www.escarpment.org/biosphere/nebr_cooperation.htm).

#### **vii) other relevant matters**

An academic and general interest champion group for biospheres, urban or otherwise, is absent in Australia at a national level. In the Canadian experience, this has been provided through a student and community group (including a website), the Canadian Biosphere Research Network (CBRN). CBRN is a network for researchers conducting both research 'on' (e.g., what is the significance or practical applications of the concept?) and 'in' (research that takes place in) BRs in Canada. There is no equivalent Australian champion.

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## Appendix A

### Key directions from ‘The Vision from Seville for the 21<sup>st</sup> Century’

1. Strengthen the contribution that biosphere reserves make to the implementation of international agreements promoting conservation and sustainable development, especially to the Convention on Biological Diversity and other agreements, such as those on climate change, desertification and forests.
2. Develop biosphere reserves that include a wide variety of environmental, biological, economic and cultural situations, going from largely undisturbed regions and spreading towards cities. There is a particular potential and need to apply the biosphere reserve concept in the coastal and marine environment.
3. Strengthen the emerging regional, inter-regional and thematic networks of biosphere reserves as components within the World Network of Biosphere Reserves.
4. Reinforce scientific research, monitoring, training and education in biosphere reserves, since conservation and the rational use of resources in these areas require a sound base in the natural and social sciences, as well as the humanities. This need is particularly acute in countries where biosphere reserves lack human and financial resources, and should receive priority attention.
5. Ensure that all zones of biosphere reserves contribute appropriately to conservation, sustainable development and scientific understanding.
6. Extend the transition area to embrace large areas suitable for approaches, such as ecosystem management, and use biosphere reserves to explore and demonstrate approaches to sustainable development at the regional scale. For this, more attention should be given to the transition area.
7. Reflect more fully the human dimensions of biosphere reserves. Connections should be made between cultural and biological diversity. Traditional knowledge and genetic resources should be conserved, and their role in sustainable development should be recognized and encouraged.
8. Promote the management of each biosphere reserve essentially as a "pact" between the local community and society, as a whole. Management should be open, evolving and adaptive. Such an approach will help ensure that biosphere reserves – and their local communities – are better placed to respond to external political, economic and social pressures.
9. Bring together all interested groups and sectors in a partnership approach to biosphere reserves, both at site and network levels. Information should flow freely among all concerned.
10. Invest in the future. Biosphere reserves should be used to further our understanding of humanity's relationship with the natural world, through programmes of public awareness, information, formal and informal education, based on a long-term, inter-generational perspective.

Source: UNESCO 1996



Attachments





# The UNESCO Biosphere Reserve Program in Australia: constraints and opportunities for localized sustainable development

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*Since their creation under the auspices of the United Nations Educational, Scientific and Cultural Organization (UNESCO) Man and the Biosphere (MAB) Program in 1976, biosphere reserves have provided an international framework for linking protected areas with their associated working landscapes. In Australia, twelve biosphere reserves were added to the World Network between 1977 and 1982. That initial flurry of activity has been followed by twenty-five years of limited interest and development in biosphere reserves in this country, although evidence suggests that new energies are being directed to it. After sketching the origins of the biosphere reserve concept and its central tenets, we explore those environmental, cultural and institutional factors that may be promoting renewed interest in the program. We then review the initial implementation and current status of the Australian Biosphere Reserve Program. Factors supporting the limited success that exists in the program in Australia are highlighted, and the new form of biosphere reserve is illustrated with reference to Australia's recent and only*

*Avec leur création en 1976 par l'Organisation des Nations Unies pour l'éducation, la science et la culture (UNESCO) et le Programme l'Homme et la Biosphère (MAB), les réserves de biosphère ont permis de mettre en place un cadre international pour établir un lien entre les zones protégées et les paysages humanisés auxquels elles sont associées. En Australie, douze réserves de biosphère se sont ajoutées au Réseau mondial entre 1977 et 1982. Suite à cette forte poussée des activités au tout début, un faible d'intérêt a été accordé aux réserves de biosphère qui ont peu évolué dans ce pays au cours des vingt-cinq années qui ont suivi. Pourtant, selon les dernières informations obtenues, elles connaissent un regain de vigueur. Nous présentons d'abord un aperçu du concept de la réserve de biosphère et des grands principes qui le sous-tendent et étudions les facteurs environnementaux, culturels et institutionnels influents qui suscitent un nouvel intérêt pour le Programme. Par la suite, nous évaluons la mise en œuvre initiale et l'état actuel du Programme de l'Australie sur les réserves de biosphère. Les facteurs qui soutiennent la réussite mitigée du Programme de l'Australie sont identifiés et*

*urban biosphere reserve, at the Mornington Peninsula, in the state of Victoria. We speculate that prospects for biosphere reserves in Australia are brighter because of the provision for biosphere reserves under the Commonwealth of Australia's Environment Protection and Biodiversity Conservation Act (DEH 1999), the conceptual relevance of the biosphere reserve to bioregional and catchment management more generally and the continued success of existing model biosphere reserves.*

*la nouvelle forme de réserve de la biosphère est illustrée par une présentation de la seule réserve de biosphère urbaine en Australie, située sur la péninsule Mornington dans l'état de Victoria. Nous émettons l'hypothèse que l'avenir des réserves de biosphère en Australie est plus brillant grâce à: la disposition en matière de réserves de biosphère dans la Loi australienne de 1999 sur la protection de l'environnement et la conservation de la biodiversité; de façon plus générale, la pertinence conceptuelle de la réserve de biosphère pour la gestion biorégionale et hydrographique; et la réussite soutenue des réserves de biosphère-type existantes.*

## Introduction

Sustainable development in action requires areas designed and managed to represent and protect biodiversity, including ecological processes, communities, species and gene pools, as they are central to the maintenance of ecosystem function and landscape integrity at a bioregional scale. When applied successfully, three primary functions of all biosphere reserves direct a holistic philosophy towards landscape scale human/environment interactions. These functions are biodiversity conservation, regional development and scientific research/monitoring, which are integrated via interdisciplinary approaches to the management of 'reserves'.<sup>1</sup> In general terms, these functions are also underpinned by a series of interrelated objectives including local community participation, integrated land use management, *in situ* conservation and restoration, regional planning and development, and environmental education and training (Batisse 1997; Brunckhorst 2000). Yet in practice and at various scales, the establishment of conservation reserves has generally been opportunistic and *ad hoc*. Despite these tendencies, the need for robust systems of bioregional concern, planning and management continues, as does the imperative to involve in such systems multistakeholder groups, fostering co-operative programs to address ecological, cultural and economic

issues at the landscape scale (Brunckhorst and Bridgewater 1995).

