

FISHERIES AND WILDLIFE

FISHERIES AND WILDLIFE IN VICTORIA

Fisheries and Wildlife Division

Introduction

In Victoria the management of fish and other animal resources in the wild has been the responsibility successively of Departments of Trade and Customs (before Federation), Public Works, Agriculture, The Chief Secretary and, since 1973, Conservation.

The Fisheries and Wildlife Division of the Ministry for Conservation plans for the management of Victoria's natural animal resources in ways which will help to ensure their survival as essential components of the Victorian countryside. Education and extension work encourages sympathetic attitudes in the community. Better knowledge of the fauna enables practical field management to be implemented to improve wildlife habitat and the ways the resources are used.

Victorian laws now protect, or prevent the indiscriminate use of, more than 700 species of vertebrate animals: fish, amphibians, reptiles, birds, and mammals. Each kind has different characteristics, requirements for survival, and values which must be understood if it is to be effectively conserved.

The Division attempts to make inventories of the fauna and study the way in which animals are distributed and how they exercise a role in functioning ecosystems.

These days man is frequently one of the components of those ecosystems. Consideration must be given to the needs or expectations of humans to use the resource for food, clothing, sport, or aesthetic appreciation. Laws are proposed to government and management techniques are developed in an attempt to co-ordinate or reconcile the needs of humans and wildlife. The policies of governments can be pursued through public education, law enforcement, and practical field management.

Until the 1940s, the Division had only about ten staff in addition to several honorary inspectors in country towns, and this limited its role to the enforcement of hunting and fishing laws and the regulation of fish acclimatisation work carried out largely by private organisations. Information about the fauna and its needs was scant and there were few field studies except those undertaken by amateur naturalists. By 1952, there were 40 staff and an annual budget of \$82,000 of which \$5,000 was for research.

By 1980, an organisational structure had evolved which reflected the main categories of the resource and the links between the Division and its traditional client groups or users of the resource, but which made it difficult to co-ordinate the Division's diverse functions or to redeploy staff efficiently in response to changing needs. Thus the Director of Fisheries and Wildlife had three Assistant Directors responsible for both research and management in each of the broad fields of Commercial Fisheries, Freshwater Fisheries, and Wildlife, respectively. However, law enforcement and much of the extension and public relations work relating to all three resource categories was carried out by the Chief Fisheries and Wildlife Officer and his staff who were immediately responsible to the Director.

During 1981, the Division was extensively re-organised to bring law enforcement and field operations together under one Assistant Director (Field Management), and the routine functioning of this Branch was decentralised by placing District Superintendents in Melbourne, Bairnsdale, Horsham, Wangaratta, and Warrnambool.

Some staff with research and management experience in both wildlife and fisheries work were allocated to a new Resources and Planning Branch with its own Assistant Director.

The third Assistant Director's position (Commercial Fisheries) was retained because the structure and function of that Branch is closely matched to the industry it serves and it operates somewhat independently of the other Branches. However, its former biological research functions had gradually been transferred to the Marine Science Laboratory at Queenscliff which was incorporated directly within the Marine Studies Branch of the Ministry for Conservation in 1977, but re-affiliated with the Fisheries and Wildlife Division in 1982.

The Marine Science Laboratories and the Arthur Rylah Institute at Heidelberg then became the Division's two major research centres and have also begun to carry out research related to the Division's interests in conjunction with other organisations or agencies of the Ministry, such as the National Parks Service and the Environment Protection Authority.

In 1982, the Fisheries and Wildlife Division employed 310 permanent and temporary staff and had a total budget of \$10m.

Education, extension, and public liaison

There are many avenues by which the Division propagates information and derives ideas from the wider community. Liaison with specially skilled groups such as professional fishermen or anglers requires a detailed knowledge of the subject and is carried out mainly through personal contact by staff of the Commercial Fisheries and Resources and Planning Branches.

Officers of the Field Management Branch are deployed throughout Victoria and have many opportunities for formal and informal liaison with the public through talks to schools and clubs and in field situations. Press releases, information leaflets, feature articles, radio and television interviews, and programmes are prepared by the Ministry for Conservation's Central Information and Extension Branch. Scientific staff exchange information through appropriate journals, conferences, and written reports.

