

CHAPTER 14

FORESTRY AND FISHERIES

FORESTRY

(Source: Forestry Branch, Department of Primary Industry)

Forestry in the States

Under the Australian Constitution land management is the sole responsibility of State Governments. Each State has a forest service responsible for the management and control of publicly-owned forests, in accordance with Forestry Acts and Regulations. Forest management aims to satisfy all reasonable demands by the community on the forest estate including timber production, provision of minor forest products, grazing, protection of native flora and fauna, recreation and watershed protection.

Forestry in the Territories

The Department of the Capital Territory is responsible for the management and control of forestry in the Australian Capital Territory. Forestry in the Northern Territory is the responsibility of the Northern Territory Conservation Commission. Both forestry units have functions similar to those of State Forest Services.

Commonwealth Forestry Administration

The Department of Primary Industry is responsible for forestry matters at the national level. Its primary responsibilities are the administration of a control on the export of unprocessed timber, liaison with State, national and international organisations concerned with forestry, provision of the Secretariat for the Australian Forestry Council and compilation of national statistics on the forestry industry.

Existing Forest Estate

Native Forests

The total area of native forest, defined as land dominated by trees with an existing or potential mature height of twenty metres or more, including native stands of cypress pine in commercial use regardless of height, was estimated at 40.8 million hectares as at 30 June 1980. Thirty-four million hectares of the natural forests are dominated by eucalypts. For a more detailed examination of Australian native forests, see Yearbook No. 61, Chapter 24.

The following tables show classifications of native forest areas in Australia by forest type and ownership. Plantation areas are dealt with separately.

NATIVE FOREST AREAS CLASSIFIED BY FOREST TYPE, 30 JUNE 1980
(^{'000 hectares})

Forest type group	N.S.W.	Vic.	Qld	S.A.	W.A.	Tas.	N.T.	A.C.T.	Aust.
Rainforest	300	-	1,074	-	-	472	38	-	1,884
Eucalypt									
Productivity—Class I(a) . . .	1,173	631	204	-	176	504	-	-	2,688
Class II(b)	3,649	3,981	1,290	-	2,816	1,848	-	51	13,635
Class III(c)	8,320	299	3,140	-	19	-	-	-	11,778
Tropical eucalypt and paperbark . .	-	-	4,078	-	-	-	2,450	-	6,528
Cypress pine	1,908	-	1,685	-	-	-	778	-	4,371
Total	15,350	4,911	11,471	-	3,011	2,824	3,266	51	40,884

(a) Gross production in excess of 5 cu. metres per hectare per annum. (b) Gross production between 1-5 cu. metres per hectare per annum.
(c) Gross production of less than 1 cu. metre per hectare per annum.

NATIVE FOREST AREAS CLASSIFIED BY OWNERSHIP, 30 JUNE 1980

('000 hectares)

Ownership category	N.S.W.	Vic.	Qld	S.A.	W.A.	Tas.	N.T.	A.C.T.	Aust.
State forestry (a)	2,866	1,916	3,126	—	1,913	1,272	312	—	11,405
Other public (b)	6,208	1,536	5,672	—	435	399	2,639	51	16,940
National parks (c)	993	853	1,394	—	105	122	315	—	3,782
Private (d)	5,283	606	1,279	—	558	1,031	—	—	8,757
Total	15,350	4,911	11,471	—	3,011	2,824	3,266	51	40,884

(a) Publicly owned land, permanently reserved or dedicated primarily for timber production. (b) Publicly owned land, vacant or occupied under lease, not specifically reserved for timber production, but on which control of timber rests with the Crown. (c) Publicly owned land, permanently reserved for purposes other than timber production. (d) Privately owned land, and leasehold where the Crown has no control over timber rights.

Plantations

Tree plantations of a few coniferous species now provide a large part of Australian-grown wood supplies. The large scale establishment of these plantations was commenced by State Forest Services early this century, and in the case of South Australia, last century, to overcome the shortage of native coniferous timber. In an eleven year period covered by the *Softwood Forestry Agreements Acts* 1967, 1972 and 1976, the Commonwealth provided financial assistance to the States in the order of \$55 million for an extended program of softwood plantation development. A further Act in 1978, authorised financial assistance over the five year period terminating 30 June 1982 for the maintenance of the area of plantations established previously with Commonwealth funds.

Privately owned plantations amount to approximately two-fifths the area under State ownership. New plantations (including replanting) are currently being established at the rate of 33,000 hectares per annum, of which almost one-third is by private enterprise. A detailed account of the history and development of coniferous plantations and of the characteristics of individual species is included in Year-book No. 59, page 880. The following table shows total area of plantations in Australia classified by species.