Biosphere reserves are a model that can facilitate bioregional protection. They are areas or *trans*-boundary regions of terrestrial and/or marine environments that are internationally designated by United Nations Educational, Scientific and Cultural Organization (UNESCO) to reconcile biodiversity conservation and the sustainable use of land and seascapes. They provide a flexible framework to link many of the world's outstanding conservation areas, centres for basic and applied ecosystem research and sites for demonstrating sustainable economic uses. Biosphere reserves are designed to serve as foci to demonstrate the benefits of co-operative relationships among policy-makers, scientists, resource managers and local people, and to marshal technical and financial resources from local, national and international sources to solve problems (Krugman and Gregg 1988). In practice, the story is somewhat different, and this matter is of significance because it highlights larger questions about the ongoing challenges that characterise efforts to implement through international governance various mechanisms for sustainability planning at various scales of endeavour. Such matters are central to our concerns in this paper. The key arguments being developed in the paper are that biosphere reserves provide a valuable tool to integrate multiple social, environmental and economic objectives at a local scale and that the program in Australia ought to be more actively and creatively fostered.

In the following, we first outline the origins and foundational principles of the biosphere reserve,

<sup>1</sup> The biosphere reserve concept incorporates an expansive orientation and concern for an *open* system of protected area management as opposed to the current situation of *closed* protected areas, fragmented from the broader landscape. Hence, 'reserves' is used here in an alternative sense.

emphasizing its importance in terms of bioregionalism and regional planning, and then elaborate on the initial implementation and current status of the Australian Biosphere Reserve Program. Factors perpetuating the limited success of the program in Australia are highlighted. We then examine a range of environmental, cultural and institutional factors that appear to be promoting renewed interest in the program. In particular, we draw attention to the role of the MAB Urban Forum in this renewal process and make reference to Australia's recent and only urban biosphere reserve, at the Mornington Peninsula–Western Port Bay, in the state of Victoria.

This paper does not intend to address the suite of natural resource management and bioregional or landscape management and planning tools available. The Biosphere Reserve Program is the program of focus and the challenges and opportunities around it. An intensive consideration of indigenous concerns as they relate to the Biosphere Reserve Program is also outside the scope of this paper; however, some discussion has been included where possible.

## Origins and Features of the Biosphere Reserve

The idea of the biosphere reserve emerged from the Man and the Biosphere (MAB) Program. MAB was initiated through a resolution passed by the Biosphere Conference convened in Paris by UNESCO in 1968 as an intergovernmental program of research to develop an interdisciplinary scientific basis for the rational use and conservation of the resources of the biosphere (Batisse 1982). UNESCO endorsed fourteen broad themes for interdisciplinary research, and by the mid-1970s, this innovative program was launched. Starting in 1976, biosphere reserves grew out of the MAB theme project 8, 'Conservation of Natural Areas and the Genetic Material They Contain'.

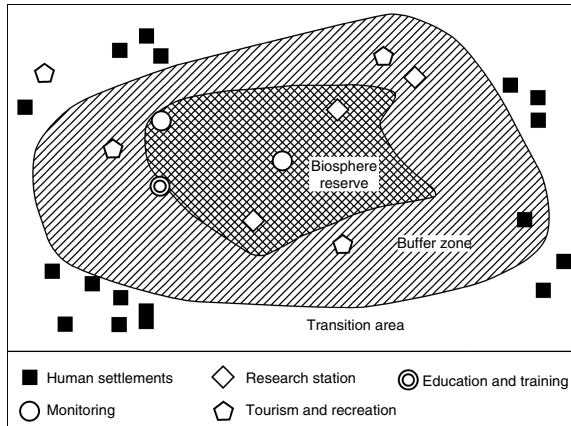
The Biosphere Conference represented the first assertion, in an intergovernmental context, that the conservation of environmental resources might be achieved alongside their use for human benefit. The idea of the Biosphere Reserve World Network was designed to include existing reserves, at the same time as systematically extending protection to many plant and animal genetic resources that were not covered by other

mechanisms. The justification for the World Network was the need to counteract increasing loss of living species, the lack of knowledge of how to conserve them and the inadequacies of existing approaches to nature conservation (Polunin 1982).

In 1984, UNESCO established an External Scientific Advisory Panel to review the MAB Program and advise on its future directions. The External Scientific Advisory Panel contributed to a shift in MAB's focus from the conservation of ecosystems to a focus on ecologically sustainable development, environmental monitoring, and 'harmony' between human and natural systems. During the mid-1980s, more weight was placed on environmental and biosphere changes caused by human activities (UNESCO/MAB 1987). In other words, the idea evolved from 'Man and the Biosphere' to 'Man in the Biosphere'. Given this shift in emphasis, the purpose of the World Network changed such that members attempted to develop local knowledge, skills and attitudes needed to integrate conservation and economic uses of ecosystems; to serve as hubs for regional co-operation on scientific and educational activities; and to address multiregional and global environmental problems by sharing information (Krugman and Gregg 1988). Later, the Statutory Framework for the World Network of Biosphere Reserves and the Seville Strategy for Biosphere Reserves (UNESCO 2004) were used to clarify and disseminate the purposes and requirements of the network for individual reserves and of the network as a whole.

A concentric structure for biosphere reserves was developed that typifies the ideal (Figure 1). A core area forms the centre and is an area (or set of multiple areas) meant to secure long-term protection from development, ideally by legal means. One or more buffer zones surround the core, and in these, activities compatible with the objectives of the core may be carried out. An outer transition area, also referred to as the zone of co-operation, is devoted to the promotion and practice of sustainable development and may include diverse land uses and activities.

Beyond these considerations of internal configuration, biosphere reserves also have particular characteristics that underscore how they relate to the World Network. For instance, reserves may comprise terrestrial and/or marine areas that



**Figure 1**  
The ideal biosphere reserve

meet one or more of the following criteria: (i) representative examples of natural biological units (biomes); (ii) unique communities or areas with unusual natural features of scientific and/or aesthetic interests (areas may also contain some unique features; thus mixed characteristics are possible); (iii) examples of harmonious areas resulting from gradual human modification or traditional patterns of land use; and/or (d) examples of damaged or degraded ecosystems capable of being managed to demonstrate human impact but able to be restored to a more natural state.

