

# Management Planning for Island Protected Areas, Based on New Zealand Experience

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## Abstract

A review of the management planning process for island protected areas reveals the many benefits provided for managers including particularly, the contribution of information to decision-making and problem solving, translation of policy into management action, and the opportunity for public consultation and education. The mandatory procedures for management planning in New Zealand under the Reserves Act are outlined, and management strategies are illustrated from the Auckland Islands Nature Reserve to show solutions to problems of human and introduced animal impacts, and the protection of historical and archaeological sites.

## INTRODUCTION

Management planning is at the heart of successful problem solving in protected area management, and is especially vital for islands which are characteristically so vulnerable to disturbance from external influences. Therefore, it is somewhat surprising that planning is an often neglected or inadequately developed component of management practice. Indeed, recognition of the need for management planning - the first step in the planning process - is not universal among protected area managers. For example, there is a commonly held belief that management planning is required only where protected areas are freely available to public access and use, and unnecessary in strictly protected nature reserves from which the general public is normally excluded. Thus, in the case of protected areas on the 22 major oceanic island groups of the Southern Ocean, most of which are nature reserves or their equivalent, officially approved and published management plans exist for only two island groups - though some others are known to be in various stages of preparation (Clark and Dingwall, 1985).

In New Zealand the Reserves Act 1977, the principal statute for establishment and management of protected areas, establishes management planning as a mandatory requirement of the administering authorities. In explaining the principles and procedures involved, a principal objective of this paper will be to demonstrate that management

planning is multi-purpose, and provides many benefits which apply to all classes of protected areas.

## THE MANAGEMENT PLANNING PROCESS

Management planning is a multi-faceted process for guiding management and directing actions toward the successful attainment of predetermined goals (Eidsvik, 1977). Management plans, though they may take many forms and may apply to protected areas of widely varying size and character, all provide a vehicle for the rational and systematic application of knowledge to management actions and decision-making. They serve many purposes at all levels and phases of management, as follows.

### 1. Problem Solving

Resolution of conflicts among competing elements or uses of natural resources is often regarded as the principal purpose of management planning. Such conflicts are usually human-induced, so assume greatest prominence where protected areas are readily accessible for recreation and use by the public. Conflict may also exist, however, where human influence is an indirect one, perhaps expressed through the deleterious modifying influences of deliberately introduced plants and animals. In New Zealand island nature reserves the former introduction of mammalian herbivores and predators, in particular, has had a widespread and often

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catastrophic impact on native biota such that restoration of natural communities may be impossible or at best extremely difficult.

## 2. Translating policy into action

The management plan, in effect, expresses legal management responsibilities and policies as an action strategy. The planning process has its genesis in legislation, which establishes the fundamental statutory requirements and objectives governing the management of a protected area. These legal requirements are, in turn, elaborated by policies, or statements of the general principles applying to management. Policies represent the administering agency's interpretation of the legal requirements and, as such, are dynamic and may change according to changing attitudes or priorities. The management plan translates policies into action programs, which reveal the way in which activities will be implemented to solve problems and achieve intended objectives.

## 3. Contributing information to decision-making

Wise decision-making presupposes an adequate understanding of the resources being protected. The planning process affords an opportunity for the systematic application of knowledge about natural resources to decisions on their protection and use. However, the management plan is not intended to provide an exhaustive account of the protected landscapes and biota. Rather the information is tailored to facilitate an adequate assessment and evaluation of the natural ecosystems in management terms, and to establish their conservation status. Thus, species lists are not as important as knowledge of the existence of special, rare or threatened species; the habitat requirements of plants and animals and their critical threshold conditions; the condition and trend of populations; and the interrelations of plants and animals, especially the impacts of alien species.

Information on protected cultural resources and their values will also be required to a level dependent upon their relative conservation importance, and an assessment of socio-economic variables will ascertain the demands and aspirations for resource utilisation.

Where research is inadequate, additional field work may be required to fill data gaps. Alternatively, interim management guidelines may be established which deal with values and principles only, pending further investigations.