PLANTATION AREAS(a), CLASSIFIED BY SPECIES, 31 MARCH 1980

(Hectares)

Species group	N.S.W.	Vic.	Qld	S.A.	W.A.	Tas.	N.T.	A.C.T.	Aust.
Coniferous—									
Pinus radiata	155,907	157,375	3,719	88,586	35,502	51,454	—	12,751	505,294
Pinus elliotii(b)	12,346	—	90,322	—	43	—	—	—	102,711
Pinus pinaster	—	1,512	—	5,411	23,960	—	—	—	30,883
Pinus caribaea	1,107	—	15,725	—	—	—	1,508	—	18,340
Araucaria	1,550	—	41,528	—	—	—	—	—	43,078
Other coniferous	4,536	3,496	5,591	535	142	296	2,499	851	17,946
Total coniferous	175,446	162,383	156,885	94,532	59,647	51,750	4,007	13,602	718,252
Broadleaved—									
Eucalyptus	16,033	12,597	2,883	864	8,300	3,893	—	—	44,570
Populus	2,314	327	—	—	—	—	—	—	2,641
Other broadleaved	—	21	547	—	—	58	—	—	626
Total broadleaved	18,347	12,945	3,430	864	8,300	3,951	—	—	47,837
Total	193,793	175,328	160,315	95,396	67,947	55,701	4,007	13,602	766,089

(a) Public and private ownership. (b) Includes all species other than *P. radiata* in private ownership.

Australian Forestry Council

Membership of the council comprises the state Ministers responsible for forestry and the Commonwealth Minister for Primary Industry. Councils major functions are to make recommendations to the Commonwealth Government on national forestry matters and research coordination. It is serviced by a Standing Committee and specialist sub-committees.

Research

Commonwealth Scientific and Industrial Research Organization (CSIRO)

The Division of Forest Research in the Institute of Biological Resources conducts research in the four core areas of forest ecology and biology, silviculture, tree breeding and genetics, and harvesting.

The Division also conducts research into taxonomy, forest protection, forest assessment, and seed resource conservation and distribution. The Division maintains close liaison with relevant State authorities and, on occasion, collaborates with private companies. It operates seven regional stations in the States and the Northern Territory.

Within the Institute of Biological Resources (Divisions of Plant Industry, Entomology and Wildlife Research) and Earth Resources (Divisions of Soils, Land Resources Management and Land Use Research) research is undertaken on forestry problems relevant to the disciplines pursued in these Divisions.

Within the Institute of Industrial Technology, the Divisions of Building Research and Chemical Technology and an Agricultural Engineering section carry out a wide range of investigations relating to the properties of wood, the processing and uses of wood and wood products and tree harvesting. Research on the applications of wood in building is undertaken by the Division of Building Research. The research programs of the Division of Chemical Technology are directed towards developing ways whereby Australia's forest resources can be more effectively utilised. The programs include processing of wood and timber, technology of fibre separation, wood and fibre properties, composite wood and paper products, assessment of cellulosic resources and conservation of wood-based materials. Technology for the production of liquid fuels from wood and other plant materials is also being investigated. The Agricultural Engineering section undertakes research leading to the design and development of machines for tree harvesting.

The Divisions provide assistance to individuals and industry, provide training and experience for overseas technologists and maintain co-operative aid projects with developing countries.

Education

The Australian National University's Department of Forestry in Canberra and the Faculty of Agriculture and Forestry of the University of Melbourne offer undergraduate courses leading to a Bachelor of Science degree in Forestry. Most States provide for sub professional forestry training.

Timber and timber products

The major forest industries include the sawmilling, ply and veneer, reconstituted board (particleboard, fibreboard) and pulp and paper industries. The sawmilling industry is the largest single user of logs harvested from Australian forests (50 per cent), followed by the pulp and paper industry (11 per cent). Currently about 75 per cent of total volume of logs harvested are obtained from natural forests and the remainder mainly from coniferous plantations. This proportion will change over time so that towards the end of this century about half the supply of logs may be from coniferous plantations. Total removals at that time are estimated at 23 million cubic metres compared to current log removal of 15 million cubic metres.

The value of imports of timber products in 1979-80 was in the order of \$525 million while the value of exports of timber products was \$205 million.

