

Summary Report of CONCOM Technical Workshop on Island Management

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INTRODUCTION

The thousands of islands in the Australia-New Zealand region traverse a range of climates from subantarctic to tropical. They include examples of oceanic, continental and coralline origin, and range in size from small rock stacks to many thousand hectares. Islands are of crucial importance to nature conservation, but they present special problems for management and are increasingly being used for purposes other than conservation.

At its thirteenth meeting in July 1984, the Council of Nature Conservation Ministers (CONCOM) supported a proposal for a workshop on the management of islands. The Western Australian Department of Conservation and Land Management convened the workshop which was held on 8-13 November, 1985 at Barrow Island with the generous assistance of West Australian Petroleum Pty Ltd (WAPET) and Mr W.H. Butler of WAPET's conservation consultant Dinara Pty Ltd.

The objective of the workshop was to review island survey, ecology and management in the Australia-New Zealand context and to publish a series of comprehensive review papers as an up-to-date statement of island biological conservation.

The workshop was attended by representatives from a number of State, Territory, Commonwealth and New Zealand nature conservation agencies and by other specialists involved in island research and conservation, including the consultant to a private company engaged in the management of Barrow Island. The Queensland, New South Wales and Victorian nature conservation authorities were not represented, resulting in an incomplete coverage of Australian islands. A list of participants is given at the front of this publication.

In addition to the presentation of review papers and formal discussion sessions, field excursions were an important part of the workshop. Barrow Island is one of the most important islands for nature conservation in Australia, particularly because of its

faunal richness which includes several rare mammals and large turtle populations. The island has been developed as a commercial oilfield since 1964. Participants examined the environmental controls that have governed this development, including measures to prevent the introduction of exotic plants and animals, waste disposal, rehabilitation and fire suppression. The workshop noted that while there have been inevitable impacts as a result of the development, the high nature conservation value of the island has been maintained through the management techniques followed by WAPET. The introduction of exotic plants and animals has been prevented and the island's full suite of indigenous species remains intact.

This summary report is intended to draw together the workshop's conclusions and recommendations for consideration by CONCOM and for use by interested individuals, organisations and government agencies. As far as possible this summary report represents the consensus reached at the workshop, but this does not imply that all of the conclusions and recommendations are necessarily supported by all of the workshop participants or by the agencies, organisations and companies they represent.

Values of Islands

Islands have a range of values which make them crucially important for nature conservation. Islands and their surrounding marine environments have intrinsic values as functioning ecosystems supporting a variety of wildlife. Their features range from habitats and species unique to islands, especially in the case of oceanic islands, to being examples of adjacent mainland ecosystems.

The importance of islands for biological conservation would be difficult to overstate. They provide the major breeding grounds for seabirds, turtles and seals, with many species breeding only on islands. As well as supporting more common wildlife, islands are also refuges for many rare and endangered species which either occur only on islands or have

their most secure populations on islands. Another feature is that because of the isolation of islands, various life forms have evolved quite differently from related forms elsewhere, resulting in a high degree of endemism among many island biotas. The biological significance of islands is illustrated by the following:

- without offshore islands, 10 species of terrestrial mammals which formerly occurred on the Australian mainland would have become extinct (see Table 1), while some other mammals which have suffered serious declines on the Australian mainland now have their most secure populations on islands (e.g. tamar wallaby, eastern barred bandicoot);
- eight birds occurring in Australia's external island territories are on the CONCOM list of endangered vertebrates (including Abbott's booby, Norfolk Island parrot), as are three birds from Lord Howe Island (including the Lord Howe Island woodhen) and a number of other species occurring on various islands (e.g. six of the mammals listed in Table 1, rufous hare-wallaby, Gould's petrel, lesser noddy, forty-spotted pardalote, Lancelin Island skink, Pedra Branca skink);
- of 39 species or subspecies of terrestrial mammal declared rare under the Western Australian Wildlife Conservation Act, 13 occur on islands in the State, and six of those occur in the State only on islands;
- about 25% of New Zealand's native frog and reptile species are confined to its offshore and outlying islands, as are about 50% of its species and subspecies of breeding birds, 6% of its vascular plant species and some groups of invertebrates (e.g. stitchbird, saddleback, Chatham Island black robin, little spotted kiwi, Antipodes Island parakeet, tuatara, Stephens Island gecko, Hamilton's frog and the giant weta *Deinacrida heteracantha*), and without offshore islands six species of birds from the North and South Islands of New Zealand would have become extinct;
- the islands of Bass Strait support an estimated 18 million short-tailed shearwaters, while New Zealand's Snares Islands are breeding grounds for an estimated 5 million sooty shearwaters and thousands of other seabirds, including the endemic Snares crested penguin;
- New Zealand's Auckland Islands are the main breeding grounds for the rare Hooker's sea-lion as well as being a breeding site for at least 52

