

## FISHERIES AND WILDLIFE

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### FISHERIES AND WILDLIFE IN VICTORIA

#### **Fisheries and Wildlife Service**

##### *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, after 1973, Conservation.

The Fisheries and Wildlife Service, now a Division of the Department of Conservation, Forests and Lands plans and develops policies 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 Service undertakes inventories of the fauna and studies the way in which animals are distributed and how they exercise a role in functioning ecosystems.

Modern man expects many natural environments, which are prime faunal habitat, to provide a range of products or values such as water, timber, and recreation. The Service provides advice to government on the policies, legislation, and management requirements to enable the needs of the community to be reconciled with wildlife conservation.

Until the 1940s the Service 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 Service and its traditional client groups or users of the resource, but which made it difficult to co-ordinate the Service's diverse functions or to redeploy staff efficiently in response to changing needs.

During 1981, the Service was extensively reorganised 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.

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

In 1984, the Fisheries and Wildlife Service employed 360 permanent and temporary staff and had a total budget of \$15m. This compares with a budget of \$13m for 1983.

During 1984 the Ministry for Conservation was amalgamated with the departments managing

Forests and Lands to form a Department of Conservation, Forests and Lands. The structural model adopted allowed for the regionalisation of departmental management functions and prompted further reorganisation of the Service.

The most significant development was the transfer of all Fisheries and Wildlife field management and enforcement staff to a newly formed Division of Regional Management.

**Further reference:** *Victorian Year Book* 1984, pp. 324-5

#### *Education, extension, and public liaison*

There are many avenues by which the Service 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.

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

**Further references:** *Mud Islands*, *Victorian Year Book* 1980, pp. 330-1; *Reserve management*, 1983, pp.303-4; *Developments since 1934*, 1984, pp. 327-40

#### *Wildlife on private land*

Nearly two-thirds of Victoria is privately owned and much of the 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 resources. 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.

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. They 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, 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 includes 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, representing those which have a restricted distribution or are rare (or both), those which have indeterminate status but are suspected of being 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 on the distribution of different vegetation cover types within local government areas is provided to municipalities and the importance of each type of soil, water, and wildlife conservation is evaluated and presented in the form of three levels of planning response. A further interpretation of the potential for natural revegetation can also be provided as a guide to those areas which could be expected to regenerate with native vegetation if protected from grazing, and those which would require planting as well as protection. The locations of geological and geomorphic features of special interest can also be provided for certain areas.

Several studies have been undertaken to contribute information on particular conservation issues. A procedure for evaluating the conservation significance of roadsides has been produced for the Service under contract by the Graduate School of Environmental Sciences of Monash University. The report will be distributed widely, especially through the Roadside Conservation Committee to agencies concerned with roadside resources.

A study of the 1983 bushfires on a number of sites of biological significance identified in earlier studies and a survey to locate and assess the conservation significance of areas of remnant native grassland in the western plains are being undertaken under contract by the Botany Department of Latrobe University.

Surveys of wetlands in Victoria have shown that significant areas have been lost through land development practices, and the conservation of the remaining areas is an important task. As many valuable wetlands are on private land, development of community awareness of their value and of the need to establish mechanisms to encourage their conservation is vital. A discussion paper has been prepared to highlight many of the problems relating to wetlands conservation.

*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 occurrence 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 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.

#### *Eastern Barred Bandicoot*

The Eastern Barred Bandicoot (*Perameles gunnii*), one of three species of bandicoots found in Victoria is now endangered in mainland Australia, although it is still common in Tasmania. Although the species once had a wide distribution across the western basalt plains of Victoria (from Kew to Coleraine) the only mainland population known to have survived is centred in the city of Hamilton. The facts responsible for the species' decline are not clearly understood, but habitat modification, predation by introduced predators, disease, use of pesticides and herbicides, and road deaths all appear to have contributed to its present status.

In 1983 research was commenced into the ecology of the Eastern Barred Bandicoot which will enable a management strategy to be formulated that will ensure the future survival of the last remaining mainland population at Hamilton, and which may at a future date enable the successful re-introduction of the species into suitable areas of its former range.

