

## Employment in the Environment Sector:

### Tourism and Conservation

**Submission To:** House of Representatives Environment Committee  
Inquiry into Employment in the Environment Sector

**Drafted By:** Dr Stephen McLeod  
Wildlife Biologist  
PO Box 123 Littlehampton, SA, 5250  
zambala@ozemail.com.au

Mr Christopher Chapman  
Barrister & solicitor  
Fax: (02) 89669251  
Mobile: 0419 994829

Secretary: *[Signature]*

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# INTRODUCTION

Three models of wildlife conservation have evolved in recent history to accommodate the multiple challenges of biodiversity preservation:

## **Zoological Parks**

Zoological parks exist in many countries of the world, with society being generally very accepting of them as legitimate enterprises in animal preservation, education and research. While the education and research aspects of a good zoo are undeniable, a lack of space and a burden of high cost seriously compromise their contribution to species conservation in the long term. Zoos are the most expensive and arguably the least efficient method of conserving biodiversity, although they do generate significant employment in the environment sector.

## **National Parks**

The system of National Parks and wildlife services in Australia provides thousands of employment opportunities throughout the country. There are more than 540 National Parks Australia-wide, conserving over 4% of the Australian landscape and encompassing 14 World Heritage listed sites. Regrettably, exotic animals including foxes, cats and rabbits are constantly challenging the survival of many native species by preying on them, displacing them or taxing their food resources. It is unlikely that foxes, cats and rabbits will ever be fully eradicated from our National Parks and some biologists are proposing that certain feral species should now be regarded as natural elements of the Australian landscape to be accommodated as best as possible.

## **Wildlife Sanctuaries**

A wildlife sanctuary may be defined as *a place of refuge for animals and plants; a protected place where flora and fauna can live and breed without interference.* Australian wildlife sanctuaries typically consist of fenced areas of land that enclose some species and exclude others. Sanctuary enclosures can be either:

- Incomplete or Open - such as a bird sanctuary. Important habitats for feeding, breeding and migrating are protected but the birds can come and go.
- Complete or Closed - such as an animal sanctuary. The sanctuaries Earth Sanctuaries Ltd (ESL), the Australian Wildlife Conservancy (AWC) and free-

range zoos like Western Plains Zoo are refuges in which threatened species are fully contained and both feral animals and land clearing are fully excluded.

Sanctuaries are the most cost-effective way of reliably breeding native Australian wildlife. Sanctuaries also necessarily generate employment because they are partially artificial constructs that require maintenance of the infrastructure and management of the flora and fauna they enclose. Sanctuaries can proceed to generate significant additional employment through the formation of functional relationships with the eco-tourism industry and the conservation research sector.

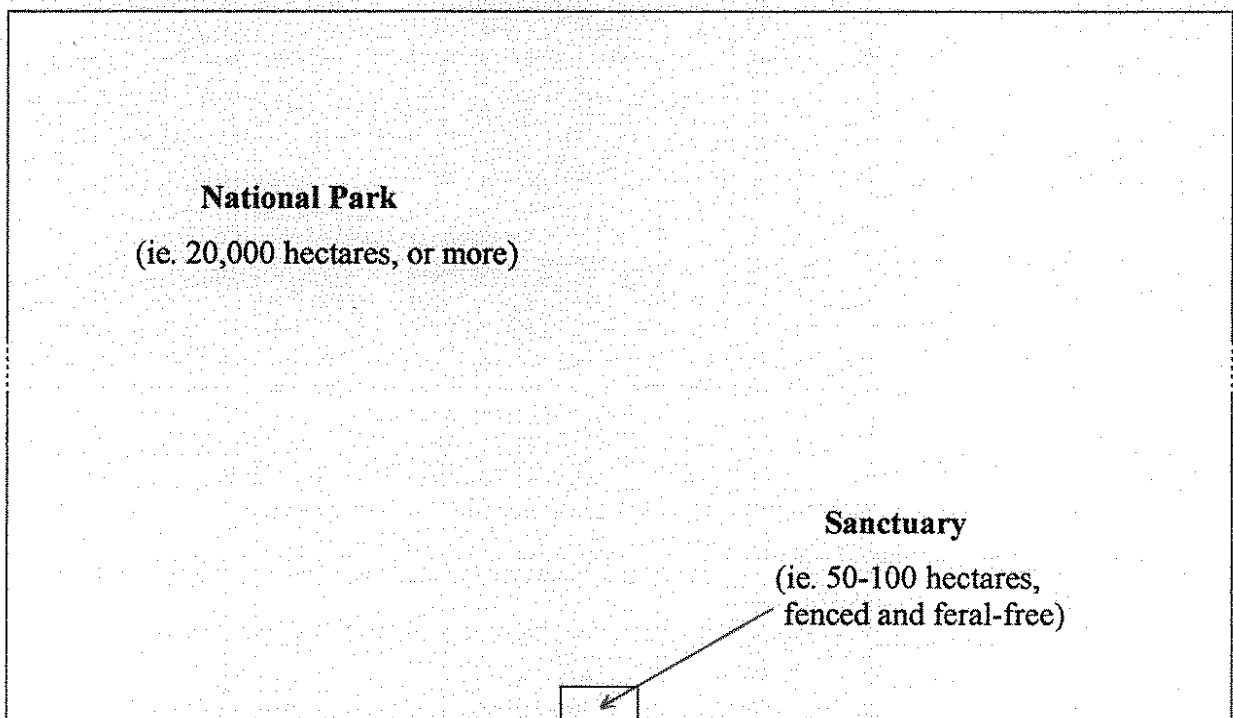
# PROPOSITION

## Combining Conservation Models

The authors of this submission are proposing that the relevant government authorities and other interested parties consider the merits of a hybrid model of wildlife conservation. A *Park Sanctuary* model is being proposed in which the dominant advantages of the national parks system and the closed sanctuary system are combined to deliver superior and predominantly self-funded conservation results.

