

## FISHERIES AND WILDLIFE

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### FISHERIES AND WILDLIFE IN VICTORIA

#### **Fisheries and Wildlife Division**

##### *Introduction*

Conservation of Victorian fisheries and wildlife requires the management of widely diverse species and the habitats which support them. With sound management goes the research upon which it is based. Consequently the responsible authority, the Fisheries and Wildlife Division of the Victorian Ministry for Conservation, deploys its resources to priorities prompted by the intrinsic value of the State's fauna and the recreational and commercial needs of the community.

Until the 1940s, fisheries and wildlife activities in Victoria were mainly restricted to limited enforcement programmes and the stocking of streams and lakes with trout. Before Federation, the functions were the responsibility of the Department of Trade and Customs, and after 1901, were transferred to the Department of Public Works. In 1909, the activities were taken over by the Department of Agriculture, and in 1913, a Fisheries and Game Branch was formed, under the control of the Chief Secretary. In 1933, a 50 cent trout licence was introduced and by 1940 the Branch had an annual budget of \$21,000.

The development of a research and management organisation began in the 1940s. By 1952, the Branch had a staff of 40 with a budget of \$82,000; \$5,000 of which was spent on research. Research into ducks resulted in a \$2 game licence being introduced in 1959.

In January 1973, the Ministry for Conservation was formed, and the functions and the Branch became the Fisheries and Wildlife Division in the new Ministry. By then there were 250 persons on the staff and half of the \$1.8m budget was spent on research.

Conservation research had become a most important function in 1973 and there were 18 scientific officers and 45 support staff in the Marine Pollution Section of the new Division. Early in 1978, the Marine Pollution Section was transferred to the Ministry proper to join a newly formed Marine Studies Group coinciding with its transfer to a site at Queenscliff. In 1979, the responsibility for the biological component of marine fisheries research was transferred to the Marine Studies Group. The Commercial Fisheries Section as a result of this re-organisation has been able to expand and consolidate its management obligations to the fishing industry.

In June 1981, the Division was extensively re-organised along the following lines.

The Commercial Fisheries Branch is now assuming a greater responsibility for the management of marine fisheries and is directing its efforts to this end. To enhance the Division's research capability, there will be close liaison with the Marine Science Laboratories. These Laboratories are part of the Ministry for Conservation but are presently affiliated with the Environmental Studies Division of the Ministry.

Before re-organisation, the Wildlife Branch was responsible for both management and research associated with wildlife problems. In future, a small Resources and Planning Branch will formulate management policies for recreational fisheries and wildlife. The Branch will also identify areas in which research is required for the formulation of management decisions.

Once these research requirements have been clearly identified, the research will be undertaken by the Arthur Rylah Institute. The Institute has been re-organised to provide a structure for scientists and technicians, to ensure that research is co-ordinated. A number of scientists with wide environmental experience have been seconded to the Institute to broaden its research work.

Before the re-organisation, wildlife field management was also associated with the Wildlife Branch, but this function has been incorporated into an upgraded Field Management Branch which is responsible for wildlife management and extension services, as well as field operations or enforcement. The Field Operations Branch originally comprised only enforcement officers who reported to a Chief Fisheries and Wildlife Officer who was in turn directly responsible to the Director of Fisheries and Wildlife. The new Branch, with its broader responsibilities, now reports to an Assistant Director. The Branch has been largely decentralised and considerable responsibility has been allocated to District Superintendents who are based at Bairnsdale, Wangaratta, Melbourne, Warrnambool, and Horsham.

The Division's permanent and exempt establishment numbers 290 and is supported by a budget of \$8m.

#### *Research in wildlife ecology*

Historically most wildlife management and research in Victoria has been orientated towards game or pest control. This work is continuing, but in recent years the need to undertake other kinds of research has been recognised. This additional requirement may be related to a general community interest in conservation.

At one time, control of wild animal pests in agriculture and forestry was approached on the basis of developing inexpensive techniques for their elimination. This approach has gradually evolved into what might be called the specialised management of wildlife which requires the basic understanding of the ecology of each species, its relationship with other species, and the use of that knowledge as a basis for control. The control of rabbits by myxomatosis is an example. Studies of native fauna in Australian universities and in government agencies have influenced this change in approach. The knowledge gained has been of great potential value to the wildlife manager.

Research undertaken by the Fisheries and Wildlife Division is now orientated towards providing a better basis for management decisions. Programmes are now increasingly directed towards conservation of species and their habitats, but will include monitoring of populations of selected species, even if on a smaller scale.