The following table shows the production, imports, exports and domestic consumption of sawn timber and major timber products

SAWN TIMBER AND MAJOR TIMBER PRODUCTS, 1979-80

(Source: Forestry Branch, Department of Primary Industry and Australian Bureau of Statistics)

<i>Item</i>		<i>Production (1)</i>	<i>Imports (2)</i>	<i>Exports (3)</i>	<i>Domestic Consumption (1 + 2 - 3)</i>
Sawn timber	cu m	3,160,264	989,088	50,640	4,098,712
Plywood	cu m	86,862	61,290	906	147,246
Railway sleepers	cu m	228,565	4,650	32,503	200,712
Particleboard	cu m	581,810	254	15,748	566,316
Hardboard	cu m	95,000	906	5,698	90,208
Newsprint	tonne	221,460	336,816	1,213	557,063
Printing and writing	tonne	210,330	181,078	16,211	375,197
Other paper	tonne	519,865	129,635	73,922	575,578
Paperboard	tonne	478,899	47,057	4,034	521,922

In addition to the products listed above, exports for 1979-80 of pulpwood (virtually all in the form of woodchips) was 4,479,134 tonnes (green).

FISHERIES

Collection and presentation of fisheries statistics

Source and basis of statistics

Statistics presented in this section of the chapter have been obtained principally from State Fisheries Authorities and Australian Bureau of Statistics collections. In New South Wales, South Australia, Western Australia and the Northern Territory the information is derived from returns collected from licensed fishermen. In Queensland the statistics are based mainly on Fish Board receipts. In Victoria, prior to 1979-80, and Tasmania data are obtained mainly by the ABS from buyers and processors. Additionally, details of New South Wales tuna production are supplied by CSIRO and particulars of Australian pearl culture have been collected and supplied by the Fisheries Division of the Department of Primary Industry.

Australian fisheries production statistics are generally in terms of the form in which they are taken from the water. For example, the statistics of fish production published in this chapter are in terms of 'estimated live weights' which are calculated from landed weights by using conversion factors for each species in each State. These conversion factors allow for the fact that the quantities of fish reported are frequently in a gutted, headed and gutted, or otherwise reduced condition. Crustaceans are reported on an 'estimated live weight' basis and molluscs (edible) on a 'gross (in-shell) weight' basis. The figures for pearl-shell and trochus-shell refer to the actual quantities of dry shell for sale and exclude the weight of the fish.

For more details of employment and boats and equipment for general fisheries and particulars of the whaling industry see earlier issues of this publication.

Fisheries resources and their commercial exploitation

(Source: Fisheries Division, Department of Primary Industry)

Fish

Over 2000 species of marine and freshwater fish occur in and around Australia. Australian fishermen concentrate their efforts on estuarine, coastal, pelagic (surface swimming) and demersal (bottom swimming) fish that occur off the north east, south-east and south-west coasts where the majority of the human population is located. Off north Australia, barramundi (*Lates calcarifer*) constitutes the most important estuarine and coastal species, while in the south-east and south-west regions, mullet (mainly *Mugil cephalus*), bream (*Acanthopagrus* spp.) Australian salmon (*Arripis trutta*) and Australian herring (*Arripis georgianus*) are important catch components.

Major pelagic fisheries are Spanish mackerel (*Scomberomorus commerson*) off north Australia, and southern bluefin tuna (*Thunnus maccoyii*), snook (*Leionura atun*), pilchards (*Sardinops neopilchardus*) and anchovies (*Engraulis australis*) off south-east Australia. Southern bluefin tuna are also fished off south-west Australia. Significant stocks of jack mackerel off southern Australia are as yet lightly fished.

A large multispecies demersal fishery exists off south-east Australia that targets on flathead (*Neoplatycephalus* and *Trudis* spp.) morwong (*Nemadactylus* spp.), redfish (*Centroberyx affinis*) gemfish (*Rexea solandri*) and blue grenadier (*Macruronus novaezelandiae*). Demersal inshore snapper (*Chrysophrys auratus*) fisheries exist off south-west and south-east Australia; in the latter region, stocks of whiting (*Sillaginidae*) are also fished. In the northern tropical region, reef fish such as cods (*Epinephelus* spp.) are exploited. A large demersal fishery for edible school and gummy sharks (*Galeorhinus australis* and *Mustelus antarcticus*, respectively) is centred in Bass Strait.

Establishment of the 200 nautical mile Australian Fishing Zone (AFZ), has brought portions of oceanic tuna stocks, and demersal and pelagic fish stocks presently exploited by foreign fishing vessels, under Australian control. A foreign pelagic gillnet fishery off the north coast catches sharks (mainly *Carcharhinus* spp.), tuna (*Thunnus tonggol*) and Spanish mackerel while a demersal pair trawl fishery off the north-west coast exploits a tropical, multispecies fauna that includes threadfin bream (*Nemipteridae*) tropical snappers (*Lutjanidae*), emperors (*Lethrinidae*) goatfish (*Mullidae*) and hair tails (*Trichiuridae*).

