

## CHAPTER 25

### FISHERIES

Further information on subjects dealt with in this chapter is contained in the annual printed bulletin *Non-Rural Primary Industries and Value of Production* and in the annual mimeographed statistical bulletin *Fisheries*, particularly as regards types of fish, etc. caught.

#### Fisheries resources and their commercial exploitation

##### Fish

It has been calculated that there are approximately 2,000 species of fish in Australia and the waters surrounding it (including freshwater species). Fishing is carried out continually in estuarine, coastal and offshore Australian waters in the east and south from Port Douglas in Queensland to Ceduna in South Australia, and in Western Australia from Esperance to Exmouth Gulf, and sporadically in the Onslow, Broome, Darwin, and Karumba areas in the north. Most fishing is done in waters over the continental shelf, which varies greatly in width around the continent, but tuna is sometimes fished beyond the shelf. As in other countries, fisheries in Australia may be divided into three types: the estuarine fisheries, located in the tidal waters of rivers and coastal lakes; the pelagic fisheries, which exploit species inhabiting the surface layers of the open ocean; and the demersal fisheries, which fish the bottom layers of the sea. The estuarine fisheries produce considerable quantities of the table varieties, such as mullets (*Mugil cephalus* and associated species) and breams (*Acanthopagrus spp.*). In addition to these there is a small freshwater commercial fishery, principally in New South Wales and South Australia, exploiting Murray cod (*Maccullochella macquariensis*) and golden perch (*Plectroplites ambiguus*). The pelagic fisheries produce species exploited during their seasonal migration, such as Australian 'Salmon' (*Arripis trutta*), which is a member of the order Perciformes, or perch-like fishes, tunas (*Fam. Thynnidae*, *Katsuwonidae*, *Sardidae*), barracouta (*Leionura atun*), and mackerels (*Cybium spp.*). These fisheries, with the exception of some tuna, mackerel and reef fisheries, are concentrated in the temperate waters around the southern half of the continent. The offshore demersal fisheries include those pursued on the reefs which may be found virtually right around the continent, and which yield such species as snapper (*Chrysophrys auratus*), the so-called 'cods' (*Epinephelus*, *Choerodon*, *Callyodon spp.*) and associated species; those pursued on the trawling grounds, which produce species such as flathead (*Neoplatycephalus*, *Trudis spp.*), morwong (*Nemadactylus spp.*), John Dory (*Zeus faber*), etc.; and the important fishery for edible shark (school shark, *Galeorhinus australis* and gummy shark, *Mustelus antarcticus*) in south-eastern Australia.

##### Crustaceans

Crustaceans taken in Australia include crayfish, prawns, crabs, and freshwater lobsters. Crayfish (southern, *Jasus lalandei*; western, *Panulirus cygnus*; and eastern, *Jasus verreauxi*) is the most important crustacean exploited in Australia, and various species occur on the reefs of the continental shelf in all States. The commercial fishery, for technological reasons and through lack of knowledge of numbers, has not extended to the tropical species (*P. ornatus*), etc., but is concentrated on species found around the southern half of Australia. Prawns (*Penaeus* and *Metapenaeus spp.*) are taken in the estuarine, coastal and offshore waters of New South Wales and Queensland, in the Shark Bay and Exmouth Gulf region of Western Australia, and in the Gulf of Carpentaria in Northern Territory. Crabs (*Scylla* and *Portunus spp.*) are taken mainly in Queensland and Western Australia, but small quantities are also taken in the other States. Freshwater lobsters (*Euastacus serratus*) are caught in inland streams in New South Wales, and one species, marron (*Cheraps tenuimanus*) forms the basis of an amateur fishery in the south-west of Western Australia.

##### Molluscs

Edible molluscs produced in Australia include oysters (mainly *Crassostrea commercialis*), scallops, mussels, and some of the cephalopods (squid, octopus, cuttlefish). Naturally-grown oysters are produced in all States except South Australia. In New South Wales, and to a lesser extent in Queensland, edible oysters are cultured commercially. The scallops (*Pecten meridionalis* and *Equichlamys bifrons*) are taken in Tasmania, the saucer scallop (*Amusium balloti*) is harvested in Queensland, and a fishery exploiting the species *Pecten alba* has been developed in Port Phillip Bay. Mussels (*Mytilus planulatus*) are gathered mainly in Victoria. Small quantities of cephalopods,

mainly squid (*Loligo spp.*), are produced in many localities. Increased interest in the abalone (*Haliotis spp.*) has resulted in the development of fisheries off southern New South Wales and Victoria and the east and south-west coasts of Tasmania. Other edible molluscs taken from time to time include pipis (*Plebidonax deltoides*).

#### Pearl-shell and trochus-shell

The shell of the Australian species of pearl oyster (*Pinctada maxima*) is taken in the tropical waters of Australia from Exmouth Gulf in Western Australia to Cairns in Queensland for the manufacture of buttons, knife handles, etc. Live pearl-shell is used for pearl culture, the *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 humpback whales (*Megaptera novaeangliae*) 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.

#### Marine flora

Seaweeds of possible commercial value occur in the coastal waters of New South Wales, Tasmania, South Australia, and Western Australia. At Louisville, Tasmania, a factory is processing seaweed (*Macrocystis pyrifera*) for its alginic content.

### History of the development of fisheries industries in Australia

#### Fishing

At the beginning of this century Australian fisheries were principally estuarine and onshore, and the deeper offshore resources were comparatively unknown. Vessels were generally sail-powered, and catching and preservation methods were primitive.

From 1909 to 1914 a Commonwealth vessel was engaged in research into fisheries resources around Australia. As a result of this exploration, otter trawling in the south-eastern waters began in 1915. There have been several years of high production from this fishery, but in each case the peak year was followed by a period of low production. Danish seine trawlers entered this fishery in 1936. In 1958–59 steam otter trawling vessels used in this area were taken out of service. This fishery is at present stabilised at a relatively low level of production.

The tuna fishery began with the establishment in 1937 of a cannery at Narooma in New South Wales to exploit the occurrences, mainly of southern bluefin tuna (*Thunnus thynnus maccoyii*), which had been revealed by aerial surveys in 1936. However, landings were insignificant for over a decade. In 1950 the Commonwealth Government sponsored an American-owned clipper and trained crew to instruct fishermen in the pole-and-live-bait method of catching tuna (see plate 49). Development of the South Australian tuna fishery followed the visit of two American tuna experts in 1954. Recent developments in tuna fishing include the use of gill netting, long lining and the purse seine technique which was successfully used for the first time in 1965. Techniques for taking species of tuna other than southern bluefin are being investigated.

#### Crustaceans

The crayfishery, which is pursued off south-eastern Australia and off the west coast of Western Australia, was for many decades on a small scale. It was not until 1944 that the major sector, the western crayfishery, began to develop into what is now Australia's most productive single fishery. Between 1944 and 1947 production from the shallow areas of Houtman Abrolhos was used for canning for the armed forces. From 1948 to 1953 mechanisation of the fleet was introduced progressively and deeper waters were worked. The United States market for frozen craytails was established during this period. The period 1954 to 1962 saw the introduction of larger and more powerful vessels, of conservation measures designed to maximise the sustainable yield, and of increased processing facilities. In the southern crayfishery development has followed similar lines, but on a smaller scale because of the smaller crayfish population. (See photographs, plate 50.).

