CHAPTER 14

FORESTRY AND FISHERIES

FORESTRY

Source of statistics

Statistics relating to total forest area have been derived from data supplied by various authorities concerned with forestry administration and by private forestry companies. Other information on forested areas has been provided by the Forestry and Timber Bureau. Statistics of timber and by-products have been compiled from the annual factory collections undertaken by the Statisticians in the several States. Figures of production of gums, resins and tanning barks have been provided by the State forestry authorities. Data of imports and exports of forest products and timber products have been compiled by the Australian Statistician as part of the statistics of overseas trade. The figures shown relate, in general, to years ended 30 June.

Objects of forestry

The main object of forestry authorities is to manage the forests of the country in a manner that will provide maximum benefits, both direct and indirect, for the community. The authorities aim to promote the multiple use concept in management under which forests remain in perpetuity as sources of valuable raw material, areas of natural beauty, sanctuaries for fauna and flora, and areas for scientific investigation and watershed protection. The provision of special protected areas such as forest parks for recreational use and for the conservation of plants and animals is an objective. Forestry also aims at improving existing forests and woodlands by properly controlled harvesting, by protection from such destructive agencies as fire, insects and diseases, and by inducing regeneration. The provision of a partial tree cover on denuded lands where this cover is necessary for protective purposes, and a complete cover when the land is more suited under forest than under other land use, are further aims of forestry.

General account of forests and timbers

The area of land in Australia suitable for the production of commercial timber as a primary crop is very small in comparison with the size of the continent. Productive or potentially productive forests cover 43 million hectares, and of these 99 per cent are natural forests. Thirty-five million hectares of the natural forests are dominated by eucalypts. For a description of the types of timber grown in Australia *see* Year Book No. 61, Chapter 24.

Extent of forested areas

The total area of forest, 43.0 million hectares, is based on a definition of forest which includes plantations, native forest with an existing or potential mature height of 20 metres or more, and cypress pine forest in commercial use regardless of height. The following tables show classifications of total forest area in Australia by forest type and by ownership.

CLASSIFICATION OF FOREST AREAS BY FOREST TYPE, 30 JUNE 1976

(*Source:* Forestry and Timber Bureau)

('000 hectares)

Forest type	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Aust.*
Rain forest	300	..	1,068	..	3	(*a*)464	37	..	1,872
Eucalypt—									
Productivity(*b*) I	1,618	648	212	..	176	(*a*)460	..	..	3,114
" (*b*) II	3,196	4,752	1,381	..	2,915	(*a*)1,804	..	(*c*)53	14,101
" (*b*) III	8,362	635	3,347	..	68	..	..	..	12,402
Tropical eucalypt and paper bark	..	..	4,078	..	7	..	2,450	..	6,535
Cypress pine	1,908	3	1,683	..	2	..	777	..	4,373
Plantations	(*d*)159	148	127	91	47	40	4	14	630
Total forest area	15,543	6,186	11,896	91	3,218	2,768	3,268	67	43,037

(*a*) As at 30 June 1972. (*b*) Eucalypt forest types have been grouped into three classes in descending order of productivity. (*c*) Includes areas of Eucalypt, Productivity Classes I and III. (*d*) As at 31 March 1976.

CLASSIFICATION OF FOREST AREAS BY OWNERSHIP, 30 JUNE 1976

(*Source:* Forestry and Timber Bureau)

('000 hectares)

Ownership	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Aust.*
State forestry(*a*)	3,027	2,409	3,338	77	1,975	1,219	312	15	12,372
Other public(*b*)	6,409	3,039	6,607	..	494	363	2,640	51	19,603
National parks(*c*)	775	138	521	..	124	181	316	1	2,056
Private(*d*)	5,332	600	1,430	14	625	1,005	..	..	9,006
Total	**15,543**	**6,186**	**11,896**	**91**	**3,218**	**2,768**	**3,268**	**67**	**43,037**

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

Plantations

The indigenous forest of Australia does not contain adequate supplies of coniferous timber, and Australia's requirements have had to be met largely by imports. As a result of the planned policy of the forest services and of several private commercial organisations, the area of coniferous plantations, mainly of exotic species, is steadily increasing. It was natural that this aspect of forestry should receive earliest attention in South Australia, as this is the State most poorly endowed with natural forest. South Australia now has a large area of planted conifers, and for some years has been obtaining considerable quantities of timber from these plantations. Production is also increasing in other States, and the thinnings from their plantations are already supplying a significant volume of timber. At 30 June 1976, the total area of coniferous plantations was about 630,000 hectares.

The total production of roundwood from Australia's coniferous plantations is now more than 3.0 million cubic metres per annum and is expected to increase substantially during the next decade.

A special article giving a detailed account of the history and development of coniferous plantations and of the characteristics of individual species is included in Year Book No. 59, page 880.

Broadleaved plantations (mainly *Eucalyptus* and *populus ssp.*) comprise 34,400 hectares, a much smaller area than for the coniferous plantations. Plantations of ash eucalypts (including *E. delegatensis* and *E. regnans*) for pulpwood in Victoria, and poplar plantations in the Eastern States make up a substantial proportion of the total broadleaved plantation area. The following tables show total area of plantations in Australia classified by species and by ownership.

AREA OF PLANTATIONS CLASSIFIED BY SPECIES, 30 JUNE 1976

(*Source:* Forestry and Timber Bureau)

(Hectares)

	N.S.W.(*a*)	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Aust.*
Coniferous plantations—									
Pinus radiata	124,660	128,029	2,445	83,396	25,303	38,705	..	13,293	415,831
Pinus pinaster	..	535	..	6,009	21,385	..	..	..	27,929
Pinus elliottii	12,694	..	70,497	..	..	..	..	..	83,191
Pinus caribaea	..	..	8,070	..	..	..	1,657	..	9,727
Araucaria species	1,457	..	37,221	..	..	..	..	..	38,678
Other coniferous species	5,250	5,368	5,724	692	..	244	1,900	896	20,074
Total	**144,061**	**133,932**	**123,957**	**90,097**	**46,688**	**38,949**	**3,557**	**14,189**	**595,430**
Broadleaved plantations—									
Eucalyptus species	13,386	13,494	2,569	1,061	..	1,050	..	..	31,560
Populus species	1,644	445	..	..	..	..	..	..	2,089
Other broadleaved species	..	183	536	..	..	8	..	..	727
Total	**15,030**	**14,122**	**3,105**	**1,061**	..	**1,058**	..	..	**34,376**
Grand total	**159,091**	**148,054**	**127,062**	**91,158**	**46,688**	**40,007**	**3,557**	**14,189**	**629,806**

(*a*) As at 31 March 1976.

