CHAPTER 25

FISHERIES

Further information on subjects dealt with in this chapter is contained in the annual mimeographed 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 'industrial fishery' in Australia, but several exploratory purse seine ventures aimed at production of clupeoids 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. There is limited culture of the introduced Pacific oyster (*Crassostrea gigas*) in Tasmania and, recently, South Australia. Following a serious decline in catches in the scallop (*Pecten meriaionalis*) 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 is undertaken at Triabunna, Tasmania, where a factory is processing seaweed (*Macrocystis pyrifera*) for its alginate content.

General

A map showing Australia's principal ports and generalised localities of the fishery resources under exploitation appears on plate 49, page 898. 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 Commonwealth 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 Commonwealth 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 laws regulating the fisheries are the *Fisheries Act* 1952–1970, the *Continental Shelf (Living Natural Resources) Act* 1968 and the *Whaling Act* 1960–1966. Each of these applies in accordance with the Commonwealth'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 Commonwealth 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 Commonwealth 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 Primary Industry, 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 Primary Industry has supplied particulars of the whaling

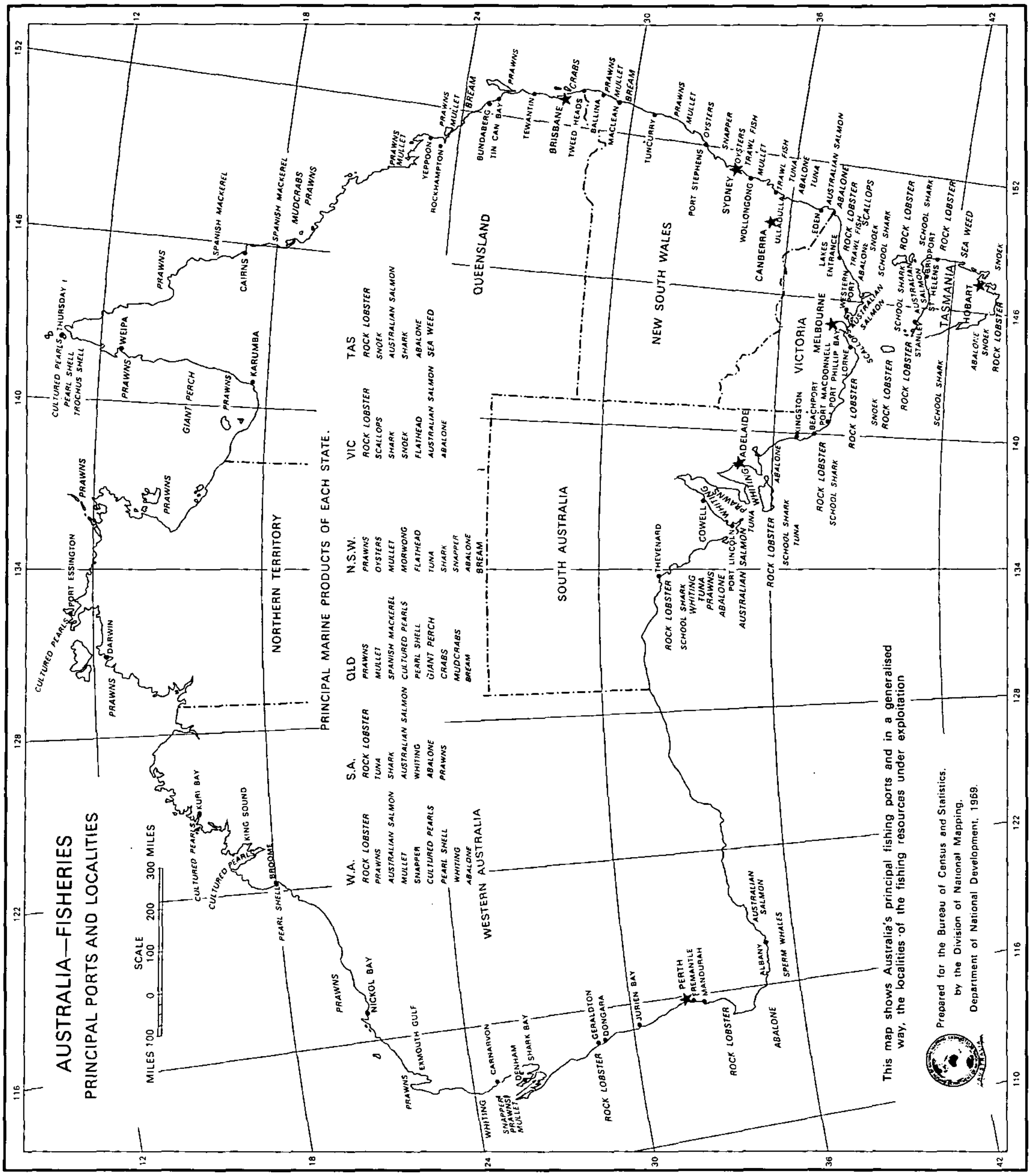
AUSTRALIA—FISHERIES
PRINCIPAL PORTS AND LOCALITIES
SCALE
MILES 100 0 100 200 300 MILES
PRINCIPAL MARINE PRODUCTS OF EACH STATE.
W.A.
ROCK LOBSTER
PRAWNS
AUSTRALIAN SALMON
MULLET
SNAPPER
CULTURED PEARLS
PEARL SHELL
WHITING
ABALONE
S.A.
ROCK LOBSTER
TUNA
SHARK
AUSTRALIAN SALMON
WHITING
ABALONE
PRAWNS
QLD
PRAWNS
MULLET
SPANISH MACKEREL
CULTURED PEARLS
PEARL SHELL
GIANT PERCH
CRABS
MUDCRABS
BREAM
N.S.W.
PRAWNS
OYSTERS
MULLET
MORWONG
FLATHEAD
TUNA
SHARK
SNAPPER
ABALONE
BREAM
VIC
ROCK LOBSTER
SCALLOPS
SHARK
SNOEK
FLATHEAD
AUSTRALIAN SALMON
ABALONE
TAS
ROCK LOBSTER
SNOEK
AUSTRALIAN SALMON
SHARK
ABALONE
SEA WEED
WESTERN AUSTRALIA
NORTHERN TERRITORY
SOUTH AUSTRALIA
QUEENSLAND
NEW SOUTH WALES
VICTORIA
TASMANIA
This map shows Australia's principal fishing ports and in a generalised way, the localities of the fishing resources under exploitation
Prepared for the Bureau of Census and Statistics,
by the Division of National Mapping,
Department of National Development, 1969.