The prawn fishery was pursued for many decades on a small scale, but it was not until the discovery that prawns spawn in oceanic waters that interest developed in catching them during this phase of their life cycle. The discovery in 1947 of stocks of prawns in Stockton Bight and off Evans Head (both in New South Wales) initiated the development of deep-sea prawning in Australia. Since that time the prawn fishery has expanded to the eastern offshore grounds. Commercial prawn fisheries in Western Australia commenced at Shark Bay in 1962 and at Exmouth Gulf in 1964.

### **Molluscs**

Natural oyster-beds were being harvested soon after settlement first began, but by 1870 rapid depletion of the stocks had resulted in restrictive legislation being passed in New South Wales. By the end of the nineteenth century, however, farms had been established in New South Wales and oyster cultivation was a notable industry. This cultivation has been almost entirely confined to the river estuaries of New South Wales. Very few oysters are exported and importation of oysters is necessary to cope with home demand. During 1964 a commercial scallop fishery was established in Port Phillip Bay and there was a noticeable development in the harvesting of abalone in the waters of New South Wales, Tasmania and Victoria.

### **Whaling**

Whaling has been undertaken from time to time in Australia since the early days of settlement. Humpback whaling was carried out from stations on the west coast of Australia from 1949, and on the east coast from 1952. However, depleted stocks of the species resulted in the closing down by 1962 of the eastern stations, and in 1963, owing to the severe decline in world stocks of humpback whales, the International Whaling Commission, of which Australia is a member, prohibited the capture of the species south of the equator for an indefinite period. Australian whaling is now carried out from Albany only, where the catch is confined to sperm whales.

### **Pearling**

Since the middle of the nineteenth century, when pearling by Europeans first began in Australia, the collection of natural pearls has been incidental to the production of mother-of-pearl shell. Although attempts to establish pearl culture in Australia had been partially successful as early as the end of the last century, it was not until 1956 that the modern technique, as developed by the Japanese, was introduced into Australia at Kuri Bay in Western Australia. The joint venture between Australian and Japanese interests proved successful and others entered the industry. There are now fifteen pearl culture farms in Western Australia, the Northern Territory and Queensland. Twelve of the farms are operated as joint ventures by Australian and Japanese interests, while three are wholly Australian enterprises. The technique of pearl culture is still a closely-guarded trade secret.

## **Fisheries administration and research**

### **Government administration**

The fisheries within territorial waters (that is, within three miles of the shore) are administered by State departments and Territory administrations. The Fisheries Branch of the Department of Primary Industry develops and administers fisheries in extra-territorial waters and co-ordinates fisheries administration. In 1967 the Commonwealth Government announced that it proposed to extend exclusive fishing limits around Australia from three to twelve miles. This proposal does not involve any change in territorial waters, and the new zone will be administered by the Commonwealth.

The fisheries laws of each State and Territory and of the Commonwealth provide for the licensing of boats used in commercial fishing operations and of commercial fishermen. The provisions are broadly similar in each State, the general requirement being that any person who takes fish for sale, and any boat used in such fishing operations, must be licensed in the State or Territory concerned. Some States extend the licensing requirements to amateur or part-time fishermen. Australian nationals who fish commercially outside the territorial waters of a State or Territory, but within Australian waters as proclaimed under the *Fisheries Act 1952-1966*, are required to take out licences and to register their boats under that Act.

Fish stocks inhabiting Australian waters are a common property resource. With the exception of the Western Australian and Tasmanian crayfisheries and the Shark Bay and Exmouth Gulf prawn fisheries, there are no restrictions on recruitment of men and vessels to any fishery. It has, therefore, been necessary for governmental action to be taken in an endeavour to provide rules of operation in certain fisheries which are vulnerable to depletion. The policy basic to the management of these fisheries is the greatest sustainable yield consistent with economic operations. Where a fishery, for economic reasons, is not producing its maximum yield, efforts to discover new methods of utilisation of the catch are made.

The *Pearl Fisheries Act 1952-1966* provides for the management of the pearl-shell resources in accordance with Australia's proclamation of sovereign rights over the natural resources of the sea bed and subsoil to the 100 fathom line. It requires that all pearlers, vessels, etc. must be licensed, and prohibits the removal of live shell from Australian waters except with the written permission of the Minister for Primary Industry.

Under the *Whaling Act 1960-1966* the Commonwealth controls whaling from Australian stations in accordance with conditions laid down by the International Whaling Commission. This Commission was established by the International Convention for the Regulation of Whaling, 1946, to organise world-wide conservation measures.

### Research

The aim of all fisheries research in Australia is to achieve the greatest sustainable yield of fish and to assist in the development of an efficient industry. To this end much of the biological research already undertaken has been directed at formulating recommendations for management measures in 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, more economical operations, and the use of more efficient equipment.

The organisations in Australia at present engaged in research into fisheries matters are:

- (i) Division of Fisheries and Oceanography, C.S.I.R.O. (fisheries science and oceanography);
- (ii) Division of Food Preservation, C.S.I.R.O. (research into handling, storage, processing, and transportation of fish);
- (iii) the several State fisheries departments (general biological research);
- (iv) Fisheries Branch, Department of Primary Industry (economic and management research, gear technology, extension work to the industry).

### 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 and the pearl and shell fisheries. The Fisheries Branch of the Department of Primary Industry has supplied particulars of the whaling industry. 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, pearl and shell fishing data refer to the season ended in the financial year shown. Whaling statistics are shown by calendar years, and refer to the season in the calendar year. 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 a 'whole 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.

In Australia the basic source of statistical information on commercial fishing operations is the fishermen. In four of the six States monthly returns of catch by species have been obtained from fishermen for a number of years. In the other two States (Queensland and South Australia) there have been no statistical collections from fishermen, and catch statistics have been derived from other sources such as markets and receiving depots. In general it is recognised that catch statistics in Australia have been somewhat incomplete in past years. For example, details of production given in this chapter refer in most cases only to the recorded commercial production. In view of the importance of amateur fishermen in certain types of fishing, details shown cannot be taken as representing the total catch. In addition, it is likely that the figures shown understate to some extent the full commercial catch because no information is available on fish taken for sale by persons not licensed as professional fishermen.

Two weaknesses of fisheries statistical collections in Australia to date have been the lack of uniformity, which makes it difficult to compile statistics on an Australia-wide basis, and the lack of data on the effort involved in taking fish (time spent fishing, gear used, etc.). Recognising these weaknesses, the Commonwealth-States Fisheries Conference in 1960 appointed a Statistics Committee 'to examine all aspects of fisheries statistics and fully document a proposed system for submission to the States and Commonwealth for approval'.

#### Model system of catch and effort statistics, 1962

The model system of catch and effort statistics designed by the Committee was adopted by the Commonwealth-States Fisheries Conference in 1962. The new system was introduced in Tasmania in 1963 and in Victoria and Western Australia in 1964. The system was introduced in Queensland for the otter trawl fishery early in 1965, but there are no definite plans at present to extend the system to other fisheries. Arrangements are proceeding for the introduction of the model system in New South Wales, but there are no plans as yet for the introduction of the system in South Australia.