## Thinking from Biosphere Reserve to Bioregion and Landscape

The criteria for biosphere reserves above make the model distinct from protected-area programs through embrace of diverse landscape types and uses. Landscapes link multiple spatial and temporal scales of biodiversity with human uses and socioeconomic imperatives (Brunckhorst 2001). However, human systems for environmental management do not abide by these spatial scales, tending to focus on productive units that are often politically determined, e.g., forestry leases or local council shires. However, sustainability is often most usefully operationalized at regional levels because regions are often defined by land use or biogeographical similarities which, in many cases, render them equivalent in scale to catchments—the level at which many natural

resources are derived (Barnett 2001). In addition, there is also a growing trend among many design professionals to work from local to regional scales, via neighbourhood and community-level planning and design. In this regard, understanding how biosphere reserves work as mechanisms to advance sustainability becomes especially important because the landscape scale is a highly significant scale of human interaction with the environment, but one that is poorly understood in terms of practices of governance. As Wells (1998, 832) notes, 'the dynamics within and between institutional actors influencing biodiversity conservation are complex, variable and insufficiently understood, somewhat like biodiversity itself'.

The challenge for bioregional planning is thus related to a larger question: how can the elements of wild nature—its species, genetic traits, populations, habitats and ecosystems—be maintained in landscapes that also need to produce material goods, environmental services and the many cultural, aesthetic and spiritual benefits that people everywhere want? (Phillips 1997). Such 'how' questions require attention to issues of governance and the resolution of conflicts over values. The answer proffered by bioregional planners is to extend the scale of conservation effort from protected areas themselves—even from an expanded notion of a protected area—to cover whole ecosystems and landscapes (Brunckhorst 2000, 2001).

## Biosphere Reserves and Urban Environments

Conscious of the promise of expanding the idea and scope of protected areas, sometime ago Davis and Drake (1983) suggested that the Biosphere Reserve Program's acknowledgement of resource use as well as biodiversity conservation may help stakeholders resolve conflicts when strict control over large areas is not feasible. Urban environments represent just such cases, and it is in this context that the biosphere reserve system of core, buffer and transition zones may best facilitate integrated and participatory strategies for bioregional and landscape planning and management (Douglas and Box 2000). Indeed, a limited number of biosphere reserves have been established just outside major cities in various locations around the globe. Examples

include the green belts of Rio de Janeiro and Sao Paulo (Mata Atlantica Biosphere Reserve) and the Cerrado Biosphere Reserve of Brazilia (Brazil), the Cordillera Volcanica Central Biosphere Reserve outside San José (Costa Rica), the Niagara Escarpment Biosphere Reserve near Toronto (Canada) and the Alto Manzanares Biosphere Reserve near Madrid (Spain).

Recognizing the potential of urban environments in the system of biosphere reserves, in 2000 UNESCO authorized the establishment of the MAB *ad hoc* Working Group to Explore the Application of the Biosphere Reserve Concept to Urban Areas and their Hinterlands (otherwise known as the MAB Urban Group). The objectives of the MAB Urban Group have been fourfold. First is to identify contributions that the biosphere reserve idea has made or could make in urban planning and management, including in the context of the Convention on Biological Diversity with its focus on the ecosystem approach. Second is to examine whether there is or should be a place for urban areas and cities in the World Network of Biosphere Reserves beyond transition areas. Third is to explore alternative ways and means of recognizing selected cities, or parts thereof, as sites that exemplify the Biosphere Reserve model. Fourth is to stimulate discussion within the MAB Program, and among relevant partner institutions and organizations, on the development of an agenda for possible future MAB activities in this field (UNESCO/MAB 2003). The MAB Urban Group is refining the means of collaboration among those communities that have biosphere reserves and an interest in urban/peri-urban issues. It is exploring options for whether and how best to recognize efforts towards more sustainable urban development and management, and determining the elements of a possible interdisciplinary research agenda on biosphere reserves in relation to urban areas and their hinterlands.

## The Biosphere Reserve Program in Australia

### The urban continent

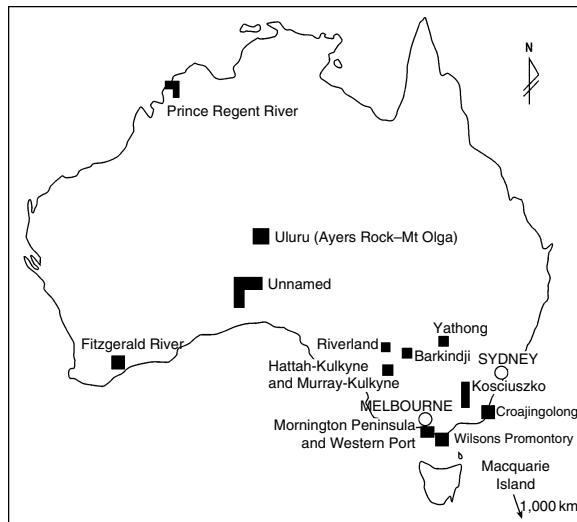
Australia is one of the most urbanized countries in the world, with more than 85 percent of the population residing in major towns or cities. All

local and state governments, as well as the Commonwealth, are explicitly positioned to pursue the goals of sustainability in these and other locations. Perhaps as a result, the interrelationships among natural, rural and urban areas are gaining greater appreciation and attention via metaphors such as the 'ecological footprint', which has highlighted the dependence of the human ecosystem on the biosphere (Wackernagel and Rees 1995). The ecological footprint of the average Australian is around 6 ha, well above the global average of 1.8 ha (Barnett 2001). The impact of Australia's urban environments extends well beyond city limits.

The early stages of the Biosphere Reserve Program in Australia did not focus on urban concerns. Rather, they focused on identifying the mechanisms for a network for global environmental monitoring, the preservation of key examples of the world's distinctive ecosystems and the conservation of genetic diversity contained within those systems (Kriwoken 1989). It was under such criteria that most of Australia's biosphere reserves were established, and as a reflection of these goals, each was individually well chosen. Twelve biosphere reserves were added to the UNESCO World Network between 1977 and 1982 in all states except Queensland (Figure 2). However, a lack of capacity (or unwillingness) to keep pace with international refinements to the program has contributed to Australia's existing biosphere reserves becoming moribund. A lack of currency in Australia's biosphere reserves has meant that little information exists, and thus biosphere reserves are not taken particularly seriously in policy domains. For example, many government officials in natural resource departments, who ought to be major stewards of the program, display little knowledge or regard for either the approach or its implementation (Copson 2003).