AREA OF PLANTATIONS CLASSIFIED BY OWNERSHIP, 30 JUNE 1976

(*Source:* Forestry and Timber Bureau)

(Hectares)

Ownership(a)	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Aust.*
Coniferous plantations—									
State forestry	115,526	67,730	99,300	75,636	39,074	26,960	3,557	14,189	441,972
Other public	592	3,501	..	95	..	..	..	..	4,188
Private	27,943	62,701	24,657	14,366	7,614	11,989	..	..	149,270
Total	144,061	133,932	123,957	90,097	46,688	38,949	3,557	14,189	595,430
Broadleaved plantations—									
State forestry	6,659	5,563	2,060	1,061	..	456	..	..	15,799
Other public	500	1,368	..	..	..	..	..	..	1,868
Private	7,871	7,191	1,045	..	..	602	..	..	16,709
Total	15,030	14,122	3,105	1,061	..	1,058	..	..	34,376
Grand total	159,091	148,054	127,062	91,158	46,688	40,007	3,557	14,189	629,806

(*a*) For definitions of the term 'State forestry', 'Other public' and 'Private', *see* footnotes to the table Classification of Forest Areas by Ownership on page 346.

Australian Government assistance for State softwood forestry operations

Under proposed new legislation the Australian Government will be authorised to enter into agreements with each of the States to provide financial assistance for the period 1977–78 to 1981–82 to cover the cost of maintaining those softwood forestry plantations previously established with Commonwealth assistance under the *Softwood Forestry Agreements Acts* of 1967, 1972 and 1976. Under these three agreements some $55.6 million has been provided to the States by way of loans to meet the cost of the establishment of some 100,000 hectares of plantations over and above certain levels of State plantings. The 1976 Agreement provided for a one year extension to the previous program, but assistance was limited to $6.0 million.

The assistance for the maintenance program will be provided by way of loans repayable over 20 years with repayments commencing 15 years after the date of each advance. Interest will either be capitalised over the deferment period, or paid as it falls due, depending upon State preferences.

Consideration is being given to the provision of assistance for the purchase of previously-cleared land for expansion of softwood plantations.

Payments under the proposed Act will be limited to $4.2 million in 1977–78, but thereafter the amounts provided will depend on State requirements for the maintenance component and any decision regarding further plantings.

Forest administration and research

Forestry and Timber Bureau

The functions of the Forestry and Timber Bureau were laid down in the *Forestry and Timber Bureau Act* 1930. They included forestry research and education, the study of timber supply, and advice to the Commonwealth Government on forestry matters. Following the transfer of the Australian Forestry School to the Australian National University in 1964 as the Department of Forestry in the University, the research functions of the Bureau were taken over by the Commonwealth Scientific and Industrial Research Organisation (CSIRO) on 1 July 1975 as the nucleus of its Division of Forest Research. The remaining non-research functions of the Bureau, which include policy advice formulation, economic studies and the collection and dissemination of information and statistics on forest resources and industry, are administered by the Department of Primary Industry.

Commonwealth Scientific and Industrial Research Organisation

The Division of Forest Research covers a wide range of studies including the following: forest genetics, controlled environment, forest nutrition, forest botany, tree seeds, forest ecology, forest entomology and pathology, fire protection and watershed management. The Division maintains six regional establishments in the States and the Northern Territory. These research stations are run on a co-operative basis with State forest services and private forest companies or other Government instrumentalities. The Divisions of Building Research and Chemical Technology carry out a wide range of investigations relating to the properties of wood and the uses of wood and wood products. Research on processing logs and timber, solid and composite wood products, timber engineering,

and the applications of wood in building is undertaken by the Division of Building Research. The Division of Chemical Technology was created in February 1974 following a reorganisation of the CSIRO research effort in which the previous Division of Applied Chemistry ceased to exist as a separate entity. The research program of the new Division of Chemical Technology is directed towards the recycling of resources, utilisation of renewable resources, and the protection and conservation of natural resources. Problems of the pulp and paper industry, and bushfire research are receiving particular attention.

Most of the present forest products activities of both Divisions are conducted at the CSIRO Forest Products Laboratory in South Melbourne. The Divisions provide assistance to individuals and industry, administer courses of instruction on timber properties and usage, and maintain co-operative projects with overseas authorities operating in the same fields.

Forestry in the Territories

The management of forests in the Australian Capital Territory is the responsibility of the Forests Branch of the Department of the Capital Territory. Forests in the Northern Territory are under the control of the Forestry Section of the Department of the Northern Territory.

Forestry activities of the States

Forestry on State-owned lands in the various States is the responsibility of the respective State Governments, but they do not exercise any control over forestry activities on private property. The powers and functions of State forest authorities are laid down under forest Acts and Regulations. In each State there is a department or commission to control and manage State forests. Its functions include the introduction of proper measures for the control and management of forest land; the protection of forest land; the conversion, marketing and economic utilisation of forest products; the securing of an adequate and permanent reservation of State forests; and the establishment and maintenance of coniferous forests to remedy the existing deficiency of conifers in Australia. All State forest services are actively engaged on research programs. Annual reports are issued by each State forest authority.

In addition to developing permanent forest reserves in each State, foresters are surveying all forested Crown lands with a view to obtaining dedications of new State forests to add to the permanent forest estate or to release for other uses areas unsuitable for forestry. In the States, publicly-owned land permanently reserved or dedicated primarily for timber production amounts to 12 million hectares, the timber on a further 19.6 million hectares not specifically reserved for permanent timber production being under the control of the Crown.

Private forestry

Privately-owned lands contribute considerably to the total production from Australian forests. The most important areas of managed native forest in private ownership are the forests owned by pulp and paper companies. Schemes of financial assistance to individual land owners—designed primarily to encourage establishment and management of coniferous plantations—have been introduced by the Governments of New South Wales and Victoria.