Under the new system fishermen are asked to report, on a monthly basis, for the various fishing methods used, catch of each species taken and the locality where the greatest proportion of the catch is taken. Fishermen are asked to record catch in terms of landed weight, and appropriate conversion factors are used to obtain live weight where this is required. A grid system of 1° rectangles (relating to latitude and longitude) is used for recording location of catches at sea, and estuaries and inland waters are recorded where appropriate. Other data obtained include details of fishing effort, ports at which catch is landed, and employment details.

The eventual implementation of this system in all States is expected to ensure the availability of statistical information of a much higher standard in the future. In addition to the new system of catch and effort statistics, a uniform boat registration system is now being introduced by the States. This new system will eventually ensure that details of various characteristics of the commercial fishing fleet are available on a uniform basis for all States.

### 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 in length from 30 feet to 120 feet and are almost invariably powered by diesel engines. Many of them have insulated holds to carry fish in ice, and some of the crayfish boats are fitted with wells in which the catch is kept alive. Some vessels have dry refrigeration, and others, including some of the tuna live-bait pole-fishing vessels, are equipped with brine refrigeration.

A recent survey showed that about 50 per cent of Australia's commercial fishing fleet, including tenders, consists of vessels up to twenty feet in length, about 25 per cent are in the 20-29 feet category, and the remainder are greater in length. Only a very small number are greater than fifty feet in length. It is hoped that more precise information on this aspect of the fishing fleet will be available in the future when an improved boat registration system is adopted in all States. Almost every type of fishing equipment is used. The following table sets out the equipment most commonly used for the main types of fish, crustaceans and molluscs.

#### FISHING EQUIPMENT USED IN AUSTRALIA

Type of fish	Equipment used
Mullet . . .	Beach seine, gill net
Shark (edible) . . .	Long-lines, gill net
Australian salmon . . .	Beach seine
Barracouta . . .	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
Garfish . . .	Gill net, beach seine
Mackerel . . .	Trolling lines
Tuna(a) . . .	Pole and live-bait, trolling lines, gill net, purse seine
Prawns . . .	Otter trawl, beam trawl, seine net
Crayfish . . .	Pots, traps
Scallops . . .	Dredge, otter trawl

(a) Lampara nets and purse seines are used for taking live bait for tuna.

#### Pearls, pearl-shell and trochus-shell; whaling

Ketch-rigged luggers about fifty-five feet long which carry crews of eight to fourteen members are used for pearl and pearl-shell fishing around Australia.

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 on page 1049 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, 1965-66**

	N.S.W.	Vic.	Qld	S.A.	W.A.(a)	Tas.	N.T.	Aust.
<b>General fisheries—</b>								
Boats employed . . . . . no.	2,638	910	1,313	2,019	1,464	596	43	8,983
Value of boats and equipment \$'000	8,542	5,253	6,889	6,200	8,766	4,704	132	40,486
<b>Edible oyster fisheries—</b>								
Boats employed . . . . . no.	1,365	..	50	..	..	..	..	1,415
Value of boats and equipment \$'000	1,120	..	41	..	..	..	..	1,161
<b>Pearl-shell and trochus-shell—</b>								
Boats employed . . . . . no.	..	..	42	..	11	..	4	57
Value of boats and equipment \$'000	..	..	n.a.	..	97	..	52	n.a.
<b>Whaling—</b>								
Chasers . . . . . no.	..	..	..	..	3	..	..	3
Stations operating . . . . . "	..	..	..	..	1	..	..	1

(a) Year ended December 1965.

**FISHERIES: BOATS AND EQUIPMENT EMPLOYED AND WHALING STATIONS  
OPERATING, AUSTRALIA, 1961-62 TO 1965-66**

	1961-62	1962-63	1963-64	1964-65	1965-66
<b>General fisheries—</b>					
Boats employed . . . . . no.	8,147	8,574	8,473	9,426	8,983
Value of boats and equipment . . \$'000	25,797	28,298	31,794	36,401	40,486
<b>Edible oyster fisheries—</b>					
Boats employed . . . . . no.	1,349	1,294	1,424	1,419	1,415
Value of boats and equipment . . \$'000	968	923	976	1,125	1,161
<b>Pearl-shell and trochus-shell—</b>					
Boats employed . . . . . no.	56	60	53	40	57
Value of boats and equipment . . \$'000	508	550	480	n.a.	n.a.
<b>Whaling—</b>					
Chasers . . . . . no.	11	8	3	3	3
Stations operating . . . . . "	4	2	1	1	1

**Employment in fisheries****Census data**

In the following table, which shows particulars collected in the population censuses of Australia at 30 June 1947, 1954 and 1961, the numbers of persons whose industry statements were classified to 'fishing' are shown together with the numbers engaged in all primary industries and the total work force. The census classification 'fishing' includes such activities as fishing, whaling, pearl-shell fishing, etc. An adjustment was made to the 1947 and 1954 industry data by distributing over the range of recorded industry the number of persons whose industry was not stated. No such adjustment was made to the 1961 figures.

## PERSONS ENGAGED IN FISHING: AUSTRALIA, CENSUSES, 1947 TO 1961

	Census, 30 June—		
	1947	1954	1961
Persons engaged in—			
Fishing . . . . .	10,656	8,637	8,252
All primary industries . . . . .	563,607	560,100	513,286
Total work force . . . . .	3,196,431	3,702,022	4,225,096
Persons engaged in fishing as a proportion of—			
All primary industries . . . . . %	1.9	1.5	1.6
Total work force . . . . . %	0.3	0.2	0.2

## 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 several 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.

## REGISTERED COMMERCIAL FISHERMEN: STATES AND NORTHERN TERRITORY 1965-66

Industry	N.S.W.	Vic.	Qld	S.A.	W.A.(a)	Tas.	N.T.	Aust.
General fisheries . . . . .	2,420	1,566	2,250	(b)2,400	2,346	1,154	120	12,256
Edible oyster fisheries . . . . .	904	..	164	..	4	..	..	1,072
Pearl-shell and trochus-shell . . . . .	..	..	544	..	107	..	27	678
Whaling(c)—At sea . . . . .	..	..	..	..	44	..	..	44
Ashore . . . . .	..	..	..	..	42	..	..	42

(a) Figures are for the year ended December 1965.

(b) Estimated; the total number of licensed (including part-time, i.e. non-commercial) fishermen was 8,000.

(c) Estimated.

## REGISTERED COMMERCIAL FISHERMEN: AUSTRALIA, 1961-62 TO 1965-66

Industry	1961-62	1962-63	1963-64	1964-65	1965-66
General fisheries . . . . .	(a) 15,878	11,544	11,862	11,414	12,256
Edible oyster fisheries . . . . .	993	1,154	1,467	997	1,072
Pearl-shell and trochus-shell . . . . .	724	727	640	533	678
Whaling(b)—At sea . . . . .	123	85	42	45	44
Ashore . . . . .	164	90	40	38	42

(a) Not comparable with later years: includes part-time (non-commercial) licensed fishermen in South Australia. (b) Estimated.