Crustaceans

Prawns (*Penaeus* and *Metapenaeus* spp) provide the most valuable fishery in Australia and are taken in estuarine, coastal and offshore waters of all States except Tasmania. The western and southern rock lobsters (*Paralurus longipes cygnus* and *Jasus novaehollandiae*), also a valuable resource, are taken on rocky reefs around the southern half of Australia. Bay lobsters (*Thenus* spp and *Ibacus* spp) are taken incidentally to prawn trawling operations. Crabs (*Scylla* spp and *Portunus* spp) are taken mainly in Queensland, New South Wales and Western Australia.

Molluscs (edible)

Naturally-occurring oysters are harvested in all States; in New South Wales and Queensland the Sydney rock oyster (*Crassostrea commercialis*) is cultured commercially. The introduction of the Pacific oyster (*Crassostrea gigas*) to Tasmania and South Australia has provided a limited supply in those States. Following a serious decline in catches in the scallop (*Pecten meridionalis*) fishery based on stocks in Port Phillip Bay, Victoria, new offshore beds were located in southern New South Wales, eastern Victoria, northern Tasmania and south-western Western Australia. However, substantial fluctuations in abundance have resulted in erratic production from year to year. A fishery based on the saucer scallop (*Amusium balloti*) is located off south and central Queensland and there is a small fishery for the same species in Shark Bay, Western Australia. An important abalone (*Haliotis spp*) fishery has been developed since 1964 in south-east Australia with Tasmania, Victoria and South Australia providing the bulk of the catch. There is also a small abalone fishery in south-west Australia. Mussels (*Mytilus planulatus*) are harvested in Victoria, Western Australia and New South Wales. Prior to 1978 small quantities of cephalopods, mainly squid, were produced in many localities. Feasibility fishing located promising squid resources (*Notutodarus gouldi*) in the south east. Squid (*Loligo spp*) form an important component to the travel catch in the Arafura Sea.

Pearl-shell and trochus-shell

The shell of the Australian species of pearl oyster (*Pinctada maxima*) is taken from various localities in the tropical waters of Australia between Broome in Western Australia and Cairns in Queensland for the manufacture of buttons, knife handles, etc. Live pearl-shell is used for pearl culture, *Pinctada maxima* being capable of producing pearls which are the largest in the world and which command top market prices. Trochus-shell is found mainly on coral reefs off the Queensland coast, although small quantities occur in Western Australia.

Whales

Whales are now a protected species in the Australian Fishing Zone.

Fisheries administration and research

(Source: Fisheries Division, Department of Primary Industry)

The Constitution of the Commonwealth (section 51 (x)) assigns to the Commonwealth Government power to legislate for fisheries in Australian waters beyond territorial limits, the residual power in respect to waters within territorial limits (including inland waters) resting with the States. The Commonwealth Government has made similar arrangements for each of its Territories. Each State and Territory has legislation regulating fisheries in waters within its jurisdiction. Persons taking fish for sale, and their boats, are required to be licensed, and provision is made for management of the fisheries.

The Commonwealth Government laws regulating the fisheries are the *Fisheries Act* 1952, the *Continental Shelf (Living Natural Resources) Act* 1968, the *Whaling Act* 1960 and the *Whale Protection Act* 1980 which is not yet in force. Each of these applies in accordance with the Commonwealth Government's fishery power under the Constitution.

Fisheries Act

This Act, as amended in 1978, established a 200 mile Australian fishing zone around Australia and its external Territories. It provides for regulation of fisheries by requiring fishermen and fishing boats to be licenced, and by empowering the Minister to prohibit certain fishing activities by fisheries Notices. As well as giving effect to Australia's sovereign rights over the living resources of the 200 mile zone, the Act, in accordance with International Law, imposes an obligation on Australia to manage the resources so that they are conserved for the future.

As part of the Commonwealth/State arrangements for the sharing of resources in the seas surrounding Australia; the *Fisheries Act* 1952 provides mechanisms for the Commonwealth and a State, or States, to consult and agree on management of a particular fishery and then for one or the other to apply its laws to implement agreed measures throughout the fishery irrespective of whether the fishery is within or beyond the three mile limit of territorial waters. These arrangements will not be possible until complementary State legislation has been enacted.