### Highlights in the governance of biosphere reserves

The area of biosphere reserves nationally represents 1.35 percent of Australia's landmass, or 5,692,505 ha. Nine of Australia's twelve biosphere reserves are almost entirely protected areas, managed by government conservation agencies—in eight cases by state authorities and in one case



**Figure 2**  
Biosphere reserve designations in Australia

by the Commonwealth (Table 1). The other three biosphere reserves have a range of governance types and better represent the intended arrangement of biosphere reserve governance. For example, an area of the Unnamed Conservation Park Biosphere Reserve (21,000 km<sup>2</sup>) was handed back to the Maralinga Tjarutja and Pila Nguru Aboriginal people in August 2004. The Conservation Park and biosphere reserve will now be managed under a joint agreement with the traditional owners. Five Aboriginal rangers will provide ongoing environmental management, take care of sensitive cultural sites and assist in a biological survey of the park and biosphere reserve (Muldoon 2004).

Inconsistent strategies and legislative protection measures across agencies in the management of existing Australian MAB reserves posed a significant hindrance to their effectiveness until 1999. At that time, the Commonwealth Environment Protection and Biodiversity Conservation (EPBC) Act was passed, providing for biosphere reserves under legislative protection. The EPBC Act states that the Commonwealth may formulate management plans for any biosphere reserve within Commonwealth areas and may co-operate with states and territories to prepare management plans for biosphere reserves within states or territories. Such plans must be consistent with the Australian Biosphere Reserve Management Principles, which

are set out in the EPBC Regulations. The act specifies that the Commonwealth may give financial assistance for the protection or conservation of biosphere reserves (Environment Australia 2002).

While the EPBC Act has been important for biosphere reserves, a number of other events have been significant in their evolution and in the refinement of the program in Australia. First, in 1983, Davis and Drake wrote an influential publication entitled *Australian Biosphere Reserves: Conserving Ecological Diversity*, providing a synthesis and description of the Biosphere Reserve Program and individual reserves in Australia. Then, in 1984, the *Minsk Action Plan for Biosphere Reserves* was drafted to address how biosphere reserves at the national level could develop in line with the changing international objectives of the program. After the Minsk conference, in 1985, a Scientific Advisory Panel for Biosphere Reserves was created to review the status of declared sites.

Approximately six years later, during 1992/1993, Australia initiated a strategy for its Biosphere Reserve Program, entitled *Biosphere Reserves in Australia: A Strategy for the Future* (Parker 1993b), which responded to recommendations from the Minsk Plan. The strategy included a list of necessary actions required to fulfil the requirements of the Biosphere Reserve Program. At that time, a second 'Review of Australian Biosphere Reserves by the Scientific Advisory Panel for Biosphere Reserves' was undertaken, and the Australian Nature Conservation Agency and the Commonwealth Department of Foreign Affairs and Trade agreed to apply a joint approach to develop two model biosphere reserves. The chosen reserves were Dangalli Conservation Park (then Bookmark Biosphere Reserve, now Riverland Biosphere Reserve)<sup>2</sup> in South Australia and the Fitzgerald River Biosphere Reserve in Western Australia. These model programs were to serve as

<sup>2</sup> In 1995, Dangalli Conservation Park was extended through purchase of the Calperum pastoral lease by the Commonwealth in partnership with a private party and was then renamed the Bookmark Biosphere Reserve. More significant, however, was the incorporation in its management of provisions for biosphere reserves under the Environment Protection and Biodiversity Conservation Act 1999 (chapter 5/part 15/division 3 and schedule 7). In 2004, Bookmark Biosphere Reserve was renamed Riverland Biosphere Reserve to be more representative of the Riverland region and identity.

**Table 1**

Australian Biosphere Reserve details

Name	Established	Area (ha)	Land tenure	Administrative authority
Ayers Rock–Mount Olga National Park (NT)	1977	132,550	Crown land	National: Environment Australia (Parks Australia North) Local: Board of Management
Riverland Biosphere Reserve (SA)	1977, extension 1995	900,000	State conservation reserves; game and forestry reserves; pastoral leases; private land	Under review
Croajingolong National Park (VIC)	1977	101,000	Public land (state-owned)	State Government; statutory co-operation between New South Wales National Parks and Wildlife Service and Parks Victoria
Fitzgerald River National Park (WA)	1978	329,039	Crown land	Western Australian Department of Conservation and Land Management on behalf of the Conservation Commission of Western Australia
Hattah–Kulkyne and Murray–Kulkyne National Park (SA)	1981	51,500 (5,680 core)	Public land (state-owned)	Parks Victoria (Department of Sustainability and Environment)
Kosciuszko National Park (NSW)	1977	625,525	Crown land	New South Wales National Parks and Wildlife Service
Macquarie Island World Heritage Area (TAS)	1977	12,785	Crown land	Tasmanian Department of Primary Industries, Water and Environment
Mornington Peninsula–Western Port Biosphere Reserve (VIC)	2002	214,200 (9,300 core)	Crown land Public land Private land	The Mornington Peninsula–Western Port Biosphere Reserve Foundation
Prince Regent River Nature Reserve (WA)	1977	633,825	Public land	Western Australian Department of Conservation and Land Management
Delisted South-West National Park (TAS)	1977	403,240	Crown land but partly subject to the rights of the Hydro Tasmania	The Tasmanian Wilderness World Heritage Area Ministerial Council (overarching administrative authority); Department of Primary Industries, Water and Environment
Unnamed Conservation Reserve (SA)	1977	2,132,600	State Government reserve	Department of Environment and Heritage South Australia and Maralinga Tjarutja and Pila Nguru Aboriginal people
Wilson's Promontory Marine Park and Marine Reserve (VIC)	1982	49,000	State-owned (public) land	Parks Victoria reporting to the state Government of Victoria
Yathong National Park (NSW)	1977	107,241	Crown land	New South Wales National Parks and Wildlife Service
Total		5,692,505 ha		

leading demonstration projects to showcase the value of various concepts embedded in the Biosphere Reserve Program. Relatedly, they were to be models on whose strengths and resources managers of other biosphere reserves could draw as they tailored the Biosphere Reserve Action Plan to suit the needs and potential of individual reserves (Parker 1993a). Some years on, it is clear that the governance systems for the model reserves have enabled staff to meet more criteria of the Biosphere Reserve Program than is the case at other declared sites, which have continued to be managed and promoted as national parks (core areas of biosphere reserve listings).