## Production, processing and domestic marketing of fisheries products

## Fish

The following tables show details of the production of the main types of fish caught in each State and the Northern Territory in 1965-66 and throughout Australia for the years 1961-62 to 1965-66.

**FISH: PRODUCTION, BY TYPE, STATES AND NORTHERN TERRITORY, 1965-66**  
(<sup>0</sup>000 lb estimated live weight)

Type	N.S.W.	Vic.	Qld	S.A.	W.A.	Tas.	N.T.	Aust.
<b>Marine types—</b>								
Tuna . . . . .	4,350	64	10	13,217	47	67	..	17,755
Mullet . . . . .	6,247	679	4,695	505	1,989	34	3	14,152
Shark . . . . .	2,123	5,266	84	2,063	970	1,088	4	11,597
Australian salmon . . . . .	1,035	1,805	..	1,405	6,508	432	..	11,184
Snoek (barracouta) . . . . .	268	5,268	..	..	..	3,003	..	8,539
Flathead . . . . .	4,059	1,482	191	..	20	74	..	5,824
Whiting . . . . .	630	213	511	1,800	446	..	..	3,600
Snapper . . . . .	1,709	343	92	652	549	..	..	3,344
Morwong . . . . .	2,549	427	..	..	9	9	1	2,995
Mackerel . . . . .	217	..	1,839	..	233	2	7	2,298
Luderick . . . . .	1,433	147	118	..	..	..	..	1,698
Bream (incl. tarwhine) . . . . .	656	235	463	70	83	..	1	1,508
Leatherjacket . . . . .	1,435	34	..	..	25	..	..	1,494
Garfish . . . . .	215	276	130	741	63	46	1	1,471
Ruff . . . . .	..	126	..	376	939	..	..	1,442
Tailor . . . . .	300	75	785	..	198	..	..	1,357
Other . . . . .	4,257	1,685	2,150	901	2,265	199	337	11,795
<i>Total, marine</i> . . . . .	<i>31,480</i>	<i>18,124</i>	<i>11,067</i>	<i>21,731</i>	<i>14,343</i>	<i>4,953</i>	<i>355</i>	<i>102,053</i>
<b>Freshwater types</b> . . . . .	362	342	n.a.	320	..	36	..	(a) 1,060
<b>Grand Total</b> . . . . .	<b>31,842</b>	<b>18,466</b>	<b>a 11,067</b>	<b>22,051</b>	<b>14,343</b>	<b>4,989</b>	<b>355</b>	<b>a 103,113</b>

(a) Excludes freshwater fish caught in Queensland, particulars of which are not available.

**FISH: PRODUCTION, BY TYPE, AUSTRALIA, 1961-62 TO 1965-66**  
(<sup>0</sup>000 lb estimated live weight)

Type	1961-62	1962-63	1963-64	1964-65	1965-66
<b>Marine types—</b>					
Tuna . . . . .	10,616	11,006	17,932	15,838	17,755
Mullet . . . . .	13,242	13,736	12,496	12,146	14,152
Shark . . . . .	8,691	10,524	10,463	10,470	11,597
Australian salmon . . . . .	11,534	7,794	11,260	8,291	11,184
Snoek (barracouta) . . . . .	6,810	4,842	4,331	6,514	8,539
Flathead . . . . .	6,458	6,828	6,151	6,836	5,824
Whiting . . . . .	3,513	3,699	3,498	3,658	3,600
Snapper . . . . .	3,757	4,107	4,160	3,877	3,344
Morwong . . . . .	2,773	4,949	4,545	3,218	2,995
Mackerel . . . . .	1,631	2,192	2,215	2,316	2,298
Luderick . . . . .	1,020	1,311	1,293	1,356	1,698
Bream (incl. tarwhine) . . . . .	1,382	1,531	1,233	1,293	1,508
Leatherjacket . . . . .	2,192	1,955	1,125	1,343	1,494
Garfish . . . . .	1,464	1,644	1,740	1,422	1,471
Ruff . . . . .	1,188	1,360	1,093	1,507	1,442
Tailor . . . . .	1,148	955	1,627	1,748	1,357
Other . . . . .	9,780	9,941	10,907	11,401	11,795
<i>Total, marine</i> . . . . .	<i>87,200</i>	<i>88,375</i>	<i>96,067</i>	<i>93,234</i>	<i>102,053</i>
<b>Freshwater types(a)</b> . . . . .	1,260	1,309	1,015	1,183	1,060
<b>Grand total(a)</b> . . . . .	<b>88,460</b>	<b>89,684</b>	<b>97,082</b>	<b>94,417</b>	<b>103,113</b>

(a) Excludes freshwater fish caught in Queensland, particulars of which are not available.



**CRUSTACEANS: PRODUCTION, BY TYPE, STATES AND  
NORTHERN TERRITORY, 1965-66**

('000 lb gross weight)

Type	N.S.W.	Vic.	Qld	S.A.	W.A.	Tas.	N.T.	Aust.
Crayfish(a)	402	1,681	30	6,063	17,794	3,939	..	29,908
Prawns	4,016	11	6,034	..	2,485	..	1	12,547
Crabs	191	..	586	..	35	..	4	815
<b>Total</b>	<b>4,608</b>	<b>1,693</b>	<b>6,649</b>	<b>6,063</b>	<b>20,313</b>	<b>3,939</b>	<b>5</b>	<b>43,270</b>

(a) Includes freshwater crayfish caught in New South Wales and shovelnosed lobster taken in Queensland.

**CRUSTACEANS: PRODUCTION, BY TYPE, AUSTRALIA  
1961-62 TO 1965-66**

('000 lb gross weight)

Type	1961-62	1962-63	1963-64	1964-65	1965-66
Crayfish(a)	29,356	31,400	27,633	26,386	29,908
Prawns	9,322	12,615	13,369	12,076	12,547
Crabs	875	842	708	832	815
<b>Total</b>	<b>39,552</b>	<b>44,858</b>	<b>41,711</b>	<b>39,293</b>	<b>43,270</b>

(a) Includes freshwater crayfish caught in New South Wales and shovelnosed lobster taken in Queensland.

**Molluscs (edible)**

A fast-developing scallop production since 1964 led to scallop exports rising to 1.8 million pounds weight for the 1965-66 period. France provided the largest market.

**MOLLUSCS: PRODUCTION, BY TYPE, STATES, 1965-66**

('000 lb gross [in-shell] weight)

Type	N.S.W.	Vic.	Qld	S.A.	W.A.	Tas.	Aust.
Scallops	..	27,956	700	..	(a)	868	(b)29,524
Oysters	14,654	7	381	..	26	..	15,067
Abalone	356	961	..	19	..	1,600	2,937
Mussels	..	425	..	..	..	..	425
Squid	..	126	101	..	5	1	233
Octopus	..	31	..	..	3	..	34
Cuttlefish	..	2	..	..	1	..	3
<b>Total</b>	<b>15,010</b>	<b>29,508</b>	<b>1,182</b>	<b>19</b>	<b>35</b>	<b>2,468</b>	<b>(c) 48,223</b>

(a) Not available for publication.

(b) Excludes Western Australia.