The area of privately-owned coniferous plantations is rapidly increasing and, here again, the pulp and paper companies are very active. In step with the increase in afforestation programs, the number of professional foresters employed in private forestry enterprise is increasing, while several are engaged on research.

The area of plantations established by private companies and individuals is included in the table on page 347.

Forestry education

The Australian National University's Department of Forestry in Canberra and the School of Forestry of the University of Melbourne offer undergraduate courses leading to a Bachelor of Science degree in forestry. Universities in all States have facilities for post-graduate studies for forestry graduates. Foresters for the Forests Commission of Victoria are trained at a departmental Forestry School at Creswick, Victoria. States other than Victoria offer traineeships to students selected for university training in forestry. These traineeships support the students and meet their expenses throughout the four year university course. Successful graduates are appointed as forestry officers in the State Forest Services. The Commonwealth Government also offers forestry scholarships to cover the cost of university training in forestry for those selected. A limited number of post-graduate scholarships are also available.

The Australian Forestry Council

The Australian Forestry Council comprises the Ministers responsible for forestry in the six State Governments and the Commonwealth Government.

The Council is intended to provide the means for the mutual exchange between the State and Commonwealth Governments of information and views on forestry. It co-ordinates research into problems affecting the establishment, development, management, and fire protection of all forests, and the utilisation of forest products. It assists in co-ordinating the work of State and Commonwealth Governments and also private enterprise in the development of Australian forestry.

The Council is supported by a Standing Committee consisting of the Director-General of the Forestry and Timber Bureau, the heads of each of the six State Forest Services, the Chief of the Division of Forest Research, CSIRO, and the Secretary of the Department of the Northern Territory.

Employment in forestry

In the following table details are shown of the number of persons employed by State forestry departments, the Department of the Capital Territory, the Department of the Northern Territory, the Forestry and Timber Bureau in the relevant States and Territories, and the private sector of the forestry industry at 30 June 1976. The table excludes staff of forestry training establishments.

PERSONS EMPLOYED IN FORESTRY(*a*), 30 JUNE 1976

Occupational group	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Aust.*
Professional staff—									
Foresters	207	249	125	55	71	77	12	40	836
Others	83	69	110	32	5	15	..	31	345
Field and other technical staff	83	285	125	60	297	200	42	58	1,150
Clerical staff	480	306	276	137	83	157	27	48	1,514
Labour(*b*)	1,289	1,257	1,414	379	532	591	121	119	5,702
Extraction(*c*)	2,713	890	2,350	191	846	2,034	12	69	9,105
Total	**4,855**	**3,056**	**4,400**	**854**	**1,834**	**3,074**	**214**	**365**	**18,652**

(*a*) The Forestry and Timber Bureau has provided figures for employment within its own organisation. (*b*) Staff engaged in silvicultural forest works, etc. (*c*) Staff engaged in felling, carting, etc. Includes direct employees only.

Forest production

FOREST PRODUCTION(*a*) 1975-76

		N.S.W.	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Aust.*
Production of logs for sawing, peeling, slicing or pulping—										
Broadleaved—										
Eucalypt and related species	'000 m³	1,985	1,774	480	7	1,102	3,347	..	..	8,695
Rain forest species	„	88	..	167	..	..	..	..	..	255
Coniferous—										
Indigenous forest conifers—										
Cypress	„	566	..	175	..	..	..	1	..	2,705
Other	„		..	42	..	..	10	..	..	
Plantation grown conifers	„		531	210	921	45	73	..	131	
Total	„	**2,639**	**2,305**	**1,073**	**928**	**1,148**	**3,430**	**1**	**131**	**11,655**
Gross value of forest products(*b*)—										
Logs(*c*)	$'000	39,106	46,354	21,233	15,519	14,669	42,496	30	1,731	181,137
Other forest products(*d*)	„	17,299	6,880	7,414	2,696	8,735	4,495	18	123	47,661
Total	„	**56,405**	**53,234**	**28,647**	**18,215**	**23,404**	**46,991**	**48**	**1,854**	**228,798**
Local value of forest products(*e*)—										
Total	„	**56,365**	**52,536**	**19,585**	**18,188**	**21,717**	**40,674**	**48**	**1,854**	**210,967**

(*a*) Excludes some production from private land thought to be relatively small, details of which are not available. (*b*) Gross production is valued at principal markets. (*c*) *See* footnote (*c*) to the table Forest Production: Australia, below. (*d*) Includes firewood, sleepers, transomes, girders, bridge timbers, mining timber, poles, piles, charcoal (forest production only), tanning bark, essential oils, eucalyptus leaves, crude rutin. (*e*) Gross production valued at place of production. *See* footnote (*b*) above.

FOREST PRODUCTION(a): AUSTRALIA

		1971–72	1972–73	1973–74	1974–75	1975–76
Production of logs for sawing, peeling, slicing or pulping—						
Broadleaved—						
Eucalypt and related species	'000 m³	7,606	8,381	9,423	9,653	8,695
Rain forest species	„	370	396	316	328	255
Coniferous—						
Indigenous forest conifers—						
Cypress	„	333	350	346	321	2,705
Other	„	71	80	61	58	
Plantation grown conifers	„	2,057	2,272	2,287	2,487	
Total	„	**10,436**	**11,478**	**12,433**	**12,847**	**11,655**
Gross value of forest products(b)—						
Logs(c)	$'000	115,257	133,964	159,397	172,833	181,137
Other forest products(d)	„	35,921	36,610	33,946	39,806	47,661
Total	„	**151,177**	**170,574**	**193,344**	**212,639**	**228,798**
Local value of forest products(e)—						
Total	„	**138,809**	**154,919**	**176,213**	**195,445**	**210,967**

(a) Excludes some production from private land, thought to be relatively small, details of which are not available. (b) *See* footnote (b) to the table Forest Production, 1975–76, above. (c) Included in this category are amounts attributable to sawmillers who carry out their own logging activities as a secondary part of their operations. As such, the values are attributable to the sawmilling industry which is part of manufacturing industry. However, the amount has been included in this table so that the overall value of forest products might be shown. The amount in question was estimated to be $29.5 million in 1969–70 or 30.5 per cent of the total of $96.6 million. An estimate of the amount for subsequent years is not available. (d) Includes firewood, sleepers, transomes, girders, bridge timbers, mining timber, poles piles, charcoal (forest production only), tanning bark, essential oils, eucalyptus leaves, crude rutin. (e) Gross production valued at place of production. *See* footnote (b) to the table above.