PLATE 49

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 Commonwealth Bureau of Census and 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 120 feet 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 30 feet in length. Recently, a number of well equipped, double rigged, prawn trawlers of 60 feet to 85 feet 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 some *tuna*, purse seine.

Pearls, pearl-shell and trochus-shell

Ketch-rigged luggers about fifty-five feet 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 100 to 125 feet in length, and tow boats.

Boats and equipment employed by industry

The following two tables show details of boats and equipment employed 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 employed in more than one industry are classified to their main activity.

FISHERIES: BOATS AND EQUIPMENT EMPLOYED AND WHALING STATIONS OPERATING, STATES AND NORTHERN TERRITORY, 1971-72

		N.S.W.	Vic.	Qld	S.A.	W.A.	Tas.	N.T.	Aust.
General fisheries—									
Boats employed	No.	3,077	808	1,828	(a)1,652	1,508	588	130	9,591
Value of boats and equipment	$'000	13,066	7,567	23,959	n.a.	20,060	7,717	7,728	(b)80,097
Edible oyster fisheries—									
Boats employed	No.	1,749	..	135	..	..	n.a.	..	(c)1,884
Value of boats and equipment	$'000	n.a.	..	n.a.	..	..	n.a.	..	n.a.
Pearl-shell and trochus-shell—									
Boats employed(d)	No.	..	..	13	..	10	..	..	23
Whaling(d)—									
Chasers	No.	..	..	..	..	3	..	..	3
Stations operating	„	..	..	..	..	1	..	..	1

(a) Reduction compared with 1970–71 figure caused by adoption of new registration system in South Australia. (b) Incomplete: excludes South Australia. (c) Incomplete: excludes Tasmania. (d) *Source:* Department of Primary Industry.