The Director and other senior executives keep in touch with community ideas and promote co-operation through regular meetings with organisations such as the Victorian Field and Game Association, the Bird Observers Club, and the Conservation Council of Victoria.

The Division is also represented on a number of formally constituted bodies which are responsible for reporting to the Minister for Conservation. These include the Deer Advisory Council and the Victorian Recreational Fishermen's Advisory Council.

Reserve management

Fish and wildlife conservation are forms of primary production and depend ultimately on the appropriate management of the habitat where animals live and from which they derive their food. Some wildlife species may survive or even flourish on land which is used for other commercial purposes such as forestry or agriculture. Many, however, are more or less intolerant of these changes and require habitat which is kept in a near natural state if they are to survive. For some thirty years, the Victorian Government has made provision for land to be reserved and managed by the Division where wildlife conservation will be the primary objective. Some Crown land may be set aside for this purpose or freehold land may be repurchased. The deliberations of the Land Conservation Council since 1970 have greatly increased the area of wildlife reserves on Crown land; however, patterns of land alienation before that time, and continued competition for some kinds of land mean that many habitats and their species are still not adequately provided for. Wildlife Reserves now comprise about 117,000 hectares, but many reserves are very small which makes them difficult and expensive to maintain and protect from harmful influences.

It is much more difficult to deliberately manipulate or modify the habitat of marine organisms, but there is the need to regulate some activities or processes which would be detrimental to the waters or the seabed, and to protect some areas from overuse. Victoria's first Marine Reserves were declared in 1979 around Port Phillip Heads and another small Marine Park was proclaimed at Point Cook in 1982.

The remaining sections outline some examples of the varied developments during 1981 and 1982 in the fields of research, management, and extension.

Further reference: *Mud Islands, Victorian Year Book 1980*, pp. 330-1

Wildlife on private land

Nearly two-thirds of Victoria is privately owned and much of that land is used for agriculture. Some agricultural land already supports some wildlife species but appropriate management could result in the provision of much more habitat without detracting from the primary purpose of the land.

The provision and management of wildlife habitat on private land can make a significant contribution to conserving Victoria's wildlife resource. An increasing number of landholders are undertaking wildlife conservation practices on their properties and are interested in making known to others their concern for wildlife and this practical response.

In 1981, following a suggestion by the Bird Observers Club, the Division and Club members embarked on a joint initiative, the "Land for Wildlife" scheme, to recognise new or existing wildlife conservation efforts by landholders and to encourage other landholders to initiate similar wildlife conservation practices on their properties.

At present, the scheme does not provide any financial assistance or incentives; it simply recognises voluntary wildlife conservation work on private land. An attractive "Land for Wildlife" sign is presented to a landholder whose property meets certain criteria, and this can be displayed on the property. Within a year, this scheme had registered 132 properties throughout Victoria as "Land for Wildlife" properties from 164 applications.

To qualify as a "Land for Wildlife" property, landholders need to establish some minimum standards and management practices. These may include developing and protecting farm dams for waterbirds, establishing native trees and shrubs in gardens and shelter belts, protecting streamside and other remnant patches of native vegetation, conserving trees which have hollows for animal nesting and shelter, and protecting small areas from stock grazing and controlling vermin.

Farmers are discovering that good wildlife conservation and good farm management often reinforce each other. The protection or re-establishment of native vegetation enhances the landscape and increases property values; it may also improve shelter for stock and improve stock condition and productivity. Judicious tree planting improves water quality, soil stability, and salinity control. Production of game species for recreational hunting can be increased. Greater numbers of birds may help to suppress outbreaks of insect pests. The growth and development of the wildlife areas is instructive and satisfying, and the presence of wildlife around the farm brings variety and pleasure.

While this "Land for Wildlife" scheme is obviously ideal for farm properties on which wildlife conservation practices can enhance traditional farming practices, the same ideas can be adapted to land used for many other purposes. Private house blocks, golf courses, school grounds, municipal reserves, roadside reserves, and even some industrial sites can incorporate one or more wildlife conservation practices.

