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Creating Markets for Biodiversity: A Case Study of Earth Sanctuaries Ltd

Staff
Research Paper

*Barbara Aretino
Paula Holland
Deborah Peterson
Michael Schuele*

The views expressed in this paper are those of the staff involved and do not necessarily reflect those of the Productivity Commission.

Appropriate citation is indicated overleaf.

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Publications Inquiries:

Media and Publications
Productivity Commission
Locked Bag 2 Collins Street East
Melbourne VIC 8003

Tel: + 61 3 9653 2244
Fax: + 61 3 9653 2303
Email: maps@pc.gov.au

General Inquiries:

Tel: + 61 3 9653 2100 or + 61 2 6240 3200

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The Productivity Commission

The Productivity Commission, an independent Commonwealth agency, is the Government's principal review and advisory body on microeconomic policy and regulation. It conducts public inquiries and research into a broad range of economic and social issues affecting the welfare of Australians.

The Commission's independence is underpinned by an Act of Parliament. Its processes and outputs are open to public scrutiny and are driven by concern for the wellbeing of the community as a whole.

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Preface

The Productivity Commission, at the invitation of Environment Australia and the OECD, assigned a staff team to undertake a case study of Earth Sanctuaries Ltd — a publicly listed Australian company directly involved in the conservation of biodiversity. This case study, along with other international examples, will contribute to an OECD/World Bank report on market creation for biodiversity products and services. This report will be available by the end of 2001 (see <http://www.oecd.org/env/> for additional information and case studies).

In undertaking the study, the project team invited interested parties to provide information and comment on relevant issues, including the creation and operation of Earth Sanctuaries Ltd.

A draft version of this report was presented at the OECD/World Bank Workshop on Market Creation for Biodiversity Products and Services in Paris on 25 and 26 January 2001.

The report was prepared within the Commission's Environment Branch. Valuable research contributions were made by Gavan Dwyer, Anna Matysek and Margo Hone. The report's development was guided by Commissioner Neil Byron.

The Productivity Commission is grateful to all those who have participated in this study. In particular, the Commission acknowledges the assistance and cooperation of Earth Sanctuaries Ltd.

Contents

Preface	III
Key messages	VII
1 Introduction	1
2 Private sector contribution to biodiversity conservation	7
Economic framework	7
Potential strengths and weaknesses of private sector conservation	8
Summary	10
3 Regulatory challenges	10
Wildlife property rights and trade of fauna	11
Private conservation on leasehold land	16
Competitive neutrality and contestability	19
Summary	22
4 ESL's ecological and financial outcomes	23
Ecological outcomes	23
Financial outcomes	27
Summary	31
5 Conclusions and potential policy issues	33
Appendices	
A Government responsibilities for environmental legislation	37
B Examples of private sector involvement in biodiversity conservation	39
C An overview of Earth Sanctuaries Ltd	43
References	49

BOXES

1	Estimates of biodiversity loss in Australia	2
2	Ecotourism at ESL	6
3	Overview of State and Territory native wildlife regulation	12
4	Western Australia private sanctuaries program	13
5	Overview of Commonwealth regulation of trade in fauna	16
6	Crown lease provisions	18
7	Competitive neutrality	19
8	Cleland Wildlife Park Case	21
9	Valuation of self generating and regenerating assets	30

TABLES

C.1	Native fauna represented at Earth Sanctuaries	44
C.2	ESL: sources of revenue 1999–2000	45

FIGURES

1	Sanctuaries operated by Earth Sanctuaries Ltd	5
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Key messages

- Australia is rich in biodiversity, with many unique plants and animals. Many of these are threatened with extinction due to habitat alteration and loss, or competition and predation from introduced species such as foxes, cats and weeds.
- Private sector involvement in conservation spans a number of local, regional and national activities, ranging from the philanthropic to purely commercial. The long run success of commercial private sector approaches to conservation depends on whether access can be controlled and a fee can be collected from users and the amount consumers are willing to pay to obtain those benefits.
- Earth Sanctuaries Ltd (ESL) is the first publicly listed company in Australia with wildlife conservation as its primary goal. Its focus to date is on conservation of small native mammals that are threatened by exotic predators and loss of habitat. Its strategy has been to acquire land, erect electrified vermin-proof fencing, remove feral animals, regenerate native vegetation and reintroduce selected native species.
- ESL has had success in breeding several rare species and establishing them in its sanctuaries. Revenue is mainly from tourism and associated activities at its sanctuaries and from professional consulting.
- Notwithstanding success at conserving many species, there has been some public criticism of ESL's approach, including the use of fencing and the relative emphasis on animals with 'tourist appeal', rather than on restoring native eco-systems per se.
- All Australian jurisdictions have extensive legislation to protect native flora and fauna. The legislation restricts trade in, and the property rights to, native species. Private sector conservation generally, and ESL's commercial operations in particular, are heavily circumscribed by this.
- There does not appear to be a consistent and coordinated approach across jurisdictions for private conservation providers to access, keep, relocate and trade native wildlife, amplifying uncertainty for organisations which operate in several jurisdictions.
- Activities that private sanctuaries may wish to undertake on Crown leasehold land may conflict with lease conditions and associated regulations.
- Although new Australian accounting standards can be used to provide estimates of the value of wildlife assets, these values are difficult to verify because the assets cannot currently be traded.
- Competitive neutrality principles and measures — designed to ensure businesses do not enjoy net competitive advantages simply by virtue of their public ownership — appear to have limited application to public sanctuaries.
- Private sector activity can complement conservation activities by the public sector, both by adding to the resources marshalled by government for conservation and by freeing up government resources for other purposes.

1 Introduction

Australia is rich in biodiversity, with many unique species of plants and animals. About 82 per cent of Australia's mammals, 45 per cent of its land birds, 89 per cent of reptiles and 93 per cent of frogs occur nowhere else. There is also much diversity in Australia's biogeography, extending from deserts to tropical monsoon areas, temperate climes and antarctic and sub-antarctic regions (DEST 1996).

Conservation of biodiversity is important to Australia for many reasons. It underpins the processes that support life, such as the maintenance and regulation of water resources, soil formation, recycling of nutrients, atmospheric quality and climate. As such, biodiversity underpins much of Australia's commercial production that relies on healthy ecosystems (for example, agricultural production). Biodiversity also provides natural ecosystems with resilience — the ability to recover from natural disasters such as drought, fire, flood and climate change. In addition, many Australians place high values on native plants and animals, which contribute to cultural identity. Aboriginal and Torres Strait Islander peoples in particular have a strong cultural association with their environment and in particular with wildlife. The aesthetic values of natural ecosystems and landscapes contribute to the emotional and spiritual wellbeing of the highly urbanised Australian population. Both active and passive recreational benefits of biodiversity are enjoyed by many Australians, as well as international visitors (DEST 1996; SEAC 1996).

Biodiversity may be described in terms of genes, species and ecosystems. It is difficult to establish the current status of biodiversity loss. Many species, for example, have not yet been identified or described, let alone surveyed (see, for example, Pearce and Moran 1994; SEAC 1996; World Conservation Monitoring Centre 1992). However, it is clear that the impact of human activity since European settlement has significantly reduced biodiversity in Australia (box 1). The State of the Environment Advisory Council describes the loss of biodiversity as perhaps the most serious environmental problem in Australia (SEAC 1996).

Biodiversity loss in Australia is attributed to a number of threatening processes acting individually or in combination, including:

- habitat loss, change and fragmentation due to factors such as clearing of native vegetation, grazing and trampling, damming of rivers, drainage of wetlands, altered fire regimes, geomorphic alteration and water release from water storages; and

- predation, competition and habitat alteration from introduced (exotic) species such as foxes, cats, rabbits, goats, cattle, sheep, rubber vine, weeds, buffel grass and mimosa (EA 1998).

Box 1 **Estimates of biodiversity loss in Australia**

European settlement has significantly altered Australia's natural landscape — and with it, Australia's biodiversity. About 90 per cent of native vegetation in the eastern temperate zone has been removed as a result of human habitation, industry and transport, or replaced by introduced pastures and crops. About 50 per cent of Australia's rainforests have been cleared and the proportion of Australia covered by forest or woodland has been reduced by more than one third.

More than 80 per cent of Australia's 18 million people live in urban centres, most of them within 50 kilometres of the coast. The resulting population pressures and changes in land use have had substantial impacts on the biological diversity of coastal ecosystems, including mangroves, estuaries and tidal marshes.

The effect of these changes on Australia's biodiversity has been considerable. Around 5 per cent of Australia's higher plants, 7 per cent of reptiles, 9 per cent of birds, 9 per cent of freshwater fish, 16 per cent of amphibians and 23 per cent of mammals are listed as extinct, endangered or vulnerable.

Species decline has been much higher in some regions than in others. In the 1990s, the number of endangered plants was recorded as being highest in the agricultural areas of the south-east and south-west, in the western coastal region and in the rainforests of north Queensland. In the deserts, 33 per cent of mammal species have become extinct.

Sources: DEST (1996); Endangered Species Advisory Committee (1992); Walker (1992).

Environmental responsibilities in Australia are divided between the Commonwealth government and state, territory and local governments. The states and territories exercise most powers and responsibilities for natural resource management and environmental protection, including management of crown land, crown forests, national parks and reserves, native wildlife, fisheries and pollution control. However, the Commonwealth has responsibility for its own lands, matters of national environmental significance and international environmental commitments (appendix A).

Around 63 per cent (about 500 million hectares) of Australia's land area is freehold or leasehold land and is under the control of private landholders and resource managers, while about 7 per cent is public land designated as a nature conservation reserve (AUSLIG 2000). Many species and habitats are poorly (or not at all) represented in national reserves: reserves tend to reflect 'residual' land use, with more extensive protection given to land least useful for commercial purposes

(SEAC 1996). Bennett (1995a) adds that many reserves in Australia are not large enough, on their own, to maintain viable populations and ecological processes necessary to sustain natural communities in the long term. Furthermore, many species move across reserve boundaries, so protection of habitat or resources in only one part of the landscape will not ensure their survival.

The National Reserves Program has been established to assist development of a comprehensive and representative system of reserves to cover those ecosystems that are unrepresented or poorly represented in the existing national reserve system. In addition, there is a growing recognition of the importance of an integrated approach to conservation which acknowledges the significance of both reserved and non-reserved land, and public and private tenure (see, for example, Bennett 1995a; IC 1998; McNeely 1994). The *National Strategy for the Conservation of Australia's Biological Diversity* recognises the importance of the private sector in the conservation of biodiversity, and notes increasing numbers of resource managers seeking and adopting new management methods that integrate ecological and economic goals (DEST 1996).

The private sector has been involved in various conservation activities in Australia for many years. These activities reflect both philanthropic and commercial approaches to conservation such as:

- using private funds to preserve wildlife and habitat or to help solve environmental problems;
- donating land for placement under a covenant or agreement to ensure conservation into the future (this may involve public assistance or encouragement to do so);
- raising awareness of, and educating, the public;
- investing in, or running, ecotourism or conservation facilities within protected areas through lease or permit arrangements, or on nearby land with agreements to access the natural areas;
- sponsoring wildlife management programs or campaigns to save particular endangered species; and
- community involvement in government funded activities such as tree planting and corporate sponsorship of environmental programs (appendix B).

Many private sector activities may also contribute to conservation even when this is not their core purpose. For example, landholders may act to control erosion or reduce salinisation for private gain, or protect remnant vegetation from clearing for security, aesthetic or altruistic reasons. These activities also benefit the environment and wider community.