Thus, the status of Australian biosphere reserves varies from site to site, with some reserves more closely fulfilling than others the requirements of the Statutory Framework. Many reserves are limited by geography in their ability to participate in all aspects of the Biosphere Reserve Program (Parker 1993b). Variations in local circumstances such as land use, tourist numbers visiting core areas (national parks), local population distributions and characteristics, and local governance have impacted on the degree to which any site may function as a biosphere reserve. Indeed, the degree of limitation experienced in some biosphere reserves is illustrated

by the de-listing of one of Australia's longest standing designations. The South-West National Park Biosphere Reserve (Tasmania), which was declared during the heyday of the program, was officially revoked in February 2003, the first in Australia to be de-listed (Copson 2003). One of the major problems associated with the listing of the South-West as a biosphere reserve was that existing national park and world heritage designations competed with the area's status as a biosphere reserve; the multiplicity of designations for the region was seen as problematic. Moreover, the difficulties experienced in applying biosphere reserve principles in the South-West are commonplace to other designations that are similarly compromised through multiple protected-area designations. In contrast, the most successful Australian biosphere reserves are undoubtedly those chosen under the model program—i.e., Riverland Biosphere Reserve and the Fitzgerald River National Park—both of which were recipients of assistance from Commonwealth and state authorities. Such aid has not been extended to other Australian biosphere reserves and does not feature as prominently or successfully in the Australian Network.

In relation to the variability of biosphere reserves in Australia, Cochrane and Muldoon (2000) argue that despite a lack of broader understanding of the concept and the opportunities offered by the biosphere reserve model, there has been significant progress to achieving the objectives of the MAB Program through complementary and related activities. In this regard, seven initiatives are particularly noteworthy:

1. Biosphere reserves are emerging again as important tools in policy and are being recognized for their role as a potential nucleus for regional approaches to biodiversity conservation and sustainable use. Regions have been especially crucial to the Commonwealth Government since the election of 1996 when many voters in non-metropolitan Australia sent a clear message to the Prime Minister, John Howard, of the need to provide more opportunities for partnerships with the regions.
2. There has been increasing private sector involvement and investment in Riverland Biosphere Reserve, and managers have identified in this partnership significant potential for replication elsewhere among Australia's biosphere reserves.
3. Some national co-ordination of biosphere reserves has been made possible via the operations of the intergovernmental Working Group on Biosphere Reserves.
4. Funding by philanthropic trusts in partnership with Environment Australia (now Department of Environment and Heritage) appears to be fostering opportunities to build capacity in communities to conserve regional biodiversity and work through various processes of land and community management that enhance the prospects for long-term sustainability.
5. Private sector support is now more prominent to engender interaction between representatives from biosphere reserves and adjacent communities such that all parties are able to explore how to adopt and adapt the fundamental principles of the program to their particular goals and circumstances and to exchange ideas on a range of pertinent issues.
6. Facilities have been provided at Riverland Biosphere Reserve for community groups to advance conservation, restoration and sustainable development aspirations for the region and to develop and test various prototype programs related to these objectives.
7. Active partnerships are being forged between biosphere reserve participants and research and development and education organizations where the latter organizations manage properties and/or projects on biodiversity conservation and sustainable use.

These initiatives are promising, and yet the Biosphere Reserve Program's scope and potential continue to receive limited attention in Australia. The initial interest exhibited during the establishment phase declined in intensity and range and did not translate into the development of the biosphere reserves that were designated. Nor did that foundational interest convert to acts that have fostered the constitution of a coherent and successful national program. It is our contention that a significant explanation for these constraints rests in the multi-jurisdictional failure to foster *local* participation and stewardship, and *regional* and *national* leadership and management. This failure typifies many of the social and institutional dimensions of natural resource management in Australia more generally (Stratford and Davidson 2002).

## Understanding the Limitations of Australia's Biosphere Reserve Program

Many factors may be attributed to the dormancy of the Biosphere Reserve Program in Australia. The practical implementation of its principles was hindered by the rather depauperate position of UNESCO in the early 1980s and exacerbated by the attention and support given to charismatic and more readily *bounded* programs such as World Heritage (Brunckhorst *et al.* 1997). Furthermore, biosphere reserves were developed prior to the Brundtland Report and the Rio Earth Summit, and it is arguable that these international agendas for sustainability might have made less onerous the pathways for successful biosphere reserves among scientists and policy-makers, scholars and members of local communities. Furthermore, like their colleagues elsewhere (Cronon 1995), the members of the environment movement in Australia have, for decades, been focused on wilderness; indeed, it has been their foundational ideology and passion. The development of the national parks and world heritage systems in Australia is a direct result of their intense work, particularly during the period from 1970 to 1985.

As a result, in practical terms, biosphere reserves remain handmaidens to various national park management plans despite a clear enunciation under the EPBC Act that they should be managed under biosphere reserve management plans consistent with the Australian Biosphere Reserve Management Principles. The implementation of priorities for biosphere reserves within the Action Plan is especially challenging for park managers as individual reserves are managed by staff in state and territory agencies. This arrangement is despite Parker's (1993a) observation that the key elements distinguishing approaches to conservation in the Action Plan—namely the zonation of uses and landscape planning with an outreach into local communities and private land—are *outside the definition of the statutes* under which most state agencies work and hence *outside the responsibilities* that managers are traditionally required to address. Therefore, biosphere reserves are challenged both conceptually and practically as areas not specifically upholding wilderness preservation and as relatively powerless competitors for what is broadly perceived as national park funding.

An institutional focus on the Australian Government's \$3 billion Natural Heritage Trust (NHT) Program has been another overriding factor. The NHT programs of Rivercare, Coastcare, Landcare and Bushcare comprise a national effort to protect and conserve natural resources in establishment for a decade. Funds are delivered through single regional plans developed jointly with local 'care' groups and other local community-based groups. Fifty-six regions have been identified covering all of Australia, with a Natural Resource Management Plan developed for each. While important for many conservation and rehabilitation purposes, the 'care' programs do not represent a comprehensive attempt at locally based sustainable development around the three pillars of social, economic and environmental sustainability: this is the domain of biosphere reserves. With such significant public education, involvement, funding and publicized success associated with these 'care' programs, it is not too surprising that biosphere reserves, perceived to be a competitor to this federal initiative, remain somewhat obscure.