### (A) Establish Wildlife Sanctuaries

It is proposed that small, closed sanctuaries be established in selected National Parks at strategic boundary locations (Figure 1):



**Figure 1:** (not to scale) A hypothetical National Park with a fenced and feral-free wildlife sanctuary located on one boundary.

If this type of land use is inappropriate or otherwise unworkable for the NPWS, then uncleared State land adjoining a National Park would also be suitable.

The purpose of these sanctuaries would be to breed threatened species of native animal in low-cost, open-range captivity for three purposes:

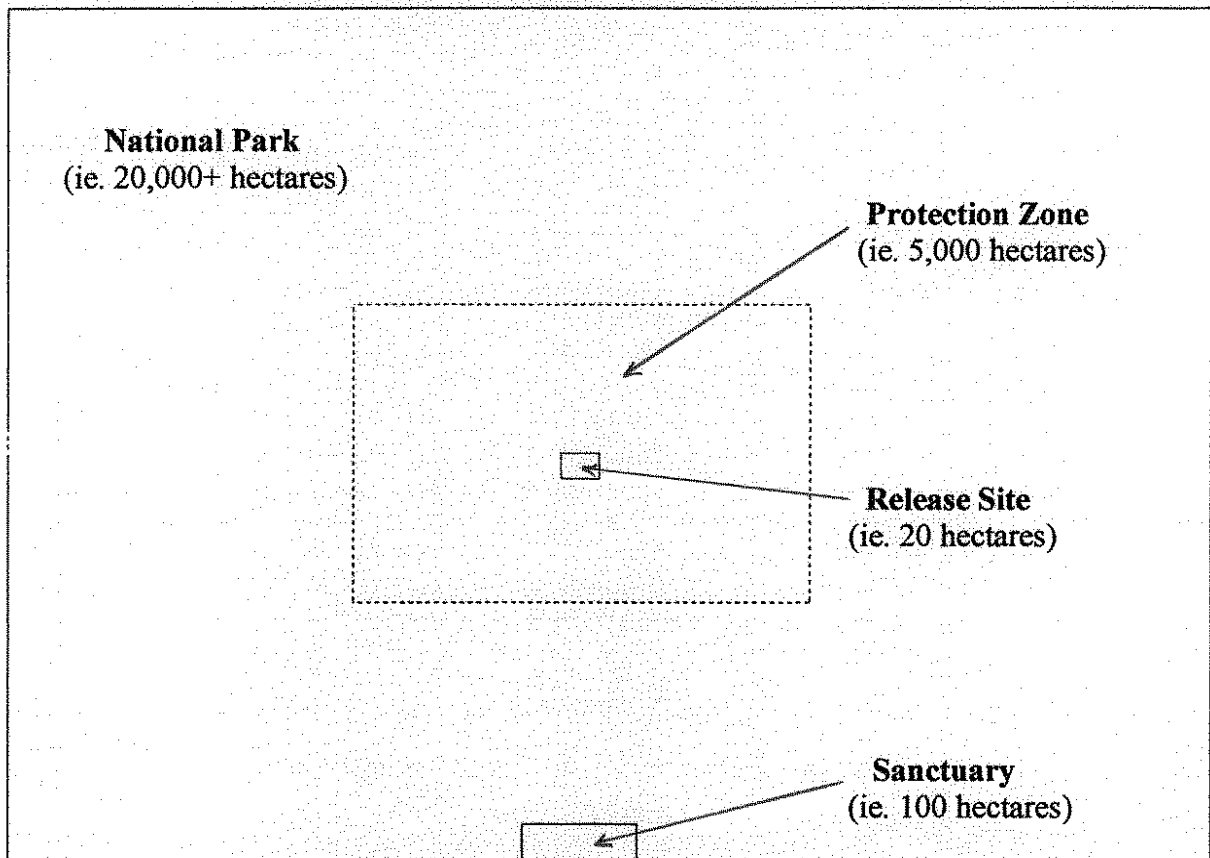
- (i) Eco-tourism: attracting the wildlife conscious local, interstate and overseas visitor to come and pay to see native Australian animals representatively living 'in the wild' in their natural habitat.
- (ii) Public Education: attracting school groups and the public in general to observe and learn about their native wildlife in its natural environment and paying for the experience.
- (iii) Species conservation: increasing the population sizes of threatened native species through captive breeding programs and their subsequent coordinated release back into their original home ranges (ie. the relevant National Parks).

Sanctuaries would need to be located near a major city or tourist destination (ie. with 1-2 hours comfortable drive) to be economically viable. Sanctuaries would probably need to be positioned on the boundary of a National Park so that the visitors weren't required to enter the Park after dusk (in keeping with common NPWS policy). Sanctuaries would specialise in guided interpretive walks at night, education/research programs during the day and hospitality/catering operations at most times. See Appendix I for more detail on the Park Sanctuary concept.

