

## CHAPTER 25

### FISHERIES

Further information on subjects dealt with in this chapter is contained in the annual statistical bulletins *Fisheries* (10.8 and 10.9), particularly as regards types of fish, etc. caught.

#### Fisheries resources and their commercial exploitation

##### Fish

Approximately 2,000 species of marine and freshwater fish occur in and around Australia, about forty of which support substantial commercial fisheries. Most fishing is confined to waters over the continental shelf on the populous eastern and south-eastern seaboard, including Tasmania and South Australia, and off the south-western corner of the continent. As in other countries, fisheries in Australia may be divided into estuarine fisheries, located in the tidal waters of rivers and coastal lakes, beaches and bays; pelagic fisheries, which exploit species inhabiting the surface layers of the open ocean; and demersal fisheries, which fish the bottom layers of the sea. Estuarine fisheries produce considerable quantities of mullet (mainly *Mugil cephalus*), bream (*Acanthopagrus spp.*) and, in northern Australia, the valuable giant perch (*Lates calcarifer*). Important freshwater fisheries in New South Wales, Victoria and South Australia include those for Murray cod (*Maccullochella macquariensis*), golden perch (*Plectroplites ambiguus*) and eels (*Anguilla australis*). Rainbow trout are farmed in Tasmania. Important pelagic fisheries include those for Australian 'salmon' (*Arripis trutta*), southern bluefin tuna (*Thunnus maccoyii*), snoek (*Leionura atun*), mackerel (*Cybium spp.*) and clupeoids (*Sardinops neopilchardus* and *Engraulis australis*). Demersal fisheries include those for snapper (*Chrysophrys auratus*), whiting (*Sillaginidae*) and from tropical waters the so called 'cods' (*Epinephelus*, etc.). Trawl fisheries off New South Wales and Victoria yield species such as flathead (*Neoplatycephalus* and *Trudis spp.*), morwong (*Nemadactylus spp.*) and John Dory (*Zeus faber*). The previously valuable fishery for edible school and gummy shark (*Galeorhinus australis* and *Mustelus antarcticus*) in south-eastern Australia has declined significantly in the year 1972-73 because of the discovery of a high mercury content in large school shark. A fishery for clupeoids in the Bass Strait which supplies the raw material for a fish meal plant at Lakes Entrance, Victoria, is the only established 'industrial fishery' in Australia, but several other exploratory purse seine ventures aimed at production of clupeoids, including a fish meal plant at Triabunna, have been established in south-eastern Australia recently.

##### Crustaceans

The western and southern rock lobsters (*Panulirus longipes cygnus* and *Jasus novaehollandiae*) which are taken on rocky reefs around the southern half of Australia, provide the most valuable fishery in Australia. Prawns (*Penaeus* and *Metapenaeus spp.*) are taken in estuarine, coastal and offshore waters of all States except Tasmania. This fishery has grown rapidly in recent years, especially in northern Australia. Bay lobsters (*Thenus spp.*) are taken incidentally to prawn trawling operations. Crabs (*Scylla* and *Portunus spp.*) are taken mainly in Queensland, New South Wales and Western Australia.

##### Molluscs (edible)

Naturally occurring oysters are harvested in all States; and in New South Wales and Queensland the Sydney rock oyster (*Crassostrea commercialis*) is cultured commercially. The introduction of the Pacific oyster (*Crassostrea gigas*) in Tasmania and, recently, South Australia provides 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 and south-western Western Australia. However, substantial fluctuations in abundance has resulted in erratic variation in production from year to year. A fishery based on the saucer scallop (*Amusium balloti*) developed, then declined, in another area of Western Australia, and there is a similar though more stable fishery in Queensland. An important abalone fishery has been developed

since 1964 in south-east Australia with Tasmania, Victoria and South Australia providing the bulk of the catch. Mussels (*Mytilus planulatus*) are harvested in Victoria, and a fishery for squid has developed in the Derwent River estuary at Hobart in 1972-73. Other small quantities of cephalopods, mainly squid, are produced in many localities.

#### **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 from Broome in Western Australia to 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**

The Australian whaling industry formerly exploited the baleen (humpback) whales during their winter migrations along the east and west coasts of Australia. However, owing to the total prohibition placed on their capture by the International Whaling Commission in 1963, Australian whaling is now confined to the sperm whale (*Physeter catodon*) which has been taken in the southern waters of Western Australia since 1955. Processing operations were carried out by several shore stations, but now only one station at Albany, Western Australia, is still operating.

#### **Marine flora**

The only substantial commercial collection of seaweed in Australia was undertaken at Triabunna, Tasmania, where a factory processing seaweed (*Macrocystis pyrifera*) for its alginic content, has recently closed, possibly as a temporary measure.

#### **General**

A map showing Australia's principal ports and generalised localities of the fishery resources under exploitation appears on plate 54, page 916. Detailed information on the history of the development of fisheries industries in Australia is given in Year Book No. 55, pages 976-7.