(c) Incomplete see footnote (b).

**MOLLUSCS(a): PRODUCTION, BY TYPE, AUSTRALIA, 1961-62 TO 1965-66**  
(<sup>000</sup> lb gross [in-shell] weight)

Type	1961-62	1962-63	1963-64	1964-65	1965-66
Scallops . . .	5,172	(b) 6,498	(b) 15,373	(b) 24,739	(b) 29,524
Oysters . . .	12,613	13,029	12,775	14,636	15,067
Abalone . . .	..	..	192	966	2,937
Mussels . . .	646	683	410	334	425
Squid . . .	319	292	303	217	233
Octopus . . .	58	18	16	13	34
Cuttlefish . . .	7	1	1	1	3
<b>Total . . .</b>	<b>18,815</b>	<b>(c) 20,521</b>	<b>(c) 29,073</b>	<b>(c) 40,907</b>	<b>(c) 48,223</b>

(a) Excludes pipis, particulars of which are not available for publication. No pipis were taken in 1965-66.  
(b) Excludes Western Australia, particulars of which are not available for publication. (c) Incomplete; see footnote (b).

**Pearls, pearl-shell and trochus-shell**

In recent years the production of pearl-shell has declined, owing to the development of plastics. However, the advent of pearl culture has since created a growing demand for live pearl-shell.

**PEARL CULTURE OPERATIONS: AUSTRALIA, 1961 TO 1965**  
(Source: Fisheries Branch, Department of Primary Industry)

	1961	1962	1963	1964	1965
Purchases of shell    no. of shells tons	230,682 107.2	337,653 158.1	503,100 241.0	555,022 270.9	651,252 319.6
Production of—					
Cultured pearls—					
Round and baroque pearls no. momme(a)	11,122 6,121	11,041 8,205	30,512 18,279	58,839 35,892	65,735 40,098
Half pearls . . . no.	26,526	97,324	147,664	232,887	278,637
Manufacturing shell . . . tons	19.9	37.0	61.4	108.1	155.4

(a) A momme is a pearl weight measurement equivalent to 0.13 oz (avoirdupois).

**PEARL-SHELL AND TROCHUS-SHELL: PRODUCTION**  
**STATES AND NORTHERN TERRITORY, 1961-62 TO 1965-66**  
(<sup>000</sup> lb)

	1961-62	1962-63	1963-64	1964-65	1965-66
Pearl-shell(a)—					
Queensland(b)	860	788	578	645	585
Western Australia(c)	801	782	542	310	359
Northern Territory(b)	147	115	11	12	11
Australia . . . (d)	1,809	1,685	1,131	967	955
Trochus-shell—					
Queensland(b)	457	357	142	69	24

(a) Includes manufacturing shell produced from pearl culture operations. (b) Season ended January of years shown. Shell taken by Queensland luggers operating in Northern Territory waters is included in Queensland. (c) Season ended December of years shown. (d) Excludes pearl-shell taken by Japanese pearlers operating in Australian waters. The quantity taken in 1961-62 was 813,000 lb. The Japanese pearling fleet did not operate in Australian waters after 1961-62.

**Whales**

Only sperm whales were caught during the 1966 season and no quotas were imposed on the catch. Quotas previously set by the Department of Primary Industry were for the baleen species.

**WHALES TAKEN: AUSTRALIA, 1962 TO 1966**  
(Source: Fisheries Branch, Department of Primary Industry)  
(Number)

	1962	1963	1964	1965	1966
Baleen whales taken—					
Type—					
Humpback . . . . .	716	87	..	..	..
Blue . . . . .	..	1	..	..	..
Bryde . . . . .	..	..	..	..	..
Sei . . . . .	2	..	..	..	..
Sex—					
Male . . . . .	404	37	..	..	..
Female . . . . .	314	51	..	..	..
<i>Total baleen whales taken</i> . .	<i>718</i>	<i>88</i>	<i>..</i>	<i>..</i>	<i>..</i>
Humpback equivalent(a) . . . .	717	89	..	..	..
Quota of humpback whales(a) . .	1,300	550	..	..	..
Sperm whales taken—					
Male . . . . .	570	587	695	636	595
Female . . . . .	21	11	15	32	11
<i>Total sperm whales taken</i> . .	<i>591</i>	<i>598</i>	<i>710</i>	<i>668</i>	<i>606</i>
<i>Total whales taken</i> . . . .	<i>1,309</i>	<i>686</i>	<i>710</i>	<i>668</i>	<i>606</i>

(a) The quotas set in the years 1962 and 1963 by the Department of Primary Industry were in terms of humpback whales, and for this purpose 1 blue whale is taken to be equivalent of 2 fin, 2½ humpback, 6 sei, or 6 bryde whales.

**Processing of fish**

Quick-freezing is used at sea and ashore to preserve fish before delivery to consumers. The main technique employed in Australia is brine-freezing, as used extensively in the tuna and salmon fisheries.

Fish canning in Australia on a modern scale dates from 1937, before which the only fish-canning carried out was on an occasional basis by factories handling other foodstuffs. The main canneries handle tuna (Eden, New South Wales; Melbourne, Victoria; Port Lincoln, South Australia); Australian salmon (Eden, New South Wales; Melbourne, Victoria; Port Lincoln and Adelaide, South Australia; Albany, Western Australia; Margate, Tasmania); snoek (barracouta) (Melbourne and Portland, Victoria; Margate, Tasmania); scallops (Morningson, Victoria); and abalone (Melbourne, Victoria).

Other methods of fish processing include smoking and bottling, but these are undertaken on a minor scale only. Among the few fish by-products produced are small quantities of fish meal.

## FISH PROCESSING (EXCEPT FREEZING): AUSTRALIA, 1961-62 TO 1965-66

	1961-62	1962-63	1963-64	1964-65	1965-66
Number of factories . . . . .	20	25	25	30	29
Fish used(a)—	'000 lb	'000 lb	'000 lb	'000 lb	'000 lb
Whole . . . . .	18,494	15,447	17,506	16,464	16,778
Headed and/or gutted . . . . .	6,796	4,972	5,148	5,491	5,835
<i>Estimated live weight equivalent,</i> <i>fish used . . . . .</i>	26,500	21,300	23,600	22,900	23,600
Production(b)—					
Canned fish(c)—					
Australian salmon . . . . .	5,772	3,976	5,335	3,805	4,663
Tuna . . . . .	3,624	4,201	4,647	5,382	4,915
Other . . . . .	2,644	2,150	1,167	1,727	2,425
<i>Total, canned fish . . . . .</i>	12,040	10,327	11,149	10,914	12,003
Smoked fish . . . . .	181	286	274	222	237
Fish paste . . . . .	1,027	1,053	1,212	944	1,105
Fish meal(d) . . . . .	2,640	2,076	2,222	2,373	n.a.

(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 crayfish, lobsters, prawns, oysters, and clams, details of which are not available for publication. (c) Includes fish loaf, fish cakes, etc. (d) Excludes whale meat.