FISHERIES: BOATS AND EQUIPMENT EMPLOYED AND WHALING STATIONS OPERATING, AUSTRALIA, 1967-68 TO 1971-72

		1967–68	1968–69	1969–70	1970–71	1971–72
General fisheries—						
Boats employed	No.	9,354	9,244	(a)8,857	(a)9,322	(a)9,591
Value of boats and equipment	$'000	51,456	(b)64,072	(b)71,376	(b)79,711	(b)(c)80,097
Edible oyster fisheries—						
Boats employed(d)	No.	1,599	1,788	1,805	1,829	1,884
Value of boats and equipment	$'000	(d)1,444	(d)1,744	(d)1,741	(d)1,844	(e)2,843
Pearl-shell and trochus-shell—						
Boats employed(f)	No.	49	33	29	28	23
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 1967–68 and earlier years because of changes in methods of valuation in Western Australia. (c) Incomplete; excludes South Australia. (d) Incomplete; excludes Tasmania. (e) Incomplete: excludes Queensland and Tasmania. (f) *Source:* Department of Primary Industry.

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: STATES AND NORTHERN TERRITORY 1971-72(a)

Industry	N.S.W.	Vic.	Qld	S.A.	W.A.	Tas.	N.T.	Aust.
General fisheries	4,545	1,534	3,595	(b)3,014	3,167	1,207	532	17,594
Edible oyster fisheries	1,400	..	n.a.	..	2	n.a.	..	(c)1,402
Pearl-shell and trochus-shell(d)	..	..	171	..	116	..	..	287
Whaling(d)—								
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) Reduction compared with 1970–71 figure caused by adoption of new definition of persons engaged in South Australia. (c) Incomplete; excludes Queensland and Tasmania. (d) *Source:* Department of Primary Industry.

PERSONS EMPLOYED ON FISHING BOATS: AUSTRALIA, 1967-68 TO 1971-72(*a*)

Industry	*1967–68*	*1968–69*	*1969–70*	*1970–71*	*1971–72*
General fisheries(*b*)	14,965	16,460	15,629	16,279	17,594
Edible oyster fisheries	(*c*)1,319	(*c*)1,425	(*c*)1,717	(*c*)1,596	(*d*)1,402
Pearl-shell and trochus-shell(*e*)	538	473	422	416	287
Whaling(*e*)—					
At sea	45	48	51	51	51

(*a*) *See* footnote (*a*) to the table 'Persons Employed on Fishing Boats: States and Northern Territory 1971–72' above. (*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:* Department of Primary Industry.

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
STATES AND NORTHERN TERRITORY, 1967-68 TO 1971-72
($'000)

Year	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*Aust.*
GROSS VALUE								
1967–68	12,028	5,725	7,309	6,993	21,954	4,473	107	58,589
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	63,297
1970–71	15,329	7,310	10,985	9,236	25,127	5,984	4,132	78,103
1971–72	18,924	9,507	11,380	11,751	30,660	6,808	2,793	91,824
LOCAL VALUE(*a*)								
1967–68	10,212	5,153	6,896	6,162	21,805	3,668	107	54,003
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	16,284	8,811	10,780	10,398	30,469	5,929	2,793	85,464

(*a*) Local value is gross value less marketing costs.

Production of selected fisheries

The following tables show details of the quantities and values of production of selected fisheries in each State and the Northern Territory in 1971-72 and throughout Australia for the years 1967-68 to 1971-72.