Timber and timber products

The selected details shown below have been compiled from the annual census of manufacturing. For further details of the Manufacturing Census *see* Chapter 17, Manufacturing and Internal Trade.

MANUFACTURING ESTABLISHMENTS(a)—SUMMARY OF OPERATIONS, 1975-76

Industry class	*ASIC code(b)*	*Number of establishments operating at end of June*	*Persons employed (c)*	*Turnover*	*Value added*	*Fixed capital expenditure (outlay on fixed tangible assets less disposals)*
		No.	No.	$'000	$'000	$'000
Log sawmilling	2511	915	14,293	319,513	194,207	12,568
Plywood and manufactured boards	2513	78	6,177	195,232	89,204	15,230

(a) All manufacturing establishments owned by multi-establishment enterprises and single establishment enterprise; with four or more persons employed. (b) Australian Standard Industrial Classification. (c) Average over whole years includes working proprietors.

TIMBER AND SELECTED TIMBER PRODUCTS PRODUCED

Item		*1972–73*	*1973–74*	*1974–75(a)*	*1975–76(a)*
Undressed sawn timber—					
Recovered from sawn logs—					
Australian grown—					
Broadleaved	'000 cu m	2,561	2,563	2,407	2,988
Coniferous	,,	848	773	823	745
Total	,,	**3,408**	**3,336**	**3,230**	**3,733**
Woodchips (green weight)—					
Hardwood (broad leaved)	'000 tonnes	2,445	3,070	3,146	2,603
Plywood—					
Commercial—(surface measure)	'000 sq m	9,723	7,168	6,347	5,963
(1 mm basis)	"	59,196	46,956	30,413	35,192
Waterproof—(surface measure)	,,	4,050	4,884	4,430	2,920
(1 mm basis)	,,	44,625	51,687	35,716	31,648
Particle board (resin bonded)	cu m	n.a.	n.a.	389	460
Wood pulp—					
Chemical	tonne	153,949	169,713	172,274	163,582
Mechanical	,,	378,543	446,867	404,684	392,675
Other	,,				
Paper—					
Newsprint	tonne	199,054	204,075	196,346	206,228
Printings	,,	57,404	74,229	58,864	46,510
Writing (incl. cartridge)	,,	80,720	99,744	100,351	69,943
Kraft	,,	299,891	347,745	284,535	301,516
Blotting	,,				
Duplicating	,,	32,608	41,136	37,313	29,381
Other paper	,,				
Tissue and sanitary papers	,,	77,422	90,033	92,457	88,716
Paperboard (incl. strawboard)	,,	411,246	443,905	378,324	369,517

(a) Excludes production of small single establishment enterprises with less than four persons employed and establishments engaged in non-manufacturing activities but which may carry on, in a minor way, some manufacturing.

Woodchips

On 24 April 1976, under direction of the Australian Government, the Standing Committee on Science and the Environment announced the start of an inquiry into the environmental impact of the woodchip industry. The scope of the inquiry covered all woodchip programs in Australia engaged in production for export or for the domestic market and their immediate environmental impact, i.e. the impact on soil, air and water and on forest fauna and flora. The findings of the Standing Committee on Science and the Environment are shown in the Committee's report *Woodchips and the Environment* issued in 1977 by the Australian Government Publishing Service. This report includes considerable statistical and descriptive material.

The woodchip industry entails the procurement of wood and its mechanical reduction to chips about the size of an Australian 50 cent piece. These chips are either exported for pulping or retained for use in domestic pulping operations. In 1975–76 the production of hardwood chips in Australia amounted to 2,603,000 tonnes.

Imports

IMPORTS OF CRUDE WOOD AND TIMBER

		Quantity			Value ($'000 f.o.b.)		
		1973–74	1974–75	1975–76	1973–74	1974–75	1975–76
Crude wood, and timber—							
Wood waste and charcoal		..	..	..	13	26	14
Wood in the rough or roughly squared	'000 cu m	104	43	156	5,002	1,777	2,221
Wood shaped or simply worked—							
Railway or tramway sleepers	,,	..	13	22	..	1,863	3,458
Timber, sawn lengthwise, sliced or peeled, but not further prepared, of a thickness exceeding 5 mm—							
Conifer—							
Douglas fir	,,	461	383	427	37,931	30,097	36,773
Hemlock and balsam	,,	165	66	65	10,929	4,692	3,992
Radiata pine	,,	50	39	5	2,551	2,594	464
Redwood	,,	18	3	9	2,636	450	1,577
Western red cedar	,,	109	86	80	13,120	9,056	10,252
Other	,,	27	24	22	2,236	(a)2,066	(b)2,059
Total conifer	,,	*830*	*784*	*608*	*69,403*	*48,955*	*55,117*
Non-conifer(c)	,,	380	268	275	34,702	23,795	27,494
Timber (including blocks, strips, etc.), planed, tongued, grooved, rebated, etc., but not further manufactured—							
Conifer	'000 cu m	23	29	41	2,118	3,405	4,684
Non-conifer	,,	35	38	50	4,172	4,841	7,322

(a) Includes a value of $5,700 for which no quantity has been included. (b) Includes a value of $11,000 for which no quantity has been included. (c) Total values for this item for 1973–74, 1974–75 and 1975–76 include values of $100,000, $181,000 and $134,000 respectively, for which no quantities have been included.