## 4. A public consultation process

Protected areas are managed ultimately in the interests of, and for the benefit of the public, so some form of public involvement in the planning process is both inevitable and desirable. While public consultation in protected area management planning is now common practice and often sophisticated (Eidsvik, 1978), it is a relatively recent phenomenon. In North America, for example, an authoritarian management style was discarded in favour of public involvement only in the late 1960s (Winge, 1978).

Involving the public in management planning is a complex, costly and often glacially slow process which can be frustrating for management. But experience shows that, where there is an adequate level of awareness and interest, a partnership between government and the public can prove highly beneficial in terms of additional information gained and for enhancing mutual trust and the acceptability of management decisions.

In New Zealand, public consultation in the management planning process is a legal requirement and it involves the public in the broadest sense - individuals, professional and non-governmental societies and interest groups, commercial interests, and other affected government agencies. Public involvement also occurs at all levels of planning; beginning with the public advertising of the intention to prepare a plan, continuing through the preparation and submission of a draft plan and allowing for the hearing of objections prior to final approval. The procedures are discussed in more detail below.

## 5. Communication, education and training

Public consultation is fundamentally an exercise in communication and can be widely mutually beneficial. Managers gain benefit from new information about resources and are exposed to public attitudes and interests in the process of gaining understanding and support for policies. The latter often require an increased public educational effort so that public submissions can be informed and constructive. Education is especially important if the protected area in question is remotely located and either infrequently visited or closed to general public access - as many island protected areas are. Thus, management plans should be written, in part, as educational tools, providing sufficient resource information and analysis to justify

decisions. Above all, emphasis in the plan should be given to evaluation of the scientific and conservation significance of the natural and cultural features being protected, in a regional, national and international context.

Preparation of a management plan can also be an important training exercise for managers. It is best conducted as a multi-disciplinary task through teamwork, and involving not only specialist planners and scientists but also administrators, and in particular the rangers (or wardens) who are ultimately responsible for implementation of the plan.

#### 6. Other benefits from management planning

While the principles discussed above are among the key universal elements in the management planning process, there are many other benefits to be derived which assume varying degrees of importance depending on the circumstances. These include the opportunity given for the setting of management priorities; the calculation of financial budgets and establishment of manpower and equipment requirements; the exposing of information gaps as a catalyst for further research; and the enhancement of external support, through fund raising for example. Some of these considerations may be made through the preparation of sub-plans which augment the principal document.

### DISCUSSION

Management planning is a widely accepted and proven aid to protected area management and it is almost unthinkable that a protected area should lack a professionally prepared management plan.

Planning is not however, a panacea for all management problems. Without active and effective implementation of planning proposals, there can be no real success.

Planning, of itself, does not provide decisions; rather it guides decisions and directs changes towards intended goals. Planning, of itself, does not solve management problems; rather it brings the best available information, in the most rational form, into the problem solving arena.

While planning has perhaps its most important role in involving the public in protected area management, the planning team must judge carefully

between public apathy on one hand and vested interests on the other.

Management plans are not exhaustive scientific texts; rather they sift, assemble and interpret knowledge for application to management issues.

For maximum impact plans must be straightforward and contain objectives and action strategies which are realistic, measurable and attainable.

### MANAGEMENT PLANNING PROCEDURES

In this section procedures for management planning are illustrated by the example of reserves in New Zealand managed under the Reserves Act 1977<sup>2</sup>. The planning process described is a legally binding one which operates through formal consultative mechanisms and comprises several phases, some of which occur simultaneously.

The procedures are established by the Act which stipulates that plans are to be prepared by the administering authority and approved by the Minister within 5 years of either the commencement of the Act or gazettal of the reserve (with provision for extension).

Prior to instigation of the formal planning process, reserves are classified (or reclassified) according to their principal purpose, through a process involving public notification and the consideration of public submissions and objections.

Commencement of management planning occurs with the issuing of a public notice of the intention to prepare a plan, and an invitation for public comment, with the requirement that comments received are given full consideration in plan preparation. Ideally, though rarely in practice, this notification should be accompanied by the distribution of some information on the character of the reserve, its conservation significance and the essential objectives for protection and use - as a means of increasing the awareness and stimulating the involvement of the public.