species of birds including 3 penguins and 17 albatrosses, mollymawks and petrels.

Mainland and island ecosystems have suffered from the deleterious impacts of human activity, such as introduction of non-indigenous animals (predators and herbivores, including domestic stock) and plants, habitat destruction, increased use of fire, disease, mining, industrialisation, pollution, exploitation of wildlife, human habitation and general human use including tourism and recreation. While European people have been responsible for massive changes, indigenous peoples have also used and affected many islands.

The extent to which islands have been affected by human activity varies widely, ranging from islands which have been almost totally devastated (e.g. Philip Island (near Norfolk Island) through introduced herbivores), through islands which are used for various purposes but are well managed, to those which are relatively free of human influence. There are still many islands which have escaped some or all of the deleterious impacts of human activity. Depending on their degree of modification, islands can be reference areas which provide an insight into the pre-European (and even pre-Aboriginal or pre-Maori) environment, as well as opportunities to study the effects of various human influences.

Islands have other scientific values as living laboratories where plant and animal communities can be studied. In particular, islands provide:

- opportunities to study intact biotas and genetic resources, relatively undisturbed ecosystems, and evolutionary and geomorphic processes;
- opportunities to study island biogeography and issues of critical importance to conservation such as reserve size and design, minimum viable population size and genetic bottlenecks;
- benchmarks against which to measure the effects of human activity on mainland and other island ecosystems (e.g. reference areas for fire studies);
- opportunities to study and experiment with management techniques;
- the possibility of monitoring the health of marine ecosystems using indicator species (e.g. key seabirds).

One of the most important features of islands is that, because of their isolation and size, they often present the opportunity to correct past mistakes in a way not possible on the mainland. For example, eradication rather than control of problem species on islands can be achieved, whereas constant reinvasion would occur

Table 1

Mammals which have become extinct on the Australian mainland but survive on islands (compiled from Strahan 1983; Burbidge and Jenkins 1984).

Extinct on mainland	Occurs only on islands other than Tasmania (number of islands shown in brackets)	Occurs only in Tasmania	Listed as endangered by CONCOM
Thylacine <i>Thylacinus cynocephalus</i>	Xa		X
Eastern quoll <i>Dasyurus viverrinus</i>		X	
Tasmanian devil <i>Sarcophilus harrisii</i>		X	
Western barred bandicoot <i>Perameles bougainville</i>	X (2)		X
Burrowing bettong <i>Bettongia lesueur</i>	X (4)b		X
Tasmanian bettong <i>Bettongia gaimardi</i>		Xc	
Banded hare-wallaby <i>Lagostrophus fasciatus</i>	X (2)b		X
Tasmanian pademelon <i>Thylogale billardieri</i>		Xd	
Greater stick-nest rat <i>Leporillus conditor</i>	X (1)		X
Shark Bay mouse <i>Pseudomys praeconis</i>	X (1)		X

a. The thylacine is considered to be extremely rare, and possibly extinct, in Tasmania.

b. Not including Dirk Hartog Island, where it is now extinct.

c. Including Bruny Island.

d. Including a number of islands in Bass Strait.

on a mainland reserve. Isolation also means that many deleterious impacts can be prevented from occurring in the first place.