A survey and classification of wetlands of Victoria is now in progress. Although this work has strong links with management objectives, its significance is much greater because for the first time inland waters are being related to wildlife survival. From the results it will be possible to draw up a list of priorities for the conservation of wetlands on the basis of their values to many species beyond those of game interest.

Similarly, a general survey of the distribution and abundance of vertebrate animals in Victoria is a long-term undertaking which will provide the basic information against which future changes in the status of wildlife may be measured. In the course of this general survey several species have been recognised which require urgent investigation because of their limited distribution or their declining status. In some cases the Division is studying these species or has encouraged other research organisations to do so; examples of such research include studies on the mountain pygmy possum, long-billed corella, Leadbeater's possum, helmeted honeyeater, and the ground parrot. The peregrine falcon is also being studied because it is declining throughout the world, apparently as a result of the effects of pesticides which reduce the strength of its egg-shell.

Another study concerns native rodents which seem to be especially responsive to the effects of fire on heath lands. Studies on the characteristics and acceptability of artificial nest boxes may help to offset some of the effects of commercial forestry on native animals.

#### *Reserves management*

Fish and wildlife require a congenial environment if they are to thrive or in some cases even survive. Therefore, to offset ever increasing demands made by an expanding human population, areas reserved for the natural propagation and maintenance of fauna and fish

must be adequate. In order to be self sufficient, the Division's policy is directed to making reserves large and free from undesirable influences exerted on them by surrounding land which may be used for agricultural or other purposes. A continuing land purchase programme is in operation.

Reserves which have been proclaimed or purchased now number 124 and cover about 105,000 hectares. The Division is continuing to establish and consolidate the habitat of wildlife throughout Victoria by purchasing land and recommending additions to the existing sanctuaries to form wildlife management co-operative areas. The Land Conservation Council has made final recommendations involving an additional 74 reserves of about 7,000 hectares in total area.

Wildlife habitat on reserves and other Crown land is either restored to the natural regime or maintained by the replanting of vegetation, the installation of water controlled structures, and sometimes, by releasing wildlife formerly present in the area. Koalas are regularly captured and re-located and emus and magpie geese have been re-introduced into areas around Puckapunyal and Sale Common, respectively. Rare species are propagated at the Division's Wildlife Research Station near Lara.

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

#### *Liaison with service groups*

In the wildlife area the Division has continued to assist various government and private organisations. Groups such as the Bird Observers Club, the Victorian Field and Game Association, and the Victorian National Parks Association have benefited from Divisional participation. Among the government authorities are the State Rivers and Water Supply Commission, the Forests Commission, the National Parks Service, the Town and Country Planning Board, the Country Roads Board, and the State Electricity Commission.

#### *Monitoring habitat*

Visual observation often indicates that physical interference has unfavourably affected the indigenous animal inhabitants. However, at other times the interference may be much less apparent and sometimes insidious.

Nevertheless, the cost of monitoring and thereby forecasting threats to all of the State's habitats is excessive, and too often, therefore, corrective action can only be taken after an adverse effect on land or water is observed in the animal or fish populations. This is usually reflected in an increase in the number of fish or animal deaths or by an easily detectable decline in numbers.

Lake Burrumbeet near Ballarat was the subject of investigation after excessive input of pollutants into the lake was first indicated by the production of dense masses of algae which caused the death of fish and livestock. Similar signs in the Gippsland Lakes have led to a comprehensive study of the lake system. This will incorporate investigations of water movement, inventories of aquatic and land species, and basic measurements of productivity, all of which are essential to the development of effective conservation policies and management techniques.

#### *Fisheries management*

The practical management of fisheries in Victoria is complex in the freshwater environment. Water, because of its susceptibility to physical and chemical influence, plays an important role in determining the range and density of fish populations. In the sea the primary concern is the continued adequate yield of fish for either the fishing industry and recreation, or both.

Victoria's commercial fisheries provide at least 20,000 tonnes of fish worth in excess of \$20m annually and thus considerable research and management is directed towards this industry. The Division is also aware of the importance of the recreational demands on the estuarine and inshore fish stocks. Some of the salt water species which are of primary importance to the fresh fish market (which constitutes about 17 per cent of the total Victorian catch) are also sought by anglers. Snapper, whiting, and flounder are examples, and in the case of snapper it is estimated that the quantity of the commercial catch is matched by that taken by amateur fishermen.