## **(B) Breed Threatened Species**

The majority of Australia's threatened fauna falls into the critical weight range of 0.5 to 5kg. These animals typically do very well in the open-range, lower cost style of breeding facility provided the habitat is suitable. The sanctuaries would operate to continuously breed such threatened fauna at a rate which is well in excess of that required for public display purposes. The sanctuary would then do two things with the excess offspring:

- (i) Supply them to NPWS authorities for distribution to species recovery teams, other breeding establishments, research institutions, etc, on an ongoing basis.
- (ii) Release them, in partnership with NPWS, into appropriate regional National Parks for ongoing re-colonisation and ultimate de-listing as threatened species.



**Figure 2:** (not to scale) A hypothetical National Park with a boundary sanctuary for animal breeding & display and a more centralised release site that is surrounded by a feral protection zone.

### (C) Control Feral Animals

Feral control procedures (including the distribution of poison baits for foxes and rabbits and the opportunistic shooting and trapping of feral cats) would be concentrated around the release sites to form protection zones within which feral animals are completely absent or seriously reduced. This would be an ongoing operation, performed by private contractors and financed through tourism-generated revenue, which would maximize the recolonisation potential of the released animals. Interestingly, one of the major threat abatement strategies recommended by the NSW NPWS in two recently gazetted Threatened Species Recovery Plans\* is to focus feral control procedures on the remnant territories of endangered species in the wild. Their intention is to establish feral-free buffer zones around the wild populations to provide year-round protection.

\* The Brush-tailed Rock-wallaby (May 2002) and the Bolam's Mouse (July 2002).

## **(D) Release Sanctuary Wildlife**

The theory behind establishing populations of threatened species within protection zones inside National Parks is as follows:

- It is widely understood that, wherever possible, the best way to protect biodiversity is to conserve the native flora and fauna in its natural state. As long as the presence of feral animals is accommodated and the appropriate fire management regimes are implemented, National Parks are the logical place in which to conserve and re-establish threatened native species.
- There is general agreement in the scientific community that the minimum size for a terrestrial vertebrate population to be genetically viable (ie. to have sufficient internal robustness to survive natural challenges) is between 250 and 500 freely breeding individuals. Metropolitan zoos do not have the necessary space to achieve this. The sanctuaries of ESL and AWC often do have space, but the use of vermin-proof fencing on a massive scale is very costly. National Parks clearly have the space to support large native animal colonies, while the contemporary strategies for controlling ferals and fire do not require the use of fencing or austere fuel reduction practices.
- The use of centralised protection zones within certain National Parks greatly reduces the opportunity for released animals and their progeny to enter any neighbouring suburbs and townships. Native wildlife and urban landscapes typically don't mix well. Alternatively, National Park boundaries can meet with rural/agricultural landscapes, into which the return of native wildlife is also not altogether appropriate or appreciated. For example, the Department of Agriculture in NSW has legitimate concerns about native animals (particularly carnivores) returning to farmlands in elevated numbers. By locating the release sites well inside the National Parks and accessible only via existing service roads or fire trails (ie. 4WD tracks), these concerns can be sidelined.
- The size of the proposed protection zones (ie. 5,000 hectares) is a recommendation that is open to debate. This area of land is large enough to support decent colonies of threatened animals. Some of these colonies would be larger than the generally



accepted minimum of 250 individuals; others would not. This highlights the importance of ideally having multiple release sites/protection zones per sanctuary, in order that:

- (i) Separate colonies of low-density dwelling species can total at least 250 individuals; and hopefully many more.
- (ii) Separate colonies of all threatened species can co-exist, increasing the chances of species survival. By disseminating animal populations throughout different National Parks, the risk of species extinctions through local threatening processes is greatly reduced.

## CONCLUSION

The *Park Sanctuary* model of wildlife conservation offers a host of new employment opportunities. Five major employment nodes can readily be identified:

### 1. The Sanctuary

Wildlife Officers	(3)
Habitat Officers	(3)
Education Officer	(2)
Tour Guides	(20 or more Part-Time/Casual)
Reception Staff	(2)
Administration Staff	(2)

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12 Full-Time Staff

20 Part-time/Casual Staff

- \* These are minimum sanctuary employment figures based on the authors experience in eco-tourism operations. The expanded sanctuary concept includes further jobs in cooking, catering, accommodation, education, research, administration, merchandising, consulting, etc.

### 2. The Release Site

Sanctuary Wildlife Officers  
NPWS Wildlife Officers

### 3. The Protection Zone

Private contractors - Pest species management  
NPWS Rangers - Wildlife monitoring

### 4. Sanctuary Visitors

The benefits of increased patronage would ripple through a region's tourism industry (ie. food, accommodation, transportation, sightseeing, etc) from an increase in visitor volume and spending.

### 5. Other Agencies

Wildlife/Research Staff - Species Recovery Teams (see Appendix II)  
- Research Institutions (universities, breeding centres, etc)  
- Other Establishments (zoos, fauna parks, etc)

In addition, the Park Sanctuary model would provide excellent training opportunities for people in wildlife management and research, thereby helping to ensure an appropriately skilled workforce. The Park Sanctuary model would be an ideal vehicle for utilising indigenous skills in land management and traditional knowledge in biodiversity. Employment opportunities in the environment sector would continue to multiply as successes in the conservation and eco-tourism ventures generated continued growth in the operations of existing and new sanctuaries. Regional employment in particular would benefit from expanded sanctuary operations.