Finally, islands are important because of their past and present use by people, as they:

- may be home to or have special significance for Aboriginal communities;
- may be sites of past human use and exploitation of historical or archaeological significance, thereby comprising an important part of our cultural heritage;
- may be places where people live and work;
- provide a range of recreational and tourism opportunities which are attractive to many people;
- provide a range of scientific and educational opportunities, because of their many features and values;
- provide a range of opportunities for commercial development and resource exploitation.

It is important to conserve islands for all of these reasons and as representative samples of island communities.

ISLAND CONSERVATION PROBLEMS

"Island ecosystems are extremely vulnerable to disturbance, and such factors as fire, introduced animals and plants, pollution of the surrounding seas or even too many people coming ashore could trigger off changes that would eliminate whole species" (Crisp 1985).

Management agencies and others involved with island management face a range of problems which threaten the nature conservation values of islands.

General

There is an overriding need for increased awareness of the importance and vulnerability of islands and for a greater commitment to their protection.

Some particular problems of a political nature are:

- remote islands are of high national significance because of extensions they provide to national sovereignty but the provision of adequate protection and surveillance is very costly;
- legislation relating to the management of islands is often inconsistent or overlapping, and inadequate;
- attention is drawn to inhabited islands rather than uninhabited islands for electoral reasons.

Failure to recognize the threats to the values of islands for nature conservation and to deal with them effectively could result in further serious degradation of islands and extinction of many Australasian species.

Protected Area Status

Conservation problems may arise as a result of the status of islands and their surrounding marine environments. Problems include:

- some islands with significant nature conservation values do not have protected area status;
- in some cases existing island reserves have insufficient security, as they may be revoked without parliamentary approval;
- there are no management plans for most existing island reserves;
- island reserves which do not extend to low water mark or include the entire island give rise to inadequate control of public access and foreshore and littoral communities;
- the existence of multiple management authorities for islands or groups of islands can result in uncoordinated development and often expensive conflict between authorities;
- misuse of surrounding marine environments can have an impact on islands.

Human Use

Islands have intrinsic attractions for residents and visitors but misuse may lead to degradation and destruction of the island values which people want to enjoy. Problems include:

- disturbance of breeding areas and animals, particularly on beaches where the majority of visitor impact is centred;
- transport and introduction of exotic plants and animals (e.g. weed seeds, pets, rats and mice);
- accumulation of litter and human waste;
- erection of buildings, campsites and facilities which may be inappropriate, cause erosion, increase the risk of introductions, and become a focus for people thus concentrating disturbance;
- increased trampling and use of off-road vehicles and machines, particularly on foredunes and other fragile areas, can lead to blowouts and soil disturbance which are extremely difficult to control;

- indiscriminate collection of specimens by both visitors and scientists can deplete or even exterminate vulnerable island populations;
- cutting of island vegetation for fuel;
- significant health problems and physical injury for visitors can result from inadequate sewage and litter control and cause bacterial infection of wildlife;
- island residents and visitors with legal or traditional rights may exercise those rights in a way which adversely affects conservation values.

All developments for tourism, recreation, extractive industries, agriculture, grazing or fishing have potential for significant impact on island values. Particular problems include:

- island developments often need to be more self-contained than equivalent mainland developments, leading to utilisation of island resources and disposal of wastes which may create a serious effect on island conservation values (e.g. uncontrolled extraction of water from small island aquifers can cause destruction of the water resources to the detriment of the island's flora and fauna and the development; it is often not economically viable to return rubbish and wastes to the mainland);
- often there are no clear environmental guidelines available before developments take place;
- where there is ignorance of the need for quarantine and lack of compliance with existing procedures, the possibility of accidental introductions is greatly increased;
- sufficient attention has not always been paid to rehabilitation of degraded and disturbed areas;
- the presence of an island development may increase casual visitation.

Another problem which has been evident is a lack of respect for the conservation values of islands by people from other nations visiting islands while exploiting marine resources.

Introduced Species

Islands are particularly susceptible to introduced plants and animals such as predators, herbivores, weeds and diseases, including the dieback fungus *Phytophthora cinnamomi*. History shows conclusively that introductions can cause rapid extinctions of island species.