SELECTED FISHERIES PRODUCTS: PRODUCTION AND GROSS VALUE STATES AND NORTHERN TERRITORY 1971-72

Product		*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*Aust.*
QUANTITY									
Fish(*a*)	tonnes	16,875	15,893	(*b*)4,511	10,898	5,926	2,380	391	56,874
Crustaceans(*c*)	,,	2,874	799	8,691	3,901	10,818	1,477	2,634	31,194
Molluscs (edible)(*d*)	,,	11,985	10,415	2,357	1,317	309	3,084	7	29,474
Pearl-shell(*e*)	,,	..	..	n.a.	..	n.a.	..	n.a.	(*f*)478.8
GROSS VALUE ($'000)									
Fish		7,055	3,335	(*b*)2,160	3,185	1,414	715	191	18,055
Crustaceans		4,968	1,970	7,788	7,716	24,949	3,794	2,566	53,751
Molluscs (edible)		6,900	4,201	534	851	154	2,248	4	14,892
Pearl-shell(*e*)(*g*)		..	..	n.a.	..	n.a.	..	n.a.	(*f*)334

(*a*) Estimated live weight. (*b*) Excludes freshwater fish, particulars of which are not available. (*c*) Gross weight. (*d*) Gross (in shell) weight. (*e*) *Source:* Department of Primary Industry. (*f*) Includes manufacturing shell produced from pearl culture operations. (*g*) Estimated.

SELECTED FISHERIES PRODUCTS: PRODUCTION, AND GROSS VALUE AUSTRALIA, 1967-68 TO 1971-72

Product		*1967-68*	*1968-69*	*1969-70*	*1970-71*	*1971-72*
QUANTITY						
Fish(*a*)	tonnes	46,540	49,049	55,335	51,632	56,874
Crustaceans(*b*)	,,	24,502	23,205	25,293	32,273	31,194
Molluscs (edible)(*c*)	,,	(*d*)29,442	(*e*)19,307	21,623	27,672	29,474
Pearl-shell(*f*)(*g*)	,,	502.8	475.8	534.3	602.6	478.8
Trochus-shell(*f*)	,,	1.0	5.9	0.2	25.5	0.7
GROSS VALUE ($'000)						
Fish(*h*)		14,179	14,512	15,493	15,399	18,055
Crustaceans		32,755	36,560	34,088	46,830	53,751
Molluscs (edible)		(*d*)7,859	(*e*)6,608	8,087	11,790	14,892
Pearl-shell(*f*)(*g*)		271	237	310	392	334
Trochus-shell(*f*)		..	1	..	4	..

(*a*) Estimated live weight. Excludes freshwater fish caught in Queensland. (*b*) Gross weight. (*c*) Gross (in shell) weight. (*d*) Excludes oysters and mussels in Western Australia and oysters in Tasmania. (*e*) Excludes abalone and oysters in Western Australia. (*f*) *Source:* Department of Primary Industry. (*g*) Includes manufacturing shell produced from pearl culture. (*h*) Excludes freshwater fish caught in Queensland.

The following tables show details of the production and gross value of the main types of fish, crustaceans, and molluscs caught in each State and the Northern Territory in 1971–72 and throughout Australia for the years 1967–68 to 1971–72.

Fish

FISH: PRODUCTION, BY TYPE, STATES AND NORTHERN TERRITORY, 1971–72

(tonnes estimated live weight)