Following preparation of a draft plan, its availability is required to be publicly notified, by publication in the Gazette and appropriate newspapers, and it is to be made freely available for inspection for a notified period of at least two months. As far as is practicable, written notice is to be given to those who made submissions when the intention to prepare the plan was advertised. In

<sup>2</sup> From 1st April 1987 administration of the Reserves Act passed to a new Department of Conservation, responsible to the Minister of Conservation.

practice, copies of the draft plan for important reserves are made available for purchase, and a complimentary copy may be sent directly to knowledgeable or interested individuals or organisations. A foreword may be included in the draft plan to specify the procedures for making submissions or lodging objections, and for approval of the plan. There may also be an outline of the key issues raised by earlier public submissions.

Written submissions on the plan become public information, subject to the Official Information Act, and can be published. Members of the public also have the right to request a hearing before the Director-General of Conservation or his nominee, to speak to their submission. The substance of submissions must be taken into account in redraft of the plan, and the final document may be accompanied by a summary of the public comments and objections and some indication of how far they influenced the contents of the final plan.

Formal approval of the plan is achieved through signature by the Director-General under delegated authority from the Minister, on an approval certificate which is incorporated in the published plan.

The administering authority is also legally bound to keep the management plan under constant review to ensure that objectives and policies remain relevant in the face of new knowledge or changing circumstances. Whenever the plan is comprehensively reviewed, then the review procedure parallels that taken for preparation of the original plan, allowing full public consultation.

In New Zealand, oversight of policy and planning approval for national parks, and most classes of reserves administered under the Reserves Act, is the responsibility of the National Parks and Reserves Authority and its 12 regional boards. These are statutory bodies widely representative of individuals agencies and organisations with interest or involvement in protected areas at regional or national levels. Boards have the task of recommending the approval of management plans (or reviews) to either the Authority or the Director-General, and the Authority may exercise approval rights where there is a disagreement between a board and the Director-General.

In the case of outlying island nature reserves an Outlying Islands Reserves Committee<sup>3</sup>, composed of representatives of various governmental scientific and management agencies, assumes the role of a board. In practice, this committee works in partnership with

the Director-General in all phases of the management planning process for outlying island nature reserves.

Many offshore islands in three regions of New Zealand are administered collectively, along with coastal mainland reserves, within maritime parks - the Hauraki Gulf Maritime Park, Bay of Islands Maritime and Historic Park, and Marlborough Sounds Maritime Park. The first of these has its own legislation while the others are administered under the Reserves Act, and each is managed through a statutory board comprising governmental and private representatives. This administrative structure enables co-ordinated planning for wide-ranging management of protection and use of islands (NZ Department of Lands and Survey, 1982).

## MANAGEMENT PLANNING IN PRACTICE - THE EXAMPLE OF THE AUCKLAND ISLANDS NATURE RESERVE

### Character and status of the islands

The Auckland Islands comprise one of New Zealand's five island nature reserves in the Southern Ocean. The eroded remnants of basaltic volcanoes, some 62 500 ha in extent, they are situated at 50°S latitude, or 460 km south of mainland New Zealand. Ecologically they are among the most important of the world's oceanic island groups, supporting a diverse assemblage of animals and plants, which includes at least 46 species of breeding birds and 228 species of vascular plants. The forest here is among the southernmost in the world and the islands have the most significant breeding grounds of the Hooker's Sea Lion, and the wandering and white-capped albatross. The island group is entirely free of rats and two islands - Adams and Disappointment are in an essentially pristine state, the former being perhaps the largest island in the world without alien mammals. Human contact over a period of 180 years has left a legacy of sites and artefacts which are of value as a record of human enterprise and misfortune in the southern regions of New Zealand. However, it is the consequences of plant and animal introductions, mostly associated with the former shipwreck era, a colonial settlement, and pastoral farming activities, which pose the greatest problems for protected area management.