The operational costs of a Park Sanctuary are intended to be self-funded through revenues generated from eco-tourism services, sponsorships, memberships, donations, grant money and volunteer labour. To make the Park Sanctuary model viable, it is envisaged that a Private-Public Partnership or similar association would be formed between the NSW government and a private consortium that allows the consortium to operate a commercial venture on government land using native flora and fauna. The private consortium would be a not-for-profit organisation devoted to wildlife conservation, education and research. Under this arrangement, the issue of native species ownership would never be challenged and a strong incentive would exist for people to visit the Sanctuary and/or make tax-deductible donations to the operating Foundation to continue its conservation work.

Wildlife experts agree that re-establishing independent colonies within their former ranges is part of the strategy that must compliment the protection of remnant wild populations. The Park Sanctuary model delivers both outcomes in an entirely self-funded arrangement that supports the National Parks and Wildlife system, offers a first class presentation of Australian wildlife assets to the general public and provides a mechanism for re-investing business profits into expanded conservation ventures. In essence, the Park Sanctuary model becomes a mechanism for complementing increased numbers of threatened species recovery plans. We would apply similar conservation strategies to the NPWS on a much wider scale, working to establish protection zones (ie. fenceless sanctuaries) around (1) re-introduced colonies that have originated from captive breeding programs; and (2) *in situ* colonies that are in need of recovery plan implementation.

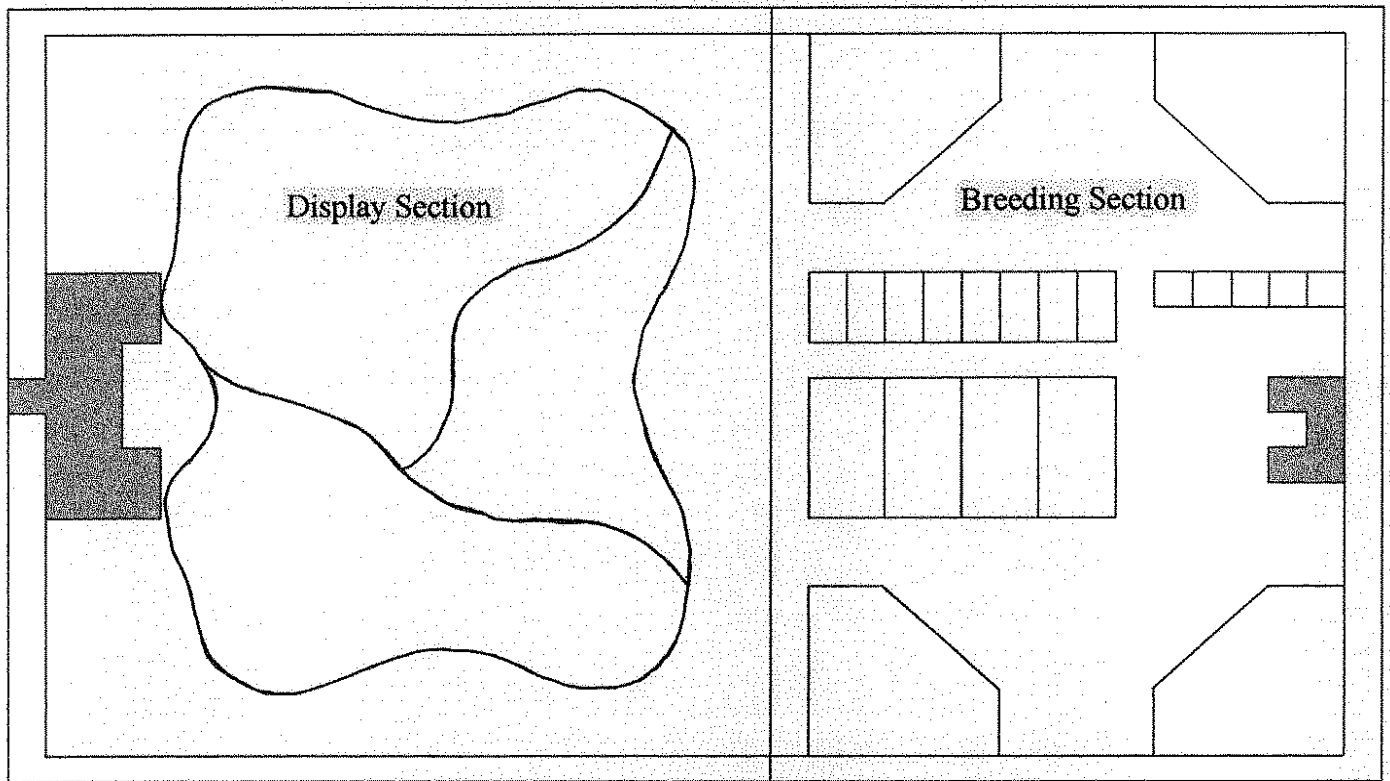
Finally, the sanctuaries themselves would function as refuges from regional disasters like wildfire, drought and disease; during which time a much greater protection could be conferred upon those colonies 'housed' inside. And when, through time and good science, biological controls are eventually developed for the dominant pest species in Australia (and also for the over-abundant native species) then none of the preceding effort will have gone to waste. The Park Sanctuary system will already be primed, the protection zones will simply be discontinued and the genetically viable wildlife inside will go forth and multiply as and where nature intended. This will be conservation at its best.