This report considers one example of private sector involvement in conservation of biodiversity — Earth Sanctuaries Ltd (ESL). ESL is the first publicly listed company in Australia to have conservation of wildlife as its primary goal (ESL 2000a; Foskey 1998). ESL states that its ambition is:

... to establish safe habitats for Australia's threatened wildlife and conserving biodiversity needed for their survival. To do this, ESL estimates it needs to develop an 'Earth Sanctuary' in each of Australia's 80 habitat regions. This would dedicate over 1 per cent of the Australian landmass to the sustainable conservation of Australia's wildlife. (ESL 2000b)

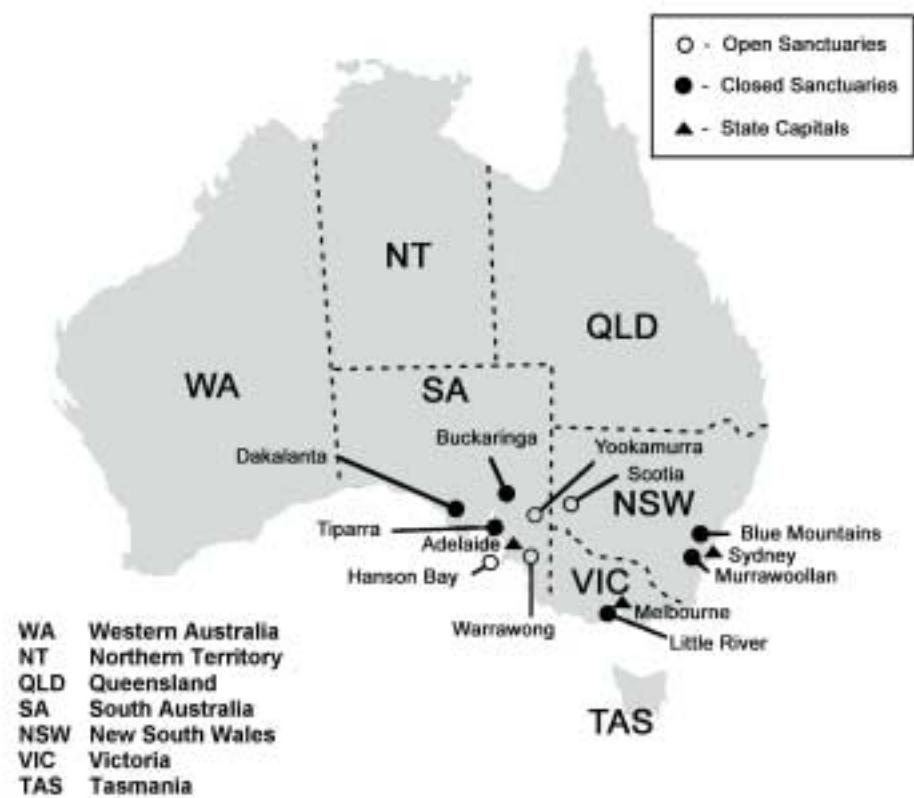
ESL's operational strategy is to acquire land and erect electrified feral (vermin) proof (exclosure) fencing around it. The company then removes feral animals from the land and attempts to re-introduce selected native species (ESL 2000b). This strategy targets the threat to small native mammals (particularly marsupials), birds and reptiles that evolved in an environment devoid of exotic predators such as foxes and cats. ESL seeks to educate the public on biodiversity and environmental issues. It also undertakes research about habitats and the diseases affecting native species and uses this information to educate its visitors and the wider public (ESL 2000b), as well as for its own purposes in managing its business.

ESL currently consists of 10 sanctuaries in three states, spanning around 90 000 hectares of land and several biogeographical regions (figure 1). Appendix C outlines the species kept at the sanctuaries, together with background information on the company.

To fund its conservation work, ESL is involved in a number of income-generating activities. The most significant of these is ecotourism permitted at various sanctuaries (box 2). The company also raises income through a variety of other activities such as the provision of consultancy and contract services (for example, the removal of feral species from private properties) and the sale of non-endangered captive animals.

ESL's emergence and growth challenges traditional conservation paradigms that give pre-eminence to the role of the public sector. Indeed, as it has grown, ESL has at times challenged regulations and activities that could constrain the operation of private sector providers of biodiversity conservation services.

Figure 1 **Sanctuaries operated by Earth Sanctuaries Ltd**



Sanctuary	Location	Year acquired	Year opened ^a	Status of tenure	Land controlled	
					Total area	Area feral fenced ^b
Warrawong	South Australia	1969 ^c	1985	Freehold	34	34
Yookamurra	South Australia	1988 ^c	1991	Freehold	4 750	1 100
Buckaringa	South Australia	1990 ^c		Freehold	2 000	Nil
Tiparra	South Australia	1987 ^c		Freehold	2 000	Nil
Dakalanta	South Australia	1993		Freehold	13 000	Nil
Hanson Bay	South Australia	1997	1997 ^d	Managed ^e	3 485	Nil
Scotia	New South Wales	1993	1997	Leasehold	65 000	8 000
Murrawoollan	New South Wales	2000		Freehold	700	Nil
Blue Mountains	New South Wales	2000		Freehold	480	Nil
Little River	Victoria	2000		Freehold	1 185	120

^aSanctuary is not yet open to the public unless a year is specified. ^bTo date. ^cYear of initial purchase (holding later expanded). ^dOpened to the public as an Earth Sanctuary in 1997. ^eA management agreement exists between the Hanson Bay Company (Georgia, USA) and ESL for the day to day running of the cabins and the property.

Sources: Craik, W., Earth Sanctuaries Ltd, Adelaide, pers. comm., 2 January 2001; ESL (1999c and 2000d); Jackson, B., Earth Sanctuaries Ltd, Adelaide, pers. comm., 5 December 2000;

Box 2 Ecotourism at ESL

Ecotourism conducted by ESL is focused around the viewing of native animals at the sanctuaries. Visitors to the sanctuaries can view the animals through day or night guided tours, and from restaurant or shop facilities. Visitors are not generally permitted to explore the sanctuaries alone.

Depending on the sanctuary, tourists may have access to various amenities. These include:

- restaurants or cafes with à la carte or light dining;
- gift shops providing a range of educational materials, local crafts, Australian gifts and ESL merchandise;
- overnight accommodation in the form of cabins or camping grounds. Visitor 'packages' may also be offered where accommodation, dinner or breakfast and morning or nocturnal tours are included;
- outlets for the sale of captive animals (not endangered) or plants.

Visitors may also hire the sanctuary facilities for private functions such as weddings or conferences. Film crews and photographers may film Australian wildlife such as platypus, quolls and kangaroos at the sanctuaries for a fee.

Source: ESL (2000b).

This report considers:

- how conservation and sustainable resource use can be stimulated within the market; the linkages between ecological and financial/economic goals; and whether and under what conditions subsidies and/or grants may be required (section 2);
- key regulatory challenges faced by the private sanctuaries in Australia and how they affect incentives and decision making (section 3);
- ESL's contribution to biodiversity conservation and/or sustainable use of resources and how ESL manages any ecological and financial/economic trade-offs, including reinvestment of financial rewards in further conservation and sustainable use activities (section 4); and
- potential policy issues such as the strengths and weaknesses of the private and public models; special circumstances that might facilitate or constrain the extension of the approach to other countries; and the potential functions for government, communities and markets as regulators and active participants in sustainable use of resources and conservation of biodiversity (section 5).

2 Private sector contribution to biodiversity conservation

This section outlines an economic framework for private sector involvement in biodiversity conservation, particularly with regard to wildlife sanctuaries. It also raises some of the potential strengths and weaknesses of private sector involvement.

Economic framework

Rights to property are generally exchanged in markets. For markets to work efficiently, property rights need to be clearly defined; completely and exclusively allocated; secure; and legally enforceable. Property right regimes are not in themselves sufficient conditions for sustainable management of resources, but they are necessary (Hanna, Folke and Mäler 1995) — without security of access to future benefits from the resource there is little incentive for the owner or manager of a resource to limit current use, to forego consumption or to reinvest in maintaining stocks.

Sanctuaries provide a mix of both public and private ‘goods’ or benefits. Public benefits can include, among other things, the existence, option and bequest values of protected habitat and species and the ecosystem stability and resilience provided by biodiversity. Private benefits can include enjoyment from recreational activities such as bushwalking. Once produced, public goods are available to all consumers simultaneously and consumption by one individual does not diminish supply of the good for another (non-rivalrous consumption). Individual consumers, including those who do not pay, cannot be excluded from consuming or enjoying the public good once it has been supplied (non-excludability). As a result, there is little incentive for the private sector to supply public goods, because the costs of supply cannot be recovered (the ‘free rider’ problem).

The long run success of commercial approaches to conservation depends on the proportion of total benefits generated by conservation activities that can be made excludable (that is, a fee can be collected from users) and the amount the consumer is willing to pay to obtain these benefits. If it is technically and/or economically possible to exclude those who have not paid to enjoy some of the benefits, these become private goods (Bennett 1995b). Even where non-excludable benefits dominate in the mix of goods jointly provided, Bennett (1995b) argues that the free rider problem may not always present an insurmountable barrier to private sector

activity. Bennett cites altruism, peer pressure and concern that if everyone free rides the good may not be provided at all as reasons why some people may pay for non-excludable goods and services.

The benefits to private operators of excluding unauthorised use are more likely to exceed the costs of exclusion the more closely a protected area is located to a densely populated area. Sanctuaries in remote locations may need to have exceptional features to attract visitors. In addition, patrolling access at remote sites may be relatively expensive. Thus, it may not be possible for private operators to obtain revenues that exceed the costs of operation and there may be little incentive for commercial provision.

To be financially viable, such areas will require funding from other sources. Those sources may be government, other private sector parties such as sponsoring corporations or not-for-profit groups, or funding may come from the operator's own activities elsewhere (that is, a cross-subsidy between sites). The latter will occur if there are spillover benefits from continued operation of the activity (requiring external funding) able to be captured by the private sector operator. For example, in the case of ESL, the existence of more remote protected areas may have value to shareholders and visitors to other sanctuaries, even if low visitor rates at the remote location result in little revenue being collected directly from that site.

Potential strengths and weaknesses of private sector conservation

Where conserving the environment is important and consistent with a resource owner's profitability or self-interest, strong incentives can exist for the owner to conserve the environment. This could result in the private sector not only conserving existing biodiversity, but also fostering and enhancing it. For example, if accommodation at a particular location appeals to consumers because of the possibility of sighting native birds, the operator has an incentive to maintain or enhance flora that provides habitat or food for those birds. These incentives are likely to be strongest when property rights are secure and enforceable.

However, the requirement to be profitable suggests there may be limits to the range of conservation activities likely to be undertaken voluntarily by commercial operators without public assistance. For example, species of less interest to the public may provide less incentive for conservation by the private sector.

A potential strength of private sector involvement in conservation is that competition encourages innovations in conservation management and provides

avenues for testing and developing more cost-effective methods. Competition also provides an incentive for providers to be responsive to consumer demands (Hartley 1997).

In addition, private sector involvement in conservation can reduce the need for direct government protection and provision of environmental assets, with consequent budgetary savings. These savings may allow government funding of additional conservation, or other, activities.