Officers of the Field Management Branch and members of the Bird Observers Club are co-operating to assess properties which are entered for the scheme and they can help landowners to develop further this nurturing of the land from which the owner and the community as a whole both stand to benefit.

Threatened species

There are many different kinds of problems associated with the conservation of wildlife and many demands for the Division to pursue one line of action or another.

One way to establish some priorities is to identify those species which seem to have declined seriously and are most likely to become extinct if deliberate and well planned action is not taken to counter the adverse influences.

Eighteen mammal species and two bird species have already become extinct in Victoria since European settlement. Among remaining species, those whose status is considered threatened may be divided into ranked categories, enabling the extent of threat to be more readily assessed.

Highest priority is afforded to species of the "Endangered" category. This currently includes the Leadbeater's Possum, Long-footed Potoroo, Orange-bellied Parrot, Plain

Wanderer, Regent Honeyeater, Helmeted Honeyeater, Brush-tailed Rock-wallaby, and Eastern Barred Bandicoot. Such species are believed to have been reduced in population size to a critical level or to have suffered drastic habitat reduction (or both) and are considered unlikely to survive if present adverse conditions persist.

The "Vulnerable" category receives second highest priority and includes wildlife species which are likely to become endangered unless special action is taken. This category presently contains the Baw Baw Frog, Mountain Pygmy-possum, Bush Thick-knee, Australian Bustard, Red-tailed Black Cockatoo, Large-footed Myotis, Eastern Horseshoe-Bat, Common Bent-wing Bat, and Little Tern.

Three further categories of threatened species were identified, comprising 30 species in Victoria at present and representing those which have a restricted distribution or are rare (or both), which have indeterminate status but are suspected to be threatened, and those which require careful monitoring to detect possible threats.

During 1982, the allocation of wildlife staff and funds was strongly influenced by this ranking system although at present it has been possible to commence limited studies or management of only ten of the seventeen species classified as "Endangered" or "Vulnerable".

Ecological inventory and evaluation

Scientists at the Arthur Rylah Institute for Environmental Research have been compiling inventories and classifying land in terms of the abundance, quality and distribution of its natural attributes, and some cultural attributes such as archaeological sites. These characteristics, considered individually or in various combinations, provide basic information for planning and sustainable land-use management. Single feature inventories often need to be integrated with other information and interpreted and evaluated in terms which can be directly used by planners.

Information was provided to the Shire of Otway on the values of the vegetation on private land for soil, water and fauna conservation as well as its scenic qualities and intrinsic botanical values. The project was designed to provide data in a form which could be used by the Shire in the development of a planning scheme.

With the continuing development of oil, gas and coal fields in South Gippsland many major changes along the coast must be anticipated. The existing information about wading birds in Corner Inlet has been collated and analysed to evaluate the relative importance of different parts of the Inlet for waders and to provide for their conservation in any development plan.

Of all the migratory wading birds in Victoria during summer probably one quarter occur at Corner Inlet and nearby Shallow Inlet. The adult birds leave in March or April and return to their breeding grounds in the Northern Hemisphere but many juveniles remain in Victoria and about half of them depend on this area. Corner Inlet has international significance for migratory wading birds. Of the 21 species of migratory waders recorded, 15 are afforded protection under an agreement between the governments of Australia and Japan.

Waders have two major habitat requirements—feeding and roosting sites. Some 49 roosting sites have been located around Corner Inlet. Extensive tidal flats that are exposed at low tide provide essential feeding areas. By identifying and mapping these critical habitat areas for waders it is hoped that in the planning for future development in the region the requirements of wading birds can be more readily accommodated.

Mountain Pygmy Possum

The Mountain Pygmy Possum (*Burramys parvus*) is regarded as a vulnerable species and a major part of its known range occurs in Victoria. The first living Mountain Pygmy Possum was found in a ski hut in 1966 within the Mount Hotham Alpine Reserve Area. Prior to this date, the species was only known from fossil remains.

In an attempt to locate live specimens of the Mountain Pygmy Possum, trapping was carried out within the Mount Hotham Alpine Reserve Area in 1979 and 1980. On these occasions, trapping effort was concentrated in the vicinity of Mount Higginbotham because of the occurrence there of a range of plant species which were favoured by this animal in its diet as well as the occurrences of rocky scree which the animal appears to favour as a habitat.