Unlike the recreational fishermen of the inland lakes and streams, those anglers who fish the bays and coastal waters of Victoria do not contribute to the special research and

development trust funds partly financed from licence fees. Because of this, money set aside for marine fisheries investigations is mainly channelled towards commercial fisheries, which do make a contribution through substantial licence payments.

The unrestricted exploitation of natural resources often results in irreparable damage being done to the resource itself with the consequential unfavourable effects ultimately being passed on to the exploiter and the community at large. Many of the State's fisheries are, therefore, subject to controls which limit exploitation by way of imposing ceilings on either the number of fishermen or boats licensed and the quantity of fishing gear which may be used. The licensing provisions of the Fisheries Act are particularly important in the process of management of the fisheries. They establish the Director's prerogative, on the recommendation of the Commercial Fisheries Licensing Panel and the Fisheries Management Committee, to grant or refuse an application for a licence. Such decisions are within the context of "having regard to the welfare of the fishery concerned as well as the persons engaged in the industry".

Thus having the authority to refuse applications has provided the Director with a mechanism for limiting the number of fishermen and boats in certain fisheries. During 1980, limited-entry status was afforded the non-culture segment of the eel fishery and certain of the bay and inlet scale fish fisheries. Previously licence limitation had been applied to the scallop, abalone, rock lobster, and some bay and inlet fisheries.

As well as maintaining research and monitoring studies on the State's established fisheries the Division has directed attention to the development of hitherto unexploited resources. Intermittently since 1975-76 the Division has operated its research vessel in the west of the State with the aim of establishing an off-shore trawl fishery adjacent to Portland. This work initially involved surveys of the seabed to determine suitable conditions for trawling and later led to the vessel being engaged, early in 1977, in simulated commercial trawling along with the vessel chartered by the Commonwealth Government. The results obtained were sufficiently encouraging to attract commercial interests and participation in this fishery is now accelerating. The trawling ground so far discovered is in waters of from 300 to 400 metres deep and covers almost 300 square nautical miles. The fishery is based at Portland and is expected to support about 10 trawlers.

#### *Fisheries extension work*

Traditionally, extension or advisory work has been one of the duties of the Fisheries and Wildlife Officers of the Field Management Branch. To a large extent this function remains; particularly in relation to advice on fisheries laws, licensing, and general information about the activities of the Division.

#### *Statistics*

The following table shows certain particulars about the fishing industry in Victoria for the years 1976-77 to 1980-81:

#### VICTORIA — FISHERIES: MEN, BOATS, AND EQUIPMENT

Year	Registered crew members	Boats registered		Value of nets and other equipment
		Number	Value	
			\$'000	\$'000
1976-77	1,565	825	11,919	2,532
1977-78	(a) 1,720	891	n.a.	n.a.
1978-79	(a) 1,891	980	n.a.	n.a.
1979-80	(a) 1,932	998	n.a.	n.a.
1980-81	(a) 1,936	1,032	n.a.	n.a.

(a) Estimated.

NOTE. Up to and including 1978-79, the statistics in this table were collected by the Fisheries and Wildlife Division and processed by the Australian Bureau of Statistics. Since 1979-80, the Fisheries and Wildlife Division have continued the collection of the data and have also assumed the responsibility of the statistical processing.

The following table shows the catch of fish, crustaceans, and molluscs for the years 1974-75 to 1978-79 landed at Victorian ports irrespective of the waters in which they were caught.

VICTORIA—FISHERIES: QUANTITY OF CATCH (a)  
(tonnes)

Year	Fish (b)	Crustaceans	Molluscs	Total
1974-75	9,445	387	9,084	18,916
1975-76	7,314	531	6,919	14,764
1976-77	10,089	316	5,868	16,273
1977-78	9,209	345	6,831	16,385
1978-79	9,303	279	7,816	17,398

(a) All figures relate to live weight.

(b) Includes freshwater.

NOTE. The statistics in this table are collected by the Fisheries and Wildlife Division and processed by the Australian Bureau of Statistics. Since 1979-80, the Fisheries and Wildlife Division have also assumed the responsibility for the statistical processing. As yet no data is available for 1979-80.

#### *Trust fund projects*

Trust fund revenues provide approximately 40 per cent of the Division's financial resources.

Two major trust funds are the Fisheries Research Fund into which all Commercial Fishing Licence and Amateur Inland Angling Licence fees are paid, and the Wildlife Management Fund into which all Shooters' Licence and Hunting Permit fees are paid.