A private business needs to balance financial goals with other objectives. Critics of private sector conservation argue that financial imperatives to generate an income from environmental assets and services may conflict with what is best from purely a conservation perspective (for example, Figgis 1996). For instance, a tourism operator may focus on conserving the species most attractive to visitors to increase revenues. While this is to be expected, the extent to which it is actually a problem depends on whether such tradeoffs result in harm to the environment overall or whether a positive contribution nevertheless is being made to conservation outcomes, albeit one that is incomplete or may be perceived as less than 'ideal'. The continued existence of a species, although in a slightly modified and artificial context, is preferable to its extinction.

A related concern is that commercial operators may sometimes focus on short term financial returns at the expense of the environment in the longer term. This may be particularly relevant because the impacts of some activities on the environment may only become apparent after long time lags.

When private operators seek to maximise the value of their businesses and assets over time, there is less incentive to focus on short term financial gains at the expense of the environment. This is because decisions that compromise the environment in future would also compromise future profits, and hence current asset values of firms in the business of conservation. However, with imperfect information about future values and prices or uncertainty about the long term impacts of activities on the environment, operators may unknowingly degrade the asset. Further, if there is information asymmetry between the seller and buyer of a conservation business, the seller may be able to hide degradation of the asset to obtain a higher price while taking advantage of any short term gains from asset degradation. Private operators may also simply make mistakes in their resource management decisions, as do public sector managers.

Finally, ensuring equitable access by the community to environmental assets has been raised as a relevant issue for some private sector conservation activities. Access issues may arise when a particular piece of land is sought after by both the private and public sector, or if private sector purchase of a property will impact on

the ability to access public lands. Access issues can be dealt with outside of the question of ownership, for example, through imposition of covenants or community service obligations associated with the property (for further discussion, see Bennett 1995b).

Summary

- Wildlife sanctuaries can provide a mix of public and private benefits or goods.
- The success of commercial approaches to conservation relies largely on the proportion of total benefits generated by conservation activities that can be made excludable and the amount that consumers are willing to pay to obtain these benefits. In some cases, the revenue generated from the private goods (that is, those where access can be controlled and a fee collected) may be sufficient to cover the costs of providing both public and private goods. In other words, the mere existence of public goods does not necessitate public support.
- The benefits to private operators of excluding unauthorised use are more likely to exceed the costs of exclusion the closer a sanctuary is to a major source of customers and the higher the degree of attractiveness of the sanctuary.
- Competition in the provision of conservation services encourages innovation and provides an incentive to be responsive to consumer demands.
- Commercial enterprises focusing on conservation also need to achieve financial viability. If these operators seek to maximise the value of their businesses and assets over time, there is an incentive to avoid actions that compromise some aspects of the environment as these would also compromise future profits and asset values.
- From a policy perspective, ensuring equitable access to conservation areas may be relevant, but equitable opportunity to access does not necessarily require government ownership or management of such areas.

3 Regulatory challenges

The activities of ESL and other private sanctuaries are primarily subject to state and territory legislative requirements, including wildlife regulations. State and territory wildlife legislation was primarily developed to protect native animals in their natural habitats. Provision also exists for commercial harvesting of certain species (for example, kangaroos) for trade in skins and meat products. In recent years there

has been an increasing emphasis on the protection and promotion of recovery of endangered species. In addition, the legislation seeks to promote ecologically sustainable commercial harvesting of a limited range of common to abundant native species such as kangaroos and crocodiles (Delahunt, A., *Wildlife Australia*, Canberra, pers. comm., 10 January 2001). Commonwealth legislation affects the activities of privately owned sanctuaries where export of native animals may be proposed or where their activities may involve actions that impinge on matters of 'national environmental significance' that trigger the *Environment Protection and Biodiversity Conservation Act 1999*.

This section assesses some of the regulatory challenges faced by private providers of conservation services. Three areas of importance are highlighted by the ESL case study: wildlife property rights and trade; leasehold conditions; and competitive neutrality and contestability in markets.

Wildlife property rights and trade of fauna

For a private wildlife sanctuary such as ESL to be established and grow it needs to develop existing sanctuaries and/or purchase additional sanctuaries, possibly in different states and territories (hereafter referred to as states or jurisdictions). It also needs to establish and manage populations of suitable native wildlife (fauna native to Australia).

In Australia rights to acquire, keep, move and trade of wildlife are determined by Commonwealth and state legislative regimes. State legislation covers intra and inter jurisdictional trade (including wildlife relocation), while Commonwealth legislation regulates international trade. At present all jurisdictions take a restrictive approach to the capture and keeping of threatened species.

Acquisition

Wildlife sanctuaries (both public and private) cannot readily source wildlife directly from the wild. State wildlife legislation generally prohibits the taking of protected wildlife from the wild without an authority (licence, permit or exemption) (box 3). In some states, legislation specifies that wildlife 'in the wild' is owned by the Crown. However, state legislation does not usually explicitly define what is considered to be 'the wild'.

State native wildlife legislation may allow acquisition through trade in particular wildlife species under a licensing system (box 3). However, very few (if any)

species currently managed by, or of interest to, ESL can be sourced from other licence holders.

Box 3 Overview of State and Territory native wildlife legislation

In each state and territory, native wildlife legislation, among other things, provides for the conservation of native wildlife; preparation of management strategies; listing of species; and control of the taking, keeping, trade, movement and release of wildlife. While broadly similar, there are some significant differences between the licensing systems that apply in each State.

The legislation protects live fauna native to Australia, but some species may be declared to be unprotected. For example, in South Australia, galahs have been declared unprotected. Protected fauna is not necessarily endangered. The Common Brushtail Possum and the Eastern Grey Kangaroo are plentiful but protected in Victoria.

In some jurisdictions, legislation states that protected native fauna are the property of the Crown until lawfully taken from the wild. A licence is generally required to take protected native fauna from the wild, to keep in captivity or to trade. Some protected fauna does not require a licence to be kept, such as budgerigars in Queensland. Jurisdictions have many licence categories with specific conditions attached. Property rights to manage the wildlife varies according to the licence; some confer rights to trade, others do not.

The legislation contains schedules which are lists grouping fauna by several criteria including whether they are endangered, the difficulty of keeping them in captivity and whether the fauna are dangerous. The schedules usually relate to licence categories. In some states, for example, New South Wales and Western Australia, a licence cannot be obtained for any fauna not listed on a schedule. In South Australia any protected fauna can be kept subject to specific approval regardless of whether it is listed on a schedule.

Generally, release of protected native fauna from captivity to the wild is prohibited unless approval has been granted. Release of rehabilitated, sick or injured fauna is controlled to reduce risks of spreading disease back into wild populations and protect animal welfare. Translocation and reintroduction of threatened species is also strictly controlled. Transferring fauna in the wild is also facilitated by various state and territory programs such as translocation programs, management plans and, more specifically, the Private Sanctuaries for Threatened Fauna Program in Western Australia (see Box 4).

Protected native fauna cannot be transported across state or territory borders without a permit from both the importing and exporting jurisdictions. In jurisdictions such as South Australia, a permit is also required to export protected native fauna to other countries (in addition to a permit from the Commonwealth).

Several states are currently reviewing their wildlife legislation.

Sources: State and territory legislation and discussions with departments responsible for the legislation.

Box 4 Western Australia private sanctuaries program

The Department of Conservation and Land Management (Western Australia) introduced the Private Sanctuaries for Threatened Fauna Program in 1994. The program enables private landowners to restock (from the wild to the wild) predator protected land with threatened (vulnerable, endangered and critically endangered) native wildlife. The objectives of the program are to:

- complement and enhance threatened species conservation on government managed lands;
- provide an avenue for private enterprise to play a major role in threatened species conservation on private lands; and
- provide a means for private individuals and firms to recover their conservation management costs through the operation of tours and recreational ventures compatible with conserving threatened wildlife.

To establish threatened fauna sanctuaries, proponents must submit a sanctuary concept plan for consideration which includes information about the purpose of the sanctuary, a site and development plan, and an indication of the wildlife currently present and those suitable for reintroduction. Proponents must also satisfy other requirements before approval can be given to introduce fauna. These include submission of a detailed fauna survey of the site and a management plan. Sanctuaries are approved only once a management plan and formal contract agreement have been concluded between the sanctuary owners and the state.

Contract conditions specify that fauna located within the sanctuary and any introduced fauna (including progeny) remain wildlife and the property of the state. However, the management plan establishes what are, in effect, partial property rights enabling the landowner to trap, capture, handle, feed and maintain the fauna in the sanctuary subject to licence requirements of the *Wildlife Conservation Act 1950*. Non-consumptive use of the wildlife, such as tourism, is permitted. However, consumptive use is not allowed.

There are currently two properties near Perth operating under this program with more approvals pending. Another sanctuary in Shark Bay (about 850 kilometres north of Perth) is under development with others in the early planning stages.

According to the Department of Conservation and Land Management, there has been considerable interest in the program. However, to date the costs of establishing and running such sanctuaries are high compared to the tourist revenue they generate. The department suggests this has not been an issue where the owners wish to make a significant contribution to threatened fauna recovery and do not require traditional financial returns on their sanctuary investment.

Source: Department of Conservation and Land Management (WA), pers. comm., 5, 11 December 2000.

The administrative processes vary between jurisdictions and at times have involved exercising of ministerial discretion. In addition, some transfers from states have

occurred outside more formal exchange and relocation programs. For example, ESL was granted permission to enclose *in situ* a colony of yellow footed rock wallabies (Jackson, B., Earth Sanctuaries Ltd, Adelaide, pers. comm., 11 January 2001).

A new avenue for obtaining stock has developed in Western Australia that involves contracts between that state and a private sanctuary (box 4). Currently other jurisdictions do not have a similar formal arrangement for private wildlife sanctuaries. To date ESL has not opened a sanctuary in Western Australia.

Since ESL can only access small numbers of particular species from other licence holders or jurisdictions, it is developing a system for releasing sustainable numbers of captive bred wildlife into its sanctuaries. ESL breeds the wildlife over successive generations in diminishing levels of captivity with the aim of eventually releasing a number that could sustain itself within an ESL sanctuary. However, there are regulations governing release of captive bred wildlife both into the wild and into captivity (see below).

Overall, there does not appear to be a consistent or coordinated approach to wildlife management across jurisdictions. This can create uncertainty for private operators, which may be amplified for organisations such as ESL which have operations in a number of different jurisdictions, and may seek to relocate some of the wildlife (or their progeny) over time.

Relocation

Once a private sanctuary has acquired wildlife, permits also need to be obtained for release into a sanctuary. Different rules can apply depending on whether release of wildlife to the sanctuary is classified as release to the wild or into captivity. Wildlife legislation usually prohibits the release of protected wildlife into the wild either from captivity or from the wild (for example, relocation from one region in the wild to another). Despite the general prohibition under the legislation, jurisdictions can authorise licence holders to release some wildlife into the wild. In addition to holding relevant licences or permits, licence holders may be required to have an appropriate release and management plan agreed by the relevant jurisdiction. These plans are intended to ensure that the species to be released is suited to the local habitat and that local fauna of the same or related species are not compromised. Similarly, some relocation programs may require that the wildlife not be held in captivity.

Fencing of sanctuaries leads to some uncertainty about whether or not the animals thus contained are considered to be 'in the wild' for the purposes of legislation regulating release of wildlife. As noted earlier, the state legislation does not clearly

define ‘in the wild’. Consequently, jurisdictions interpret its meaning, which may lead to different interpretations across jurisdictions. The answer may vary depending on the size and habitat of the sanctuary, among other things. For example, some sanctuaries (such as Warrawong, currently 45 hectares) with small re-established habitats are unlikely to be considered ‘in the wild’. The classification of larger sanctuaries such as Scotia (when completed) may be more ambiguous. Consequently, different release rules may be applied to different wildlife in different sanctuaries. This creates uncertainty for ESL when it wishes to acquire wildlife for release into sanctuaries, or if it wishes to move animals between sanctuaries.