## Processed crustaceans and molluscs

Quick-freezing is also used to preserve crustaceans and molluscs. The chief technique employed to preserve crayfish and scallops is air blast freezing, while plate contact freezing is being used on an ever increasing scale for prawns, scallops and abalone. Crayfish for the domestic market are usually cooked whole and then frozen, as are some exported crayfish. However, the major proportion of crayfish exports consists of frozen raw craytails. Most prawns for domestic consumption are sold in a whole cooked condition. Some are also exported in this form, after freezing. As a rule, however, the majority of prawn exports consist of green headless prawns, sometimes de-veined, sometimes split in 'butterfly' style, but in all cases frozen into five-pound blocks. Scallops are normally frozen in cello-wrapped five-pound blocks, although packaging of individually frozen scallops in polythene pouches is growing in popularity for local consumer packs. Canned abalone is now packed for the Asian market, as well as abalone soup for domestic and overseas sale. Small quantities of frozen abalone are also now being exported to the United States of America and Asia.

## 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, 1962 TO 1966

(Source: Fisheries Branch, Department of Primary Industry)

	1962	1963	1964	1965	1966
Quantity of whale oil produced—					
Baleen oil . . . . . barrels(a)	30,849	3,865	..	..	..
Sperm oil . . . . .	24,833	23,860	27,534	25,002	24,252
Value of whale oil produced . . . . . \$'000	1,564	886	620	510	540
Value of by-products (meal, meat, solubles, etc.) . . . . .	448	138	120	244	398
<i>Total value of products . . . . .</i>	2,012	1,024	740	754	938

(a) 6 barrels = 1 ton.

**Domestic marketing of fisheries products**

Although virtually the whole of the tuna and Australian salmon catches and a large proportion of the snook (barracouta) catch are canned, the greater part of Australian fisheries production is marketed fresh or frozen.

Marketing arrangements for fresh fish vary from State to State. In New South Wales fish marketing is the responsibility of the New South Wales Fish 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. Fish for industrial use do not pass through any of these markets. The Queensland Fish Board sells all production on behalf of fishermen in that State, and has branches in eighteen centres, as well as depots at eight others. The Board also purchases fish on its own account to stabilise prices. In Victoria, Western Australia and Tasmania the marketing of fish is undertaken through agents. In South Australia the great majority of the fishermen are members of the South Australian Fishermen's Co-operative Ltd., which handles the whole of their production. Canned fish and frozen fish in the form of consumer packs are marketed mainly by the supermarket-type retail establishments. Oysters are usually sold live in the shell directly to restaurants, or are shelled and bottled before being sent to retailers.

**Value of fisheries production**

The following tables show details of the values of production of edible fisheries products, pearl-shell and trochus-shell for the years 1961-62 to 1965-66. *See also* the chapter Miscellaneous for an explanation of the value terms used.

**FISHERIES PRODUCTION: GROSS VALUE  
STATES AND NORTHERN TERRITORY, 1965-66  
(\$'000)**

Product	N.S.W.	Vic.	Qld	S.A.	W.A.	Tas.	N.T.	Aust.
Fish	5,210	2,231	(a)1,776	2,708	(b)1,256	491	57	(a)13,730
Crustaceans	2,152	1,183	2,332	3,334	12,448	2,557	2	24,008
Molluscs (edible)	2,801	989	106	4	(c) 7	252	..	4,159
Pearl-shell(d)	..	..	(e) 166	..	(f) 258	..	(e) 2	427
Trochus-shell	..	..	(e) 2	..	..	..	..	2

(a) Excludes freshwater fish caught in Queensland, particulars of which are not available. (b) Not comparable with previous years owing to a change in method of valuation. (c) Excludes scallops, particulars of which are not available for publication. (d) Queensland figure includes pearl-shell taken by Queensland luggers operating in Northern Territory waters. (e) Season ended January. (f) Season ended December.

**FISHERIES PRODUCTION: GROSS VALUE, AUSTRALIA  
1961-62 TO 1965-66  
(\$'000)**

Product	1961-62	1962-63	1963-64	1964-65	1965-66
Fish(a)	12,147	12,290	13,660	12,187	13,730
Crustaceans	14,959	16,030	15,629	22,386	24,008
Molluscs (edible)(b)	2,504	2,808	3,351	3,804	4,159
Pearl-shell(c)	(d) 722	668	391	371	427
Trochus-shell(c)	56	36	10	5	2

(a) Excludes freshwater fish caught in Queensland. (b) Excludes pipis in New South Wales (no pipis were taken in 1965-66) and scallops in Western Australia. (c) Season ended December (Western Australia) or January (Queensland and Northern Territory) of years shown. (d) Excludes pearl-shell taken by Japanese pearlers in Australian waters. The Japanese pearling fleet did not operate in Australian waters after 1961-62.

**FISHERIES: GROSS AND LOCAL VALUE OF PRODUCTION  
STATES AND NORTHERN TERRITORY, 1965-66  
(\$'000)**

State or Territory	Gross value(a)	Marketing costs	Local value(b)
New South Wales . . .	10,163	1,608	8,555
Victoria . . . . .	4,403	606	3,797
Queensland . . . . .	6,086	498	5,588
South Australia . . . .	6,048	754	5,294
Western Australia . . .	(c) 15,733	50	(c) 15,683
Tasmania . . . . .	3,300	552	2,747
Northern Territory . . .	61	n.a.	61
<b>Australia . . . . .</b>	<b>45,794</b>	<b>4,068</b>	<b>41,725</b>

(a) Gross production valued at principal markets. (b) Gross production valued at place of production. (c) Not comparable with previous years owing to a change in method of valuation.

In the following table the local value of fishing and whaling production and the local value per head of population are shown 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.