Expenditure from these trust funds contributes towards the cost of the Division's research projects, particularly those conducted by the Freshwater Ecology Section, the Commercial Fisheries Assessment and Development Sections, and the Wildlife Ecology Section. Trust fund expenditure is also directed towards the Division's management projects conducted throughout the Field Management Branch and particularly, the support of enforcement, the management of reserves, and the land purchase programme.

#### *Murray Cod—Lake Charlegrark*

One of the projects made possible by the establishment of a trust fund into which the revenue from fishing licences is paid, is the Warm Water Fisheries Pilot Project at Lake Charlegrark in the far west of Victoria. This project which was officially opened in 1976 was established to develop intensive culture techniques for Murray cod, taking advantage of a naturally reproducing population of cod in the adjacent lake.

A promising breeding technique using artificial spawning sites has been developed which eliminates the high stress and mortality rates associated with earlier hormonal stimulation techniques. A feeding regime for young cod has also been developed at the pilot project based on initial feeding with brine shrimp before weaning the fish onto liver which is followed by a liver-pellet mixture; this eliminates the need for extensive plankton ponds to produce food. These two innovations have removed what were the major barriers to intensively producing cod to a size where they could be safely stocked in waters containing populations of predatory fish such as redfin.

Production techniques are now at a stage which will enable small numbers of fish to be released each year into selected waters.

#### *Research in freshwater ecology*

Research within the Freshwater Ecology Section can be classified into four major areas of emphasis: streamflow and habitat requirements of freshwater fishes; breeding biology of native fishes; distribution, abundance, and propagation techniques for salmonids; and the effects of introduced fish on co-habiting species and the aquatic environment. Through these research programmes, the Section provides valuable information upon which resource managers can develop management policies on individual species, bodies of water, and species exploitation.

#### *Estuary perch*

A State-wide survey to determine the distribution and life history characteristics of estuary perch, *Macquaria colonorum*, started in mid-July 1975. The survey programme

was discontinued in July 1980 following the survey of 78 coastal rivers, estuaries, and lakes.

The majority of Victoria's coastal rivers and estuaries were found to contain estuary perch populations. Data collected from individual rivers and estuaries over a five year period showed that estuary perch numbers may vary considerably, both seasonally and from year to year. The population of fish was found to be greater in the east coast rivers and estuaries than for the west coast sites.

Estuary perch have an extended spawning season from September to December. Actual spawning takes place under estuarine conditions in salinities that varied between 10,000-24,000 parts per million. The majority of fish spawn for the first time at three years of age.

Fish remains, mostly yellow-eye mullet and gudgeon, comprised about 50 per cent of the estuary perch diet. Shrimp and prawns comprised about 41 per cent of the diet.

Angler harvest of estuary perch from Victorian waters is negligible compared to the catch of bream, mullet, and luderick. There are only a few anglers who have become adept at fishing for and catching estuary perch. Thus, the Victorian stock of estuary perch remains largely unexploited by anglers.

#### *Eel programme*

Eels have a life cycle involving spawning at sea, the transport of the larval forms (leptocephalus) by the East Australian Current, invasion of the estuaries by glass-eels, and growth and maturation in freshwater before the sea migration to the spawning grounds.

Aquaculture of eels is dependent on the availability of glass-eels. It is important to determine when the invasion of glass-eels peaks and the specific composition of the glass-eel catch, as at this stage the short-finned eels form the basis of the aquaculture.

Examination of glass-eel samples collected by staff of the Freshwater Ecology Section and those provided by commercial eel fishermen for the period 1975 to 1980 shows that glass-eels may be present throughout the year in particular drainage systems, e.g. Bruthen Creek, Snowy River. Peaks of invasion from the sea occur at different times for the two species of *Anguilla* found in inland waters of Victoria. The short finned species has a winter-spring invasion peak, while invasion by long finned species peaks during late summer and autumn. During the peak periods, glass-eels occur in most estuaries along the entire Victorian coastline.

In each month, best catches were made at the last quarter and/or first quarter phases of the moon. Catches made between noon and midnight were always considerably higher than those taken between midnight and noon. Glass-eel nets, because of their fine mesh (10 meshes to one centimetre), caught 40 species of fishes other than the two species of eel. Of these other fishes, a number were of commercial and angling importance, while the remainder were forage fishes.

This study of glass-eel distribution and occurrence is now in its final stages although catches of glass-eels by commercial eel fishermen will continue to be monitored.