Trade in native wildlife

Opportunities for private sanctuaries to trade native wildlife are limited, thereby constraining their revenue sources and the ability to manage wildlife populations. As noted above, licensed intra and interstate trade of wildlife species held by ESL has been relatively rare. The Commonwealth regulates international trade in native species both to achieve national biodiversity objectives and to meet its international commitments such as the Convention on the International Trade in Endangered Species of Wild Fauna and Flora (CITES). The Commonwealth *Wildlife Protection (Regulation of Exports and Imports) Act 1982* prohibits the international export of live Australian wildlife although there are exceptions (box 5).

Ownership

The ownership of some wildlife held by ESL may be unclear and some rights that could be conferred by their ownership appear to be untested.

Although wildlife purchased through licensed trade can be owned, they represent a small proportion of all wildlife held by ESL. It is the ownership of wildlife obtained by ESL through other means that may be unclear. In particular, there may be a lack of clarity about the ownership status of *in situ* wildlife and their progeny constrained by fencing, and ownership of those directly transferred from the states may not be clearly or fully articulated in transfer agreements. The latter case can be particularly complicated if fauna are being transferred between states.

Ownership usually has associated financial implications such as being able to claim, value and realise assets. However, even if ESL were considered to ‘own’ all of its wildlife, it would still face a range of regulations specifying how they can be managed and used. The main difficulty from a financial perspective appears to be restrictions on use and trade rather than ownership *per se*.

Private conservation on leasehold land

A significant issue for private wildlife conservation sanctuary businesses such as ESL is gaining land tenure rights and the use of Crown leasehold land. Crown leasehold land makes up more than two thirds of all privately controlled land in Australia (AUSLIG 2000).

Box 5 Overview of Commonwealth regulation of trade in fauna

The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (and regulations), which incorporates provisions of the former *Wildlife Protection (Regulation of Exports and Imports) Act 1982*, regulates among other things, the export of live Australian native fauna to other countries. In so doing, it implements CITES.

In general, live native (vertebrate) fauna cannot be exported. However, permits to export live native fauna may be issued for limited purposes in accordance with specified criteria. Live native fauna listed on Schedule 1 may only be exported if the specimens are captive-bred, and the export is a transfer between approved zoological organisations or is for the purposes of approved scientific research.

Criteria to gain declaration as an approved zoological organisation include that the zoological organisation: is owned or administered by the Commonwealth or a State, is a learned zoological society, is non-profit making and primarily non-commercial, and the breeding or public exhibition of specimens is the major function. These requirements would seem to exclude conservation organisations such as ESL.

The export of captive-bred native fauna between approved zoological institutions can only occur where the native fauna is of a species that is readily bred in captivity and where it is to be used for a breeding program. Native fauna would only be classified as being bred in captivity if breeding occurs: in a controlled environment, is part of an approved program for breeding live native fauna in captivity that has been established in a manner not detrimental to the survival of the species in 'the wild', is maintained without further augmentation from 'the wild', and is managed in a manner that has demonstrated it can reliably produce second generation offspring in a controlled environment. Approved scientific organisations must (among other things) acquire specimens primarily for research purposes, publish results of research in recognised scientific publications and maintain accurate and accessible records.

Similar restrictions apply to live native fauna listed on Schedule 2 and other non-listed native fauna. There is an additional exemption for a small list of native birds (identified on Schedule 7) that may be exported as household pets if they meet strict qualification requirements. In addition to the CITES listings, the schedules contain native fauna considered to be threatened in Australia but not listed in CITES.

Proposals to incorporate the existing wildlife trade laws within the *Environment Protection and Biodiversity Conservation Act 1999* are currently being considered.

Source: Environment Australia (1996a; 1996b; 1996c; 1997).

Almost all Crown leasehold land in Australia involves pastoral leases. Existing legislation governing pastoral leases has been developed to reflect 'traditional' rural land uses.

The activities of private wildlife sanctuary businesses such as ESL may conflict with lease conditions and governing legislation relating to grazing and stocking; fencing and access; resumption of land; and Native Title legislation and land use approval by traditional owners (box 6).

ESL currently operates one leasehold sanctuary, Scotia (see section 1), located on pastoral leasehold land administered in New South Wales under the *Western Lands Act 1901*. The lease conditions for Scotia specify that the property is to be used for grazing as its primary purpose. ESL is endeavouring to achieve simultaneously its conservation objectives and satisfy the lease grazing condition on Scotia by building an exterior perimeter fence beside its feral proof sanctuary fence. The remnants of the feral goat population which used to roam the property will be grazed in the area between the two fences. The harvesting of these goats will provide ESL with an additional source of revenue and the grazing of the animals will create an additional firebreak. Discussions with the Department of Land and Water Conservation in New South Wales indicate that ESL's approach would, subject to final approval by the Department, satisfy the lease grazing condition.

Other legislation requiring access for recreational and tourist purposes may also affect leasehold land. For example, in Western Australia, the *Land Administration Act 1997* provides for access by the public to areas of recreational or tourist interest. In New South Wales, legislation that protects public access for fishermen along established watercourses may limit the suitability of leasehold properties for private conservation companies such as ESL, given ESL's approach of creating a feral proof environment.

Although infrequently exercised, resumption provisions can create uncertainty that may affect investment decisions in private conservation. Under state-based legislation, it is possible to exclude activities such as mining on Crown reserves, including national parks, but mining cannot be excluded on leasehold or private freehold land.

To lessen some of the perceived uncertainty concerning Native Title legislation and land use (see box 6), companies can negotiate directly with traditional owners to ratify Indigenous Land Use Agreements (ILUA) — a form of conditional lease (*Native Title Act 1994*). ESL is in the process of negotiating an ILUA for its Scotia property (Jackson, B., Earth Sanctuaries Ltd., Adelaide, pers. comm. 5 December 2000).

Box 6 **Crown lease provisions**

Pastoral leasehold provisions determine the property rights of landowners by specifying conditions on land use. Four key areas of importance relate to grazing, access, resumption and native title.

Grazing

All pastoral leases have some level of grazing or stocking provision attached to their title. The presumption is that the land will be used for pastoral purposes unless an exemption is granted. Western Australia and South Australia have explicit provisions for minimum stocking rates on pastoral leases. While minimum stocking rates exist in South Australia, they have not generally been enforced. In contrast, Western Australia enforces stocking rates to ensure that a commercially sustainable pastoral enterprise is achieved (subject to ecological limits).

Access

Access provisions vary across states and can limit the ability to fence a leasehold property. For example, in South Australia, the *Pastoral Land Management and Conservation Act 1989* specifies arrangements for established public access (ungraded roads) and stock route whereas no such provision applies in western New South Wales. The New South Wales *Fisheries Management Act 1994* gives a person the right to fish on all established watercourses provided the person is in a boat on those waters or is on the bed of the river or creek.

Resumption

Under lease provisions in each State, Crown leasehold land remains the property of the Crown and the Crown reserves the right to undertake certain activities on the land. For example, under the *South Australian Crown Lands Act 1929*, the Minister may:

...resume lands included in the lease or agreement for roads, railways, tramways, sites for towns, park lands, mining purposes, or for any other purpose whatsoever.

Native title

The rights of traditional owners with respect to Native Title are reflected in the Commonwealth's *Native Title Act 1994* and legislation administered by the States. Particularly for pastoral leases, there are a number of issues related to access and the use of the land by traditional owners that may potentially impact on the operation of a private wildlife conservation company such as ESL. The Industry Commission's 1996 Report on the *Implications for Australia of Firms Locating Offshore* discusses several areas of concern relating to the *Native Title Act 1994* including the legal uncertainty of varying land use on pastoral leases.

Sources: IC (1996); South Australia Pastoral Board and Native Vegetation Council Secretariat, pers. comm., 11 December 2000; Various state acts.

Competitive neutrality and contestability

The majority of Australian wildlife sanctuaries are run by the public sector. Hence, a private company in the business of running a wildlife sanctuary may face the challenge of competition from public sector businesses.

In Australia, governments have an agreed policy principle, known as ‘competitive neutrality’ (CN), that government businesses should not enjoy net competitive advantages over their private sector competitors simply by virtue of public ownership (box 7). However, competitive neutrality is not intended to apply to all government businesses and its applicability to public wildlife sanctuaries is limited and unclear until tested.

Box 7 **Competitive neutrality**

In 1995, the Commonwealth, state and territory governments committed themselves to a national competition policy that included policy principles regarding competitive neutrality. A cornerstone of competitive neutrality is the removal or ‘counter balancing’ of advantages conferred solely by government ownership. Each jurisdiction has subsequently published ‘competitive neutrality’ policies that are to be applied within that jurisdiction (including local government).

The competitive neutrality framework does not apply:

- to non-profit, non-business public sector activities;
- where government business is not considered significant; and
- where the costs of applying competitive neutrality exceed the benefits.

Competitive neutrality can be implemented by public businesses by applying a variety of measures (which may vary slightly between jurisdictions) such as:

- Corporatisation, which involves establishing clear and non conflicting objectives through measures such as separating policy and service roles, enhanced managerial responsibility and autonomy and effective performance monitoring. It applies mainly to large businesses such as Government Business Enterprises.
- Commercialisation, which is similar to but not full corporatisation. It can involve applying such measures as: establishing performance targets, removing regulatory functions, paying all rates and taxes, being subject to commercial borrowing rates and requiring a rate of return. Not all measures are necessarily applied.
- Cost reflective pricing, which requires businesses to fully recover the costs of goods and services provided. It can be applied where full corporatisation or commercialisation is not appropriate.

Sources: Commonwealth Government (1996); Department of Premier and Cabinet (Victoria) (1996); South Australian Government (1996).

Few jurisdictions have nominated public sanctuaries as significant businesses subject to competitive neutrality measures. Although most jurisdictions have a complaint mechanism that can be applied to businesses not listed as significant, some jurisdictions do not. In some states, competitive neutrality principles cannot be tested on businesses not listed as significant.

Competitive neutrality principles have only been fully tested and applied to public sanctuaries in one case — the Cleland Wildlife Park (CWP) in South Australia (box 8). It is unclear whether competitive neutrality principles would be applied or similar rulings made to other sanctuaries.

An important test in a competitive neutrality complaint is whether the public business (for example, sanctuary) is a direct competitor to the private business (sanctuary). To assess this a range of factors would need to be considered such as location, types of products, and client base.

The expected benefits would have to exceed the costs for competitive neutrality to be implemented. In the CWP Case, the South Australian Competition Commissioner considered the costs of legislative and regulatory amendments; management and cultural changes and establishing and administering appropriate tax equivalents; debt guarantees and pricing principles. These are compared with the benefits derived from increased market contestability, performance benchmarking, and clarifying non-commercial objectives. The Commissioner found the cost of implementing full cost recovery would be relatively small but significant benefits would occur from cost efficiency, management performance and maintenance of service quality.

If competitive neutrality were applicable to other sanctuaries, some measures might not be easily applied.¹

- Defining and separating a sanctuary's commercial and non commercial activities can be difficult. While activities such as cafeterias and souvenir shops are clearly commercial, some sanctuary operations such as education and wildlife recovery programs could be considered public goods and are closely intertwined with its general operations.