Type	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*Aust.*
Freshwater types—	241	256	n.a.	630	..	25	..	(*a*)1,153
Marine types—								
Tuna	(*b*)5,033	159	17	4,348	629	44	..	10,230
Mackerel	46	..	803	..	29	4	17	899
Snoek	131	1,533	..	..	..	581	..	2,245
Mullet	2,038	277	1,427	229	706	11	15	4,701
Tailor	137	10	365	..	45	..	..	557
Bream (including Tarwhine)	246	314	215	15	26	..	..	815
Australian salmon	516	586	..	1,881	1,730	508	..	5,221
Ruff	..	34	..	277	864	..	..	1,175
Snapper	708	299	49	528	185	..	..	1,768
Morwong	1,136	24	..	1	5	13	..	1,179
Whiting	137	417	291	768	234	..	..	1,847
Luderick	591	51	63	..	..	..	..	705
Flathead	1,479	743	80	16	9	64	..	2,390
Shark	772	3,625	61	1,480	492	859	8	7,297
Leatherjacket	847	16	..	..	13	2	..	879
Garfish	121	182	67	459	24	34	2	889
Other	2,698	7,366	1,072	267	935	237	348	12,923
Total marine	*16,634*	*15,637*	*4,511*	*10,268*	*5,926*	*2,355*	*391*	*55,721*
Grand total	**16,875**	**15,893**	(*c*)**4,511**	**10,898**	**5,926**	**2,380**	**391**	**56,874**

(*a*) Incomplete; excludes Queensland. (*b*) *Source:* C.S.I.R.O. (*c*) Incomplete: figure for freshwater fish caught in Queensland not available.

GROSS VALUE OF FISH, BY PRINCIPAL TYPES, 1971-72

($'000)

Type of Fish	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*Aust.*
Tuna	1,553	29	2	767	123	11	..	2,485
Snoek	43	282	..	..	..	71	..	395
Mullet	651	55	436	45	201	3	6	1,398
Australian salmon	120	91	..	290	214	101	..	816
Snapper	624	204	39	233	59	..	..	1,159
Morwong	376	9	..	..	1	3	..	389
Flathead	685	245	43	6	2	17	..	998
Shark	177	1,588	11	351	164	345	3	2,639
All other species	2,827	831	(*a*)1,629	1,491	651	164	181	7,776
Total fish	**7,055**	**3,335**	(*a*)**2,160**	**3,185**	**1,414**	**715**	**191**	**18,055**

(*a*) Excludes freshwater fish, particulars of which are not available.

FISH: PRODUCTION, BY TYPE, AUSTRALIA, 1967-68 TO 1971-72

(tonnes estimated live weight)

Type	*1967–68*	*1968–69*	*1969–70*	*1970–71*	*1971–72*
Freshwater types(*a*)	491	768	678	1,018	1,153
Marine types—					
Tuna(*b*)	6,803	8,916	8,450	6,802	10,230
Mackerel	1,007	796	763	903	899
Snoek	3,314	3,895	4,124	2,951	2,245
Mullet	5,316	5,072	5,272	5,527	4,701
Tailor	618	441	518	544	557
Bream (including Tarwhine)	937	901	936	945	815
Australian salmon	7,102	4,293	4,764	3,463	5,221
Ruff	596	822	865	834	1,175
Snapper	1,609	1,319	1,600	1,710	1,768
Morwong	1,352	1,192	852	1,029	1,179
Whiting	1,669	1,741	2,070	1,859	1,847
Luderick	674	640	748	734	705
Flathead	2,436	2,756	2,793	2,341	2,390
Shark	6,024	7,175	7,743	7,314	7,297
Leatherjacket	387	369	762	946	879
Garfish	753	864	892	705	889
Other	5,454	7,089	11,505	12,005	12,923
Total marine	*46,050*	*48,280*	*54,658*	*50,614*	*55,721*
Grand total	**46,540**	**49,049**	**55,335**	**51,632**	**56,874**

(*a*) Excludes freshwater fish caught in Queensland, particulars of which are not available. (*b*) Includes estimate by C.S.I.R.O. for New South Wales.

Crustaceans

CRUSTACEANS: PRODUCTION, BY TYPE, STATES AND NORTHERN TERRITORY, 1971-72

(tonnes gross weight)

Type	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*Aust.*
Rock lobster(*a*)	216	782	(*b*)60	2,377	8,246	1,469	..	13,151
Prawns	2,523	14	8,261	1,524	2,519	..	2,629	17,470
Crabs	135	3	370	..	53	8	5	573
Total	**2,874**	**799**	**8,691**	**3,901**	**10,818**	**1,477**	**2,634**	**31,194**

(*a*) Includes freshwater crayfish caught in New South Wales and Victoria, bay lobster taken in New South Wales, Queensland and Western Australia and yabbies taken in South Australia and Victoria. (*b*) Estimated.