## APPENDIX I: The Park Sanctuary Concept

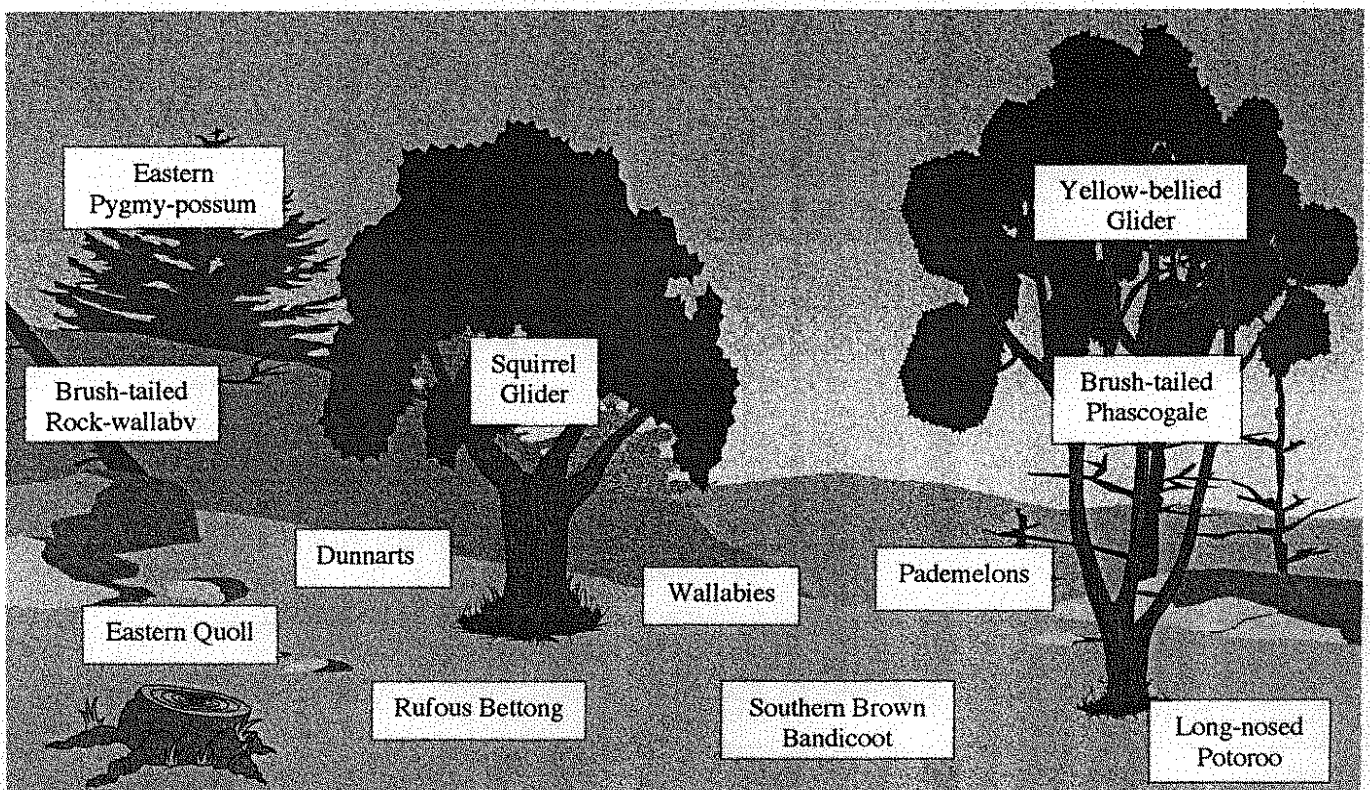
Sanctuaries would specialise in guided interpretive walks at night, education/research programs during the day and hospitality/catering services at most times.

- A good example of guided interpretative walks at night is found at Warrawong Earth Sanctuary in the Adelaide hills. Warrawong is 35 hectares of fenced land in which threatened marsupial species are bred for conservation and display. Warrawong receives 40,000 visitors a year with an average head spend of \$20.00. Warrawong is cash-flow positive through the operation of interpretive wildlife tours, education programs, food & beverage, accommodation, conference facilities, merchandising and consulting.
- A good example of education/research programs during the day is found at Macquarie Fauna Park, Macquarie University, Sydney. The Fauna Park holds a host of marsupial species in specialised breeding yards for teaching and research purposes. The Park is funded by government money and private investment. It provides training in the management of captive marsupials, experience in native animal research and advances in biological control applications for native species and exotic pests.
- The proposed Park Sanctuary would be a combination of these two examples. The sanctuary would be sectioned into a free-range display area and a captive breeding/research area (see Figure A). The founder colonies of particular threatened species would be captive bred initially, with the first generation(s) being used to re-colonise the free-range area for ensuing public display (see Figure B). All subsequent generations of captive-bred individuals, plus free-range individuals in excess of display requirements, would be released in partnership with the NPWS into sizeable wild locations with routine feral protection to achieve the optimal conservation outcome.
- The Park Sanctuary would be cash-flow positive through the same activities as Warrawong Earth Sanctuary and similar eco-tourism businesses. A minimum 52,000 visitors a year to the Park Sanctuary (ie. 1,000 visitors a week), with an average head-spend of \$20.00, would generate over \$1 million annually. This income would cover the cost of sanctuary operations including the captive breeding programs and routine feral protection operations associated with the threatened species in the wild.