Exports

EXPORTS OF CRUDE WOOD AND TIMBER(a)

		Quantity			Value ($'000 f.o.b.)		
		1973–74	1974–75	1975–76	1973–74	1974–75	1975–76
Crude wood, and timber—							
Wood waste and charcoal (including shell and nut charcoal)	'000 m^3	..	..	..	3	44	12
Pulpwood	,,	6	45	54	562	1,139	1,078
Wood in the rough or roughly squared	,,	7	13	2	607	629	252
Wood, shaped or simply worked—							
Railway or tramway sleepers	,,	14	38	44	1,183	3,511	4,902
Timber, sawn lengthwise, sliced or peeled, but not further prepared, of a thickness exceeding 5 mm—							
Conifer	,,	1	1	1	192	228	92
Non-conifer—Jarrah	,,	15	4	1	1,101	350	159
Other	,,	26	18	33	3,407	2,601	2,856
Timber (including blocks, strips and friezes for parquet or wood block flooring, not assembled), planed, tongued, etc.—							
Conifer	,,	2	1	..	214	216	82
Non-conifer	,,	5	9	1	845	388	184

(a) Excludes re-exports.

FISHERIES

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 industry and pearl-shell fishery. Statistics of the processing of general fisheries products and of overseas trade in the products of fishing and whaling have been compiled in the Australian Bureau of Statistics.

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 for pearl-shell and trochus-shell refer to the actual quantities of dry shell for sale and exclude the weight of the fish.

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 substancial 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 spp.*), golden perch (*Plectroplites ambiguus*) and eels (*Arguilla australis*). Trout are farmed in New South Wales, Victoria and Tasmania. Important pelagic fisheries include those for Australian 'salmon' (*Arripis trutta*), southern bluefin tuna (*Thunnus maccoyii*), snoek (*Leionura atun*), spanish mackerel (*Scomber omerus*), 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*). Expansion of trawling onto the continental slope off central New South Wales and in Western Bass Strait has established a fishery for gem fish (*Rexea solandri*). There has been a renewal of interest in the Great Australian Bight, several grounds resulting in the establishment of a joint venture operation employing three large modern freezer trawlers. The previously valuable fishery for edible school and gummy shark (*Galeorhinus australis* and *Mustelus antarcticus*) in south-eastern Australia declined significantly in the year 1972–73 because of the discovery of a high mercury content in large school shark, but production and prices have since risen as the fishery for gummy sharks has expanded, although production has not attained its former level. A fishery for clupeiods in the Bass Strait which supplies the raw material for a fish meal plant at Lakes Entrance, Victoria, is the only established 'industrial fishery' in Australia.

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. Over the last decade, important fisheries have been established in northern Australia and South Australia. Interest in deep water prawn stocks off New South Wales is growing. Bay lobsters (*Thenus* and *Ibacus 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; in New South Wales and Queensland the Sydney rock oyster (*Crassostrea commercialis*) is cultured commercially. The introduction of the Pacific oyster (*Crassostrea gigas*) to Tasmania and South Australia has provided a limited supply in those States. Following a serious decline in catches in the scallop (*Pecten meridionalis*) fishery based on stocks in Port Phillip Bay, Victoria, new offshore beds were located in southern New South Wales, eastern Victoria, northern Tasmania and south-western Western Australia. However, substantial fluctuations in abundance have resulted in erratic production from year to year, and only the Victorian and Tasmanian beds are currently producing. A fishery based on the saucer scallop (*Amusium balloti*) is located off south and central Queensland and there is a small fishery for the same species in Shark Bay, Western Australia. An important abalone fishery has been developed since 1964 in south-east Australia with Tasmania, Victoria and South Australia providing the bulk of the catch. There is also a small abalone fishery in South-west Australia. Mussels (*Mytilus planulatus*) are harvested in Victoria and New South Wales. 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.

General

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

The Commonwealth Government laws regulating the fisheries are the *Fisheries Act* 1952, the *Continental Shelf (Living Natural Resources) Act* 1968 and the *Whaling Act* 1960. Each of these applies in accordance with the Commonwealth Government's fishery power under the Constitution.

Fisheries Act

This Act requires persons engaging in fishing and boats used for fishing to be licensed 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 nautical 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 by the Convention on the Continental Shelf, Geneva, 1958 in respect of the organisms belonging to sedentary species (that is, organisms which, at the harvestable stage, either are immobile on or under the seabed, or are unable to move except in constant physical contact with the seabed or the subsoil) on the continental shelf. The continental shelf comprises the seabed and subsoil of the submarine areas adjacent to the coast but outside the territorial sea to a depth of 200 metres, or beyond that depth where the depth of the superjacent waters admits of the exploitation of the natural resources of the

area. The Act requires the licensing of persons searching for and taking sedentary organisms, of boats used to search for and take sedentary organisms, and of persons employing divers, trial divers and divers' tenders in taking sedentary organisms if such activities are carried out in controlled areas of the continental shelf of Australia or the Territories for a commercial purpose. Provision is made for proclamation of sedentary organisms to which the Act applies, for the establishment of controlled areas of continental shelf in respect of specified sedentary organisms, and for the management and conservation of sedentary organisms in controlled areas (the last of these applying to all persons whether the purpose of the taking of the sedentary organism is commercial or not). The Act applies to all persons including foreigners, and to all boats including foreign boats.

Whaling Act

This Act implements in Australian law the obligations imposed on Australia by virtue of its 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 Government which, by agreement, has delegated to State fisheries authorities the necessary authorities for day-to-day administration of the Acts.

The administration of the fisheries is directed to a number of objectives of which the two most important are conservation of the living resources in order to ensure their ability to sustain a maximum yield consistent with economy in their exploitation, and the orderly conduct of the fishing industry. Fishery resources are common property and, apart from fisheries such as those for rock lobster, abalone, southern bluefin tuna and prawns in northern Australia where the numbers of boats are controlled, and in the rock lobster fisheries where 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 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 for the development and management of the fisheries and fishing industry which are consistent with the purposes of those Acts. The former was established with the proceeds of the sale of the assets of the Australian Whaling Commission and was replenished from Consolidated Revenue in 1976/77. The latter is a matching fund into which is paid each year an appropriation from Commonwealth Government Revenue equal to amounts collected from the fishing industry by the State Fisheries Authorities and 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) CSIRO Division of Fisheries and Oceanography, which has its headquarters and main laboratory at Cronulla, N.S.W. and regional laboratories in Perth and Brisbane (fisheries science and oceanography);

(ii) CSIRO Division of Food Research, which has its 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, Brisbane and Cairns; research vessels are operated by New South Wales, Victoria, Western Australia, Tasmania and South Australia; and the Department of the Northern Territory has a small scientific section at 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).