CRUSTACEANS: PRODUCTION, BY TYPE, AUSTRALIA, 1967-68 TO 1971-72

(tonnes gross weight)

Type	*1967–68*	*1968–69*	*1969–70*	*1970–71*	*1971–72*
Rock lobster(*a*)	15,017	13,101	(*b*)11,460	(*b*)(*c*)13,043	(*b*)(*d*)13,151
Prawns	9,118	9,713	13,366	18,752	17,470
Crabs	367	390	468	477	573
Total	**24,502**	**23,205**	**25,293**	**32,273**	**31,194**

(*a*) Includes freshwater crayfish caught in New South Wales and Victoria and bay lobster taken in Queensland. (*b*) Includes also bay lobster taken in New South Wales and Western Australia. (*c*) Also includes yabbies taken in South Australia. (*d*) Also includes yabbies taken in Victoria and South Australia.

Molluscs (edible)

MOLLUSCS: PRODUCTION, BY TYPE, STATES AND NORTHERN TERRITORY, 1971-72

(tonnes gross (in-shell) weight)

Type	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*Aust.*
Octopus	..	13	..	52	..	..	..	65
Squid	..	94	54	35	18	8	..	209
Cuttlefish	..	2	..	..	..	..	..	2
Oysters	10,224	..	(*a*)145	3	1	54	7	10,434
Scallops	324	7,565	2,158	..	47	52	..	10,146
Pipi	..	..	..	86	..	..	..	86
Mussels	42	534	..	..	..	..	..	577
Abalone	1,394	2,208	..	1,140	243	2,971	..	7,956
Total	**11,985**	**10,415**	**2,357**	**1,317**	**309**	**3,084**	**7**	**29,474**

(*a*) Estimated.

MOLLUSCS: PRODUCTION, BY TYPE, AUSTRALIA, 1967-68 TO 1971-72

(tonnes gross (in-shell) weight)

Type	*1967–68*	*1968–69*	*1969–70*	*1970–71*	*1971–72*
Octopus	(*a*)8	(*a*)12	(*a*)28	86	65
Squid	(*b*)171	(*b*)170	(*b*)254	(*c*)211	209
Cuttlefish(*b*)	..	(*a*)3	(*a*)5	(*a*)1	2
Oysters	(*d*)7,546	(*e*)7,519	9,359	9,807	10,434
Scallops	13,044	5,012	5,551	9,293	10,146
Pipi	..	..	..	47	86
Mussels	(*e*)112	54	304	535	577
Abalone	8,560	(*e*)6,539	6,123	7,692	7,956
Total	(*f*)**29,442**	(*f*)**19,307**	(*f*)**21,623**	(*f*)**27,672**	**29,474**

(*a*) Production for South Australia is included with squid. (*b*) Includes cuttlefish and octopus for South Australia. (*c*) Includes cuttlefish for South Australia. (*d*) Excludes particulars for Western Australia and Tasmania which are not available for publication. (*e*) Excludes particulars for Western Australia which are not available for publication. (*f*) Incomplete, *see* relevant footnotes.

Pearls, pearl-shell and trochus-shell

PEARL CULTURE OPERATIONS: AUSTRALIA, 1967 TO 1971

(*Source:* Department of Primary Industry)

		1967	*1968*	*1969*	*1970*	*1971*
Live shell introduced	No. of shells	783,733	838,622	796,831	444,727	333,280
	tonnes	434.5	447.2	410.8	179.8	107.4
Production of—						
Cultured pearls—						
Round and baroque pearls	No.	56,653	76,337	77,858	80,445	107,777
	momme(*a*)	30,061	42,854	44,334	48,314	62,179
	$'000	1,539	2,499	3,020	2,029	3,165
Half pearls	No.	266,466	522,247	631,476	472,259	413,964
	$'000	680	1,165	1,409	606	366
Manufacturing shell	tonnes	170.9	216.8	265.9	237.1	164.3
	$'000	80	86	120	116	89

(*a*) A momme is a pearl weight measurement equivalent to 3.769 grams.