The *Fisheries Act* 1952 and the *Continental Shelf (Living Natural Resources) Act* 1968 were amended in 1980 to complement the *Whale Protection Act* 1980 in respect of the preservation, conservation and protection of all species of whale. The *Whale Protection Act* 1980 is administered by the Minister for Home Affairs and Environment.

Continental Shelf (Living Natural Resources) Act

This Act implements in Australian law the sovereign rights conferred on Australia by the Convention on the Continental Shelf, Geneva, 1958 in respect of the organisms belonging to sedentary

species (that is, organisms which, at the harvestable stage, either are immobile on or under the seabed, or are unable to move except in constant physical contact with the seabed or the subsoil) on the continental shelf. The continental shelf comprises the seabed and subsoil of the submarine areas adjacent to the coast but outside the territorial sea to a depth of 200 metres, or beyond that depth where the depth of the superjacent waters admits of the exploitation of the natural resources of the area. The Act requires the licensing of persons searching for and taking sedentary organisms, of boats used to search for and take sedentary organisms, and of persons employing divers, trial divers and divers' tenders in taking sedentary organisms if such activities are carried out in controlled areas of the continental shelf of Australia or the Territories for a commercial purpose. Provision is made for proclamation of sedentary organisms to which the Act applies, for the establishment of controlled areas of continental shelf in respect of specified sedentary organisms, and for the management and conservation of sedentary organisms in controlled areas (the last of these applying to all persons whether the purpose of the taking of the sedentary organism is commercial or not). The Act applies to all persons including foreigners, and to all boats including foreign boats.

Whaling Act and Whale Protection Act

The Whaling Act provides for similar controls over the taking of whales as the Fisheries Act and the Continental Shelf (Living Natural Resources) Act provide in relation to other species. It will be repealed by the Whale Protection Act, which will come into force when arrangements have been concluded with the State Governments. The legislation prohibits killing, capturing, injuring or interference with a whale, dolphin or porpoise in the Australian fishing zone and by Australians domiciled in Australia and Australian fishing vessels and aircraft and their crews beyond the 200 mile Australian fishing zone, with penalties up to \$100,000.

Administration

Australian fisheries are administered by the authority having jurisdiction over the waters concerned. In inland waters and in waters within territorial limits, administration is the responsibility of the State or Territory fisheries authority. In proclaimed waters, and on the continental shelf beyond territorial limits, administration is the responsibility of the Commonwealth Government which by agreement, has delegated to State fisheries authorities the necessary authorities for day-to-day administration of the Acts.

The administration of the fisheries is directed to a number of objectives of which the two most important are: conservation and management of the living resources of the Australian Fishing Zone to ensure that they are not endangered by over exploitation; and achievement of the optimum utilisation of the living resources by the Australian fishing industry and foreign interests. Consistent with these objectives, a number of controls have been introduced to prevent the depletion of the more heavily fished species. These controls take the form of seasonal closures, gear limitations, minimum size requirements and limited access rights, as well as outright prohibitions on the taking of certain species.

The Fisheries Development Trust Account (established under the *Fishing Industry Act* 1956) and the Fishing Industry Research Trust Account (established under the *Fishing Industry Research Act* 1969) are available to support financially projects for the development and management of the fisheries and fishing industry which are consistent with the purposes of those Acts. The former was established with the proceeds of the sale of the assets of the Australian Whaling Commission and is replenished from Consolidated Revenue as necessary. The latter is a matching fund into which is paid each year an appropriation from Commonwealth Government Revenue equal to amounts collected from the fishing industry by the State Fisheries Authorities and paid into appropriate State research accounts for the same purpose.

Research

The main aim of fisheries research in Australia is to provide a background of biological, technical and economic information which will provide guidance for the efficient and rational utilisation of fisheries resources. To this end much of the research already undertaken has been directed at formulating recommendations for management of various fisheries. Research work, including feasibility fishing projects involving foreign fishing vessels, is also carried out and is expected to lead to the development of new fisheries, the expansion of under-exploited fisheries, greater economy in operations and the use of more efficient equipment and methods.

Organisations in Australia at present engaged in research into fisheries matters are:

- (i) CSIRO Division of Fisheries Research, which has its headquarters and main laboratory at Cronulla, N.S.W. and regional laboratories in Western Australia and Queensland (fisheries science);
- (ii) CSIRO Division of Oceanography which has its headquarters and laboratory at Cronulla, N.S.W.;

- (iii) CSIRO Division of Food Research, conducts research into handling, storage, processing and transportation of fish at its laboratory in Hobart, Tasmania;
- (iv) State fisheries departments (fisheries laboratories have been established in Perth, Hobart, Melbourne, Sydney, Brisbane, Darwin and Cairns; research vessels are operated by New South Wales, Victoria, Western Australia, Tasmania and South Australia;
- (v) Fisheries Division, Department of Primary Industry, Canberra (economic and management research, fishing technology, extension and education service); and
- (vi) private fishing companies (surveys of fisheries resources, research into handling, processing and marketing).