Boats and equipment used in fisheries

Fish, crustaceans and molluscs (edible)

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

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

Pearls, pearl-shell and trochus-shell

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

Whaling

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

Boats and equipment employed by industry

The following table shows details of boats and equipment engaged in the taking of fish, crustaceans and edible molluscs, and pearl-shell and trochus-shell; and the number of chasers and stations engaged in whaling operations. Boats engaged in more than one industry are classified to their main activity.

FISHERIES: BOATS AND EQUIPMENT

		1971–72	*1972–73*	*1973–74*	*1974–75*	*1975–76*
General fisheries—						
Boats	No.	9,591	10,760	10,532	9,830	9,110
Value of boats and equipment	$'000	(*a*)80,097	114,188	141,819	191,482	225,901
Edible oyster fisheries—						
Boats	No.	(*c*)1,884	(*c*)1,710	(*b*)1,899	(*c*)1,818	(*c*)1,926
Value of boats and equipment(*c*)	$'000	2,843	3,734	4,133	4,476	5,607
Pearl-shell and trochus-shell—						
Boats(*d*)	No.	23	17	21	20	15
Whaling(*d*)—						
Chasers	No.	3	3	3	3	3
Stations operating	„	1	1	1	1	1

(*a*) Incomplete; excludes South Australia. (*b*) Incomplete; excludes Tasmania. (*c*) Incomplete; excludes Queensland and Tasmania. (*d*) *Source:* Commonwealth Department of Primary Industry.

Employment in fisheries

Classification of registered commercial fishermen by industry

The following table has been derived mainly from the licensing records of the various State fisheries authorities. 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

Industry	*1971–72*	*1972–73*	*1973–74*	*1974–75*	*1975–76*
General fisheries(*a*)	17,594	19,208	19,072	18,403	17,037
Edible oyster fisheries	(*c*)1,402	(*c*)1,318	(*b*)1,620	(*c*)1,444	(*c*)1,390
Pearl-shell and trochus-shell(*d*)	287	233	193	242	194
Whaling(*d*)—					
At sea	51	51	56	51	51

(*a*) 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. Includes the number of licenced commercial fishermen in Western Australia. (*b*) Incomplete; figure for Tasmania is not available. (*c*) Incomplete: excludes Queensland and Tasmania. (*d*) *Source:* Commonwealth 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. *Gross value of production* is the value placed on recorded production at the wholesale price realised in the principal markets. In general, the 'principal markets' are the metropolitan markets in each State, although, in cases where commodities are consumed locally or where they become raw material for a secondary industry, these points are presumed to be the principal markets. *Local value* (i.e. gross value of commodities produced at the place of production) is ascertained by deducting marketing costs from the gross value of commodities produced. Marketing costs include freight, cost of containers, commission, and other charges incurred in marketing. Gross and local values of primary commodities produced involve some duplication as they include certain primary commodities which are consumed as raw materials to produce other primary commodities (e.g. hay consumed by livestock).

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

Year	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*Aust.*
GROSS VALUE								
1971–72	18,970	9,507	11,382	12,380	30,817	5,929	3,164	92,148
1972–73	21,165	11,471	(*a*)13,375	15,759	28,158	5,739	5,068	(*a*)100,732
1973–74	20,974	10,895	(*b*)15,196	17,442	30,494	7,014	7,295	(*b*)109,310
1974–75	24,609	8,686	(*a*)12,606	(*c*)14,083	35,130	6,928	5,667	(*ac*)107,709
1975–76	31,599	10,601	(*b*)17,137	(*c*)22,474	51,079	8,511	5,188	(*bc*)146,589
LOCAL VALUE(*d*)								
1971–72	16,323	8,855	10,764	11,027	30,625	5,929	3,164	86,687
1972–73	16,898	10,646	12,686	13,969	28,000	5,739	5,068	93,004
1973–74	16,568	8,682	14,387	15,433	30,313	7,014	7,295	99,692
1974–75	21,569	6,949	11,732	12,496	34,785	6,928	5,667	100,127
1975–76	25,334	8,481	16,152	20,022	50,870	8,511	5,188	134,558

(*a*) Incomplete; excludes oysters in Queensland. (*b*) Incomplete; excludes oysters and rock lobster in Queensland. (*c*) Incomplete; excludes oysters in South Australia. (*d*) Local value is gross value less marketing costs.

Production of selected fisheries

SELECTED FISHERIES PRODUCTS: PRODUCTION AND GROSS VALUE
1975–76

Product		*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*Aust.*
QUANTITY									
Fish(*a*)	tonnes	18,235	7,314	(*b*)5,313	13,128	7,778	2,229	978	54,973
Crustaceans(*a*)	,,	2,806	531	7,086	4,999	13,313	1,229	3,211	33,173
Molluscs (edible)(*a*)	,,	10,744	5,295	(*c*)1,002	(*c*)863	700	3,213	3	(*d*)21,820
Pearl-shell(*e*)	,,	..	..	(*f*)	..	(*f*)	..	(*f*)	(*g*)291.2
GROSS VALUE ($'000)									
Fish		12,417	5,490	(*b*)4,656	7,316	3,633	1,108	929	35,549
Crustaceans		7,600	2,077	11,265	14,202	40,613	3,670	4,258	83,685
Molluscs (edible)		11,582	3,035	(*c*)430	(*c*)956	344	3,733	1	(*d*)20,080
Pearl-shell(*e*)		..	..	(*f*)	..	(*f*)	..	(*f*)	(*g*)260

(*a*) Estimated live weight. (*b*) Excludes freshwater fish, particulars of which are not available. (*c*) Incomplete; exludes oysters. (*d*) Incomplete; *see* individual States. (*e*) *Source:* Commonwealth Department of Primary Industry. (*f*) Not available for publication. (*g*) Excludes manufacturing shell produced from pearl culture operations.