**Figure A:** Schematic representation of a Park Sanctuary, showing walkways and breeding compounds.



**Figure B:** Hypothetical Sanctuary Scenario – some of the animals observable on a guided walk at night (ie. during their active period). Walks would typically comprise a leisurely 1-2 hour interpretation of indigenous flora and fauna followed by food and beverage in an ambient setting. Other sanctuary services could include a licenced restaurant, retail shop, interpretation centre, function room, conference facilities, native plant nursery, etc.

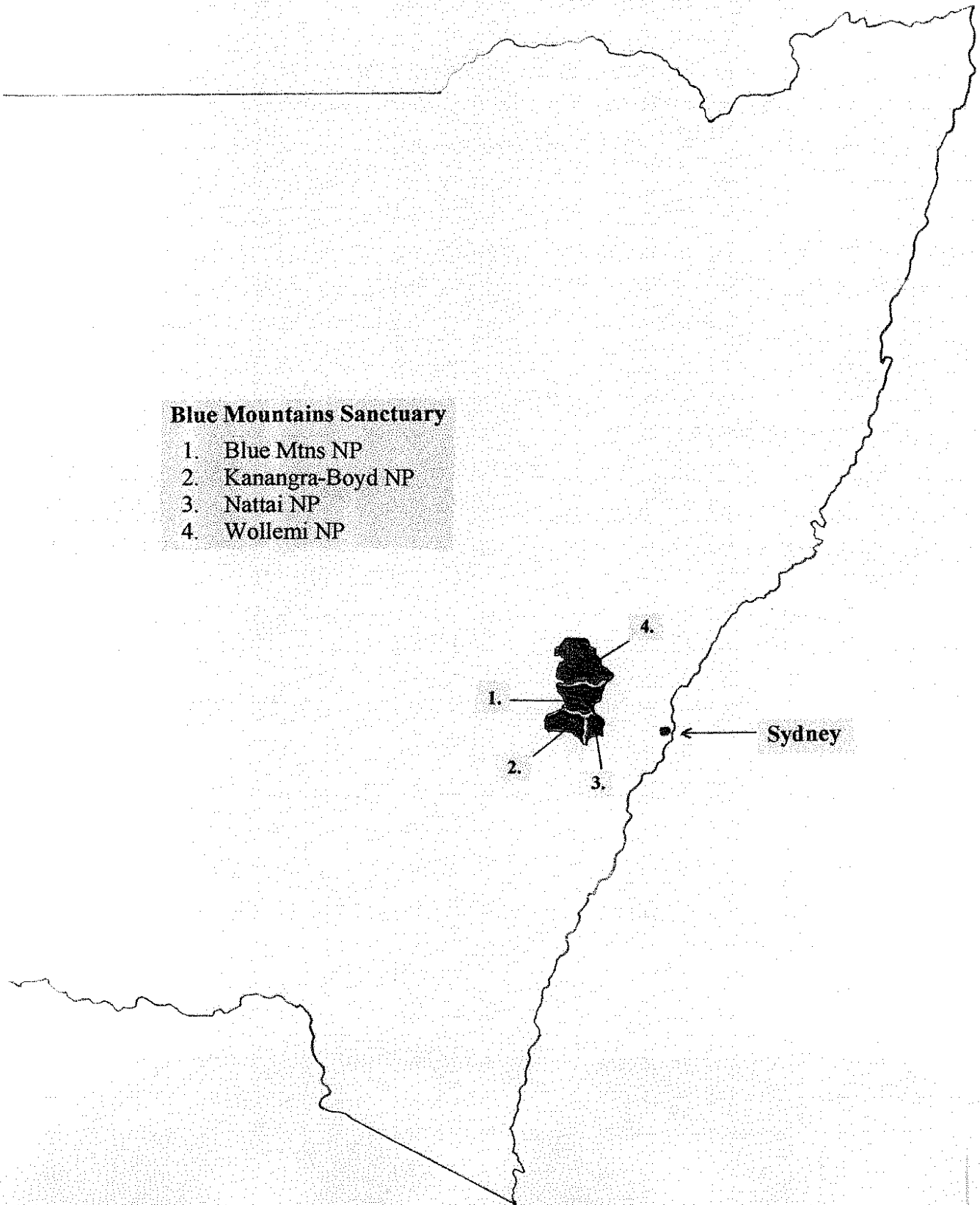


**Basic Scenario:** The Blue Mountains Sanctuary is a reasonably straightforward proposition. The location might be somewhere close to the Great Western Hwy between Katoomba and Springwood. There might be one to four corresponding release sites for the native animals. All the National Parks identified here are over 20,000 hectares in size.

An alternative site to the Blue Mountains for a Park Sanctuary near to Sydney could be Ku-ring-gai Chase National Park or the Royal National Park.

**Blue Mountains Sanctuary**

1. Blue Mtns NP
2. Kanangra-Boyd NP
3. Nattai NP
4. Wollemi NP





**Advanced Scenario:**

Three Park Sanctuaries. It is feasible that three Park Sanctuaries could be established in NSW, two in VIC and two in QLD. The remaining States (SA, WA and TAS) could probably support one Park Sanctuary each. The total number of Park Sanctuaries in this scenario is therefore 10 nation-wide.