¹ Some of these measures are effectively already operating for some public sanctuaries. In some states, such as Victoria, public sanctuaries are separated from the regulatory arm of the relevant department via statutory boards which report directly to the relevant Minister. This meets one of the attributes of commercialisation. However, in South Australia, where ESL's Warrawong Sanctuary operates, the Cleland Wildlife Park was directly run by the Department for Environment and Heritage, thereby giving rise to potential conflicts between the department's regulatory and service functions.

- Accurately valuing wildlife and habitat assets to measure rates of return is difficult when there is no observable market for these assets (section 4).
- Requiring public sanctuaries to recover full costs through admissions prices may not be desirable. Some public sanctuaries, for example, may be required to meet certain community service obligations by discounting admissions to particular community groups — which can be allowed under competitive neutrality. On the other hand it is not uncommon for private businesses to provide discounted admissions to senior citizens and students.

Box 8 **Cleland Wildlife Park Case**

Cleland Wildlife Park (CWP), like ESL's Warrawong Sanctuary, is located in the Adelaide Hills. In 1998, ESL lodged a competitive neutrality complaint alleging certain CWP commercial activities contravened the principles of competitive neutrality.

The South Australian Competition Commissioner found clear similarities between the operations of ESL and CWP and determined that the two entities were competing in the same market segment. For example:

- both had a strong conservation focus, displaying wildlife in bushland habitats;
- a significant number of species displayed at CWP were identical to Warrawong; and
- both sanctuaries were a similar distance from the city and a ten minute drive apart.

The Competition Commissioner deemed CWP a 'significant business' for competitive neutrality purposes. He found CWP held a much larger market share than ESL and possessed the market strength to act as a 'formidable' competitor to existing and potential private sector operators. CWP was found to be recovering a significant proportion of its operating costs from revenues generated from admission charges, the restaurant and souvenir shop. Direct cost recovery was estimated to be in the range of 60 to 90 per cent, which the Commissioner considered to be a 'significant proportion' of operating costs, even at the lower end of the estimate.

The Commissioner indicated that the application of competitive neutrality principles was likely to generate net benefits to the community, mainly through improving competition and contestability in the market. The Commissioner suggested that the appropriate competitive neutrality principle for CWP to apply was full cost reflective pricing, within a framework of commercialisation. The South Australian Department for Environment and Heritage would be required to establish CWP as a separate business unit within the department, necessitating the generation of separate financial statements. It was also required to undertake its own analysis to confirm the appropriate competitive neutrality principles to apply.

The Commissioner noted that community service obligations, such as discounted admissions to particular community groups, may affect the extent to which CWP could implement full cost recovery.

Source: Competition Commissioner — South Australia (1998).

Over and above whether competitive neutrality is applied to individual public sanctuaries, implementing and monitoring the measures can be an uncertain and lengthy process. Generally, implementation falls to the relevant government agency overseeing the business. Although broad jurisdictional compliance is overseen by the National Competition Council, a jurisdiction usually establishes compliance through its Treasury department or an agency dedicated for National Competition policy issues.

In South Australia, the Department for Environment and Heritage (DEH) was required to confirm, via the South Australian Treasury, appropriate competitive neutrality principles to be applied to CWP. DEH stated that its approach towards CWP's business plan would be full cost recovery. The business plan estimates full cost recovery may be achieved in three years. When the plan is approved by the South Australian Government, Treasury will oversee its implementation. Some steps towards cost recovery have been made. CWP has been established as a ring fenced business unit. Revenues and expenses have been analysed and a financial model prepared to establish competitively neutral costs. Admission prices have increased and some staff functions have been eliminated. However, the plan does not seek to introduce wildlife or habitat asset valuations. A critical cost recovery question for the department is whether the education services provided by CWP should be recovered through admission charges or externally funded.

Summary

- Wildlife sanctuaries (both public and private) cannot readily source wildlife directly from the wild and very few (if any) species currently managed by or of interest to ESL can be sourced from other licence holders.
- Overall, there does not appear to be a consistent or coordinated approach across jurisdictions for private conservation providers to access wildlife. This can create uncertainty which may be amplified for organisations with operations in several jurisdictions.
- For example, ways in which ESL has been able to obtain wildlife appear to be peculiar to individual jurisdictions, usually undertaken on a case by case basis and often involving ministerial discretion. Requirements for releasing wildlife to ESL sanctuaries depend on jurisdictional interpretations of wildlife regulations that can lead to considerable management uncertainty.
- The opportunities for ESL to trade surplus wildlife are limited — thereby constraining its revenue sources.
- The ownership of some wildlife held by ESL may be unclear and some rights that could be conferred by their ownership appear to be untested.

- The activities of private conservation companies such as ESL may conflict with Crown leasehold land conditions and associated regulations.
- Competitive neutrality is not intended to apply to all Australian government businesses and its applicability to public wildlife sanctuaries is not clear. Even if competitive neutrality were applicable, some measures might not be easily and effectively applied.

4 ESL's ecological and financial outcomes

It is not possible in this study to assess categorically either ESL's ecological or financial outcomes. Criteria for assessing ecological outcomes remain contentious and difficult to specify, and there has been little independent evaluation of ESL's ecological performance. But most importantly both financial and ecological outcomes need to be viewed from a long term perspective given, for example, the significant lags in regenerating native flora and obtaining and establishing fauna at a range of diverse sites. Notwithstanding its apparent success to date, it is still too early to pass judgement on ESL's ecological and financial sustainability.

As a commercial company with conservation objectives, ESL needs to strike a balance between its conservation and commercial goals. This section discusses a number of issues surrounding ESL's ecological and financial outcomes to date and some of the potential tradeoffs involved.

Ecological outcomes

The creation of sanctuaries by the private sector can contribute to conservation of biodiversity. ESL considers its contribution to be:

- protecting some habitat and species through the establishment of selected pockets of wildlife in its sanctuaries;
- educating and informing the public on biodiversity and environmental issues, and assisting in identifying areas of public interest in conservation; and
- improving conservation methods and techniques through activities such as improvements in breeding techniques (ESL 2000b).

These conservation services currently provided by ESL have the potential to complement existing government conservation strategies. Environment Australia note that:

The potential contribution of captive held animals to conservation of a species is related to both the level of threat to the species in the wild and the level of integration of the captive colony with overall efforts to maintain and increase wild populations of that species. (EA sub. 5, p.3)

Nevertheless,

Captive colonies can contribute to essential research on the species that will assist management in the wild, as well as provide animals to supplement wild populations or re-establish populations in areas formerly inhabited by the species. In this latter case it is essential to determine why the species is no longer present so that the causes of local extinction can be ameliorated or removed.

Common species in captivity may have considerable educational or tourist value. In addition to their educational and tourist value, species that are in the low risk categories may support research that will enhance an understanding of the animal in the wild. Threatened species held in captivity have considerable potential conservation value. (EA sub. 5, p. 3)

It is important not to overlook the variations in the scale and extent of ESL's operations. ESL's sanctuaries are not homogeneous — while a small number of sanctuaries contain a limited number of selected species in a relatively small area, others do not. For example, Scotia Sanctuary in Western New South Wales is progressively fencing a large area of native habitat that will accommodate the range of many species. As ESL's operations develop it is likely that the ambiguities of 'captive' and in 'the wild' will need to be clarified as such ambiguities influence the assessment of the role and potential contribution of ESL to conservation.

Environment Australia suggests that the potential contribution to conservation of holding threatened species in captivity will 'best be realised if the captive animals are managed within the context of a recovery plan for the species which has as its end-point the restoration of that species to a secure status in the wild as an ongoing, integral component of a functioning ecosystem' (EA, sub. 5, p. 3).

This raises a number of important questions such as the effectiveness of recovery programs and eligibility for participation. While the above approach may be preferred, ESL's contributions should nevertheless not be overlooked.

Despite these contributions, two areas of concern with respect to ESL's approach have been raised — the use of fencing, and the narrow selection of species for conservation (EA, sub. 5; World Wide Fund for Nature — Australia, sub. 2).

Critical elements of ESL's strategy to achieve its conservation goals include the use of fencing and the elimination of feral animals within the enclosed areas. Where total species numbers are very low, the breeding of animals in captivity and their reintroduction to the wild can be a valuable complement to *in situ* conservation (IUCN 1987a). In the past, captive breeding has provided critical support for some wild populations (such as the American bison). In some cases, it has been the sole factor preventing extinction of species that have then been reintroduced to the wild (such as the Arabian oryx). The IUCN (1987b, p. 6) observed that the reintroduction of species is particularly useful where species have '... become extinct due to human persecution, over-collecting, over-harvesting or habitat deterioration, but where these factors can now be controlled'.

ESL has had success in breeding several native species, such as numbats, brush-tailed bettongs, bilbies, woylies, long nose potoroos and southern brown bandicoots, and in establishing them in its sanctuaries (ESL 1999a; Wamsley 1996). Indeed, ESL (2000b) claims that it has increased the number of animals in its sanctuaries substantially. It has reported more than a 300 per cent increase in the number of animals from species listed as threatened, and an increase of over 40 and 20 per cent in the number of its animals that are rare and endangered respectively, living in its reserves (appendix C). It has also had success with platypus which are difficult to sustain in captivity. ESL has been one of only two institutions in Australia to have bred platypus in captivity (Rural and Regional Affairs and Transport References Committee 1998).

The Commonwealth Minister for the Environment (Hill 1997, pp. 1-2) has previously acknowledged the value of feral free environments in protecting native species:

... the national Bilby Recovery Plan details research and management actions aimed at bilby conservation ... The actions include predator management, captive breeding and reintroducing bilbies into predator-proof sanctuaries and areas where the species once occurred, providing predators can be controlled.

Further, as this example illustrates, the Commonwealth Government has supported conservation strategies that involve the use of feral free areas.

However, the use of fencing to achieve conservation outcomes has been criticised on other grounds, such as its potential to conflict with other conservation strategies. It may prevent the free movement of native species both inside and outside enclosures. The Total Environment Centre (2000) considered that fencing could cut across wildlife corridors and endanger animals trying to escape from bushfires. EA (sub no. 5) noted that ESL's current practices involve only a limited number of mammal species and one bird species on relatively small land areas, and that restrictions on population size imposed by confinement of a species to particular

areas may ultimately lead to limited gene pools, loss of population viability and potentially adverse animal welfare outcomes.

However, these and other criticisms of ESL's practices need to be considered in the context of the many regulatory constraints faced by private conservation initiatives. In particular, the potential problems of over crowding or in-breeding arise directly from the constraints created by the extensive and complex native wildlife regulatory arrangements. For example, the ability of a firm to access, relocate and manage wildlife is constrained by regulations governing the taking, release and relocation of native wildlife from 'the wild'. (For further discussion, see PC 2001.)

The second criticism of ESL's approach centres on its selection of species for conservation. ESL's main focus appears to be to return native mammals to regions (ESL 2000b), rather than restore native ecosystems *per se*. ESL's approach appears highly targeted at relatively few native species. To date, the main emphasis has been on small ground-dwelling mammals, especially those that are endangered in their natural habitat (Environment and Natural Resources Committee 2000). It might be argued that species are selected by ESL on the basis of their 'charisma' — their tourist appeal — while less charismatic species receive less, if any, attention. Hartley (1997, p. 326) observed that critics of ESL have commented:

The breeding of platypus at Warrawong has been cited by some ecologists as proof that Wamsley is more interested in publicity than ecology and conservation. The platypus is not rare or endangered. The conclusion must therefore be that the only reason to breed them is for self promotion.