PEARL-SHELL AND TROCHUS-SHELL: PRODUCTION STATES AND NORTHERN TERRITORY, 1967 TO 1971

(*Source:* Department of Primary Industry)

(Tonnes)

	1967	*1968*	*1969*	*1970*	*1971*
Pearl-shell(*a*)—					
Queensland	192.2	140.1	121.4	226.6	n.a.
Western Australia	134.8	118.9	139.9	127.8	n.a.
Northern Territory	4.9	..	7.1	11.2	n.a.
Australia	**331.9**	**259.0**	**268.4**	**365.6**	**314.5**
Trochus-shell—					
Queensland	1.0	5.9	0.2	25.5	0.7

(*a*) Excludes manufacturing shell produced from pearl culture operations.

Whales

WHALES TAKEN(*a*): AUSTRALIA, 1968 TO 1972

(*Source:* Department of Primary Industry)

(Number)

	1968	*1969*	*1970*	*1971*	*1972*
Male	585	637	775	820	792
Female	73	42	24	40	161
Total	**658**	**679**	**799**	**860**	**953**

(*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. Processing vessels receiving prawns from a fleet of trawlers are also operating in this 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 (EXCEPT FREEZING): AUSTRALIA, 1967-68 TO 1971-72

(tonnes)

	1967–68	*1968–69*	*1969–70*	*1970–71*	*1971–72*
Fish used(*a*)—					
Whole	10,952	11,486	11,182	8,707	10,893
Headed and or gutted	3,549	2,350	2,246	1,393	1,473
Production(*b*)—					
Canned fish(*c*)					
Australian salmon	3,055	1,981	2,520	1,923	2,226
Tuna	3,716	3,909	3,679	2,771	3,310
Other	1,120	859	885	456	763
Total canned fish	**7,892**	**6,749**	**7,085**	**5,149**	**6,299**
Smoked fish	117	620	616	694	557
Fish paste	594				
Fish meal(*d*)	777	579	1,747	2,014	2,315

(*a*) Fish used for canning (including fish loaf), smoking and the manufacture of fish paste, but excluding the weight of oysters, other shellfish and crustaceans used for canning. (*b*) Excludes canned rock lobsters, prawns, oysters, and clams, details of which are not available for publication. (*c*) Includes fish loaf, fish cakes, etc. (*d*) Excludes whale meat.

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, 1968 TO 1972

(*Source:* Department of Primary Industry)

		1968	*1969*	*1970*	*1971*	*1972*
Quantity of sperm whale oil produced	barrels(*a*)	23,474	26,142	31,686	36,414	34,632
Value of whale oil produced	$'000	435	607	1,082	1,390	993
Value of by-products (meal, meat, solubles, etc.)	,,	313	349	481	553	585
Total value of products	,,	**748**	**956**	**1,563**	**1,943**	**1,578**

(*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 the whole 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, 1967-68 TO 1971-72

(kg edible weight per head per annum)

	1967–68	*1968–69*	*1969–70*	*1970–71*	*1971–72*
Fresh or frozen—					
Fish—					
Australian origin(*a*)	1.4	1.6	1.8	1.6	1.5
Imported	1.6	1.7	1.6	2.1	1.5
Crustaceans and molluscs	1.0	0.7	0.7	1.0	1.0
Cured (including smoked and salted)	0.3	0.5	0.4	0.5	0.3
Canned—					
Australian origin	0.3	0.5	0.6	0.5	0.6
Imported	1.0	1.0	0.9	0.9	0.9
Total	**5.5**	**5.9**	**6.0**	**6.5**	**5.9**

(*a*) Includes an allowance for non-commercial catch of fish; excludes fish exported.