The islands were declared a reserve in 1934 (Adams Island in 1910) and are now classified as a nature reserve under the Reserves Act. This class of reserve has the degree of security and scope of

<sup>3</sup> This Committee was abolished in 1987 and new arrangements are under consideration.

protection which comply with criteria established for scientific/strict nature reserves by the International Union for the Conservation of Nature and Natural Resources (IUCN) (CNPPA, 1984). The overriding aim of management is to safeguard the numbers, natural distributions and interactions of native plants and animals while allowing limited and carefully controlled access for research, monitoring and tourism.

### **Content for Format of the Plan**

An outline of matters addressed in the plan (NZ Department of Lands and Survey, 1987) and their arrangement within it are shown by the table of contents at Appendix I. Administrative details and resource information are relegated to the final sections of the plan to avoid detracting from management objectives, policies and action programs which are the key elements of the plan. The quality and scope of available resource information are excellent for the purposes of planning and compare favourably with the situation at other nature reserves, even those on the mainland. This is a by-product of a long research history beginning with scientific exploration in the mid-19th century and including intensive research effort by coastwatchers during World War II and by expeditions in the past 15 years. Principal remaining gaps in resource information are in the fields of littoral and nearshore marine ecology, human history and archaeological survey.

In describing natural and cultural resources particular attention is given to highlighting their significance for management. For example, the impact of weather on safety is stressed, the presence and status of rare, endemic, or threatened species of plants and animals are emphasised, and the impacts of alien species on native species are assessed.

### **OBJECTIVES**

Management objectives for the reserve stem from requirements established by legislation, and its classification as a nature reserve.

The case for including all or part of the reserve within the category of scientific reserve was carefully considered in drafting the plan, and will probably arise again from public comments. Scientific reserves normally have less restricted access, and there is also provision for the deliberate manipulation of natural ecosystems for experimental scientific purposes, including the retention of man-modified conditions. Some islands in the group offer fascinating opportunities for investigating the interplay of native and introduced species and communities. However, the intrinsic conservation values of the reserve's

indigenous elements are considered to outweigh their research potential, so management will encourage reversion of modified environments towards their natural state.

Thus, the principal management objectives are:

1. To preserve and maintain the indigenous flora and fauna, ecological associations and natural environment of the Auckland Islands in a natural state and to allow the operation of natural processes and accept their effects as far as possible.
2. To manage the reserve as an integral part of the natural and international system of protected areas with emphasis on the protection of its special or unique natural features.
3. To protect and manage any biological, scenic, historic, archaeological, geological, or other scientific features to the extent compatible with the primary objective (1, as above).
4. To prevent human interference which causes undue modification or acceleration of natural processes or the alteration or destruction of natural features on the islands.
5. To allow and encourage research and studies, which will have no permanent detrimental effects especially where it has been demonstrated the results will contribute directly to the effectiveness of protection and management of the reserve.
6. To promote public appreciation and enjoyment of the features of the reserve consistent with the primary objective (1, as above).
7. To promote understanding of the specialised and vulnerable subantarctic ecosystems and pursue the protection of the habitat and food source of mammals and sea birds in the surrounding sea.

### **EXAMPLES OF POLICIES AND THEIR IMPLEMENTATION**

#### **Public entry and use of the reserve**

Human activities in the reserve must remain secondary to, and be compatible with, the principal protection objectives. But this implies controlled access and use, not total prohibition. Of greatest concern are disturbance or destruction of native species or habitats, and the potential for introduction of undesirable alien species, especially rats.

In practice, policy requires that access and use are limited essentially to activities involving research, conservation management and regulated tourism.

Scientific research, especially where it will enhance management, is encouraged and vigorously pursued insofar as limited logistical support allows. Active surveillance of field research is required to ensure avoidance of detrimental impact, particularly the undue depletion of the numbers of species which are rare or of restricted distribution.

The natural features of the reserve hold great tourist appeal, and there is justification for controlled tourist visits, especially because of the positive benefits that can accrue from increased awareness and sympathy for management objectives. Conversely, tourist visits carry inherent dangers, both for the safety of visitors in a remote and often hostile environment, and for environmental impact through overcrowding at critical sites, tracking and erosion, interference with plants and animals, littering and introduction of foreign materials.