Problem species often threaten the last populations of endangered species, including some animals which have become extinct on adjacent mainland areas where eradication of the problem species is not possible.

While eradication is often possible on islands, it is generally expensive and requires considerable commitment, and ingenuity, over a long period. Where introduced rats are involved, eradication is usually not possible except on the smallest islands.

There are a few examples where it has been argued that feral species on islands should not be eradicated because they have, or may have, special scientific values (e.g. in genetic terms).

Fire

Many islands have been burnt very infrequently in historical times, and some not at all. The species on these islands may not be adapted to frequent fire. Particular problems associated with fire are:

- access to fight island fires is extremely difficult and fires often burn virtually all vegetation;
- lack of adequate surveillance networks means that fires are often not detected until it is too late to effect control;
- there is often little or no logistical support and equipment (boats, helicopters etc.) available on or near islands to allow a quick response;
- increasing visitor usage, if unmanaged, will inevitably increase fire frequency;
- on islands with a variety of land uses the absence of coordinated fire control programs and strategies may lead to loss of conservation values;
- polarity of scientific and management opinion on island fire management has resulted in non uniform fire regimes on islands.

Resources for Management

Management of islands is often more expensive than management of mainland reserves for a number of reasons:

- there can be difficulties of access and transport costs are high;
- island structures are particularly vulnerable to deterioration and destruction and require regular maintenance and security;
- island management staff need special skills and training;

- there is often a lack of resident staff and support facilities;
- island isolation can cause a high turnover of management staff;
- social problems and cultural differences may be exacerbated in isolated island communities.

Resources allocated to island conservation are inadequate to carry out the range of activities which would be desirable for nature conservation purposes.

RECOMMENDATIONS

The problems facing island managers are not uniform around Australia and New Zealand, nor has island management progressed to the same level in all areas. Consequently, the following recommendations are not necessarily equally applicable in all areas and to all CONCOM agencies and others involved with island management.

In recognition of the special nature conservation values of islands and of the problems that have occurred and may occur in the future, the workshop made the following recommendations:

General Policy and Directions

1. In view of the special significance of islands for nature conservation and other values of community interest, governments should give high priority to legislative and policy provisions to enable their management without degradation of their biological and other resources.

2. Governments and their nature conservation agencies should give high priority to the allocation of adequate resources for islands, including resources for:

- (a) survey and inventory;
- (b) research;
- (c) management planning;
- (d) management;
- (e) monitoring;
- (f) surveillance and enforcement;
- (g) public education, information and interpretation.

3. Agencies should identify priorities for island conservation and management based on a systematic examination of existing knowledge, island values and management resources, using criteria relevant to their own regions and circumstances.

Protected Area Status

4. High priority should be given to the reservation of islands for nature conservation purposes, and reserve status should be such that revocation can only occur after parliamentary approval.
5. Existing systems of island reserves should be examined to ensure their adequacy in terms of protecting conservation values and new reserves should be declared as necessary.
6. Wherever possible, whole islands or groups of islands should be reserved.
7. In the reservation and management of islands for nature conservation, the relationship of the island to intertidal areas, the surrounding marine environment and nearby islands should be recognised.
8. Island reservation should extend at least to low water mark to enable management of public access and of foreshore and littoral communities.
9. Consideration should be given to declaration of marine protected areas adjacent to island conservation areas.
10. Wherever possible there should be a single management authority for islands or groups of islands. Where this is not practical, there needs to be effective cooperation and coordination between the authorities involved.
11. For each island or group of island reserves, a plan of management should be prepared. The planning process should include public participation and plans should be subject to periodic review.

Human Use

12. Human use of islands which are important for nature conservation should be subject to appropriate control and management.
13. To encourage government and community support for and cooperation in the protection of islands, public education, information and interpretation programs should be initiated outlining the important conservation, scientific and other values of islands and the necessity for protection and careful management.
14. Human use and development of islands should be carried out in a planned manner and in accordance with comprehensive guidelines or controls that include rehabilitation requirements where appropriate. Developments should be preceded by evaluation of their environmental impacts and,

wherever possible, should be sited on adjacent mainlands.