### **Fisheries administration and research**

The Constitution of the Commonwealth (Section 51 (x) ) assigns to the Australian Government power to legislate for fisheries in Australian waters beyond territorial limits, the residual power in respect of waters within territorial limits (including inland waters) resting with the States. The Australian 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 Australian Government laws regulating the fisheries are the *Fisheries Act* 1952-1974, the *Continental Shelf (Living Natural Resources) Act* 1968-1973 and the *Whaling Act* 1960-1966. Each of these applies in accordance with the Australian Government's fishery power under the Constitution.

#### **Fisheries Act**

This Act requires persons engaging in fishing and boats used for fishing to be licensed and their equipment for taking fish to be registered if the purpose of the fishing is commercial. It also provides for management and conservation of the fisheries. The Act applies to Australian residents and their boats in waters proclaimed under the Act and, since 1968, to foreign boats and their crews in the zone of waters extending 12 miles from the baselines of the territorial sea but excluding waters within territorial limits, where State law applies.

#### **Continental Shelf (Living Natural Resources) Act**

This Act implements in Australian law the sovereign rights, conferred on Australia 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, by the Convention on the Continental Shelf, Geneva, 1958. 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 was commercial or not). The Act applies to all persons including foreigners, and to all boats including foreign boats.

#### Whaling Act

This Act implements in Australian law the obligations imposed on Australia by virtue of our adherence to the International Convention for the Regulation of Whaling, Washington, 1946. The Act requires the licensing of factories engaged in treating whales and of ships (and aircraft) used for taking whales. It also provides for the management and conservation of whale stocks.

#### 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 Australian 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 of the living resources in order to ensure their ability to sustain a maximum yield consistent with economy in their exploitation and the orderly conduct of the fishing industry. Fishery resources are common property and apart from fisheries such as those for rock lobster and abalone, where the numbers of boats and the quantities of fishing gear are controlled, the only other restrictions on the entry of boats into the Australian fishing industry are those relating to foreigners, and to processing and carrying boats in the northern prawn fishery. Management measures have been introduced in several fisheries to provide controls such as minimum sizes, closed areas, closed seasons and regulation of the types of fishing gear that may be used.

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 of kinds consistent with the purposes of those Acts for the development and management of the fisheries and fishing industry. The former is supported by the proceeds of the sale of the assets of the Australian Whaling Commission. The latter is a matching fund into which is paid each year an appropriation from Australian Government Revenue equal to amounts collected from the fishing industry by the State Fisheries Authorities and expended by the States for the same purposes.

#### 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 is also carried out which 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) C.S.I.R.O. Division of Fisheries and Oceanography, with its headquarters and main laboratory at Cronulla, N.S.W. (fisheries science and oceanography);
- (ii) C.S.I.R.O. Division of Food Research; main laboratories located at Ryde, N.S.W. (handling, storage, processing and transportation of fish);
- (iii) State fisheries departments (fisheries laboratories have been established in Perth, Hobart, Melbourne, Sydney and Brisbane; research vessels are operated by New South Wales, Victoria, Western Australia and Tasmania; the Department of the Northern Territory conducts a Prawn Research Unit in Darwin);
- (iv) Fisheries Division, Department of Agriculture, Canberra (economic and management research, gear technology, extension and education service); and
- (v) private fishing companies (surveys of fisheries resources, research into handling and processing).



## Collection and presentation of fisheries statistics

### Source and basis of statistics

Statistics presented in this chapter have been collected by a number of authorities. The various State fisheries authorities have supplied, through the Deputy Commonwealth Statisticians in the States, the details of employment, boats, equipment, and production of the general fisheries. The Fisheries division of the Department of Agriculture has supplied particulars of the whaling industry and pearl-shell fishery. Statistics of the processing of general fisheries products and of overseas trade in the products of fishing and whaling have been compiled in the Australian Bureau of Statistics.

The statistics refer, in general, to financial years. However, statistics of pearl and trochus shell fishing, pearl culture operations and whaling refer to the season ended in the calendar year shown. For convenience of presentation, statistics of production of pearl and trochus shell have been assigned to financial years in the tables which follow. All overseas trade information refers to financial years.

In the preparation of Australian fisheries production statistics the quantities of individual products 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 of pearl-shell and trochus-shell refer to the actual quantities of dry shell for sale and exclude the weight of the fish.

## Boats and equipment used in fisheries

### 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. About 25 per cent of the vessels registered in Australia for commercial fishing are over 10 metres in length. Recently, a number of well equipped, double rigged, prawn trawlers of 20 metres to 25 metres in length with large refrigeration capacity have been built for the rapidly developing northern prawn fisheries.

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, 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.

### Whaling

The whaling industry is highly mechanised. Standard equipment includes aircraft to locate whales, diesel-powered catchers of about 30 to 40 metres in length, and tow boats.