**New England Sanctuary**

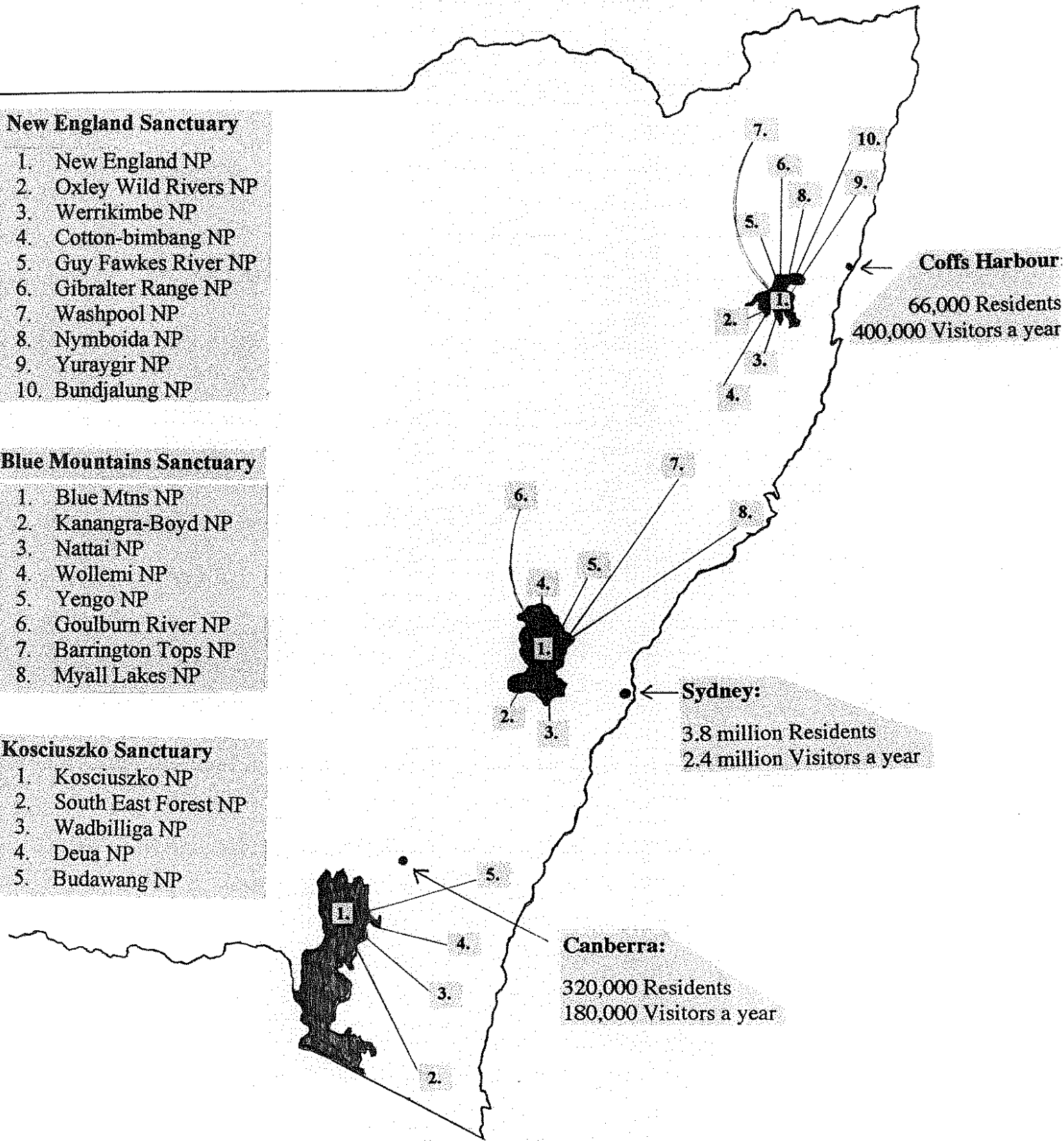
- 1. New England NP
- 2. Oxley Wild Rivers NP
- 3. Werrikimbe NP
- 4. Cotton-bimbang NP
- 5. Guy Fawkes River NP
- 6. Gibraltar Range NP
- 7. Washpool NP
- 8. Nymboida NP
- 9. Yuraygir NP
- 10. Bundjalung NP

**Blue Mountains Sanctuary**

- 1. Blue Mtns NP
- 2. Kanangra-Boyd NP
- 3. Nattai NP
- 4. Wollemi NP
- 5. Yengo NP
- 6. Goulburn River NP
- 7. Barrington Tops NP
- 8. Myall Lakes NP

**Kosciuszko Sanctuary**

- 1. Kosciuszko NP
- 2. South East Forest NP
- 3. Wadbilliga NP
- 4. Deua NP
- 5. Budawang NP



**Note:** The proposed conglomerations of release sites around each Park Sanctuary is not a fixed entity. NSW east-coast National Parks are divided into 4 regions – Northern Rivers, Hunter & Lower North Coast, Sydney & Surrounds and South Coast & Highlands. Conglomerations include National Parks from different regions – this may or may not be a problem. Vital input is required from the NSW NPWS to decide on what is appropriate and achievable with this model.



## APPENDIX II: Status of Threatened Species Recovery Plans

Mammalian species (minus bats) listed in Schedules 1 and 2 of the NSW Threatened Species Conservation Act (1995), and their suitability for breeding and display in an east-coast Park Sanctuary. The Park Sanctuary system could be directly responsible for de-listing these suitable species by significantly elevating their numbers through a largely self-funded breeding & release operation. Clearly the NPWS is finding it difficult to draft and implement the necessary Threatened Species Recovery Plans quickly enough.