However, Hartley also notes that ESL argues that the breeding of such species can provide valuable publicity for the objectives of the sanctuary, which can aid the conservation cause. Further, while a narrow selection of species may limit the overall contribution made by private sector sanctuaries, the contribution made to conservation of the species selected should not be ignored, especially when species remain threatened by feral predators in public lands. In addition, private conservation activities, even if directed at few species, can still contribute to government conservation efforts by reducing the call on funding for the environment from government budgets.

Other concerns about private sector approaches to conservation more generally focus on the question of whether environmental objectives could be compromised by commercial demands. With respect to ESL, the World Wildlife Fund (USA) (quoted in Ellison 2000) commented:

If the shareholders pressure him to make higher returns, will he [Wamsley] compromise his values by building megalodges or overstocking his reserves?

As discussed in section 2, the pursuit of profit does not necessarily result in tradeoffs with environmental objectives. If ESL's activities were to be inconsistent with the product or service that visitors to the sanctuaries and shareholders demand, ESL would have little incentive to undertake them as they could compromise rather than enhance profits.

It is difficult to assess whether financial or other factors have or will lead to overstocking. The stocking rates of native wildlife in the absence of feral predators are not known and can only be implied. Further, it is important to ask what regulates population levels in the sanctuaries in the absence of predation (Tidemann sub. 3, p. 1). Wamsley (1996) has argued that ESL's approach allows a greater density of animals to co-exist in an area than might otherwise be expected. Dr Tidemann (sub. 3, p. 1) considers it '... reasonable to expect that an absence of predators might allow population densities to increase'. Nevertheless, the stocking of threatened or endangered animals in private sanctuaries, even if stocked at artificial levels, may still contribute to conservation goals.

Perhaps as important as financial incentives are regulatory constraints which restrict the ability of private sector operations to manage stocking rates (see PC 2001).

Other concerns centre on the effects of tourism on the environment. Tourists and visitors, particularly in numbers above certain thresholds, can potentially have adverse impacts on the environment, such as by trampling native flora and littering. But an operator seeking to remain in business has an incentive to minimise these impacts. For example, in ESL's case, access to the sanctuaries is strictly limited to reduce environmental impacts. Visitors may only explore the sanctuaries in the company of guides at pre-arranged times and along specific routes. ESL has regard to the carrying capacity of its sanctuaries and to the effects that tourist activity has on its conservation activities. ESL also separates sanctuaries established primarily for revenue earning from those with relatively greater emphasis on conservation.

Some criticisms of ESL's approach essentially seem to reflect a view that ESL has 'not gone far enough'. Such criticisms appear harsh because they focus on what the ESL approach omits, rather than on the positive contribution of ESL in the areas in which it has chosen to focus.

Financial outcomes

Like any other commercial operator, ESL needs to generate funding to ensure its long term viability. Currently, ESL engages in various commercial activities such as tourism and consultancy services to generate revenue to fund its conservation activities. ESL also obtains some funding through donations and government grants,

working in partnership with Earth Sanctuaries Foundation Inc, a non-profit organization that 'funds special projects to protect endangered Australian species' (ESF 2001). Appendix C outlines ESL's revenues and costs in 1999-2000.

In addition to the receipts it earns from commercial activities, ESL is also assisted by a number of volunteers who help in the day to day operation of sanctuaries as well as in undertaking on-ground works such as erecting fences. In 2000, around 175 volunteer workers were estimated to be involved in various ESL projects (Jackson, B., Earth Sanctuaries Ltd, Adelaide, pers. comm., 21 December 2000). In 1999-2000, ESL reported an operating profit after income tax of almost A\$2.1 million compared to about A\$1.2 million in 1998-99 and A\$0.162m in 1997-98. The higher profit in the last two years reflects inclusion of the value attributed to fauna held by the company (ESL 2000b, 2000d).

The company's revenues from operating activities such as the sale of goods have increased by about 11 per cent on the previous financial year (ESL 2000b). Visitor numbers at the sanctuaries have also increased in recent years. In 2000, around 25 000 visitors to ESL paid for guided walks and/or accommodation, compared with around 18 000 in 1995. These visitors were in addition to an estimated 18 000 other visitors who also attended ESL sanctuaries in 2000, as school parties or as customers seeking to use the restaurants or the souvenir shops only (Jackson, B., Earth Sanctuaries Ltd, Adelaide, pers. comm., 20 December 2000). The planned opening of additional sanctuaries, and the receipt of various tourism awards, may contribute to increases in revenue associated with operating activities such as tourism.

While revenue associated with tourism is likely to be an important source of funds for commercial sanctuaries, it may be insufficient to fund significant expansion of sanctuaries. The creation of sanctuaries involves large, up-front investment in long term assets. In ESL's case, investments are required to fund construction of vermin-proof fences, eradication of feral animals, reintroduction of endemic wildlife, establishment of tourist facilities and other capital expenditures (ESL 2000a). To raise capital, ESL listed on the Australian Stock Exchange in May 2000, generating almost A\$12 million that will help fund the development of three sanctuaries (ESL 2000b). Prior to 1998, the company raised A\$8.9 million from investors (Foskey 1998). Since listing on the stock exchange, the share price has fallen from an initial listing of A\$2.50 to A\$0.75 as at 30 June 2001. The volume of ESL shares traded on the stock exchange has been low with few active buyers and sellers: turnover in the period from 1 January to 31 June 2001 was around 3 per cent of the total number of ordinary shares. ESL attributes its low trade and share price to a variety of factors including an 'investment wariness', arising from the fact that the investment community has little experience to judge ESL's worth. In addition, ESL

suggest that the conservation community exhibits a 'conservation wariness' where it prefers to buy shares from the company itself, rather than from the market (ESL 2001c).

Around 60 per cent of ESL's 6800 shareholders have small holdings of less than 1000 shares (ESL 2000b). ESL's Chairman has stated that ESL is yet to attract support from institutional investors who often prefer to commit funds when new projects — such as new sanctuaries — are near completion (ESL 2000b). Foskey (1998) has suggested that many investors in ESL may be more interested in the preservation of Australian wildlife than in investment returns. One shareholder, Bradley von Xanten (von Xanten 2000) notes:

I personally have bought shares several times on previous floats prior to their listing on the ASX. I have not invested in ESL so much as to make a profit, I have invested in the company because I believe in what they are doing and I feel they are approaching it the correct way.

Nevertheless, although there has been relatively little trade in ESL shares, the long slow slide in share-price indicates that some shareholders have been willing to sell their shareholdings at lower prices, and that on-market demand has not been great.

Indeed, according to ESL, (Craik, W., Earth Sanctuaries Ltd., Adelaide, pers. comm., 2 January 2001), ESL has had significant donations of dividends back to it, which suggests that Foskey may be correct with respect to at least some ESL investors.

The reported capital value of ESL increased in the last two years in part due to its adoption of a new method to estimate the market value of its fauna. ESL had previously valued its wildlife on the basis of (i) a proportion of the amount spent by tourists visiting Australia for endangered species and (ii) a 'best conservative estimate of what the company could reasonably expect to recover' for common native species. However, this method suffered from a number of problems (for discussion, see Burritt 1999).

In 1998, the Australian Accounting Standards Board outlined a new approach for evaluating self generating and re-generating assets (SGARAs) (box 9). Under the accounting standard AASB 1037, a SGARA is a 'non-human living asset' (AASB 1998). Australia is the first country to develop and apply an accounting standard for SGARAs and the standard applies to financial years ending on or after 30 June 2001 (AASB 1999, Keys 1998). ESL is one of the first companies in Australia to apply the new method (Booth 1999).

Box 9 **Valuation of self generating and regenerating assets**

The value of self generating and regenerating assets (SGARAs) can be measured using Accounting Standard AASB 1037. AASB 1037 applies to SGARAs that are held primarily for profit, for example, for sale in their own right or to generate produce for sale. The standard applies to both 'consumable-SGARAs' with short-term production cycles, such as wheat crops, and 'bearer-SGARAs' with long-term production cycles, such as apple trees in an orchard. According to AASB 1037, although the principles contained in the standard may be appropriate for SGARAs not held primarily for profit, such as SGARAs that are a component of a national park, measurement methods may not be sufficiently developed to measure reliably the net market value of those assets separately from non-biological assets, such as land, to which they are attached.

The standard requires SGARAs to be measured at net market values and for increments and decrements in net market values to be recognised in profit and loss statements. SGARAs must also be presented separately in the balance sheet. The net market value of SGARAs is defined as the 'amount which could be expected to be received from the disposal of the SGARA in an active and liquid market after deducting costs expected to be incurred in realising the proceeds of such a disposal' (AASB 1998, p. 8).

Key guidelines for valuing SGARAs include:

- where active and liquid markets exist for the SGARA, the observed market price should be used as a basis for valuation, from which transactions costs should be deducted;
- where no active and liquid market for the SGARA exists, valuations of SGARAs should be based on the best indicator of the net amount that could be received from its disposal in a market. Depending on the situation, AASB 1037 states that one of the following may provide the best indicator of net market price and, therefore, be the best basis for determining net market value:
 - the most recent net market price of the same or of similar assets;
 - the net market value of related assets;
 - the discounted net present value of cash flows expected to be generated by the SGARA;
 - cost.

The standard states that SGARAs must be recognised when, and only when:

- it is probable that the future economic benefits embodied in the SGARA will eventuate;
- the SGARA has a value that can be reliably measured.

AASB 1037 applies to arrangements where exclusive rights are granted over a specific SGARA. SGARAs that are not subject to exclusive rights are excluded from the scope of the standard.

Source: AASB (1998).

Under these accounting standards, ESL values its SGARAs on replacement cost (cost to capture, relocate and re-establish species in the sanctuaries). The replacement values depend on the conservation status of the SGARAs, with the values used by ESL ranging from A\$1250 per animal for threatened species, A\$2500 per animal for rare species, and to A\$5000 per animal for endangered species (ESL 2000b). While the SGARA approach provides a valuation of one of ESL's key revenue generating assets, it is a unique application of the standard.

The market value of native flora and fauna is difficult to establish, as it is not traded in an active and liquid market (ESL 2000b, see also section 3). An inability to trade, and hence establish the value of such assets, could limit a firm's ability to borrow, raise funds and generate revenue. If ESL were able to sell native fauna assets, earnings could potentially be significant. The company has reportedly received A\$500 000 from Toba Aquarium in Japan in the event that the aquarium may, one day, be able to purchase a platypus (Woodford 1996). However, the value ESL could receive for fauna on an ongoing basis would depend on several factors, such as the type of species sold and the number available.

By affecting the potential to generate revenue and to borrow or raise capital, the inability to trade fauna can affect the financial success of a private conservation company. By implication, this restriction can also affect a company's conservation success through a lack of funds.

Since a funding source is required for the development of sanctuaries and the pursuit of conservation objectives, a commercial operator such as ESL must balance its environmental objectives with the need to establish a financially viable and attractive investment option for potential investors. A conservation company may wish to retain profits to create additional sanctuaries and thereby expand its conservation activity. In the case of ESL, the company has expressed a preference to limit the dividend paid to shareholders so that profits may be ploughed back into the company to allow it to pursue its conservation objectives. However, the Chairman of ESL has acknowledged that it may need to increase its dividend to attract investor interest to be able to further its conservation goals.

Summary

- ESL's main contribution to the conservation of biodiversity to date is through the protection of some habitat and selected species of small to medium sized mammals. This is pursued through the establishment of selected pockets of wildlife in its sanctuaries; educating and informing the public on biodiversity and environmental issues and assisting in identifying areas of public interest in

conservation; and improving conservation methods and techniques through activities such as improvements in breeding techniques.