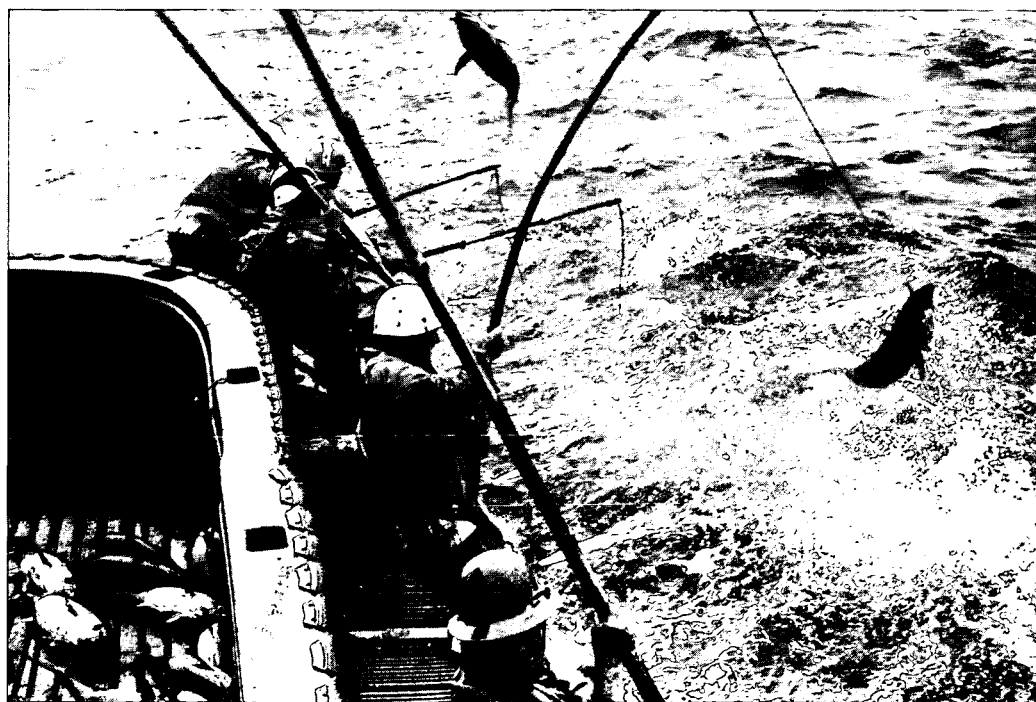
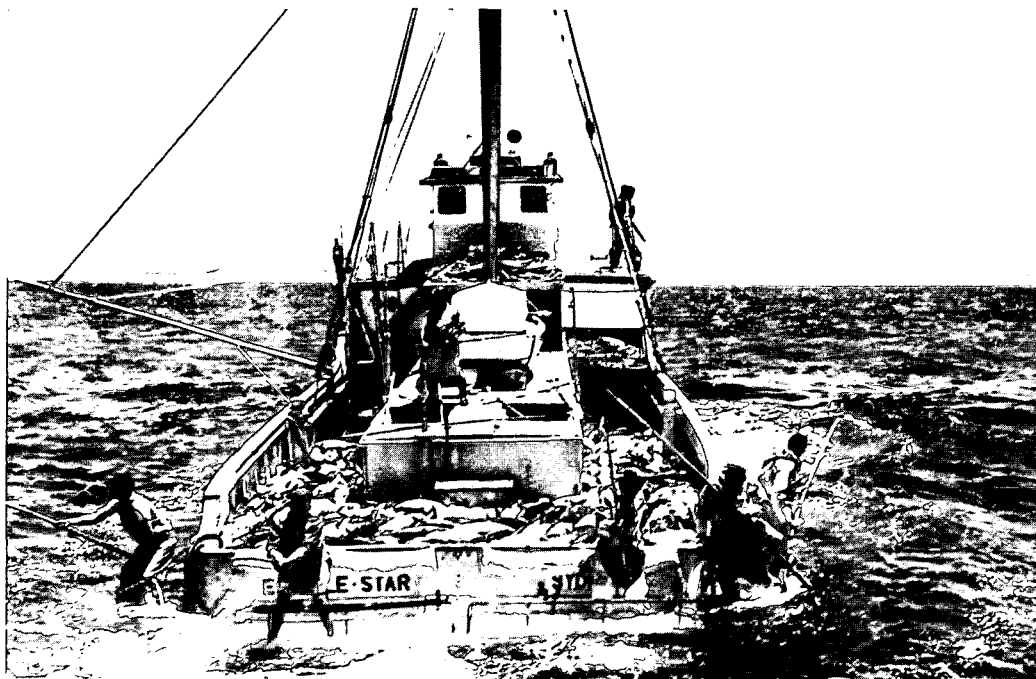
**FISHERIES: LOCAL VALUE OF PRODUCTION, STATES  
1961-62 TO 1965-66**

Year	N.S.W.	Vic.	Qld	S.A.	W.A.	Tas.	N.T.	Aust.
<b>LOCAL VALUE (\$'000)</b>								
1961-62 . . .	6,576	3,482	3,266	2,758	10,582	1,818	106	28,588
1962-63 . . .	7,600	3,248	3,844	2,946	11,128	1,770	86	30,622
1963-64 . . .	7,856	4,202	4,324	3,436	10,088	1,726	52	31,684
1964-65 . . .	8,263	(a) 3,212	5,298	4,480	15,167	2,194	71	38,685
1965-66 . . .	8,555	3,797	5,588	5,294	a 15,683	2,747	61	41,725

**LOCAL VALUE PER HEAD OF POPULATION  
(\$)**

1961-62 . . .	1.66	1.18	2.13	2.82	14.20	5.15	3.84	2.70
1962-63 . . .	1.90	1.08	2.47	2.96	14.52	4.94	2.98	2.84
1963-64 . . .	1.93	1.37	2.73	3.37	12.81	4.76	1.65	2.88
1964-65 . . .	2.00	(a) 1.02	3.28	4.27	18.83	5.99	2.09	3.45
1965-66 . . .	2.04	1.19	3.39	4.91	(a) 19.01	7.44	1.68	3.65

(a) Not comparable with previous years owing to a change in method of valuation.



**PLATE 49**

**Pole-and-live-bait tuna fishing**

*Photos Plates 49 and 50: Australian News and Information Bureau*

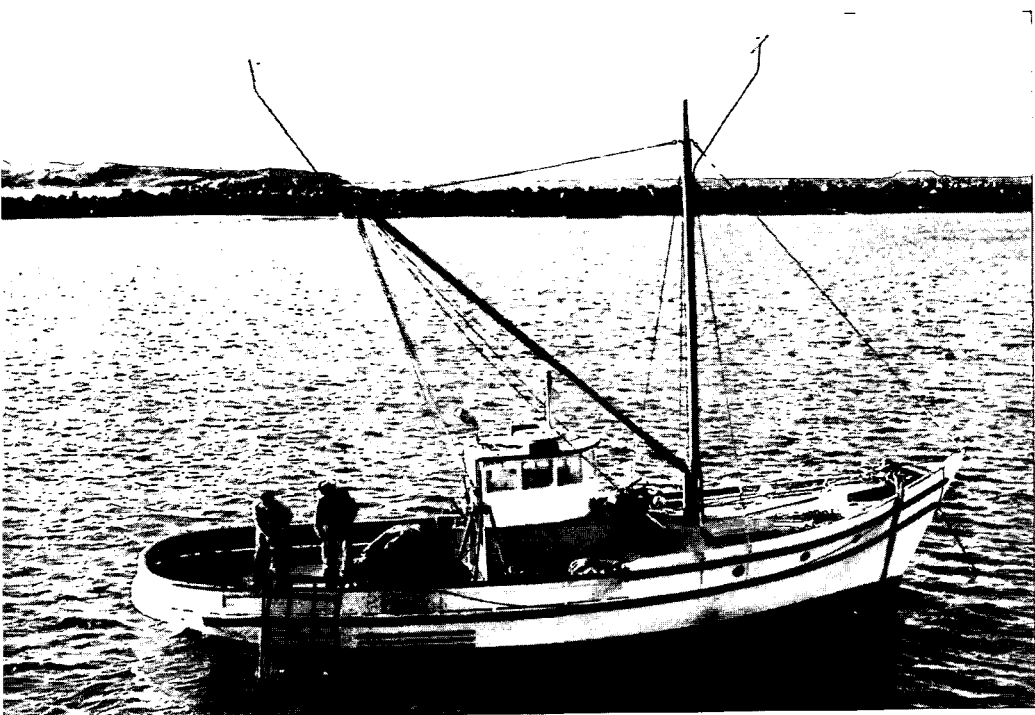


PLATE 50  
Crayfish boat and catch





**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 table below. 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, 1961-62 TO 1965-66**  
 (lb edible weight per head per annum)