Endangered Mammals (Schedule 1)	Suitable for East Coast Sanctuary	Recovery Plans Gazetted (NPWS)
Eastern Quoll ( <i>Dasyurus viverrinus</i> )	Yes	No
Southern Brown Bandicoot ( <i>Isodon obesulus</i> )	Yes	No
Southern Hairy-nosed Wombat ( <i>Lasiorhinus latifrons</i> )	No	No
Mountain Pygmy-possum ( <i>Burramys parvus</i> )	Yes	Pending
Western Pygmy Possum ( <i>Cercartetus concinnus</i> )	No	Pending
Long-footed Potoroo ( <i>Potorous longipes</i> )	Yes	Pending
Black-striped Wallaby ( <i>Macropus dorsalis</i> )	Yes	No
Yellow-footed Rock-wallaby ( <i>Petrogale xanthopus</i> )	No	No
Silky Mouse ( <i>Pseudomys apodemoides</i> )	No	Yes
Bolam's Mouse ( <i>Pseudomys bolami</i> )	No	Yes
Smoky Mouse ( <i>Pseudomys fumeus</i> )	Possibly	No
Hastings River Mouse ( <i>Pseudomys oralis</i> )	Possibly	No
<b>Vulnerable Mammals (Schedule 2)</b>		
Eastern Pygmy-possum ( <i>Cercartetus nanus</i> )	Yes	No
Spotted-tailed Quoll ( <i>Dasyurus maculatus</i> )	Yes	No
Brush-tailed Phascogale ( <i>Phascogale tapoatafa</i> )	Yes	No
Common Planigale ( <i>Planigale maculata</i> )	Possibly	No
Southern Ningauai ( <i>Ningauai yvonneae</i> )	No	No
White-footed Dunnart ( <i>Sminthopsis leucopus</i> )	Yes	No
Stripe-faced Dunnart ( <i>Sminthopsis macroura</i> )	No	No
Koala ( <i>Phascolarctos cinereus</i> )	Yes	No
Yellow-bellied Glider ( <i>Petaurus australis</i> )	Yes	No
Squirrel Glider ( <i>Petaurus norfolcensis</i> )	Yes	No
Rufous Bettong ( <i>Aepyprymnus rufescens</i> )	Yes	No
Long-nosed Potoroo ( <i>Potorous tridactylus</i> )	Yes	No
Parma Wallaby ( <i>Macropus parma</i> )	Yes	No
Brush-tailed Rock-wallaby ( <i>Petrogale penicillata</i> )	Yes	Pending
Red-legged Pademelon ( <i>Thylogale stigmatica</i> )	Yes	No
Forrest's Mouse ( <i>Leggadina forresti</i> )	No	Yes
Broad-toothed Rat ( <i>Mastacomys fuscus</i> )	Possibly	No
Eastern Chestnut Mouse ( <i>Pseudomys gracilicaudatus</i> )	Possibly	No
Sandy Inland Mouse ( <i>Pseudomys hermannsburgensis</i> )	No	Yes
Pilliga Mouse ( <i>Pseudomys pilligaensis</i> )	No	No
Long-haired Rat ( <i>Rattus villosissimus</i> )	No	No

### APPENDIX III: Author Biographies

**Stephen McLeod:** PhD (Mammalian Physionlogy) - University of Sydney, NSW.  
2000 – 2002: Earth Sanctuaries Ltd (Group Wildlife Officer)  
1995 – 1999: Marsupial Cooperative Research Centre (Marsupial CRC) -  
Scientific Officer and Fauna Park Manager (Macquarie Uni)

"My time with ESL was both enriching and disillusioning. The public display of native plants and animals in their natural state is a truly rewarding and uniquely Australian encounter that should be experienced by many more people. However, the disrespect that the senior management of ESL showed towards conservation research and government wildlife authorities was very disappointing. I believe that ESL is wrong in its concept of native animal ownership, wrong in its notion of free wildlife trade and wrong in its practice of fencing vast tracts of land. There is a better way to achieve better outcomes. By taking the positive aspects of ESL's revenue-generating capacity in wildlife display and linking them with the proper management procedures of our National Parks and Wildlife Services, measurable conservation outcomes can be achieved which translate essentially into the self-funded implementation of more Threatened Species Recovery Plans."

**Christopher Chapman:** Dip.Law; Dip CD; Dip CM; FCIS; FAICD; MBA (UNE).  
1999 – 2001: Earth Sanctuaries Ltd (Company Secretary)  
1988 – 1999: Various Companies and registered Foundations -  
Company Secretary and General/Legal Counsel.

"The vision of ESL was always out of reach. The simply economics of the ESL objective of 100 sanctuaries in 80 habitats enclosing 1% of Australia under the company's management structure and *modus operandi* was never going to be sustainable. A vital ingredient in senior management practices at ESL has always been missing - sound business acumen. Important opportunities for company growth were missed through the disrespect of certain company directors for due process in business planning and due diligence in market trends. The triple bottom line of environmental, social and financial sustainability in business practice cannot be ignored; yet ESL was never committed to the last two. I am certain that a model of sustainable wildlife conservation can be achieved through both professional competency and a genuine partnership with Environment Australia and our State/Territory wildlife colleagues."