#### *Blackfish programme*

The river blackfish (*Gadopsis marmoratus* Richardson) is the only member of the Gadopsidae and is restricted to south-eastern mainland Australia and northern Tasmania. In Victoria, it occurs in a variety of waters from fast flowing mountain streams to slower flowing lowland rivers. Its preferred habitat appears to be streams with gravel beds and abundant cover in the form of large boulders or submerged timber. The biology of this unique and valued angling species has been very poorly understood.

To examine its life history, staff from the Freshwater Ecology Section studied river blackfish in Mackenzie River, a tributary of the Wimmera system, from 1975 to 1980. Spawning was found to occur from late spring to early summer when adhesive eggs are laid inside submerged hollow logs. The incubation period from fertilisation to hatching is about 16 days. After hatching, the young fish do not leave the ruptured egg membrane; instead the large yoke-sac remains inside, with only the actual embryo itself becoming free. Then follows a period of further development for about 26 days before the fish finally leave the egg membrane. They are thus vulnerable to predation, and parental care by the male is exhibited.

In Mackenzie River, blackfish live to a maximum age of 5 years and grow to a maximum length of about 300mm. They are carnivorous, feeding on aquatic invertebrates living on the river bed and on any terrestrial insects that may fall into the river.

Samples of river blackfish have been collected from many areas of Victoria and the data are now being analysed to determine their distribution and variation in growth and abundance. Preliminary analysis indicates that river blackfish generally grow to a larger size and live longer in streams south of the Great Dividing Range.

Specimens of river blackfish have been placed in a number of farm dams to determine their suitability for stocking such water bodies. The dams are sampled at three-monthly intervals and sampling will continue until March 1982.

The study of the biology of river blackfish is now in the analysis stage.

#### *Carp*

Four different standing and flowing water habitats in the Shepparton area have been intensively studied during the past eighteen months: Lake Cooper, Corop; Darcys State Forest, Mooroopna (5 billabongs); Loch Garry, Bunbartha; and the Broken River from Benalla to the Goulburn River (8 sites). Experimental ponds have been established to investigate the effects of carp on standing waters.

Results have shown that carp have experienced at least two years of poor growth and poor recruitment. Growth rates of both marked and unmarked carp from Loch Garry have been minimal. Neither spawning carp nor recruitment of young carp were seen there for the 1980-81 season. Carp in Lake Cooper spawned in the previous two years and in the Broken River in 1980-81, but survival beyond 100mm was very low.

Despite the apparent decline in numbers of carp over the past few years, they are still the dominant fish in most rivers and lakes near Shepparton, together with the other introduced species, goldfish, and redfin. The small native forage species, western carp gudgeon, smelt, and rainbow fish have been found to be widespread and locally abundant, but very few individuals of the larger native fish, golden perch, Murray cod, blackfish, or catfish have been caught. According to anglers, the larger native fish were more abundant in 1981 than in the past 20 or more years. Whether the availability of carp as a food source has played any part in this is unclear.

Increased rainfall and minor flooding in July and August 1981, have expanded spawning sites and allowed fish to move in and out of many water bodies. Successful spawning of carp at Pagues Billabong, Darcys State Forest, occurred in 1981 with many adults taking part and with an apparently good hatching survival. With higher water levels in all habitats this year, carp may flourish again.

#### *Chinook salmon programme*

The chinook salmon is the largest of the Pacific salmon and has been introduced to Victoria from North America. Often called the King salmon, it sometimes grows to more than 40 kilograms in weight. Where anadromous populations exist, the fish feed and grow in the ocean for 2-6 years before returning in huge runs upriver to their birth place to spawn. The salmon excavate nests in the clean river gravels, lay their eggs, and die shortly afterwards. After hatching, the small salmon fry feed in the river until they attain about 80mm in length when they begin smolting. The smolts migrate downriver to enter the ocean, where they spend the greater part of their life.

In Victoria, the environmental conditions are not ideal for chinook salmon and special attention has been required to maintain breeding stocks of these fish at the Snobs Creek Fish Hatchery and Research Station near Eildon. Salmon have been raised at the station for more than 12 years and several life cycles have been spent entirely in freshwater.

At present, only a few waters in the western districts are regularly stocked with chinook salmon where they provide excellent angling. During 1981, the incidental stocking of 6,000 two year old "surplus" fish took place in Albert Park Lake, Melbourne, for the benefit of metropolitan anglers. They are an attractive, fine flavoured table fish and being easy to culture, may become increasingly popular as a commercially farmed fish.