### Boats and equipment employed by industry

The following two tables show details of boats and equipment engaged in the taking of fish, crustaceans and edible molluscs, pearl-shell and trochus-shell, and the number of chasers and stations engaged in whaling operations. The reservations mentioned below regarding the use of employment information are also applicable to these tables. Boats engaged in more than one industry are classified to their main activity.

## FISHERIES: BOATS AND EQUIPMENT; WHALING STATIONS, 1972-73

		N.S.W.	Vic.	Qld	S.A.	W.A.	Tas.	N.T.	Aust.
General fisheries—									
Boats	No.	3,096	806	2,204	2,314	1,588	589	163	10,760
Value of boats and equipment	\$'000	15,191	8,481	29,790	17,139	25,642	8,254	9,691	114,188
Edible oyster fisheries—									
Boats	No.	2,209	..	n.a.	1	..	n.a.	..	(a)2,210
Value of boats and equipment	\$'000	n.a.	..	n.a.	1	..	n.a.	..	(a)1
Pearl-shell and trochus-shell—									
Boats(b)	No.	..	..	5	..	11	..	1	17
Whaling(b)—									
Chasers	No.	..	..	..	..	3	..	..	3
Stations operating	"	..	..	..	..	1	..	..	1

(a) Incomplete: see individual States.

(b) Source: Australian Department of Agriculture.

## FISHERIES: BOATS AND EQUIPMENT, WHALING STATIONS, AUSTRALIA

		1968-69	1969-70	1970-71	1971-72	1972-73
General fisheries—						
Boats	No.	9,244	(a)8,857	(a)9,322	(a)9,591	(a)10,760
Value of boats and equipment	\$'000	64,072	(b)71,376	(b)79,711	(b)(c)80,097	(b)114,188
Edible oyster fisheries—						
Boats	No.	(d)1,788	(d)1,805	(d)1,829	(d)1,884	(e)2,210
Value of boats and equipment	\$'000	(d)1,744	(d)1,741	(e)1,844	n.a.	n.a.
Pearl-shell and trochus-shell—						
Boats(f)	No.	33	29	28	23	17
Whaling(f)—						
Chasers	No.	3	3	3	3	3
Stations operating	"	1	1	1	1	1

(a) Not comparable with 1968-69 and earlier years because of change in basis of counting in South Australia. (b) Not comparable with 1968-69 and earlier years because of change in definition of commercial fishermen in South Australia. (c) Incomplete; excludes South Australia. (d) Incomplete; excludes Tasmania. (e) Incomplete; excludes Queensland and Tasmania. (f) Source: Australian Department of Agriculture.

## Employment in fisheries

## Classification of registered commercial fishermen by industry

The following two tables are derived mainly from the licensing records of the various State fisheries authorities. Because the definitions and licensing procedures used by these authorities are not uniform the statistics should not be used to compare the relative productivities of fishing industries in the various States. Persons engaged in more than one industry are classified according to their main activity, and so may be classified differently from one year to the next.

## PERSONS EMPLOYED ON FISHING BOATS, 1972-73(a)

Industry	N.S.W.	Vic.	Qld	S.A.	W.A.	Tas.	N.T.	Aust.
General fisheries	4,516	1,573	4,346	3,810	3,167	1,235	561	19,208
Edible oyster fisheries	1,307	..	n.a.	8	3	n.a.	..	(b)1,318
Pearl-shell and trochus-shell(c)	..	..	133	..	94	..	6	233
Whaling(c)—								
At sea	..	..	..	..	51	..	..	51

(a) For all States except Western Australia, the figures for general fisheries refer to number of persons (including skippers) reported as usually employed on boats. Persons reported as usually employed on more than one boat for a particular year are counted more than once for that year. For Western Australia, the figure for general fisheries refers to number of licensed commercial fishermen. (b) Incomplete; excludes Queensland and Tasmania. (c) Source: Australian Department of Agriculture.

## PERSONS EMPLOYED ON FISHING BOATS: AUSTRALIA(a)

Industry	1968-69	1969-70	1970-71	1971-72	1972-73
General fisheries(b)	16,460	15,629	16,279	17,594	19,208
Edible oyster fisheries	(c)1,425	(c)1,717	(c)1,596	(d)1,402	(d)1,318
Pearl-shell and trochus-shell(e)	473	422	416	287	233
Whaling(e)—					
At sea	48	51	51	51	51

(a) See footnote (a) to the table 'Persons Employed on Fishing Boats, 1972-73' previous page. (b) Breaks in comparability of figures in this series occur in 1969-70 and 1971-72, due to changes in basis of counting in South Australia. (c) Incomplete: figure for Tasmania is not available. (d) Incomplete; excludes Queensland and Tasmania. (e) Source: Australian Department of Agriculture.