Before management decisions can be made on an endangered species such as the Eastern Barred Bandicoot, detailed information on the biology of the species must be collected. To this end a sample population is captured, marked, and released again and data collected on this identifiable sample can then be extrapolated for the population as a whole. Data collected during the project indicate that although the adult bandicoots are breeding successfully there is excessive juvenile mortality within the population. Two major factors appear to be responsible for this high level of mortality. First, is the lack of suitable shelter for the dispersing juveniles, and second, is predation by cats, both feral and, in particular, domestic.

In an attempt to reduce the level of predation by domestic cats and promote public awareness about the plight of the bandicoots, a community education campaign was launched by the Minister for Conservation, Forests and Lands in mid-1984. The 'responsible pet ownership campaign' was jointly conducted by the Fisheries and Wildlife Service, the Department of Agriculture-Bureau of Animal Welfare, and the City of Hamilton. The aim of the campaign was to inform all Hamilton residents how they could play an active role in the conservation of the bandicoot by promoting several aspects of responsible pet ownership.

A captive colony of Eastern Barred Bandicoots is being established at the Serendip Wildlife Research Station which will act as a reserve population in the event of any natural or unnatural disaster occurring. The colony will also enable accurate data on reproduction, growth, and development to be obtained for comparison with the wild population. Techniques for captive propagation will be developed with a view to using surplus stock for re-introduction into suitable sites.

#### *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.

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. In the first stage, mapping of fish distribution and abundance is being carried out to determine the habitat requirements of the larger species north of the Great Dividing Range – Murray Cod (*Maccullochella peelii*), Macquarie Perch, (*Macquarie 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 references:** *Victorian Year Book* 1982, pp. 311-15; Long-billed Corella, 1983, p. 306; Preserving the habitat, 1984, p. 325; Public participation in conservation, 1984, pp. 325-7

#### *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 fish as the Snapper (*Chrysophrys aurata*).

A study has been conducted to develop and assess alternative strategies for culturing mussels which would not only avoid the detrimental effects of wild harvesting but possibly enhance productivity, efficiency, and the quality of the product.

Following the successive trials conducted in Port Phillip Bay, twenty-three permits have been issued for mussel farming and the permit holders have formed the Victorian Mussel Growers Association. It is expected to take some years for these farms to become fully productive. One factor that will be very important in determining the growth of this new industry is the development of markets for the product and the Fisheries and Wildlife Service is currently undertaking research in this area.

The Service is also initiating a study on the potential for farming native oysters (*Ostrea angasi*), sometimes called the Mud oyster. This oyster is a close relative of the Bluff oyster from New Zealand and the very popular European Flat oyster. In Europe, Flat oysters bring four times the price of Rock oysters which suggests that the latter may have potential on the export as well as the local market.

#### *Fishing Industry Council*

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 Service 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. Since then other small promotions have taken place, but a lack of funds has been a major problem. The Victorian Government decided that there should be a levy placed on the fishing industry so that it makes a contribution for the promotional work done by the Council. Fishermen and processors are already licensed with the Fisheries and Wildlife Service and their licence fees were increased by 15 per cent with the extra revenue raised going to the Council. As well as this levy, a new licence called the Fish Trader's Licence was introduced to cover all people who sell raw fish for human consumption. There are two types of Fish Trader's Licence: an individual Fish Trader's Licence and a Body Corporate Fish Trader's Licence, the latter being for companies. The revenue raised from this licence will be used by the Council specifically for the promotion and development of Victorian fish.

#### *Scallop fishery*

Victoria's commercial fish catch is 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 production was valued at \$7m in 1982, \$8.5m in 1983, and \$10.6m in 1984..

Scallops are taken from two localities in Victoria – Port Phillip Bay and Lakes Entrance. Total production in 1982 was 1,832 tonnes of flesh, of which 1,014 tonnes came from Port Phillip Bay and 818 tonnes from Lakes Entrance. This was a record year for the Bay, but a relatively poor year for the Lakes. Total production in 1983-84 was 2,206 tonnes of flesh, of which an estimated 784 tonnes came from Port Phillip Bay and 1,422 tonnes from Lakes Entrance.

The number of boats licensed to take scallops is limited. Most of the 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.

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 the scallop catch are a daily bag limit on the catch of each boat and limitations on 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 of January 1983 indicated that the stocks were below 40 per cent of the 1982 level. This fall coincided with a corresponding fall in the commercial catch.

**Further references:** Trout surveys, *Victorian Year Book* 1981, pp. 330-1; Commercial fisheries, 1984, pp. 340-1

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