Such misperceptions are characteristic of a problem of awareness that dogs the success of biosphere reserves in Australia. On this larger and more significant dilemma, Kellert (1986) suggests that the biosphere reserve—a term invoking specifically ecological connotations—is alien to the members of the general public. Furthermore, while some appreciation exists of the need to protect such parks for culturally significant, rare or endangered species, this perspective is only peripherally informed by what might be called an 'ecosystem appreciation' of land protection. Davis and Drake (1983) voiced the urgent need to build capacity and understanding of the purpose of biosphere reserves and to show the value of assessing the meaning, scope and diversity of relationships between people and environments (Parker 1993b). Two decades later, the Biosphere Reserve Program is slowly being rediscovered by scientists, policy-makers and a select number of local communities but remains largely unknown to the general population, suggesting a failure to engage with and act upon pleas from Davis and Drake.

Various political challenges have also hindered the success of the Biosphere Reserve Program in the past (Parker 1993a), and we believe that these

will continue to constrain its progress in the future. One such challenge is that politicians may tend to respond to what they think are popular perceptions and understandings of conservation. In this regard, there appears to be widespread expectations that the confinement of conservation to protected areas is sufficient: that setting aside defined areas into strictly protected parks will accomplish conservation goals for Australian communities at large (Parker 1993a). Relatedly, decisions about land use planning, development and management are made as if these activities outside parks and reserves are not part of the fabric of conservation or key to the well-being of communities in the long term.

Perhaps most importantly, the lack of a robust understanding of the idea of 'the working landscape' will mean that stakeholders continue to fail to differentiate government-directed, siloed initiatives in the areas of environment, industry, indigenous affairs, and social and economic health from a comprehensive, sustainable development program such as biosphere reserves. Aboriginal peoples in Australia have long been the historical custodians of a working landscape approach where 'land and sea is something that must be respected and cared for—it is unequivocally part of their *country*' (Palmer 2004, 67). This indigenous view of the landscape fosters simultaneous utility and respect for the fragility of a landscape's resources. Ethics and protocols ensure that conservation and use *can* co-exist. As Palmer (2004, 69) suggests, 'the commonsense views [of indigenous people] reflect socio-physical interrelations and a shared identity between people, land and resources'. The ideal biosphere reserve strives for nothing more than a mainstream implementation of what appears to be intrinsic Aboriginal practice within the landscape. Indeed, it would be encouraging to see a heightened involvement of indigenous individuals, communities or groups involved with biosphere reserves, which could result in a closer nexus of theory and practice of the program. Conversely, the lack of involvement of the indigenous community may be a factor in the limited implementation success of the program in Australia.

Commonwealth, state and territory and—increasingly—local governments are often held responsible for, and erroneously deemed capable of doing, all that is necessary to safeguard Australia's natural heritage and quality of life for

future generations. Given this belief, another challenge to the success of biosphere reserves is a threefold change in systems of governance in Australia since the 1990s. One change has been to invoke the principle of subsidiarity such that public services are decentralised to the lowest level of government where they can be properly carried out. *Prima facie*, this shift has the potential to empower local communities to build capacities for civic and ecological engagements—two pillars of biosphere reserves and particularly apt in the context of urban biospheres. A second change has been to invoke the principle of devolution, involving the transfer of greater levels of authority for decision-making, finance and management to local government without properly resourcing that tier of government to undertake such tasks. This shift often works to constrain the types of engagement that subsidiarity might produce and is in tension with it and, in the case of biosphere reserves, may 'starve' on-ground initiatives. A third change has been to invoke the principle of partnerships about which there is considerable debate. The partnership is a unifying, controlling or mobilizing device that regulates interactions between formal government and individuals in communities (Armstrong and Stratford 2004). Some commentators see it as liberating and important in the creation of civic and ecological engagements (Healey 1996); others suggest it is a new and subtle method by which to make communities governable and serve the needs of devolution (Rose 2000). The effects and effectiveness of partnerships for biosphere reserves in Australia are yet to be fully tested, but the likelihood is that elements of both sides of the debate are identifiable in the real cut and thrust of biosphere reserve management.

### **Government, Institutional and Community Change**

Although the Biosphere Reserve Program is promoted as an independent, self-supportive form of conservation, the reality is generally less noble. In an effort to establish a successful biosphere reserve, the smallest amount of funding and awareness can determine the outcome of the initiative. The absence of priority for the program evident in the Commonwealth and state and territory governments has meant that critical funding

and resourcing and general awareness are diminished.

The inappropriate provision of financial and in-kind resources represents a major hurdle to implementing significant actions in the Biosphere Reserve Program in Australia. Yet, if government agencies supply all of the required resources, an inconsistency enters key messages about the core participatory underpinnings of the program. Although other conservation measures are historically funded through the states and territories and the Commonwealth Government, the strength of the Biosphere Reserve Program lies in predictions about its *eventual* resource self-sufficiency, through local community ownership of specific program initiatives and reserves.

In this light, the most efficient role for government may be to work through partnerships in establishing biosphere reserves using incentive funding to seed initial stages of new reserves, or by allocating or competitively awarding prestigious funds to such initiatives, or by increasing resources to those biosphere reserves with distinguished records of achievement and partnerships with non-government and private sector organizations and communities. If statutory organizations are to form partnerships with others in the development of biosphere reserves, then such partnerships might best rely on each party bringing some of the essential resources to the task: monetary resources, professional knowledge, labour and the capacity to share decision-making about strategic directions and their implementation. Thus, each level of government might need to provide initial incentives to the process and remain significant providers of professional expertise but perhaps should avoid major financing or managerial roles in this task.

Even so, multi-jurisdictional government support for the Biosphere Reserve Program would be hard-won against the prevailing reservation mentality manifest through the robust national parks and world heritage systems in Australia. It is important not to lose sight of the remarkable degree of public support for national parks in most developed nations. Efforts to promote biosphere reserves should be careful to avoid any dilution of public appreciation of national parks as relatively pristine areas in which people are casual and transient rather than ascendant forces. This view is certainly implicit amongst conservation managers in

state, territory and Commonwealth governments in Australia. Furthermore, the limited budget designated to biosphere reserves is a constraint on the degree of support available to the program and indicative of the low national priority given to *innovative* conservation measures. Therefore, a significant tension exists between the sorts of institutional change demanded by biosphere reserves in principle and the range of practices that currently exist in relation to protected areas in general.

The range of challenges faced by biosphere reserves include those which implicate communities of place and interest around Australia. Among them are fears over the loss of local autonomy in relation to the formal declaration and zonation of biosphere reserves (Solecki 1994). Problems include landowner objections to a perceived 'reservation' and a lack of local political commitment, administrative capacity and inter-agency co-operation. Moreover, because Australia's original biosphere reserves were nominated for their high conservation values and for research opportunities, most have been operational at only one of the functional levels of a biosphere reserve, namely that corresponding to the 'core' area. Until recently, all were public lands from which most local people felt excluded in terms of custodial and stewardship sensitivities (Brunckhorst *et al.* 1997). These issues—'don't own, don't care'—highlight the important and necessary role of local champions able to advance more widespread understanding of biosphere reserves' manifold advantages and services, to foster greater levels of civic and ecological literacy among diverse stakeholders.