## 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. (See also the chapter Miscellaneous for an explanation of the value terms used.)

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

Year	N.S.W.	Vic.	Qld	S.A.	W.A.	Tas.	N.T.	Aust.
GROSS VALUE								
1968-69	11,517	5,933	8,089	7,683	23,717	4,864	1,191	62,994
1969-70	13,467	5,979	8,034	8,135	19,660	4,043	3,979	63,296
1970-71	15,329	7,310	10,985	9,236	25,127	5,984	4,132	78,103
1971-72	18,970	9,507	11,382	12,380	30,817	6,808	2,793	92,657
1972-73	21,165	11,556	(a)13,375	15,915	28,347	6,577	4,617(a)	101,552
LOCAL VALUE(b)								
1968-69	9,984	5,336	7,679	6,773	23,600	4,100	1,191	58,663
1969-70	11,514	5,304	7,609	7,183	19,536	3,343	3,979	58,468
1970-71	13,224	6,462	10,458	8,177	25,028	5,116	4,132	72,596
1971-72	16,323	8,855	10,764	11,027	30,625	5,929	2,793	86,315
1972-73	16,898	10,731	12,686	14,243	28,189	5,739	4,617	93,104

(a) Incomplete; excludes oysters in Queensland.

(b) Local value is gross value less marketing costs.

## Production of selected fisheries

SELECTED FISHERIES PRODUCTS: PRODUCTION AND GROSS VALUE  
1972-73

Product		N.S.W.	Vic.	Qld	S.A.	W.A.	Tas.	N.T.	Aust.
QUANTITY									
Fish(a)	tonnes	21,472	10,768	(b)5,424	11,790	7,090	2,265	619	(c)59,428
Crustaceans(a)	"	2,454	(d)845	7,447	4,863	10,486	1,584	2,618	(c)30,297
Molluscs (edible)(a)	"	10,182	(e)13,831	(f)4,181	1,155	606	2,988	19	(c)32,960
Pearl-shell(g)	"	..	..	n.a.	..	n.a.	..	n.a.	(h)223.8
GROSS VALUE (\$'000)									
Fish		8,467	3,391	(b)3,238	5,614	1,749	658	380	(c)23,497
Crustaceans		4,990	(d)2,087	7,985	9,399	22,286	3,651	4,027	(c)54,424
Molluscs (edible)		7,708	(e)5,961	(f)890	902	308	2,268	7	(c)18,043
Pearl-shell(g)(i)		..	..	n.a.	..	n.a.	..	n.a.	(h)203

(a) Estimated live weight. (b) Excludes freshwater fish, particulars of which are not available. (c) Incomplete; see individual States. (d) Incomplete; excludes freshwater crayfish and crabs. (e) Incomplete; includes only abalone and scallops. (f) Incomplete; excludes oysters. (g) Source: Australian Department of Agriculture. (h) Excludes manufacturing shell produced from pearl culture operations. (i) Estimated.

SELECTED FISHERIES PRODUCTS: PRODUCTION, AND GROSS VALUE  
AUSTRALIA

Product		1968-69	1969-70	1970-71	1971-72	1972-73
QUANTITY						
Fish(a)(b)	tonnes	49,049	55,335	51,632	57,002	59,428
Crustaceans(a)	"	23,205	25,293	32,273	31,313	(c)30,297
Molluscs (edible)(a)	"	(d)19,307	(e)21,623	27,672	29,479	(f)32,960
Pearl-shell(g)(h)	"	259.0	268.4	365.6	314.5	223.8
Trochus-shell(g)	"	5.9	0.2	25.5	0.7	1.1
GROSS VALUE (\$'000)						
Fish(b)		14,512	15,493	15,399	18,706	23,497
Crustaceans		36,560	34,088	46,830	54,038	(c)54,424
Molluscs (edible)		(d)6,608	(e)8,087	11,790	14,894	(f)18,043
Pearl-shell(g)(h)		152	190	275	245	203
Trochus-shell(g)		1	..	4	..	..

(a) Estimated live weight. (b) Excludes freshwater fish caught in Queensland. (c) Excludes freshwater crayfish and crabs in Victoria. (d) Excludes abalone and oysters in Western Australia. (e) Excludes mussels in Western Australia. (f) Incomplete; excludes oysters in Queensland, and includes only abalone and scallops in Victoria. (g) Source: Australian Department of Agriculture. (h) Excludes manufacturing shell produced from pearl culture operations.