SELECTED FISHERIES PRODUCTS: PRODUCTION, AND GROSS VALUE
AUSTRALIA

Product		*1971–72*	*1972–73*	*1973–74*	*1974–75*	*1975–76*
QUANTITY						
Fish(*a*)(*b*)	tonnes	57,002	59,263	65,747	57,423	54,973
Crustaceans(*a*)	,,	31,709	(*c*)30,521	(*c*)(*d*)37,318	29,488	33,173
Molluscs (edible)(*a*)	,,	29,479	(*e*)33,089	(*e*)29,362	(*f*)21,386	(*f*)21,618
Pearl-shell(*g*)(*h*)	,,	314.5	223.8	204.9	246.7	291.2
Trochus-shell(*g*)	,,	0.7	1.1	2.5	21.4	..
GROSS VALUE ($'000)						
Fish(*b*)		18,633	23,329	26,334	29,983	35,549
Crustaceans		53,966	(*c*)54,231	(*c*)(*d*)60,809	55,955	83,685
Molluscs (edible)		14,581	(*e*)17,612	(*e*)15,552	(*e*)13,337	20,080
Pearl-shell(*g*)(*h*)		245	203	236	218	260
Trochus-shell(*g*)		..	..	..	8	..

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

FISH: PRODUCTION, BY PRINCIPAL TYPES

Type	Tonnes estimated live weight			Gross value ($'000)		
	1973–74	1974–75	1975–76	1973–74	1974–75	1975–76
Tuna(a)	(b)(c)9,700	11,082	10,674	(b)(c)3,608	3,349	3,244
Mackerel	(b)(c)1,291	1,315	1,289	873	941	1,128
Snoek	(b)708	2,005	359	141	452	128
Mullet	(b)6,071	5,999	6,255	1,792	2,076	2,791
Bream (including Tarwhine)	(b)704	1,112	904	526	749	860
Australian salmon	(b)4,513	5,178	3,510	798	1,065	1,020
Ruff	(b)1,161	1,019	895	203	154	191
Snapper	(b)1,691	2,190	1,842	1,431	2,860	2,669
Morwong	(b)1,342	1,415	1,815	605	941	1,416
Whiting	(b)1,762	2,268	2,853	(d)2,069	(d)3,190	(d)4,385
Flathead	(b)1,645	2,848	2,117	778	1,630	1,584
Shark	(b)4,233	4,773	6,320	1,459	2,640	3,820
Leatherjacket	(b)1,042	528	413	399	333	261
Other	(b)(c)19,748	15,690	15,726	(d)6,813	(d)9,605	(d)12,051
Total	**65,747**	**57,423**	**54,973**	**26,334**	**29,983**	**35,549**

(a) Includes estimates by CSIRO for New South Wales. (b) Incomplete; excludes Victorian figure which is not available for publication. (c) Tasmanian figures for tuna and mackerel are not available for publication and have been included in 'Other'. (d) Value of whiting in Tasmania is not available for publication and has been included in 'Other'.

Crustaceans

CRUSTACEANS: PRODUCTION, BY TYPE
(tonnes live weight)

Type	1971–72	1972–73	1973–74	1974–75	1975–76
Murray crayfish	136	(a)113	(a)295	23	23
Yabbies				161	107
Rock lobster	13,085	13,005	(b)11,830	12,265	(b)12,865
Bay lobster					
Prawns	17,915	16,757	24,491	16,327	19,478
Crabs	573	(a)647	(a)702	712	700
Total	**31,709**	**(c)30,521**	**(c)37,318**	**29,488**	**(c)33,173**

(a) Excludes Victorian figure, which is not available for publication. (b) Excludes rock lobster in Queensland. (c) Incomplete; *see* footnotes to figures for individual species.

Molluscs (edible)

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

Type	1971–72	1972–73	1973–74	1974–75	1975–76
Octopus	65	(a)40	(a)158	20	(c)59
Squid	209	(a)314		212	253
Cuttlefish	2	(a)..	(a)1	..	19
Oysters	10,434	(b)9,202	(b)10,479	(b)(c)8,908	(b)(c)10,273
Mussels	577	(a)23	(a)63	1,019	1,123
Pipi	86	117	203	193	195
Scallops	10,148	16,953	12,425	6,062	4,642
Abalone	7,958	6,439	6,032	4,971	5,256
Total	**29,479**	**(d)33,089**	**(d)29,362**	**(d)21,386**	**(d)21,820**

(a) Excludes Victorian figure, which is not available for publication. (b) Excludes Queensland figure which is not available. (c) Excludes South Australia figure, which is not available. (d) Incomplete; *see* individual species.

Pearls, pearl-shell and trochus-shell

PEARL CULTURE AND PEARL AND TROCHUS SHELL FISHING OPERATIONS

(*Source: Commonwealth Department of Primary Industry*)

		1971	*1972*	*1973*	*1974*	*1975*
QUANTITY						
Pearl and Trochus shell fishing operations—						
Production of—						
Pearl shell(*b*)	tonne	314.5	223.8	204.9	246.7	291.2
Trochus shell	tonne	0.7	1.1	2.5	21.4	..
Pearl culture operations—						
Live shell introduced	No.	333,280	432,318	500,651	558,465	578,437
	tonne	107.4	139.6	202.1	249.3	201.2
Production—						
Round and baroque pearls	No.	107,777	133,442	102,033	86,757	57,638
	momme(*c*)	62,179	74,727	57,138	63,722	42,334
Half pearls	No.	413,964	159,113	215,288	224,966	229,655
Manufacturing shell	tonne	164.3	103.0	87.6	66.1	105.2
VALUE ($'000)						
Pearl and Trochus shell fishing operations-						
Production of—						
Pearl shell		245	203	236	218	260
Trochus shell		..	..	..	8	..
Pearl culture operations—						
Production of—						
Round and baroque pearls		3,165	3,861	4,781	6,140	4,431
Half pearls		366	251	423	457	392
Manufacturing shell		89	59	44	24	49

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

Processing of fish, crustaceans and molluscs

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

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

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

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

Whale processing

WHALING

(*Source:* Commonwealth Department of Primary Industry)

		1972	*1973*	*1974*	*1975*	*1976*
Whales taken (*a*)—						
Male	No.	792	684	729	692	650
Females	"	161	287	450	480	345
Total	"	**953**	**971**	**1,079**	**1,172**	**995**
Quantity of sperm whale oil produced	barrels	34,632	32,952	34,956	34,610	35,190
Value of whale oil produced	$'000	993	951	1,261	1,218	2,240
Value of by-products (meal, meat, solubles, etc.)	"	585	624	795	631	751
Total value of products	"	**1,578**	**1,575**	**2,056**	**1,849**	**2,991**

(*a*) Sperm whales only were taken. (*b*) 6 barrels = approximately 1.016 tonnes.