Boats and equipment used in fisheries

(Source: Fisheries Division, Department of Primary Industry)

Fish, crustaceans and molluscs (edible)

The boats used for the estuarine fisheries are mostly small vessels propelled by diesel or petrol engines of low power. The offshore vessels range up to 40 metres in length and are almost invariably powered by diesel engines. Most of them have either insulated holds and carry ice, or are equipped with dry or brine refrigeration. Some rock lobster vessels are fitted with wells in which the catch is kept alive.

The following are the types of equipment most commonly used in the main fisheries: *mullet*, beach seine, gill net; *shark* (edible), long-lines, gill net; *Australian salmon*, beach seine; *snoek*, trolling lines; *flathead*, Danish seine, otter trawl; *snapper*, long-lines, traps, gill net, hand-line; *morwong*, Danish seine, otter trawl, traps; *whiting*, handlines, Danish seine, beach seine, gill net; *garfish*, beach seine; *mackerel*, trolling lines; *tuna*, pole and live-bait, purse seine, trolling lines (lampara nets and purse seines are used for taking live bait for tuna); *prawns*, otter trawl, beam trawl, beach seine net; *rock lobster*, pots, traps; *scallops*, dredge, otter trawl; *abalone*, diving using hookah gear; and *pilchards*, *anchovies*, *jack mackerel* and *striped tuna*, purse seine.

Pearls, pearl-shell and trochus-shell

Ketch-rigged luggers about 15 metres long which carry crews of eight to fourteen members are used for pearl-shell fishing in northern Australia.

Production, processing and domestic marketing of fisheries products

Value of fisheries production

The following table shows the gross value and local value of fishing and whaling production by States. Because the value of materials used in the course of production is not available for all States, it is not possible to show a comparison of net values. *Gross value of production* is the value placed on recorded production at the wholesale price realised in the principal markets. In general, the 'principal markets' are the metropolitan markets in each State, although, in cases where commodities are consumed locally or where they become raw material for a secondary industry, these points are presumed to be the principal markets. *Local value* (i.e. gross value of commodities produced at the place of production) is ascertained by deducting marketing costs from the gross value of commodities produced. Marketing costs include freight, cost of containers, commission, and other charges incurred in marketing. Gross and local values of primary commodities produced involve some duplication as they include certain primary commodities which are consumed as raw materials to produce other primary commodities (e.g. hay consumed by livestock).

FISHERIES: GROSS AND LOCAL VALUE OF PRODUCTION
(\$'000)

Year	N.S.W.	Vic.	Qld	S.A.	W.A.	Tas.	N.T.	Aust.
GROSS VALUE								
1974-75 . .	(a) 24,609	8,686	(b) 12,606	(c) 14,083	35,130	6,928	5,667	(d) 107,709
1975-76 . .	31,599	10,601	(b)(e) 17,137	(c) 22,474	51,079	8,511	5,228	(d) 146,629
1976-77 . .	36,059	16,014	(b)(e) 34,955	(c) 27,199	69,094	11,662	11,357	(d) 206,340
1977-78 . .	39,665	17,977	(b)(e) 40,808	(f) 23,615	88,340	12,609	10,337	(d) 233,351
1978-79 . .	42,286	20,025	58,214	(f) 30,475	80,233	14,636	19,576	(d) 279,809
1979-80 . .	58,661	19,814	(e) 62,789	(f) 35,235	85,652	20,463	16,806	(d)(g) 317,546

For footnotes see end of table.

LOCAL VALUE

1974-75	21,569	6,949	11,732	12,496	34,785	6,928	5,667	100,127
1975-76	25,334	8,481	16,152	20,022	50,870	8,511	5,228	134,598
1976-77	30,352	13,917	33,953	24,207	68,864	11,662	11,357	194,312
1977-78	32,993	16,539	39,677	21,034	88,038	12,609	10,337	221,226
1978-79	35,113	18,423	56,720	27,199	79,912	14,636	19,576	265,531
1979-80	48,405	17,377	61,130	31,399	85,015	20,463	16,806	(g) 298,721

(a) Incomplete; excludes octopus, squid and cuttlefish in New South Wales. (b) Incomplete; excludes oysters in Queensland. (c) Incomplete; excludes oysters in South Australia. (d) Incomplete *see* individual States. (e) Incomplete; excludes rock lobster in Queensland. (f) Incomplete; excludes octopus, cuttlefish, oysters and scallops in South Australia. (g) Includes value of pearling which has been excluded from State totals.