## Fish

**FISH: PRODUCTION, BY TYPE, 1972-73**  
(tonnes estimated live weight)

Type	N.S.W.	Vic.	Qld	S.A.	W.A.	Tas.	N.T.	Aust.(a)
Freshwater types	229		n.a.	686	..	40	..	954
Marine types—								
Tuna	(b)6,134		28	6,696	679	40	1	13,577
Mackerel	(c)		1,244	..	85	1	17	1,347
Snoek	(c)		..	..	3	915	..	918
Mullet	2,745		1,448	353	771	7	..	5,325
Bream (including Tar-whine)	291		227	25	23	..	1	567
Australian salmon	732		..	799	1,630	461	..	3,622
Ruff	..	n.a.	..	241	1,234	..	..	1,474
Snapper	764		61	541	217	..	..	1,583
Morwong	1,311		..	..	10	7	..	1,329
Whiting	208		324	959	228	1	..	1,720
Flathead	1,548		90	17	12	39	..	1,706
Shark	1,125		18	618	652	497	..	2,909
Leatherjacket	1,277		..	..	27	..	..	1,305
Other	(d)5,108		1,985	856	1,518	257	600	(d)10,324
Total marine	21,244		5,424	11,104	7,090	2,226	619	47,706
Grand total	21,472	10,768	(e)5,424	11,790	7,090	2,265	619	59,428

(a) Incomplete, see individual States. (b) Source: C.S.I.R.O. (c) Not available separately; included in 'Other marine types'. (d) Includes mackerel and snoek. (e) Incomplete; excludes freshwater types.

**GROSS VALUE OF FISH, BY PRINCIPAL TYPES, 1972-73**  
(\$'000)

Type	N.S.W.	Vic.	Qld	S.A.	W.A.	Tas.	N.T.	Aust.(a)
Tuna	2,062		5	2,545	147	12	..	4,771
Mackerel	(b)		825	..	40	..	12	878
Snoek	(b)		..	..	1	129	..	130
Mullet	912		447	124	202	2	..	1,687
Bream (including Tar-whine)	311		110	18	9	..	1	448
Australian salmon	129		..	229	171	98	..	627
Ruff	..	n.a.	..	80	163	..	..	243
Snapper	799		56	341	84	..	..	1,280
Morwong	493		..	..	3	2	..	498
Whiting	221		264	1,444	110	(b)	..	2,039
Flathead	727		49	8	3	11	..	798
Shark	240		3	154	235	186	..	818
Leatherjacket	454		..	..	9	..	..	463
Other	(c)2,120		(e)1,480	671	570	(d)216	367	(cd)5,424
Total fish	8,467	3,391	(e)3,238	5,614	1,749	658	380	23,497

(a) Incomplete; see individual States. (b) Not available separately; included in 'Other'. (c) Includes mackerel and snoek in New South Wales. (d) Includes value of whiting and seaweed in Tasmania. (e) Incomplete; excludes freshwater types.

**FISH: PRODUCTION, BY TYPE, AUSTRALIA**  
(tonnes estimated live weight)

Type	1968-69	1969-70	1970-71	1971-72	1972-73
Freshwater types(a)	768	678	1,018	1,153	(b)954
Marine types—					
Tuna(c)	8,916	8,450	6,802	10,237	(b)13,577
Mackerel	796	763	903	900	(b)(d)1,347
Snook	3,895	4,124	2,951	2,245	(b)(d)918
Mullet	5,072	5,272	5,527	4,705	(b)5,325
Bream (including Tarwhine)	901	936	945	815	(b)567
Australian salmon	4,293	4,764	3,463	5,246	(b)3,622
Ruff	822	865	834	1,220	(b)1,474
Snapper	1,319	1,600	1,710	1,770	(b)1,583
Morwong	1,192	852	1,029	1,179	(b)1,329
Whiting	1,741	2,070	1,859	1,852	(b)1,720
Flathead	2,756	2,793	2,341	2,390	(b)1,706
Shark	7,175	7,743	7,314	7,310	(b)2,909
Leatherjacket	369	762	946	879	(b)1,305
Other.	9,033	13,663	13,988	15,099	(b)(e)10,324
<i>Total marine.</i>	<i>48,280</i>	<i>54,658</i>	<i>50,614</i>	<i>55,849</i>	<i>(b)47,706</i>
<b>Grand total</b>	<b>49,049</b>	<b>55,335</b>	<b>51,632</b>	<b>57,002</b>	<b>59,428</b>

(a) Excludes freshwater fish caught in Queensland, particulars of which are not available. (b) Incomplete; excludes Victorian figure, which is not available for publication. (c) Includes estimate by C.S.I.R.O. for New South Wales. (d) Figure for New South Wales is not available separately, and has been included in 'Other'. (e) Includes mackerel and snook in New South Wales.