- There is debate about the extent to which ESL can contribute to conservation of biodiversity ‘in the wild’ because the animals are constrained by exclosure fencing, although in some cases, these may be potentially very large areas.
- Ecotourism can complement conservation and provide funds to support conservation goals, but it may also have potentially negative impacts on the environment. Some of the ways ESL manages the impacts of tourism include limiting visitor access to certain areas at pre-arranged times, and in the company of a guide; and separating sanctuaries established primarily for revenue earning from those with relatively greater emphasis on conservation.
- Like any other commercial operator, ESL needs to generate profits to ensure its long term financial viability.
- ESL is supported by the Earth Sanctuaries Foundation, a non-profit organisation that ‘funds special projects to protect endangered Australian species’, and assisted by volunteer labour.
- The ESL approach to conservation involves large ‘up front’ investments in long term assets.
- An inability to trade can make it difficult to value wildlife — a key asset of a sanctuary business — potentially affecting firms’ ability to raise funds needed for investment.
- New accounting standards for self generating and regenerating assets can be used to provide an estimate of the value of wildlife assets but these values can be difficult to verify because these assets cannot currently be traded.
- Like all companies, ESL needs to make decisions about the balance between retaining profits and paying dividends. In ESL’s case, this tradeoff can have implications for the company’s ecological outcomes. For example, a lower dividend may be paid to shareholders to increase retained profits and fund additional conservation activities, but low dividends may fail to attract sufficient investor interest and funds, thereby affecting the firm’s ability to fund additional conservation activities in the future.

5 Conclusions and potential policy issues

Markets can generally allocate resources in a way that maximises benefits to the community. However, where property rights to resources are poorly defined (such as where they display public good characteristics) markets cannot be relied on to generate an efficient resource allocation. In addition, markets may not efficiently allocate resources where information on the value of goods and services is inadequate. The result can be a less than socially optimal provision of a good or service by the private sector.

Although there may therefore be occasions when markets do not lead to efficient resource use, this is not a sufficient reason for government action. The merits of government action also depend on whether government provision or involvement will result in an allocation of resources that is more efficient than that arising through the (imperfect) market.

In the case of biodiversity conservation, there may be a role for government in areas such as:

- ensuring that an appropriate regulatory framework is in place to promote conservation goals in a coordinated and integrated way;
- supporting and providing information and education on biodiversity and environmental issues;
- funding or undertaking research on environmental issues to improve understanding of ecological processes;
- providing financial support through subsidies or grants for conservation activities undertaken by the private sector; and
- ownership, though not necessarily management, of critical protected areas.

However, as the Productivity Commission argued in its recent report on constraints to private conservation of biodiversity (PC 2001), it is important that the government conservation activities and regulatory framework do not inhibit or 'crowd out' potential private sector involvement. A dominant government role in biodiversity conservation can create, or reinforce, a perception that conservation is the 'government's responsibility' which can deter private sector initiatives. This implies that governments need to establish a regulatory framework and policies that enable rather than impede private sector involvement in achieving or complementing government conservation goals.

Public enterprises currently dominate the wildlife sanctuaries in Australia. It is unclear whether competitive neutrality principles and measures, which seek to remove or counterbalance advantages of government ownership, can be effectively applied to these government businesses.

At present, wildlife regulations in Australia are complex, create considerable uncertainty for existing and potential commercial operators and hence reduce incentives for the conservation of native wildlife. The institutional framework governing native wildlife in Australia generally operates on a ‘regulate by exception’ basis: that is, most actions are prohibited unless specifically approved. Regulations governing acquisition, relocation and disposal of wildlife are not necessarily consistent (or interpreted consistently) across jurisdictions.

For example, fencing of sanctuaries – a key element of ESL’s approach – leads to uncertainty about whether or not the animals thus contained are considered to be ‘in the wild’ for the purposes of legislation regulating release of wild animals. Different rules apply depending on whether permission is sought to release wildlife to the wild or into captivity. State regulations do not explicitly define ‘in the wild’. The classification of the sanctuary may vary depending on the size and habitat of the sanctuary, among other things. This leads to potential inconsistency in interpretation of the regulation within, and between, jurisdictions. This creates problems for operators who wish to acquire wildlife and release wildlife into sanctuaries, or to move animals between sanctuaries.

Exclusionary fencing also potentially raises difficulties in some jurisdictions for sanctuaries operating on Crown leasehold land as lease conditions, such as grazing and access requirements, may conflict with the requirement for exclusionary fencing.

An important regulatory constraint is the inability to trade commercially native wildlife. As wildlife is one of a sanctuary’s key assets, this impinges on the enterprise’s ability to raise revenue and to generate capital. While new accounting standards for self generating and re-generating assets may be used to provide estimates of the value of its wildlife assets, these values can be difficult to verify because the assets cannot be traded. This has implications for the ability of the enterprise to achieve both financial and ecological objectives.

ESL’s approach to conservation highlights some inherent tensions between conservation and financial goals. In part, the success of commercial approaches to conservation depends on whether some of the benefits of conservation can be made ‘excludable’ and hence an access fee can be collected. ESL is able to exclude non-paying beneficiaries from viewing the fauna it keeps in its sanctuaries and is thus able to generate some tourism revenue from its conservation activities. While more

remote reserves may not be self-supporting in terms of revenue, this does not necessarily mean that government support is needed. Instead, ESL has chosen to cross subsidise less profitable sanctuaries with funds from operations closer to major urban populations. These remote sanctuaries may enhance ESL's credibility and reputation as a conserver of biodiversity.

While tourism can complement conservation activities by providing revenue to fund them, it can also potentially have negative impacts on the environment. ESL manages the trade-off between its need to obtain revenue and its environmental goals by limiting tourist access to certain areas, and to particular times of the day and night, and by requiring visitors to be in the company of ESL guides at all times. In addition, sanctuaries are managed differently, with 'tidbit feeding' to encourage animal sightings by tourists limited to smaller sanctuaries with higher tourist potential.

Private sanctuaries can contribute to conservation through successful captive breeding programs and maintenance of populations of selected fauna in selected pockets of habitat. In many cases a formal 'captive breeding program' is unnecessary — simply controlling predation allows populations to flourish.

Any education and information activities of such companies may also contribute to an increase in awareness of problems associated with conservation and management of threatened species generally. This potentially generates increased demand by the public for both governments and companies to pay attention to conservation issues.

Thus private sector activity can complement conservation activities by the public sector, both by adding to the resources marshalled by government for conservation and by freeing up government resources for other purposes.

A Government responsibilities for environmental legislation

In Australia, environmental responsibilities are divided between the Commonwealth Government and the state and territory and local governments. The states and territories exercise most powers and responsibilities for natural resource management and environmental protection, including management of Crown land, Crown forests, national parks and reserves, native wildlife, fisheries and pollution control.

The Commonwealth manages its own lands, including some national parks and the marine environment outside state coastal waters (three nautical miles).

As the national government of Australia, the Commonwealth Government is also responsible for protecting features of national environmental significance, such as World Heritage areas and threatened species. In addition it implements obligations entered into under international environmental treaties, such as those dealing with climate change, destruction of the ozone layer and protection of biodiversity. Some of these responsibilities are exercised through the principal act; the *Environment Protection and Biodiversity Conservation Act 1999*.

The Commonwealth can effectively override state legislation affecting the environment, for example, through its constitutional responsibility for matters related to trade, corporations, taxation and external affairs. Despite this ability to override the states, however, the Commonwealth is more usually involved in environmental management and protection in the role of initiator and co-ordinator of national strategies that are drawn up and implemented in co-operation with the states. Examples of such national strategies include Australia's Oceans Policy, the National Forests Policy, the *National Greenhouse Strategy*, the *National Strategy for Ecologically Sustainable Development* and the *National Strategy for the Conservation of Australia's Biological Diversity*.

B Examples of private sector involvement in biodiversity conservation

Private sector involvement in biodiversity conservation spans a number of local, regional and national activities in Australia. These activities include conservation undertaken for philanthropic and commercial purposes such as the use of private funds to acquire wildlife and habitat, support education in the value of wildlife and biodiversity, and community involvement in government funded activities. Many of the private activities occur in collaboration with Government. Brief examples of some of the ways in which the private sector is involved in conservation are provided below. Some of these activities are similar to those undertaken by ESL, in that they are undertaken for profit, while other activities differ to those of ESL as they are explicitly not-for-profit.

Seal Rocks Sea Life Centre

The Seal Rocks Sea Life Centre is located on Philip Island, Victoria. It houses a theatrette with remote viewing of an offshore fur seal colony. The facility enables visitors to observe the seal-breeding colony without creating disturbance to the animals. The Centre currently raises funds through visitor fees and various amenities such as eateries, a gift shop and conference facilities (Environment and Natural Resources Committee 2000).

The work of the Centre may be considered a collaboration between the private and public sectors. The site for the Centre was originally excised from the Phillip Island Nature Park to permit a commercial lease to be established. While the Centre itself is run as a commercial business by a private company, the Phillip Island Nature Park Board manages the coastal reserve and the seal colony on which the commercial enterprise relies for revenue. The facility currently employs over 60 people and has an annual turnover of A\$4 million (Environment and Natural Resources Committee 2000).

Trust for Nature

The Trust for Nature (TFN) is a Victorian Public Authority with a mission to ‘ensure that all significant natural areas in private ownership in Victoria are conserved’ (TFN 2000a). The Trust is funded through public donations and bequests and uses volunteers to assist with administration, promotions, fund raising, and field day activities.

TFN facilitates private conservation efforts through two mechanisms. First, it assists the establishment of agreements or ‘conservation covenants’ between landowners and the Trust, under which landowners agree that the land will be protected from subdivision, clearing and other activities that damage the environment. The establishment of the covenant protects the land from actions by current and future owners. The Trust also provides a range of services to develop and manage the covenant, including regular visits and management advice (TFN 2000b).

Second, the Trust acquires land for conservation using a ‘revolving fund’. The revolving fund is used to buy land which is then protected with a covenant and sold to private buyers who are sympathetic to the aim of the Trust. Receipts from land sale are returned to the fund and used to protect more land. Some land purchased by the Trust is retained or transferred to the National Parks system in Victoria. Examples of Trust owned lands include Yarrabridge at Woori Yallock and Ralph Illidge Sanctuary near Cobden (both in Victoria). Both of these properties are open to the public.

Bush Heritage Fund

The Australian Bush Heritage Fund (BHF) is a privately owned and managed national company with the aim of protecting land for long term conservation. The Fund seeks to acquire and manage land that protects biodiversity and other nature conservation values (BHF 2000a). BHF focuses on acquiring and preserving areas of habitat which are likely to be sold and developed.

The BHF is funded through donations of money or land from the public. It also uses volunteers, such as botanical experts, to assist in its work (BHF 2000b).

As well as purchasing property through donations, a number of land purchases made by the BHF have occurred using funds received from the National Reserves System Program. The National Reserves System Program is a Commonwealth program aimed at establishing a ‘comprehensive, adequate and representative’ system of terrestrial protected areas. It has A\$85 million in funding to purchase land and meet its objectives (EA 2000).

National Landcare Program

The National Landcare Program (NLP) aims to support collective action by communities to sustainably manage the environment and natural resources in partnership with government (AFFA 2000).

Through the NLP, the government assists private conservation efforts by providing grants and advice to community-based groups and landowners seeking to solve soil, water, vegetation management, and nature conservation problems. Grants provided through the Program help groups with a variety of activities including planning, education and training in resource management and on-ground actions and resource monitoring (AFFA 2000). An example of work undertaken through the NLP is the Great Artesian Basin Rehabilitation Project, which aims to address the problems of water waste and ecosystem damage caused by uncontrolled old artesian bores (Dames and Moore 1999).