Production of selected fisheries

SELECTED FISHERIES PRODUCTS: PRODUCTION AND GROSS VALUE

1979-80

Product	N.S.W.	Vic.	Qld	S.A.	W.A.	Tas.	N.T.	Aust.
QUANTITY (tonnes)								
Fish(a)	25,421	n.y.a.	4,762	12,356	10,915	2,188	1,352	(e) 56,994
Crustaceans(a)	2,918	n.y.a.	(b) 11,258	4,440	14,226	1,340	3,189	(e) 37,371
Molluscs (edible)(a)	9,592	n.y.a.	(c) 1,593	(d) 2,095	838	7,233	27	(e) 21,378
GROSS VALUE (\$'000)								
Fish	25,072	n.y.a.	7,073	12,673	8,690	2,994	1,791	(e) 58,293
Crustaceans	13,243	n.y.a.	(b) 53,590	19,718	75,661	6,938	14,987	(e) 184,137
Molluscs (edible)	20,347	n.y.a.	(c) 2,127	(d) 2,844	1,302	10,531	28	(e) 37,179

(a) Estimated live weight. (b) Excludes Rock Lobster in Queensland. (c) Incomplete. Excludes oysters in Queensland. (d) Incomplete. Excludes octopus, cuttlefish, oysters and scallops in South Australia. (e) Incomplete; *see* individual States.

SELECTED FISHERIES PRODUCTS: PRODUCTION, AND GROSS VALUE, AUSTRALIA

Product	1977-78	1978-79	1979-80
QUANTITY (tonnes)			
Fish(a)(b)	62,789	63,395	(c) 56,994
Crustaceans(a)	34,641	37,640	(c) 37,371
Molluscs (edible) (a)	25,517	26,667	(c) 21,378
Pearl-shell	150.0	185.0	309.6
Trochus-shell	—	—	n.p.
GROSS VALUE (\$'000)			
Fish(b)	52,778	56,617	(c) 58,293
Crustaceans	139,237	176,391	(c) 184,137
Molluscs (edible)	26,581	32,348	(c) 37,179
Pearl-shell	124	188	905
Trochus-shell	—	—	n.p.

(a) Estimated live weight. (b) Excludes freshwater fish caught in Queensland. (c) Incomplete *see* individual States in table above. (d) Excludes manufacturing shell produced from pearl culture operations. (e) Source: Department of Primary Industry.

FISH: PRODUCTION, BY PRINCIPAL TYPES

Type	Tonnes estimated live weight			Gross value (\$'000)		
	1977-78	1978-79	1979-80	1977-78	1978-79	1979-80(a)
Tuna (b)	12,306	11,266	13,573	5,564	5,316	11,426
Mackerel	1,481	1,049	1,093	1,439	1,177	1,424
Snoek	386	186	121	166	76	58
Mullet	6,095	5,600	5,930	3,071	3,396	4,154
Bream (including Tarwhine)	834	794	809	1,247	1,453	1,687
Australian salmon	3,225	2,390	2,448	1,203	993	1,154
Ruff	1,173	1,163	1,092	481	443	493
Snapper	2,128	2,045	2,250	3,585	3,939	4,621
Morwong	1,593	1,447	1,287	1,373	1,356	1,642
Whiting	2,382	2,566	2,173	5,441	6,969	5,125
Flathead	1,966	2,169	1,372	1,590	1,896	1,593
Shark	7,935	7,452	5,274	8,647	8,465	4,266
Leatherjacket	365	227	357	237	171	259
Other	21,222	23,065	19,210	17,926	21,412	20,390
Total	63,093	61,420	56,994	53,728	57,062	58,293

(a) Excludes Victoria. (b) Includes estimates by CSIRO for New South Wales.

Crustaceans

CRUSTACEANS: PRODUCTION, BY TYPE

(Tonnes live weight)

Type	1974-75	1975-76	1976-77	1977-78	1978-79	1979-80(a)
Murray crayfish	184	(a) 131	83	38	28	18
Yabbies						
Rock lobster						
Bay lobster	12,265	(a) 12,865	(b) 12,875	(b) 14,485	15,358	14,469
Prawns	16,327	19,478	23,095	19,272	21,724	21,994
Crabs	712	700	825	858	790	888
Total	29,488	(b) 33,173	(b) 36,878	(b) 34,653	37,900	37,371

(a) Excludes Victoria. (b) Incomplete; see footnotes to figures for individual species.