During 1982, trapping was carried out at a range of sites away from Mount Higginbotham. These sites were selected on the basis that their visual appearance was not unlike sites where the animal had been trapped successfully. Trapping was also carried out over a reference grid which had been marked out on Mount Higginbotham.

Specimens of Mountain Pygmy Possum were most frequently encountered on Mount Higginbotham and overall, 80 per cent of all the specimens were encountered in the Mount Higginbotham grid despite the fact that only 20 per cent of total trapping effort was expended there and the grid area represented only 20 per cent of the total area in the Alpine Reserve where traps were laid. These results indicate that Mount Higginbotham is an exceptional area of habitat for the Mountain Pygmy Possum.

Long-billed Corella

The Long-billed Corella (*Cacatua tenuirostris*) occurs naturally only in Australia and its distribution within the continent has contracted since European colonisation so that the population in south-western Victoria is now the largest one remaining.

However, despite its rarity on a world scale, local flocks may be large enough to cause serious damage to individual cereal and oil seed crops.

In 1978, research was commenced into the ecology of the Corella to seek ways to relieve the problem of damage on farms while at the same time ensuring the survival of the species. Detailed information has been collected on the changing patterns of distribution and abundance of the birds, and the distribution of elements of the habitat which may have an important influence on the Corella's behaviour, such as native vegetation, crops and other introduced food plants, rainfall, and related bird species. Observations have been made on the composition and behaviour of feeding flocks, their choice of foods throughout the year, breeding biology, and the movements of flocks and individuals.

A computer is used to analyse any relationships which exist between distribution, daily patterns of behaviour, changes in the habitat, flock size and activity, and the weather.

During 1982, nets propelled by explosives were used to capture samples of birds from flocks while they were feeding. Each bird was identified by a tag so that it could be recognised again later. Measurements were made of the body and feathers of each bird to indicate its age and help to determine the proportions of different ages in the flocks. Such information may be used to predict the ways in which flocks could respond or be affected by different management options.

Minimum streamflow

The minimum rate of flow in a stream and the general characteristics of the habitat needed by native and introduced freshwater fish have received much attention over the past few years. These investigations are prompted by the increasing number of water diversion and withdrawal schemes proposed or instituted by water resource managers.

The collection and interpretation of information on species likely to be adversely affected by reduced or altered water flows enables the Division to make biologically sound recommendations to resource managers concerning the temporal distribution of water releases and the minimum flows which will permit resident fish species to survive and reproduce successfully. Currently, the Division is placing its research emphasis on streams south of the Great Dividing Range, particularly on those streams which have been or will be altered by water development schemes. These include the Gellibrand, Thomson, Tambo, Avon, and Mitchell Rivers. Similar studies will be developed for rivers in other parts of Victoria as the need arises.

Native fish management

Several studies of freshwater fish have been completed recently and a response is now being made to the renewed interest by anglers in some of the excellent native species, several of which have declined seriously in status with changing patterns of water use.

The first stage is to map the distribution and abundance, and determine the habitat requirements of the larger species north of the Great Dividing Range, Murray Cod (*Maccullochella peelii*), Macquarie Perch, (*Macquaria australasica*), and Trout Cod (*Maccullochella macquariensis*).

The results will be used not only in the development of techniques for managing the habitat of those species, but also to enable fish produced at the Snobs Creek Hatchery to

be used more efficiently for stocking streams. Knowledge gained in the field and in the course of artificial propagation complement each other to build up a better understanding of the species and their ecological needs.

It is now regarded as an essential component of any artificial stocking programme to evaluate the success of the operation in terms of the survival of the fish and their ultimate contribution to the ecology of the stream and the angler's sport.

Further reference: *Victorian Year Book* 1982, pp. 311-15

Marine pollution

At the Marine Science Laboratory, techniques are being developed to use the living organisms of the sea to monitor the quality of marine waters cheaply and efficiently.