Birds Australia

Birds Australia is a private non-profit conservation group. The organisation has been operating since 1901 when its predecessor, the Royal Australasian Ornithologists Union, was founded. The aim of Birds Australia is to contribute to the conservation, study and enjoyment of Australia's native birds and their habitats (Birds Australia 2000a).

Birds Australia is funded through public donations but has also received funding for some of its work through the Commonwealth Government's Natural Heritage Trust. The Trust is intended to support environmental activities at local, regional and national levels through the provision of funding (NHT 2000).

A key element of Birds Australia's contribution to conservation has been the acquisition and management of land for the protection of birds. In 2000, Birds Australia acquired Newhaven, a 262 600 hectare (650 000 acre) block of land in the Northern Territory for dedication and management as a conservation park (Adams 2000, Birds Australia 2000b). This supplements ownership by Birds Australia of a smaller property in South Australia, the Gluepot Station, which covers over 54 000 hectares (134 000 acres) (Birds Australia 2000c).

Australian Wildlife Conservancy

The Australian Wildlife Conservancy (AWC) — formerly the Fund for Wild Australia) is a private non-profit organisation whose goal is to enhance and protect

biodiversity. It operates by purchasing and managing properties of high conservation value (Fund For Wild Australia 2001).

AWC is funded mainly through public donations. It operates a gift fund that is independently audited and its accounts are reported annually to the Department of Environment, Sport and Territories.

The organisation currently has two properties open to the public near Perth — Karakamia Sanctuary, a 250 hectare freehold property, and Paruna Sanctuary, a 2000 hectare freehold property. AWC also holds the lessee rights to three leasehold properties in Western Australia. These leasehold properties cover approximately 450 000 hectares, and are intended for wildlife sanctuaries (Fund For Wild Australia 2001).

C Overview of Earth Sanctuaries Ltd

In 1969, Dr John Wamsley purchased 14 hectares of land in the Adelaide Hills in South Australia. The land was fenced, cleared of feral animals, and some flora and fauna native to the area was re-introduced. This area, later known as the Warrawong Sanctuary, was opened to the public on 1 January 1985 (ESL 2000e). Earth Sanctuaries Ltd (ESL) was incorporated on 27 January 1988 and became a public company on 3 September 1993. It listed on the Australian Stock Exchange on 8 May 2000 (ESL 2000b).

ESL now comprises 10 sanctuaries spanning over 90 000 hectares of land and incorporating several representative biogeographical regions. The sanctuaries are: Warrawong (South Australia), Yookamurra (South Australia), Buckaringa (South Australia), Tiparra (South Australia), Dakalanta (South Australia), Hanson Bay (South Australia), Scotia (New South Wales), Murrawoollan (New South Wales), Blue Mountains (New South Wales) and Little River (Victoria) (see figure 1, section 1). The Tiparra property is currently for sale. The reason for the sale, according to ESL, is that the South Australian government denied permission to build a sea wall which would prevent access of feral animals to the sanctuary at low tide (ESL 2001a). ESL is also seeking to divest itself of spare blocks adjacent to the Yookamurra Sanctuary and the Dakalanta property 'to focus the company' efforts on Little River Earth Sanctuary and its east coast projects (ESL 2001b). The species currently represented at the sanctuaries are listed in table C.1. ESL states that its ambition is:

... to establish safe habitats for Australia's threatened wildlife and conserving biodiversity needed for their survival. To do this, ESL estimates it needs to develop an 'Earth Sanctuary' in each of Australia's 80 habitat regions. This would dedicate over 1 per cent of the Australian landmass to the sustainable conservation of Australia's wildlife. (ESL 2000b).

Not all sanctuaries operated by ESL are managed in the same manner or scale. For example, some of the sanctuaries are run as tourist venues that are open to the public, while others are not (see figure 1, section 1). At Warrawong, 'tidbit' feeding is used to improve the likelihood of animal sightings, by visitors but this practice is not undertaken at all of the other sanctuaries. Further, not all sanctuaries are as large as Scotia Sanctuary will be when completed. ESL has plans to eventually open most, but not all, of the land it manages to the public (ESL 2000b). For those sanctuaries that operate as tourist attractions, the tourism permitted by ESL is

intended to be sustainable. In keeping with its environmental objectives, ESL uses solar power, off-site effluent disposal and recycled materials where appropriate (ESL 2000b).

Table C.1 Native fauna represented at Earth Sanctuaries

Species ^a	Status ^b	Number	
		1999	2000
Southern Hairy Nosed Wombat	Threatened	100	869
Rufous Bettong	Threatened	97	154
Long Nosed Potoroo	Threatened	90	97
Southern Brown Bandicoot	Threatened	85	98
Tammar Wallaby	Threatened	42	49
Eastern Quoll	Threatened	36	70
Plains Rat	Threatened	-	139
Cream Striped Red Necked Pademelon	Rare	45	52
Yellow Footed Rock Wallaby	Rare	120	180
Woylie	Endangered	341	377
Numbat	Endangered	130	156
Bilby	Endangered	38	54
Stick Nest Rat	Endangered	33	43
Bridled Nail Tail Wallaby	Endangered	20	40
Boodie	Endangered	12	26

^a ESL does not intend to include other species (including platypus) until reliable methods for determining species numbers are established. ^b The status reported by ESL (2000b) uses the following definitions: threatened species – requires some form of conservation due to species vulnerability; rare species – numbers have declined and it is likely to become endangered in the near future if causal factors continue; and endangered species – in danger of extinction. The categories, and reported status for most species, do not accord with IUCN criteria or current listings under the Environment Protection and Biodiversity Conservation Act 1999. A species may have a different status at the State and Commonwealth levels. The categories and reported status are currently under review by ESL (McLeod, S, Earth Sanctuaries Ltd, Adelaide, pers. comm. 3 August 2001).

Source: ESL (2000b).

Awards and commendations

ESL has received several commendations for its conservation activities, such as:

- 1988 Tree Care Award: High Commendation, Development of Wildlife Habitat;
- 1989 Civic Trust Awards: Winner, Landscape and Streetscape;
- Prime Minister's Environment Awards 2000; and
- Australian Small Business Award for Environmental Best Practice: Highly Commended (ESL 1999b, Hill 2000).

ESL has also won various awards for its tourism facilities such as the Banksia Foundation Environment Award, and Travel Holiday Insider Award (USA) and South Australian Tourism Awards.

ESL accounts

ESL's sources of revenue for 1999-2000 are given in table C.2. As indicated, some 56 per cent of total revenue is attributable to the assessed increase in market value of Australian fauna — in particular, to the estimated growth in the number of native animals on ESL properties (section 4). The other major sources of revenue are sale of goods (19 per cent), including gift shop and restaurant sales, and rendering of services (14 per cent) such as consultancy services. Donations (3.2 per cent) and government subsidies (less than 0.1 per cent) are relatively minor sources of revenue.

Table C.2 ESL: sources of revenue 1999-2000

	Consolidated ^a		Parent entity	
	Value	Share of revenue	Value	Share of revenue
	A\$	%	A\$	%
Revenue from operating activities				
Sale of goods	708 699	19.2	0	0.0
Rendering of services	521 283	14.1	2 010 776	92.0
Interest	116 228	3.1	116 228	5.3
External consulting fees	56 381	1.5	56 381	2.6
Incremental increase in net market value of Australian fauna operations	2 060 000	55.7	0	0.0
Rental	20 501	0.6	0	0.0
Donations	119 802	3.2	0	0.0
Government subsidies	1 250	0.0	1 250	0.1
Sundry income	92 743	2.5	1 072	0.0
Revenue from outside operating activities				
Gross proceeds from sale of non current assets	316	0.0	316	0.0
	3 697 203	100.0	2 186 023	100.0

^a The consolidated accounts comprise the assets and liabilities of the parent entity Earth Sanctuaries Ltd and all of its controlled entities, including Buckaringa Sanctuary Pty Ltd, ESL Holdings Pty Ltd, (formerly known as Warrawong Sanctuary Pty Ltd.), Yookamurra Sanctuary Pty Ltd, Scotia Sanctuary Pty Ltd, Tiparra Sanctuary Pty Ltd, Canyon Sanctuary Pty Ltd, Djungan Sanctuary Pty Ltd, You Yangs Sanctuary Pty Ltd and Blue Mountains Sanctuary Pty Ltd.

Source: ESL (2000b).

In 1999-2000, key costs for ESL included property, plant and equipment (A\$6 462 086), sanctuary habitat development (A\$2 897 345), and operating costs — mainly payments to suppliers and employees (A\$562 599). Expenditures on

property and plant, and sanctuary development constituted over 90 per cent of cash outflows (ESL 2000b).

In addition to these revenue sources, ESL works with Earth Sanctuaries Foundation of Australia Inc (ESF), a non-profit body which funds special projects related to ESL 'to protect endangered Australian species and save them from extinction' (ESL 2000c). Financial support comes from tax deductible donations as well as membership, bequests, grants from philanthropic organisations, raffles and sale of merchandise. In addition, some ESL shareholders donate their dividends, and have bequeathed their ESL shares to ESF (ESL 2000f). ESF has also received government grants through the Natural Heritage Trust (NHT) — a program providing funding for environmental works. In 1999, for example, ESF received A\$200 000 under the NHT Endangered Species Program to assist in fencing, elimination of feral pests, and reintroduction of threatened species. Like other private organisations, ESL is required to meet strict eligibility conditions in competing for NHT grants. These include:

... that projects must be mainly for the benefit of the community or public, not for private gain; activities that affect matters of national significance must be in accordance with relevant management, recovery or threat abatement plans; projects should not seek to replace the obligations of individuals, government agencies or organisations for natural resource management and shift costs to the Commonwealth ... Where a private individual or organisation is to benefit from a project they are expected to contribute funds at least in proportion to the value of the benefit they expect to obtain. (Delahunt, A., Wildlife Australia, Canberra, pers. comm., 10 January 2001, see also NHT 1999).

ESL shares

In May 2000, ESL listed on the Australian Stock Exchange with an initial listing price of A\$2.50 per share. The company raised a total of A\$8.9 million from five previous prospectus (Foskey 1998). The company has approximately 6800 shareholders (ESL 2000b). The majority (63 per cent) have small holdings of less than 1000 shares (ESL 2000b). Since listing, the volume of ESL shares traded on the stock exchange has been low with few active buyers and sellers. The market price of ESL shares fell to around A\$1.22 (as at 30 March 2001).

ESL currently has two options available on the Australian Stock Exchange. One ESL option gives the right to buy an ESL share at A\$2.50 on or before 31 March 2002. On 30 June 2001, this option was trading at A\$0.001. The second ESL option gives the right to buy an ESL share at A\$3.50 on or before 31 March 2005. On 30 June 2001, this option was trading at A\$0.01. Many existing ESL shareholders were issued free options (ESL 2000b).

ESL shareholders receive a number of benefits:

Dividends: ESL paid a dividend of A\$0.50 per 100 shares for 1999-2000 (ESL 2000b).

Members' weekends: ESL offers its shareholders a special invitation to attend shareholder weekends throughout the year at its various sanctuaries;

Discounts: Shareholders receive a shareholder's card which entitles them to a 20 per cent discount at all ESL projects open to the public; and

Newsletter: The official ESL newsletter, Earth News, is distributed to all shareholders around five times a year.

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