Molluscs (edible)

MOLLUSCS: PRODUCTION, BY TYPE

(Tonnes estimated live weight)

Type	1974-75	1975-76	1976-77	1977-78	1978-79	1979-80(a)
Octopus	(b) 20	(c) 59	78	(c) 92	(c) 147	(c) 250
Squid	(b) 212	253	280	381	583	719
Cuttlefish	(b) -	(c) 19	(c) 19	(c) 29	(c) 93	(c) 144
Oysters	(c) (d) 8,908	(c) (d) 10,273	(c) (d) 10,793	(c) (d) 9,786	(c) (d) 6,740	(c) (d) 8,251
Mussels	1,019	1,123	544	773	689	343
Pipi	193	195	207	303	285	1,108
Scallops	6,062	4,642	4,396	(c) 9,121	(c) 10,548	(c) 5,594
Abalone	4,971	5,256	6,313	5,057	6,197	4,970
Total	(e) 21,386	(e) 21,820	(e) 22,630	(e) 25,543	(e) 25,283	(e) 21,378

(a) Excludes Victoria. (b) Excludes New South Wales. (c) Excludes South Australia. (d) Excludes Queensland. (e) Incomplete; see individual species.

Pearls, pearl-shell and trochus-shell**PEARL CULTURE AND PEARL AND TROCHUS SHELL FISHING OPERATIONS^(a)**

(Source: Department of Primary Industry)

		1977	1978	1979
QUANTITY				
Pearl and Trochus shell fishing operations—				
Production of—				
Pearl shell ^(b)	tonne	150.0	185.0	309.6
Trochus shell	tonne	—	—	n.a.
Pearl culture operations—				
Live shell introduced	No.	495,465	438,496	358,022
	tonne	157.5	130.5	112.6
Production—				
Round and baroque pearls	No.	71,384	88,369	77,231
	momme ^(c)	48,056	55,553	54,500
Half pearls	No.	287,283	248,360	138,687
Manufacturing shell	tonne	244.0	66.7	133.6
VALUE (\$'000)				
Pearl and Trochus shell fishing operations—				
Production of—				
Live pearl shell		686	813	739
Pearl shell		124	188	905
Trochus shell		—	—	n.a.
Pearl culture operations—				
Production of—				
Round and baroque pearls		8,853	11,768	15,281
Half pearls		1,197	1,104	594
Manufacturing shell		156	58	309

(a) Figures refer to the year ended January for the Northern Territory and Queensland and to the year ended December for Western Australia. (b) Excludes manufacturing shell produced from pearl culture operations. (c) A momme is a pearl weight measurement equivalent to 3.769 grams.

Processing of fish, crustaceans and molluscs

Processing plants are located strategically throughout Australia close to fishing grounds. A number of shore-based plants have been established in remote areas of northern Australia to service the expansion of the northern prawn fishery.

Rock lobsters, prawns, abalone and scallops are frozen for export; tuna, snoek, Australian salmon and abalone are canned; small amounts of fish are smoked; and some molluscs are bottled. Hand labour is still used extensively in processing operations, but mechanisation is being progressively introduced.

Ice is used extensively for the chilling of fish taken in estuarine and inshore fisheries. Refrigeration is used particularly on vessels operating in the tuna fishery and prawn fisheries to chill or freeze the catch.

Fish, crustaceans and molluscs intended for export are processed in establishments registered under the Export (Fish) Regulations. Edible fish for local consumption is mainly dispatched fresh-iced to markets.

Domestic marketing of fisheries products

Although virtually the whole of the tuna and Australian salmon catches are canned, the greater part of Australian fish production is marketed fresh or frozen.

Marketing arrangements for fresh fish vary. In New South Wales, fish marketing is the responsibility of the Fish Marketing Authority which operates the Metropolitan Fish Markets. In other coastal centres of New South Wales, fishermen's co-operatives may become registered as local fish markets. In Queensland, the Fish Board sells all production on behalf of fishermen in that State, except fish intended for export and interstate trade. In Victoria, South Australia, Western Australia and Tasmania, there is no restriction on market outlets. In Victoria, South Australia and Western Australia, most fish is sent to metropolitan wholesale fish markets for auctioning; small quantities are processed for sale locally, chiefly by co-operatives. Nearly all fresh fish in Tasmania is consigned direct to processors. The principal outlets for fish products in Australia are retail and catering establishments.