Implementation of the limited public entry and use provisions therefore requires:

- (1) Regulation of the number and purpose of visits by use of a permit system. Permits, which are granted for a specified period, comprehensively state conditions of entry, such as the rodent-proofing of stores; approved landing sites and mooring restrictions; supervision and safety; disturbance of biota; erection of facilities; and post-expedition reporting procedures. Where appropriate, a separate permit is issued which stipulates conditions for the taking, use and disposal of scientific specimens.
- (2) Prohibition of the shore mooring of transporting vessels, as a precaution against rodent entry.
- (3) Selective application of entry restrictions within the reserve to increase security for specific islands. Thus entry to Adams, Disappointment and Dundas Islands, which are pristine and support important breeding colonies, is limited to scientific and management personnel for approved activities.
- (4) Restriction of tourist visits to designated islands or sites, and encouragement of water-based sightseeing as far as possible. Enderby Island, the most modified of the group, is the principal tourist destination but several other sites on the main island are nominated as possible tourist venues. All visits are required to be under direct supervision from a departmental official, and "wilderness-type" visitor codes are strictly enforced.

## Protection of Historical and Archaeological Sites and Antiquities

The Auckland Islands record in microcosm the history of human endeavours in the southern regions of New Zealand (Dingwall, 1981). Since their chance discovery in 1806 by a whaling expedition, the islands have experienced successive waves of human intrusion for settlement and resource exploitation; whaling and sealing; Maori occupation; scientific exploration; a short-lived and ill-fated British colonial settlement in the mid-19th century; a rash of shipwrecks during the sailing era; unsuccessful attempts at pastoral farming until the early 1930s, wartime occupation by coastwatching parties; and sporadic visits by scientific and reserve management expeditions especially over the past 30 years.

All events have left their mark, some of which such as mammals introduced as castaway food or farming stock are undesirable for reserve management. Others, however, including occupation and shipwreck sites, grave sites, castaway provisioning depots and boatsheds, and coastwatcher lookouts, are of considerable interest and cultural value as a record of episodes of New Zealand's history.

The preservation of historical and archaeological features in a remote and incompletely supervised island reserve is an extremely difficult task. Threats of loss or destruction exist from unlawful removal of relics and disturbance of sites both by people and animals - pigs and seals in particular. Many important artefacts are already scattered among various museum and private collections in New Zealand. Policies are established to ensure the protection and integrity of historic features as far as is possible, and these include:

- (1) Surveying, recording and preserving, where practicable, archaeological remains and sites of cultural significance.
- (2) Leaving relics in their original locations unless their significance warrants custody by the National Museum - thus avoiding the past unsatisfactory practice of shifting relics within the island group.
- (3) Restoration of buildings and other structures where this is considered warranted, retaining the original character and materials where possible.
- (4) Allowing abandoned sites or structures of lesser significance to age and decay naturally while preventing human and wildlife impacts.
- (5) Encouragement of historical and archaeological research and the development of an historic

conservation plan, and to treat such research in the same manner as ecological research projects.

## CONTROL OF INTRODUCED ANIMALS AND PLANTS

### Animals

When Abraham Bristow, the discoverer of the Auckland Islands, released pigs as a source of food for castaways he unwittingly initiated a long process of environmental modification. Later in the 19th century, further introductions of pigs along with rabbits, goats, sheep, cattle, cats and mice to islands where the indigenous plant and animal communities had evolved free from mammalian herbivores and predators, intensified the scope and pace of change to one of ecologically catastrophic proportions (Taylor, 1971).

Today pigs are ubiquitous on the main island and are held responsible for the elimination from all accessible areas of large leaved herbaceous plants such as *Pleurophyllum*, *Stilbocarpa*, and *Anisotome* spp. Together with cats, which are similarly distributed, pigs are also implicated in the reduction or absence from the main island of several species of burrowing petrel. Sheep have not survived, but approximately 50 cattle remain on Enderby Island. Here, the impact of cattle, along with that of thousands of rabbits (also present on Rose Island) and the past influence of fires during the farming era, have markedly reduced the extent of natural tussock and forest in favour of a close-cropped sward dominated by liverworts and mosses, and induced communities of the less palatable herb *Bulbinella rossii*.