The chinook salmon programme is aimed at improving propagation methods and the factors which affect viability are being examined closely. The specific causes of mortalities during the breeding period are being identified, and variations in fish husbandry techniques will be implemented to overcome these mortalities. At present, the effects of

warmer than desirable water temperatures during the late adult maturation and early incubation periods of the life cycle seem to be a major contributing factor to poor viability.

#### *Trout management*

During the fifth year of operation, the Trout Management Group continued the work begun in 1977, when it was charged with the task of surveying and reporting on the situation regarding trout populations in Victoria's major angling waters. In 1981, the group conducted surveys in approximately twenty rivers and streams and sixty lakes, reservoirs, and dams. The data gathered provided a basis for fixing trout stocking levels in those waters that proved capable of supporting worthwhile populations of trout. Areas of primary interest were the north-east rivers, Otway streams, south-west coastal rivers, and south-west reservoirs and lakes.

In general, those lakes that produced well in the past continued to do so in 1981. Several lakes showed excellent recovery following re-stocking after fish kills, with both numbers and physical condition of trout up to or better than they were before the kills.

The streams and rivers sampled generally produced fish of smaller size than the lakes, but in good condition, with some natural spawning depending on stream conditions. Poor quality water usually held low populations of trout in poor condition. On this evidence future stocking levels can be determined.

The results of the 1981 surveys tended to support the conclusions reached in previous years: the quality of angling in a particular area depends primarily on the condition of the lake or stream and its catchment. High quality water will produce high quality angling. Degraded areas cannot be made to produce good fish, despite high levels of stocking.

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

#### *Research in chemistry and toxicology*

The impact of chemicals, both material and man-made, on Victoria's native fish and wildlife is not well understood or documented. Each year an increasing number of chemicals have the potential to reach the natural environment and so the need to determine the effects of these materials on fish and wildlife becomes more critical.

Research to be undertaken by the Division's Chemistry and Toxicology Section aims to examine the tolerance of native fish and wildlife to a wide range of chemicals, particularly those that are widespread and persistent. First steps in this research have been taken, as aquarium and animal house facilities have been established at the Arthur Rylah Institute at Heidelberg. Current programmes have already produced data on the effects of fluoride on fish species such as trout. Further testing will involve a number of species of native fish.

Fluoride is also of interest regarding its effects on native animals. While the effects of fluoride on domestic and exotic animals are documented, the chronic effects on native animals are not. With the strong possibility of an aluminium smelter which emits fluoride, being established in Victoria the need to determine these effects becomes very important. The Section will be undertaking field and laboratory work to determine the relationships between fluoride and the health of various bird and marsupial species. Longer term work on chemical effects in fish and wildlife will be concerned with pesticides and other complex organic compounds as well as heavy metals.

Other important aspects of the Section's activities include survey of fish and wildlife to determine the levels of foreign chemicals present in fauna. Information from such studies is useful for the management of animal populations and for the control of chemical substances used in or discharged to the environment.

#### *Enforcement*

The day to day responsibility of maintaining contact with the outdoor public and of enforcing the provisions of the Fisheries and Wildlife Acts rests with the 52 Fisheries and Wildlife Officers of the Field Management Branch. Twenty-eight of these officers, are stationed in strategic rural and coastal areas according to the demands of the particular regions of the State. There are, for instance, sixteen Fisheries and Wildlife Officers who occupy offices in fishing ports and direct the major part of their activities towards the commercial fisheries.



In the inland where wildlife conservation and recreational fishing take pre-eminence, the twelve stations into which Victoria is divided, each with its own resident officer, vary considerably in area and nature of responsibility. Following the introduction of a regionalisation scheme in 1979, Victoria has now been divided into five Districts. In each District the Senior Fisheries and Wildlife Officer co-ordinates the activities of the Station Officers in his District.

The Victorian Fisheries and Wildlife Officers also have the delegated responsibility of enforcing Commonwealth fisheries laws and regulations which apply to the adjacent offshore seas.

*Angling information*

One of the questions of great importance to anglers is where and when to catch fish. In many cases information regarding particular species and size is also sought. To answer these questions, the Division has published an *Angling Guide* which lists over 500 inland angling waters in Victoria and describes the type of water, the surrounding country, and any special problems or fishing restrictions likely to be encountered. The Guide lists the fish type, their abundance and expected size, and in some cases it also gives advice on the best times to go fishing and the methods most likely to succeed.

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

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