**Crustaceans**

**CRUSTACEANS: PRODUCTION, BY TYPE, 1972-73**  
(tonnes estimated live weight)

Type	N.S.W.	Vic.	Qld	S.A.	W.A.	Tas.	N.T.	Aust.
Rock lobster(a)	182	830	173	3,066	7,352	1,583	23	13,209
Prawns	2,128	14	6,892	1,789	3,038	..	2,584	16,446
Crabs	144	n.a.	382	9	96	1	11	(b)643
<b>Total</b>	<b>2,454</b>	<b>(c)845</b>	<b>7,447</b>	<b>4,863</b>	<b>10,486</b>	<b>1,584</b>	<b>2,618</b>	<b>(d)30,297</b>

(a) Includes Murray crayfish caught in New South Wales, bay lobster taken in New South Wales, Queensland, Western Australia and the Northern Territory, and yabbies taken in South Australia. (b) Excludes Victorian catch, which is not available for publication. (c) Excludes freshwater crayfish and crabs. (d) Incomplete; see individual States and species.

**CRUSTACEANS: PRODUCTION, BY TYPE, AUSTRALIA**  
(tonnes live weight)

Type	1968-69	1969-70	1970-71	1971-72	1972-73
Rock lobster	(a)13,101	(b)11,460	(c)13,043	(d)13,220	(e)13,209
Prawns	9,713	13,366	18,752	17,520	16,446
Crabs	390	468	477	573	(f)643
<b>Total</b>	<b>23,205</b>	<b>25,293</b>	<b>32,273</b>	<b>31,313</b>	<b>(g)30,297</b>

(a) Includes Murray crayfish caught in New South Wales and Victoria and bay lobster taken in Queensland. (b) Includes bay lobster taken in New South Wales and Western Australia, in addition to items in footnote (a). (c) Includes yabbies taken in South Australia, in addition to items in footnotes (a) and (b). (d) Includes yabbies taken in Victoria, in addition to items in footnotes (a), (b) and (c). (e) For inclusions see footnote (a) to previous table. (f) Excludes Victorian figure, which is not available for publication. (g) Incomplete; see individual species.

## Molluscs (edible)

MOLLUSCS: PRODUCTION, BY TYPE, 1972-73  
(tonnes estimated live weight)

Type	N.S.W.	Vic.	Qld	S.A.	W.A.	Tas.	N.T.	Aust.
Octopus . . . . .	..	n.a.	..	36	3	..	..	(a)39
Squid . . . . .	..		98	43	21	154	..	(a)315
Cuttlefish . . . . .	..		..	..	..	..	..	(a)
Oysters . . . . .	9,027		n.a.	9	..	147	19	(a)9,202
Mussels . . . . .	23		..	..	..	..	..	(a)23
Pipi . . . . .	..	11,807	..	117	..	..	..	(a)117
Scallops . . . . .	114		4,082	49	257	515	..	16,825
Abalone . . . . .	1,018	2,023	..	900	325	2,172	..	6,438
<b>Total</b> . . . . .	<b>10,182</b>	<b>(b)13,831</b>	<b>(b)4,181</b>	<b>1,155</b>	<b>606</b>	<b>2,988</b>	<b>19</b>	<b>(a)32,960</b>

(a) Incomplete; see individual States. (b) Incomplete; see individual species.

MOLLUSCS: PRODUCTION, BY TYPE, AUSTRALIA  
(tonnes estimated live weight)

Type	1968-69	1969-70	1970-71	1971-72	1972-73
Octopus . . . . .	(a)	(a)	86	65	(b)39
Squid . . . . .	(c)185	(d)287	194	209	(b)315
Cuttlefish . . . . .	(a)	(a)	19	2	(b) . .
Oysters . . . . .	(e)7,519	9,359	9,807	10,434	(b)9,202
Mussels . . . . .	54	(e)304	535	577	(b)23
Pipi . . . . .	..	..	47	86	(b)117
Scallops . . . . .	5,012	5,550	9,293	10,148	16,825
Abalone . . . . .	(e)6,539	6,123	7,692	7,958	6,438
<b>Total</b> . . . . .	<b>(f)19,307</b>	<b>(f)21,623</b>	<b>27,672</b>	<b>29,479</b>	<b>(f)32,960</b>

(a) Included with squid. (b) Excludes Victorian figure, which is not available for publication. (c) Includes octopus, and cuttlefish in all States except Western Australia. (d) Includes cuttlefish and octopus. (e) Excludes Western Australian figure, which is not available for publication. (f) Incomplete; see individual species.

## Pearls, pearl-shell and trochus-shell

PEARL CULTURE AND PEARL AND TROCHUS SHELL FISHING OPERATIONS  
AUSTRALIA(a)

(Source: Australian Department of Agriculture)

	1968	1969	1970	1971	1972
QUANTITY					
Pearl and Trochus shell fishing operations—					
Production of—					
Pearl shell(b) . . . . .	tonne	259.0	268.4	365.6	314.5
Trochus shell . . . . .	tonne	5.9	0.2	25.5	0.7
Pearl culture operations—					
Live shell introduced . . . . .	No.	838,622	796,831	444,727	333,280
	tonne	447.2	410.8	179.8	107.4
Production—					
Round and baroque pearls . . . . .	No.	76,337	77,858	80,445	107,777
	momme(c)	42,854	44,334	48,314	62,179
Half pearls . . . . .	No.	522,247	631,476	472,259	413,964
Manufacturing shell . . . . .	tonne	216.8	265.9	237.1	164.3

For footnotes see next page.