	1961-62	1962-63	1963-64	1964-65	1965-66
<b>Fresh or frozen—</b>					
<b>Fish—</b>					
Australian origin . . . . .	3.1	3.2	3.3	3.2	3.3
Imported . . . . .	2.7	2.7	3.1	3.0	3.8
Crustaceans and molluscs . . . . .	1.0	1.4	1.2	1.5	1.5
<b>Cured (including smoked and salted) . . . . .</b>	<b>0.9</b>	<b>1.0</b>	<b>1.0</b>	<b>0.7</b>	<b>0.9</b>
<b>Canned—</b>					
Australian origin . . . . .	0.8	0.9	0.8	1.0	1.1
Imported . . . . .	2.0	1.9	2.3	2.4	2.4
<b>Total . . . . .</b>	<b>10.5</b>	<b>11.1</b>	<b>11.7</b>	<b>11.8</b>	<b>13.0</b>

**Overseas trade in fisheries products**

Values shown in this section are expressed as \$ f.o.b. port of shipment. The tables of exports relate to Australian produce only, but quantities and values quoted in the text sometimes include re-exports, the amounts involved, however, generally being small.

**Edible fisheries products**

The United Kingdom and Japan each supplied 25 per cent of the value of edible fisheries products imported in 1965-66, South Africa (9 per cent) and Canada (8 per cent) being the other principal suppliers.

The value of crayfish tails exported in 1965-66 was 74 per cent of the value of all exports of edible fisheries products. Of all crayfish tails exported in 1965-66, 96 per cent (9,335,000lb, valued at \$17,443,000) were consigned to the United States of America.

The table below gives further details of Australia's overseas trade in edible products in the years 1963-64, 1964-65 and 1965-66.

**OVERSEAS TRADE IN EDIBLE FISHERIES PRODUCTS: AUSTRALIA  
1963-64 TO 1965-66**

	Quantity ('000 lb)			Value (\$'000 f.o.b.)		
	1963-64	1964-65	1965-66	1963-64	1964-65	1965-66
<b>IMPORTS</b>						
Fresh and frozen(a)	40,177	39,965	50,666	10,384	10,671	13,972
Smoked, dried and salted	10,430	8,438	10,516	2,299	2,013	2,551
Potted and concentrated	184	200	194	130	159	206
Canned—						
Herrings	4,376	4,773	6,528	934	1,060	1,384
Salmon	11,642	11,912	11,145	5,475	6,228	6,522
Sardines and pilchards	6,494	6,341	6,759	1,967	2,003	2,228
Tuna	497	316	216	149	90	65
Other fish	1,192	1,581	1,973	264	461	579
Crustaceans and molluscs	887	1,026	1,527	580	756	1,096
<i>Total canned</i>	<i>25,087</i>	<i>25,949</i>	<i>28,148</i>	<i>9,368</i>	<i>10,598</i>	<i>11,874</i>
Products not elsewhere included	73	1,643	1,599	13	581	811
<b>Grand total</b>	<b>75,952</b>	<b>76,196</b>	<b>91,123</b>	<b>22,194</b>	<b>24,023</b>	<b>29,414</b>

**EXPORTS**

(Australian produce only; excludes re-exports)

Fresh and frozen(b)—						
Fish	3,338	2,725	4,857	433	330	782
Crustaceans and molluscs—						
Crayfish tails	9,121	7,801	9,735	10,931	13,600	18,079
Prawns	3,990	2,270	1,822	2,843	1,875	1,616
Other		2,629	2,618		1,420	1,367
Boiled and frozen crustaceans and molluscs		625	2,194		521	1,964
Prepared and preserved—						
Fish	202	246	277	47	93	97
Crustaceans and molluscs	87	553	884	34	290	458
Products not elsewhere included	20	8	70	28	6	43
<b>Grand total</b>	<b>16,758</b>	<b>16,857</b>	<b>22,457</b>	<b>14,315</b>	<b>18,133</b>	<b>24,406</b>

(a) Excludes frozen smoked, which is included in item Smoked, dried etc.. (b) Excludes frozen smoked, which is included in item Products not elsewhere included.

**Pearls**

Pearls valued at \$523,000 were imported into Australia in 1965-66. This was 52 per cent less than the value imported in 1964-65 (\$1,078,000). In 1965-66 imports of pearls valued at \$505,000 (97 per cent of the total value of pearl imports) originated in Japan.

Cultured pearls exported from Australia in 1965-66 were valued at \$1,534,000, \$235,000 more than 1964-65. In 1965-66 cultured exports consigned to Japan were valued at \$1,452,000, 95 per cent of the value of all cultured pearls shipped in that year. The value of natural pearls exported from Australia (excluding re-exports) in 1965-66 was \$39,000, an increase of \$11,000 compared with 1964-65 (\$28,000). In 1965-66 natural pearls consigned to Japan were valued at \$29,000, 74 per cent of the value of natural pearls shipped in that year.

**Pearl, etc. shell and marine animal oils**

Of the pearl-shell exported in 1965-66, 337,000 lb (29 per cent) were consigned to the Federal Republic of Germany, 336,000 lb (29 per cent) to Japan, and 320,000 lb (28 per cent) to the United States of America. Exports of trochus-shell in 1965-66 were 24,000 lb, 89 per cent less than in 1964-65. Imports of shells included quantities of pearl, trochus and green snail shell from New Guinea, Papua and the Pacific Islands, which were subsequently re-exported from Australia.

**OVERSEAS TRADE IN SHELLS: AUSTRALIA, 1963-64 TO 1965-66**

	Quantity ('000 lb)			Value (\$'000 f.o.b.)		
	1963-64	1964-65	1965-66	1963-64	1964-65	1965-66
<b>Imports—</b>						
<i>Total imports</i>	166	81	88	32	23	31
<b>Exports(a)—</b>						
Pearl-shell	1,226	1,121	1,141	402	425	427
Trochus-shell	295	202	24	30	19	2
Other	61	21	18	19	8	8
<i>Total exports</i>	1,582	1,344	1,183	452	452	437

(a) Australian produce only; excludes re-exports.

**OVERSEAS TRADE IN MARINE ANIMAL OILS: AUSTRALIA  
1963-64 TO 1965-66**

	Quantity ('000 gal)			Value (\$'000 f.o.b.)		
	1963-64	1964-65	1965-66	1963-64	1964-65	1965-66
<b>Imports—</b>						
Whale oil from—						
Japan	527	1,208	1,195	466	1,162	1,084
Norway	..	74	98	..	68	91
Other countries	126	171	88	154	188	123
<i>Total whale oil</i>	653	1,453	1,281	620	1,418	1,298
Cod liver oil	86	81	108	76	79	97
Unrefined fish oils	120	125	82	112	119	76
Other	45	43	21	55	63	28
<i>Total imports</i>	904	1,702	1,492	863	1,679	1,499
<b>Exports(a)—</b>						
Whale oil	1,253	1,738	1,288	927	864	620
Other	..	..	2	..	..	1
<i>Total exports</i>	1,253	1,738	1,290	927	864	621

(a) Australian produce only; excludes re-exports.