### **The Mornington Peninsula–Western Port Biosphere Reserve**

Despite the various challenges outlined above, there is a new generation of biosphere reserves whose make-up appears to be fundamentally different from the original suite of biosphere reserves in Australia. A bottom-up approach is typical, and the role of champions in promoting biosphere reserves to local communities is the norm rather than the exception. Much of the initial skepticism arising at a local level can be overcome if such champions are known and respected citizens of these communities.

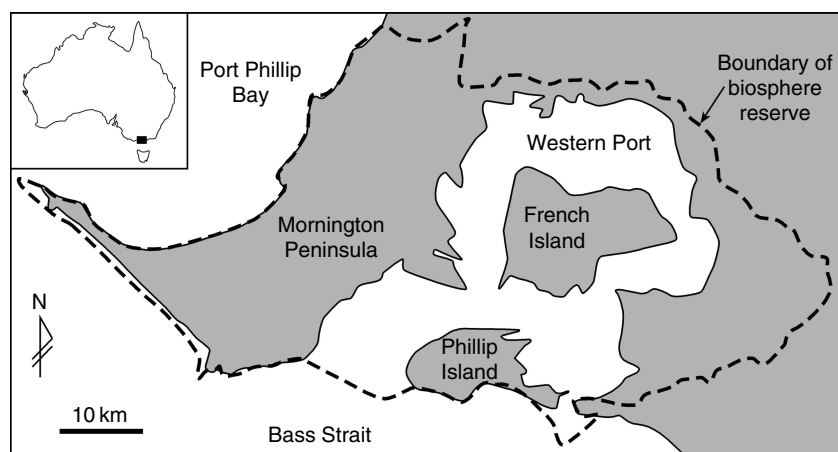
The Mornington Peninsula–Western Port Biosphere Reserve (Figure 3) has been developed in two phases. Phase one covers approximately 2,100 km<sup>2</sup>, including a permanent population of 180,000 people and a seasonal population of approximately 270,000 people. Phase two of the designation could potentially extend the area of the biosphere reserve to 3,400 km<sup>2</sup>. It is one case through which it is possible to identify a set of challenging objectives in relation to local, national and global issues of sustainability. Certainly, the Mornington Peninsula, that part of Port Phillip Bay that abuts it, and Western Port and its catchment, including Phillip and French Islands, form what is recognized as one of Victoria's most biologically diverse regions.

The region also sustains some of Victoria's most valuable farming activities, including a flourishing wine industry, horticulture, dairy and cattle grazing. Both Port Phillip and Western Port are important for recreation and commercial fishing, and for an expanding aquaculture industry. Land clearance and its impact on water quality, along with the enormous demands being made on the marine environment, are issues of concern for the sustainable use of the region. Parks are a fundamental mechanism to protect the region's diverse range of ecosystems, and there is growing recognition that conserving biodiversity encompasses all land use types.

The Mornington Peninsula–Western Port region was proposed as a biosphere reserve because of its

outstanding values, which include the following. First is French Island, which supports a higher diversity of animals than on comparable mainland areas. The island is nationally significant because of its undisturbed and continuous range of habitats. Second is Western Port, one of the state's most used marine areas in terms of commercial and recreational purposes, and an area of great biological diversity. It features a wide range of habitat types, including deep channels and sea-grass meadows, mangroves, salt marsh and mela-leuca thickets. Also present are a wide variety of marine invertebrates and about 65 percent of Victoria's bird species. Third is the Mornington Peninsula, which features outstanding landscapes and sustains some of the state's most valuable residential land.

The recommendation for a biosphere reserve in the Mornington Peninsula–Western Port was first mooted in the 1998 French Island Management Plan by Parks Victoria. The first community meeting in support of the proposal was held in June 1999. This gathering led to the establishment of a working group of community representatives and founding partners—the Mornington Peninsula Shire Council, Parks Victoria, the Department of Infrastructure, the Royal Melbourne Institute of Technology and Phillip Island Nature Park. The shire councils (local governments) of Mornington Peninsula, Frankston, Bass Coast, Cardinia City and Casey are incorporated fully or partly inside the biosphere reserve. Local catchment management



**Figure 3**

The Mornington Peninsula–Western Port Biosphere Reserve is located in South-east Victoria, one hour transit from Australia's second largest city, Melbourne

authorities are also significant within the biosphere reserve.

The nomination as a biosphere reserve was fitting for a number of reasons. For more than thirty years, it has been home to one of the earliest and consistently active networks of community conservation groups in Victoria. Numerous scientific studies of international importance have been undertaken in the area. Managing urban growth in a sustainable manner and developing a culture of responsible stewardship by all community members is one of the key principles for the Mornington Peninsula–Western Port Biosphere Reserve.

The Victorian Government, according to the nomination document by the Mornington Peninsula Shire Council *et al.* (2002), supported the Mornington Peninsula and Western Port Biosphere reserve nomination to UNESCO as one means of encouraging ecologically sustainable development through increased community involvement recognizing that it be community driven, self-funded and based on voluntary participation by individuals; not restrict uses that are consistent with state legislation, planning schemes or other government policies; and be technically sound and have a sound governance and business framework.

However, to limit the proliferation of biosphere reserve proposals, and in order to address those already under development, the Victorian Government issued a State Government Policy on Biosphere Reserve Proposals in April 2002. This policy mandates an eighteen-month evaluation period that must be observed between approval of one proposal and the consideration of another. The outcome of this policy is that the Victorian Government actively restricts prospective biosphere reserves, instead of encouraging such an initiative that engenders community stewardship, voluntary work and civil society collaboration. Certainly, the Government has not shown enthusiastic support for this or any other biosphere reserve proposals.

A Biosphere Reserve Advisory Group administered the proposal in its early stages. This group then formed the Biosphere Reserve Interim Group, comprising three specialist committees on governance, visioning and research. A Biosphere Reserve Foundation now administers all matters as an incorporated body that can receive donations,

form partnerships and implement programs after consulting with the community.