**PEARL CULTURE AND PEARL AND TROCHUS SHELL FISHING OPERATIONS  
AUSTRALIA(a)—continued**

	1968	1969	1970	1971	1972
<b>VALUE (\$'000)</b>					
Pearl and Trochus shell fishing operations—					
Production of—					
Pearl shell . . . . .	152	190	275	245	203
Trochus shell . . . . .	1	..	4	..	..
Pearl culture operations—					
Production of—					
Round and baroque pearls . . . . .	2,499	3,020	2,029	3,165	3,851
Half pearls . . . . .	1,165	1,409	606	366	204
Manufacturing shell . . . . .	86	120	116	89	59

(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.

**Whales**

**WHALES TAKEN(a): AUSTRALIA**  
(Source: Australian Department of Agriculture)  
(Number)

	1969	1970	1971	1972	1973
Male . . . . .	637	775	820	792	684
Female . . . . .	42	24	40	161	287
<b>Total . . . . .</b>	<b>679</b>	<b>799</b>	<b>860</b>	<b>953</b>	<b>971</b>

(a) Sperm-whales only were taken.

**Processing of fish, crustaceans and molluscs**

Ice is extensively used 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. Refrigerated brine tanks are most commonly used.

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

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

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. A survey of the Australian seafood processing industry was published by the Department of Trade and Industry in 1971.

## FISH PROCESSING: AUSTRALIA

(tonnes)

	1968-69	1969-70	1970-71	1971-72	1972-73
Fish used—					
Whole . . . . .	11,486	11,182	8,707	10,893	13,107
Headed and/or gutted . . . . .	2,350	2,246	1,392	1,473	1,440
Production—					
Smoked fish . . . . .	620	616	694	557	640
Fish paste . . . . .					
Fish meal . . . . .					
	579	1,747	2,014	2,223	1,690
Canned fish—					
Shellfish, canned or bottled(a) . . . . .	989	1,332	1,679	1,758	1,474
Australian salmon . . . . .	1,981	2,520	1,923	2,226	2,021
Tuna . . . . .	4,768	4,564	3,227	4,073	5,242
Other (including fish loaf, cake, etc.) . . . . .					

(a) Other than lobsters, crayfish, oysters or clams, production figures for which are negligible, or not available for publication.

## Whale processing

Oil from sperm whales is used in the manufacture of soap, plastics and watch lubricants, and in automatic transmission systems in motor cars.

## WHALE PROCESSING: AUSTRALIA

(Source: Australian Department of Agriculture)

		1969	1970	1971	1972	1973
Quantity of sperm whale oil produced	barrels(a)	26,142	31,686	36,414	34,632	32,952
Value of whale oil produced . . . . .	\$'000	607	1,082	1,390	993	951
Value of by-products (meal, meat, solubles, etc.) . . . . .	„	349	481	553	585	624
Total value of products . . . . .	„	956	1,563	1,943	1,578	1,575

(a) 6 barrels = approximately 1.016 tonnes.

## Domestic marketing of fisheries products

Although virtually the whole of the tuna and Australian salmon catches and a large proportion of the snoek catch 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 and Wollongong 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 South Australia the majority of fishermen are members of the South Australian Fishermen's Co-operative Ltd, which handles most of their production. Other outlets for fish products include retail and catering establishments.

## Consumption of edible fisheries products

Particulars of the estimated supplies of fish, crustaceans and molluscs available for consumption per head of population, in terms of edible weight, are included in the following table. For the purpose of compiling this table, an allowance has been made for the non-commercial fish catch.

**FISHERIES PRODUCTS: ESTIMATED SUPPLIES AVAILABLE FOR CONSUMPTION  
AUSTRALIA**

(kg edible weight per person per annum)

	1968-69	1969-70	1970-71	1971-72	1972-73
<b>Fresh or frozen—</b>					
Fish—					
Australian origin(a)	1.6	1.8	1.6	1.7	1.7
Imported	1.7	1.6	2.1	1.5	1.5
Crustaceans and molluscs	0.7	0.7	1.0	1.0	0.8
<b>Cured (including smoked and salted)</b>	<b>0.5</b>	<b>0.4</b>	<b>0.5</b>	<b>0.3</b>	<b>0.3</b>
<b>Canned—</b>					
Australian origin(a)	0.5	0.6	0.5	0.5	0.3
Imported	1.0	0.9	0.9	0.9	0.9
<b>Total</b>	<b>5.9</b>	<b>6.0</b>	<b>6.5</b>	<b>5.9</b>	<b>5.5</b>

(a) Estimates have been calculated by subtracting export figures from production figures. In the case of fresh or frozen fish, an allowance of 10 per cent has been added to the commercial production figure to allow for non-commercial catch.