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

Domestic marketing of fisheries products

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

Marketing arrangements for fresh fish vary. In New South Wales, fish marketing is the responsibility of the Fish Marketing Authority which operates the Metropolitan 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 Victoria, South Australia and Western Australia, most fish is sent to metropolitan wholesale fish markets for auctioning; small quantities are processed for sale locally, chiefly by co-operatives. Nearly all fresh fish in Tasmania is consigned direct to processors. The principal outlets for fish products in Australia are retail and catering establishments.

Consumption of edible fisheries products

Particulars of the apparent consumption of fish, crustaceans and molluscs 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: APPARENT CONSUMPTION

(Kg edible weight per person per annum)

	1971–72	*1972–73*	*1973–74*	*1974–75*	*1975–76*
Fresh or frozen—					
Fish—					
Australian origin(*a*)	1.7	1.7	2.0	1.2	1.8
Imported	1.5	1.5	1.8	1.6	1.7
Crustaceans and molluscs	0.9	0.8	1.2	0.6	1.0
Cured (including smoked and salted)	0.5	0.8	0.9	0.7	0.8
Canned—					
Australian origin(*a*)	0.5	0.3	0.6	0.7	0.7
Imported	0.9	0.9	1.2	1.1	0.6
Total	**6.0**	**6.1**	**7.8**	**6.1**	**6.7**

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

Overseas trade in fisheries products

Edible fisheries products

OVERSEAS TRADE IN EDIBLE FISHERIES PRODUCTS

	Quantity (tonnes)			*Value ($'000 f.o.b.)*		
	1973–74	*1974–75*	*1975–76*	*1973–74*	*1974–75*	*1975–76*
IMPORTS						
Fresh, chilled, frozen or boiled(*a*)	23,135	20,346	21,903	19,009	17,336	26,412
Smoked, dried, salted or in brine	4,694	3,739	3,643	4,747	4,281	4,929
Potted or concentrated	154	150	142	329	395	390
Canned—						
Herrings	2,047	1,684	1,210	1,668	1,873	1,428
Salmon	6,901	3,657	3,279	16,884	9,724	7,726
Sardines, sild, brisling, etc.	3,023	3,175	3,070	3,911	5,024	4,550
Tuna	538	2,355	213	723	3,418	343
Other fish	3,448	3,874	1,167	2,868	3,649	1,687
Crustaceans and molluscs	1,715	1,561	1,429	3,607	2,881	3,153
Total canned	*17,672*	*16,306*	*10,368*	*29,661*	*26,569*	*18,887*
Other prepared or preserved fish, crustaceans and molluscs(*b*)	9,965	8,936	11,002	14,201	13,156	18,887
Grand total	..	..	..	**67,947**	**61,737**	**68,720**
EXPORTS (Australian produce only; excludes re-exports)						
Fresh, chilled or frozen(*c*)—						
Fish	2,805	1,378	1,487	1,628	1,103	1,191
Crustaceans and molluscs—						
Rock lobster tails	3,749	4,247	4,018	25,706	32,430	35,782
Prawns	6,719	7,165	5,654	23,904	24,394	29,601
Other(*d*)	3,026	1,473	1,668	8,085	4,120	6,091
Crustaceans and molluscs boiled in water	334	378	383	1,194	1,161	1,767
Prepared and preserved—						
Fish	215	158	385	380	268	380
Crustaceans and molluscs	1,787	1,564	1,426	5,170	5,071	5,576
Grand total	..	..	..	**66,067**	**68,547**	**80,388**

(*a*) Excludes frozen smoked, which is included in item 'Smoked, dried, etc.' (*b*) 1974–75 figures for this category are not comparable with those for previous years as the item 'prawn crackers' is no longer available separately and has been excluded. (*c*) Excludes frozen smoked, which is included in item 'Prepared and preserved crustaceans and molluscs'. (*d*) Total values for this item for 1973–74, 1974–75 and 1975–76 include values of $232,000, $215,000 and $151,000 respectively, for which no quantities have been included.

Non-edible fisheries products

OVERSEAS TRADE IN SELECTED NON-EDIBLE FISHERIES PRODUCTS

		Quantity			*Value ($'000 f.o.b.)*		
		1973–74	*1974–75*	*1975–76*	*1973–74*	*1974–75*	*1975–76*
IMPORTS							
Fish heads, fresh or frozen	tonnes	883	576	766	128	95	133
Other fish waste	,,	1,978	3,484	1,434	185	128	144
Fish, live(*a*)	'000	8,315	10,856	12,148	688	1,029	1,187
Fish meal	tonnes	13,873	23,516	12,947	4,769	7,064	2,688
Whale oil	'000 litres	144	81	32	44	40	21
Cod-liver oil	,,	324	200	288	123	112	191
Other oils (including seal oil)	,,	1,043	985	549	218	382	436
Coral and shells and their waste	tonnes	75	77	93	56	82	120
Tortoise shell (including turtle shell, claws, waste)	,,	2	..	1	57	5	12
Pearls		..	..	..	232	204	238
Total		..	..	..	**6,500**	**9,141**	**5,170**
EXPORTS (Australian produce only; excludes re-exports)							
Australian produce—							
Whale oil	'000 litres	8,494	4,184	8,134	1,088	713	1,354
Other oils	,,	7	97	20	8	30	77
Pearl-shell	tonnes	455	400	306	489	471	107
Other shell (including trochus)	,,	297	417	443	115	168	279
Natural pearls		..	..	..	3	6	11
Cultured pearls—							
Round	No.	49,772	58,302	111,806	656	1,196	330
Half round	,,	279,474	209,824	179,080	521	324	751
Other		..	..	..	20	40	11
Total		..	..	..	**2,900**	**2,948**	**2,920**

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

Further information on subjects relating to fisheries is contained in the annual statistical bulletins *Fisheries* (7602.0 and 7603.0).