Sustainable development initiatives for the Mornington Peninsula–Western Port Biosphere project have been a particular focus. These initiatives are thought to provide opportunities to enhance rather than replace existing programs and arrangements among the various stakeholders, including (i) a program accrediting sustainable land and water uses, with accreditation being used to promote and market products and services; (ii) strategies to encourage improved agricultural practices through co-operative programs; (iii) strategies to foster further ecotourism opportunities; (iv) mechanisms to develop regional environmental performance indicators that measure environmental improvements; (v) mechanisms to develop partnerships with scientific, educational and industrial organizations to conduct research into the region's natural systems; (vi) steps to produce voluntary codes of practice covering the recreational use of land and marine ecosystems; (vii) means to attract funding for the reserve through grants and sponsorships and (viii) methods to enhance communication networks, including visitor centres (Mornington Peninsula Shire Council *et al.* 2002).

One especially noteworthy initiative under the new biosphere reserve designation is a Sustainability Framework, developed and implemented by the Mornington Peninsula Shire Council in consultation with its local community. The framework delineates values that members of the community regard as particularly significant, where each value corresponds to existing or developed local government policies. Proponents of new developments in the shire are required to consider and address the framework prior to consulting with the shire council on specific development issues. The framework has assisted council in applying the biosphere reserve idea to urban and peri-urban areas by balancing community values with sustainable development criteria and by prioritizing long-term visions for the sustainability of the region.

A review of the Foundation's administrative arrangements, including the Constitution, during the second year of operations, is currently being completed. The commitment to the review reflected both the understanding that some components of the Constitution represented an attempt at a 'best fit' at the time on issues on

which consensus had not been reached and the expectation that the Foundation would be entering a new phase as a corporate entity and would need to fine-tune its arrangements in the light of experience. Key elements of the process have included broad consultation to identify administrative areas of interest or concern, development of a discussion paper outlining issues and options, and conduct of a formal submission process. Important tests for any proposed changes to administrative arrangements or the Constitution will be consistency with the expectations of the MAB Program (including the Seville Strategy), the nomination, the expectations of government including the state Government's conditions for endorsing the nomination, and legislative requirements.

## Conclusion

Increasingly, integrative approaches to governance are required to care for land and water resources into the future. While conservation reserves such as national parks are fundamental in protecting ecosystems, there is growing recognition that conserving biodiversity and caring for nature encompass all land, including working landscapes and the human ecosystems that map onto them.

Internationally, UNESCO's Biosphere Reserve Program has become a program concerned with the integration of social and environmental goals for practical and achievable environmental sustainability in both natural and urban areas, moving away from original emphases on science and conservation *per se*. Yet, it is clear that competition with other systems of protected-area management has hindered the success of the program and that this constraint has been exacerbated by lack of awareness of the principles and benefits of the program, as well as by limited civic and ecological capacities, leadership and resources.

In Australia, a decision in the 1990s to implement a model approach to the program led to higher than anticipated levels of funding and support for two reserves, Riverland and Fitzgerald. Each has subsequently exhibited success under their biosphere reserve designations. However, these models provide little assistance in the wider promotion of the biosphere reserve concept in Australia because they are part of what might be termed 'mark one' of the biosphere reserve program and therefore damned by association with

those who have failed to spark widespread interest and involvement.

Alternatively, the Mornington Peninsula–Western Port Biosphere Reserve illustrates a new application of principle and practice in Australia. Aided by formal support through the EPBC Act, in certain quarters, 'mark two' forms of biosphere reserve may revitalize commitment to diverse and broad-based notions of conservation as stewardship. From the earliest stages, this reserve has been a community-driven initiative, developed and proposed by a concerned group of committed individuals in the region. The Mornington Peninsula–Western Port Biosphere Reserve has altered the application and prospects of the Biosphere Reserve Program in Australia, creating much enthusiasm and interest in this innovative approach to bioregional planning and management. Even in 1983, Davis and Drake suggested that biosphere reserves were poised with several operational problems. The main difficulty was the tutelage of legislators, public servants, scientists and the public about the need for biosphere reserves and to justify them as additions to the existing network of protected areas. The same difficulty remains twenty years later, despite the fact that biosphere reserves provide the only practical, implemented, landscape-scale model for the moderation of resource use and conservation, and resolution of conflicts when strict control over large areas is unfeasible. Perhaps the solution lies in steering the Australian perception of biosphere reserves away from the notion of protected area and into one of demonstration sites for innovative approaches to conservation and sustainable development.

However, the future of the Biosphere Reserve Program in Australia appears much brighter. Several factors will ensure that future additions of Australian biosphere reserves are coupled with relevance and fulfilment of objectives. First among these has been a resurgence of interest in, and increasing requirement for the application and management at bioregional and catchment scales, to which the biosphere reserve concept aptly fits. The provision for biosphere reserves under the EPBC Act, including the Australian Biosphere Reserve Management Principles, is promising. The MAB Urban Forum provides new direction and investigation of the role of biosphere reserves in urban and peri-urban areas.

The Mornington Peninsula–Western Port Biosphere Reserve also serves as an example of new application for biosphere reserves, driven by community management and a regional sustainability vision. Continued success of the two model biosphere reserves is being mapped via benchmarks for existing and developing sites. Finally, new Australian biosphere reserve designations are in development, promoting consideration of the concept in other communities similarly concerned with sustainable futures. A prominent example is the proposal for a designation in Canberra, incorporating a large area of the Australian Capital Territory. Despite hindrances and given the right opportunities, the Biosphere Reserve Program in Australia does, and can further, epitomize local sustainable development.

### Acknowledgements

We gratefully acknowledge the assistance from the School of Geography and Environmental Studies at the University of Tasmania, Hobart (Australian Postgraduate Award, PhD studies for Kate Matysek) and Commonwealth Scientific and Industrial Research Organisation (CSIRO) Sustainable Ecosystems Division, Urban and Regional Futures Group, Canberra, for their financial and supervisory support of Kate's project through the CSIRO Postgraduate Top-up Scholarship Program. Most valuable information on aspects of this paper has been provided by Geoff Copson (Tasmanian Department of Primary Industries, Water and Environment), Bruce Davis (Institute of Antarctic and Southern Ocean Studies, University of Tasmania), Amy McDonald (Mornington Peninsula–Western Port Biosphere Reserve Project Officer), Kate Glenie (Local Learning and Employment Network, Frankston, Victoria), Jim Muldoon (Environment Australia), Peter Mooney (Tasmanian Department of Primary Industries, Water and Environment), Graeme Davis (Parks Victoria) and Ian Anderson (Australian National University, Centre for UNESCO). Any shortcomings in the paper reside with the authors.

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