A population of about 100 feral goats survives in the Port Ross region of the main island. Formerly largely restricted to the coastal fringe of forest and lower slopes, the goats now appear to be extending their range to higher ground where they have the potential for spreading throughout the island and, in combination with pigs, accentuating the destruction of higher altitude tussock grasslands (Campbell and Rudge, 1984).

Pigs and goats in particular, have also contributed to the damaging of sites of historical significance, especially that of the colonial settlement at Erebus Cove in Port Ross.

The presence of feral mammals has profound implications for management of the reserve which is committed to halting the trend toward depletion of native plant and animal communities. The management plan includes policies for the

extermination of feral mammals as soon as possible. This is a monumental task, but one which assumes varying proportions throughout the island group.

Elimination of cattle, rabbits and goats which are present either in low numbers or on small islands should be a relatively straightforward task. But extermination of cats and pigs will require a huge commitment of resources, given the widespread distribution of the populations throughout a large island of rugged terrain and, in parts, virtually impenetrable vegetation cover.

Research and testing will undoubtedly be required to develop feasible extermination methods and strategies, and to avoid deleterious consequences for non-target species. It may be necessary ultimately to confine the effort to a program of intensive control at particularly sensitive sites such as seabird breeding colonies. Post-control monitoring will also be required to ensure, for example, that the reduced cat population does not favour an undesirable increase in the number of mice.

The extermination programs may prove to be controversial. There have been expressions of interest in the retention of a gene pool of the goats, which are among the southernmost herds of goats in the world and appear to be at the limits of their ecological tolerance. The rabbits are an unusual strain and may be of commercial interest in New Zealand. Prior public notification of the control programs will allow removal of animals for research and other purposes. In the summer of 1986/87 approximately 50 goats were captured and relocated on the New Zealand mainland for gene preservation and research, breeding, and assessment of commercial traits of wool and meat.

There is no possibility of achieving eradication of mice from such a large area using currently available methods. Policy, therefore, is aimed at preventing the spread of mice from their present locations on the main Auckland Island, Enderby Island and Masked Island to other rodent-free island and avoiding the introduction of any new rodent species. Current practice for rodent control includes; the establishment of poison bait stations in the vicinity of permanent huts, when occupied; strict rodent surveillance and prevention conditions in permits granted to enter the reserve, covering the transporting vessel, packing, loading and unloading of stores, landings of personnel, travel between islands, and regular hut or camp maintenance practices. A critical element in the proposed rodent control program is the development of a contingency plan to ensure that adequate equipment and resources are available for urgent implementation of inspections following



shipwrecks or control action if evidence of rat introduction is reported.

## Plants

Although there are more than 40 alien species of vascular plant on the Auckland Islands, none threatens indigenous plants at present. Policy requires the eradication of exotic plants, but practical considerations dictate the use of selective controls.

*Olearia lyallii* presents an interesting case. The plant occurs naturally elsewhere in southern regions of New Zealand but it appears to be a recent immigrant and probably arrived at the islands with people (Johnson and Campbell, 1975). It has established vigorously in areas of cleared forest and coastal grassland of the Port Ross region, and its active spread has raised concern that, if left unchecked, it could replace the existing forest of rata (*Metrosideros umbellata*). However, recent monitoring and research (Lee *et al.*, 1983) has revealed that *Olearia* is invading coastal tall tussock grassland, mega-herbfield, shrubland and dwarf mixed forest, but does not threaten tall rata forest. Subject to further monitoring, a policy of limited control is considered appropriate. Thus, the plant will be cleared from all but Ewing Island and the main Auckland Island, and on the latter it will be confined within specified outer limits.

## CONCLUSION

The examples cited above illustrate the way in which management policy has evolved and action programs have developed through the management planning process to cope with problems in the Auckland Islands Nature Reserve. The planning process is in a constant state of flux in response to continuing application of new information derived from research and monitoring and the maturing of policies through the public consultation process. Professional assistance from an advisory committee has been a valuable adjunct to reserve management and planning. The planning approach is proving successful and is commended for wider adoption in the management of island nature reserves.

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Figure 1  
Auckland Islands



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