15. Where traditional or established prior uses of islands conflict with important conservation values, there should be consultation aimed towards phasing out those uses. Where phasing out is not possible, such uses should only be allowed on a sustainable basis and monitored, so as to maximise conservation values.
16. Island residents, owners, visitors and users with traditional and/or legal rights should be involved in management planning and, where appropriate, management. The legal basis for any such rights must be clearly established.
17. There should be an integrated approach to the use of islands so that proliferation of particular uses and facilities is avoided, i.e. planning and use of one island should take into account other islands and the adjacent mainland.

Introduced Species

18. High priority should be given to preventing the introduction of species not native to an island, and to monitoring and surveillance aimed at detecting any introductions. Exceptions should be considered only in special circumstances (e.g. introduction of an endangered species in order to establish an additional population; planting of suitable shade trees for residents or tourist developments).
19. High priority should be given to the eradication of introduced species from islands, taking into account the values of the islands concerned, management priorities, the impact which the introduced species is having and the likelihood of success. Support for continuing research into and development of eradication techniques is essential. Where eradication is not achievable, control may be necessary.
20. The nature conservation values of islands should override any perceived scientific (e.g. genetic) values of their introduced populations. If it is desired to preserve the latter on an island where an introduced species is damaging important nature conservation values, then the introduced population should be re-established elsewhere.

Fire

21. Agencies should develop a planned approach to fire management on islands, including improved surveillance and reporting of fires as well as fire management guidelines indicating, for each island, the

type of action that should be taken in response to a reported fire.

22. As a general principle, no deliberate burning should be carried out except for the purposes of research, protection of property values and to meet particular management requirements, and any such burning should be properly monitored.

Other Management Requirements

23. For each island, consideration should be given to the range of available management options, from no intervention to active manipulation and from prohibiting visitation to allowing unrestricted access.

24. Appropriate attention and priority should be given, as necessary, to management actions such as rehabilitation and restoration programs, soil conservation measures and waste disposal, and to research into and development of the required techniques.

Resources for Management

25. Recognition should be given to the high cost of managing islands to conserve their nature conservation values and to the need to allocate resources accordingly. Priorities for the allocation of resources should be set according to stated criteria and should be reviewed regularly.

26. Management agencies need to be innovative in getting resources, and should make use of opportunistic visits by other agencies, amateur assistance, island inhabitants, and corporate and private sources of funds. Defence force and other government (e.g. fisheries, lighthouse tender) vessels have an important role to play in this regard, and should be made available to support nature conservation agencies on island management as an integral part of their sovereign duties in the overseeing of Australia's and New Zealand's resources.

27. To maximise the efficient use of resources, there is a need for an integrated approach to island nature conservation responsibilities, with all of the activities listed in Recommendation 2 being carried out simultaneously to the greatest extent practicable.

Other

28. Agencies should consider establishing:

- (a) advisory groups to consider and develop island policies and priorities;
- b) specialist units, with appropriate training,

responsible for management activities including fire control, rehabilitation and control/eradication of introduced species;

(c) specialist research and planning capability with respect to islands.

29. There should be continuing informal liaison among CONCOM agencies and with others interested in island conservation and management, with a view to another technical workshop after a suitable period (say 5 to 10 years).

30. Recognising the internationality of nature conservation and the proximity of Australia and New Zealand to numerous island nations in the Pacific and Indian Oceans, governments and agencies should assist where possible in the island nature conservation activities of other countries.

31. CONCOM Standing Committee should consider the desirability of a public information booklet on island conservation and management being produced as a CONCOM initiative. As an alternative, individual agencies should consider producing booklets and/or pamphlets suited to their own needs.

32. CONCOM Standing Committee should consider conveying this Summary Report to other appropriate Ministerial Councils (e.g. Councils dealing with tourism, vertebrate pests and fisheries) and Commonwealth agencies (defence forces, coastal surveillance authorities and lighthouse authorities), drawing their attention to recommendations relevant to their interests and responsibilities. Consideration should also be given to conveying this Summary Report to appropriate international organisations (e.g. World Wildlife Fund and the International Union for the Conservation of Nature and Natural Resources).

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