In one procedure animals and plants are used as accumulators of toxicants from surrounding waters instead of attempting to measure directly the very low but nevertheless important concentrations of pollutants in the sea water itself.

In the course of refining such a technique, methods must be perfected for collecting water samples which adequately represent the variations over time of heavy metal and hydrocarbon concentrations; the response of various organisms to different concentrations of known and potential toxicants must be tested in the laboratory; a relationship must be established between levels of toxicants in sea water and those accumulated by the selected species; and allowance made for the variability of toxicants accumulated by different organisms.

Further reference: *Water pollution; Environmental studies, Victorian Year Book* 1981, p. 331

Mussel culture

Port Phillip Bay naturally produces large quantities of mussels (*Mytilus edulis*) which traditionally have been commercially harvested by dredging. There are fears that continued exploitation by this means will not only deplete the stock but adversely affect the associated fauna including such important commercial and recreational fishes as the Snapper (*Chrysophrys unicolor*).

A study is now well advanced which aims to develop and assess alternative strategies for culturing mussels which would not only avoid the detrimental effects of wild harvesting but possibly enhance productivity and efficiency, and the quality of the product.

The progress of the trials has been encouraging and much information and advice has already been made available to prospective mussel farmers.

Fishing Industry Council

One of the most significant developments to occur in Victorian commercial fisheries in recent years was the establishment of the Victorian Fishing Industry Council. The idea of an organisation to represent the whole industry and provide advice to the Victorian Government was first raised by professional fishermen and discussed with the Minister for Conservation who set up a working party to examine the proposal in detail.

The *Victorian Fishing Industry Council Act* 1979 established a statutory body to promote the use of Victorian fish, develop new and existing markets, encourage the development of new and existing fisheries, and promote the education of persons engaged in the Victorian fishing industry.

The Council consists of eleven members appointed by the Governor in Council on the Minister's recommendation. A representative of the Fisheries and Wildlife Division is Chairman, and five members represent processors, marketers, wholesalers, retailers, and consumers of fish. During 1982, the Council undertook a major promotion of scallops as its first venture of this kind.

Scallop fishery

Victoria's commercial fish catch continued to be dominated by the two molluscs, scallops and abalone, which account for over 50 per cent of the total value of the State's fisheries. Scallops are the largest single fishery and, in 1981 production was valued at \$11m.

Scallops are taken from two localities in Victoria—Port Phillip Bay and Lakes Entrance. Total production in 1981 was 3,650 tonnes of flesh, of which 2,500 tonnes came

from Port Phillip Bay and 1,150 tonnes from Lakes Entrance. This was a record year for the Bay, but a relatively poor year for the Lakes.

The number of boats licensed to take scallops is limited. Most of the 105 boats are licensed to fish at both localities although some are restricted to either one or the other. Those boats which are entitled to do so move between Lakes Entrance and the Bay, depending on the relative profitability in each area, and in 1981 most boats worked in the Bay.

One important characteristic of scallops from a fisheries management point of view is the extreme variability in the number of young scallops that are introduced into the fishery from year to year as a result of breeding success. The wide fluctuations in stock levels which result mean that the Fisheries and Wildlife Division must continually monitor the fishery and make adjustments to the level of exploitation that is allowed, particularly on the more confined grounds in Port Phillip Bay. In the Bay, the two methods used to control effort are a daily bag limit on the catch of each boat and limitation of the number of days per week open for fishing.

Each year during the closed season in summer the Division's research staff conducts a survey in the Bay to determine the level of stocks. This information is then used to set the bag limits and fishing days for the coming season. The survey in January 1981 showed exceptionally high numbers of commercial sized scallops. The 1982 survey showed that stocks were still at a good level, but only about 60 per cent of the record in the previous year. The results of the survey were borne out by actual production levels in 1982 which were less than for 1981 but still above the long-term average.

During 1981 and 1982, the catch per boat in Port Phillip Bay was limited to 20 bags per day and fishing was permitted on four days a week. The 1982 survey of the stocks revealed a low recruitment of young scallops to the population and this suggests that the catch over the next year or two may be closer again to the average.

Further reference: Trout surveys, *Victorian Year Book* 1981, pp. 330-1

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