Overseas trade in fisheries products

Edible fisheries products

OVERSEAS TRADE IN EDIBLE FISHERIES PRODUCTS: AUSTRALIA 1969-70 TO 1971-72

	Quantity (tonnes)			*Value ($'000 f.o.b.)*		
	1969–70	*1970–71*	*1971–72*	*1969–70*	*1970–71*	*1971–72*
IMPORTS						
Fresh, chilled, frozen or boiled(*a*)	22,802	30,216	23,296	14.274	21,508	17,792
Smoked, dried, salted or in brine	3,150	3,806	3,826	2,041	3,128	3,106
Potted or concentrated	99	97	78	166	210	149
Canned—						
Herrings	1,920	2,297	1,936	1,160	1,434	1,436
Salmon	4,471	4,311	5,465	7,387	6,989	8,659
Sardines, Sild, brisling, etc.	2,785	2,293	2,720	2,442	2,383	3,272
Tuna	183	71	115	151	63	131
Other fish	1,117	1,200	1,232	954	1,116	1,177
Crustaceans and molluscs	854	867	979	1,664	1,763	2,080
Total canned	*11,329*	*11,040*	*12,448*	*13,758*	*13,748*	*16,755*
Other prepared or preserved fish, crustaceans and molluscs	1,820	2,162	2,377	2,892	3,100	3,549
Grand total	..	..	..	**33,131**	**41,694**	**41,352**
EXPORTS (Australian produce only; excludes re-exports)						
Fresh, chilled or frozen(*b*)—						
Fish	440	1,632	3,113	222	800	1,473
Crustaceans and molluscs—						
Rock lobster tails	3,873	4,455	4,652	19,686	27,333	33,074
Prawns	4,790	6,615	7,847	12,135	16,930	26,026
Other	1,800	2,223	2,270	3,266	4,488	5,279
Crustaceans and molluscs boiled in water	439	331	344	1,193	889	1,087
Prepared and preserved—						
Fish	218	550	314	202	545	353
Crustaceans and molluscs	1,609	2,292	2,536	1,992	4,546	5,877
Other edible fisheries products	72	64	44	280	84	59
Grand total	..	..	..	**38,976**	**55,615**	**73,228**

(*a*) Excludes frozen smoked, which is included in item Smoked, dried, etc. (*b*) 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 1969-70 TO 1971-72

		Quantity			*Value ($'000 f.o.b.)*		
		1969–70	*1970–71*	*1971–72*	*1969–70*	*1970–71*	*1971–72*
IMPORTS							
Fish waste	tonnes	992	1,586	1,241	143	241	197
Fish heads, fresh or frozen	,,	319	429	1,173	42	70	208
Fish, live(*a*)	'000	3,241	4,545	6,031	240	332	461
Fish meal	tonnes	26,580	31,797	27,632	3,006	4,969	3,988
Whale oil	'000 litres	3,832	4,105	482	568	834	124
Cod-liver oil	,,	309	346	314	83	118	114
Other oils (including seal oil)	,,	632	736	536	102	138	158
Coral and shells and their waste	tonnes	47	82	63	24	40	30
Tortoise shell (including turtle shell, claws, waste)	,,	1	2	..	12	18	..
Pearls		..	..	..	436	832	132
Total		..	..	..	**4,656**	**7,592**	**5,412**
EXPORTS (Australian produce only; excludes re-exports)							
Australian produce—							
Whale oil	'000 litres	4,532	8,528	6,278	492	1,405	1,014
Other oils	,,	5	5	5	1	1	2
Pearl-shell	tonnes	671	611	459	574	601	456
Other shell (including trochus)	,,	98	77	154	17	24	39
Natural pearls		..	..	..	24	18	8
Cultured pearls—							
Round pearls	No.	79,250	105,024	38,749	1,161	1,561	536
Baroque pearls	,,	10,276	10,875	4,018	74	67	23
Half round pearls	,,	533,919	245,570	181,035	1,354	479	360
Total		..	..	..	**3,697**	**4,156**	**2,439**

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