**Overseas trade in fisheries products**

**Edible fisheries products**

**OVERSEAS TRADE IN EDIBLE FISHERIES PRODUCTS: AUSTRALIA**

	Quantity (tonnes)			Value (\$'000 f.o.b.)		
	1970-71	1971-72	1972-73	1970-71	1971-72	1972-73
<b>IMPORTS</b>						
Fresh, chilled, frozen or boiled(a)(b)	30,218	23,297	19,197	21,508	17,792	15,739
Smoked, dried, salted or in brine	3,806	3,825	2,946	3,128	3,106	2,835
Potted or concentrated	97	79	95	210	149	225
<b>Canned—</b>						
Herrings	2,297	1,936	1,994	1,434	1,436	1,377
Salmon	4,311	5,465	4,590	6,989	8,659	7,841
Sardines, sild, brisling, etc.	2,293	2,720	3,090	2,383	3,272	3,588
Tuna	71	115	38	63	131	43
Other fish	1,200	1,232	2,372	1,116	1,177	1,884
Crustaceans and molluscs	868	980	1,071	1,763	2,080	2,200
<b>Total canned</b>	<b>11,040</b>	<b>12,448</b>	<b>13,155</b>	<b>13,748</b>	<b>16,755</b>	<b>16,933</b>
Other prepared or preserved fish, crustaceans and molluscs(b)	2,162	2,376	11,030	3,100	3,547	11,432
<b>Grand total</b>	<b>..</b>	<b>..</b>	<b>..</b>	<b>41,694</b>	<b>41,349</b>	<b>47,164</b>

**EXPORTS**

(Australian produce only; excludes re-exports)

<b>Fresh, chilled or frozen(c)—</b>						
Fish	1,632	3,113	3,767	800	1,473	1,776
Crustaceans and molluscs—						
Rock lobster tails	4,455	4,652	4,544	27,333	33,074	29,783
Prawns	6,615	7,847	6,457	16,930	26,027	23,721
Other	2,224	2,270	3,362	4,488	5,279	8,620
Crustaceans and molluscs boiled in water	331	345	644	889	1,087	2,234
<b>Prepared and preserved—</b>						
Fish	550	314	439	545	353	649
Crustaceans and molluscs	2,292	2,537	2,195	4,546	5,877	5,501
Other edible fisheries products	64	51	79	84	75	163
<b>Grand total</b>	<b>..</b>	<b>..</b>	<b>..</b>	<b>55,615</b>	<b>73,245</b>	<b>72,447</b>

(a) Excludes frozen smoked, which is included in item Smoked, dried, etc. (b) 1972-73 figures for 'fresh, chilled, etc.' edible fisheries products are not comparable with those for previous years, as the item 'fish fingers or fish sticks in packs under 500 grams', formerly included in 'fresh, chilled, etc.' is now included in 'Other prepared or preserved fish, crustaceans and molluscs.' (c) Excludes frozen smoked, which is included in item Other edible fisheries products.

## Non-edible fisheries products

## OVERSEAS TRADE IN SELECTED NON-EDIBLE FISHERIES PRODUCTS: AUSTRALIA

		Quantity			Value (\$'000 f.o.b.)		
		1970-71	1971-72	1972-73	1970-71	1971-72	1972-73
IMPORTS							
Fish heads, fresh or frozen	tonnes	429	1,173	1,972	70	208	262
Other fish waste	"	1,586	1,241	1,109	241	197	190
Fish, live(a)	'000	4,545	6,031	6,201	332	461	494
Fish meal	tonnes	31,797	27,382	14,110	4,969	3,988	2,054
Whale oil	'000 litres	4,105	482	146	834	124	46
Cod-liver oil	"	346	314	342	118	114	115
Other oils (including seal oil)	"	736	536	748	138	158	145
Coral and shells and their waste	tonnes	82	63	91	40	30	33
Tortoise shell (including turtle shell, claws, waste)	"	2	..	..	18	..	..
Pearls	"	..	..	..	832	132	142
Total		..	..	..	7,592	5,412	3,481
EXPORTS							
(Australian produce only; excludes re-exports)							
Australian produce—							
Whale oil	'000 litres	8,528	6,278	7,685	1,405	1,014	995
Other oils	"	5	5	2	1	2	1
Pearl-shell	tonnes	611	459	560	601	456	547
Other shell (including trochus)	"	77	154	302	24	39	86
Natural pearls	"	..	..	..	18	8	86
Cultured pearls—							
Round	No.	105,024	38,749	89,065	1,561	536	1,038
Baroque	"	10,875	4,018	2,323	67	23	14
Half round	"	245,570	181,035	159,195	479	360	299
Other	"	..	..	..	20	4	34
Total		..	..	..	4,176	2,443	3,100

(a) Live fish whether or not fit for human consumption.

