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Forestry

Introduction

Forests are an important sustainable natural resource providing a wide range of indispensable products and benefits to the community.

Forest vegetation cover protects the soil from water and wind erosion, reduces flooding and siltation of water bodies and maintains water quality. Forests provide habitats for a wide variety of native animals and plants. They also act as a sink to absorb greenhouse gases.

The forests and wood products industries based on native and plantation forests contribute substantially to Australia's economy, especially to employment in regional areas. Forests are also valuable ecosystems providing a gene pool of great diversity for scientific investigation; a source of honey, oils, gums, resins and medicines; and a resource base for education, tourism, recreation and other purposes. Forests cannot necessarily provide for all uses at the

same time, but careful management will ensure that forests provide multiple benefits in the long term for the Australian community.

Farm forestry is becoming increasingly important as a potential commercial source of wood. A broad range of programs has been implemented by government and private agencies to promote tree planting on Australian farms.

Forest estate

Native forest

Native forest is defined in this chapter as land dominated by trees with an existing or potential mature height of 20 metres or more, including native stands of cypress pine in commercial use regardless of height. Based on this definition, the total area of native forest was estimated at 40.7 million hectares at 30 June 1993 (about 5% of Australia's land area).

15.1 NATIVE FOREST AREAS, By Forest Type and Ownership — 30 June 1993

	NSW '000 ha.	Vic. '000 ha.	Qld '000 ha.	SA '000 ha.	WA(a) '000 ha.	Tas.(b) '000 ha.	NT '000 ha.	ACT '000 ha.	Aust. '000 ha.
CLASSIFIED BY FOREST TYPE GROUP									
Rainforest	260	16	1 237	—	6	565	203	—	2 287
Eucalypt productivity(c)									
Class I	1 171	544	205	—	186	468	—	—	2 574
Class II	3 658	4 328	1 290	—	2 160	1 901	—	—	13 337
Class III	7 937	538	3 300	—	—	—	—	51	11 826
Tropical eucalypt and paperbark	—	—	4 078	—	—	—	2 450	—	6 528
Cypress pine	1 696	7	1 686	—	—	—	778	—	4 167
Total	14 722	5 433	11 796	—	2 352	2 934	3 431	51	40 719
CLASSIFIED BY OWNERSHIP									
Public ownership(d)									
Category 1	3 257	3 132	3 071	—	1 358	1 306	—	—	12 124
Category 2	3 699	—	6 412	—	2	85	511	—	10 709
Category 3	2 574	1 641	(e)821	—	502	685	339	51	6 613
Total public ownership	9 530	4 773	10 304	—	1 862	2 076	850	51	29 446
Private ownership	5 192	660	1 492	—	490	858	2 581	—	11 273
Total	14 722	5 433	11 796	—	2 352	2 934	3 431	51	40 719

(a) Data previously published for Western Australia's forest were stated as gross forest areas: the areas have now been converted to net areas. All other States and Territories are gross areas. (b) Remapping of the Antarctic beech forests (*Nothofagus cunninghamii*) has resulted in a shift of area figures for the different Tasmanian forest types. (c) Eucalypt forests are grouped into productivity classes in descending order of productivity. No specific indexes of productivity have been developed for these classes and there can be some overlap, especially between States, in the relative productivity levels used to assign particular forest types to productivity classes. (d) Category 1: Forest land managed for multiple use including wood production. Category 2: Crown land either vacant or occupied under lease on which wood harvesting is carried out under government control but is not reserved and managed for that purpose. Category 3: Land on which wood production is excluded (National Parks etc.). (e) Includes 101 500 hectares in World Heritage Area previously included in Category 1.

Source: National Forest Inventory, and State and Territory forest agencies.

The National Forest Policy Statement defines a forest as an area dominated by trees having usually a single stem and a mature or potentially mature stand height exceeding five metres, and with existing or potential projective cover of overstory strata about equal to or greater than 30%. The National Forest Inventory is presently revising the estimate of the total area of native forest according to the definition in the National Forest Policy Statement.

Of the 40.7 million hectares of native forest at June 1993 (table 15.1), 29.4 million hectares (72%) were publicly owned and 11.3 million hectares (28%) were private land. Of the publicly owned forests, 6.6 million hectares (16%) were in National Parks or in World Heritage areas, 12.1 million hectares (30%) were managed by State forest authorities for various uses, including wood production, and 10.7 million hectares (27%) were vacant or leasehold Crown land. A small but increasing area is covered by plantations. Australia has around 1.1 million hectares of plantations, made up of 964,000 hectares of softwood (mostly radiata pine) and 155,000 hectares of hardwood (table 15.2). Plantations are expanding at about 13,000 hectares a year.

Plantations

Under the National Forest Policy Statement (NFPS) agreed to by the Commonwealth, State and Territory Governments in 1992, Australia is committed to expanding its plantation estate to

provide additional resources for the forestry sector. The Commonwealth Government has supported the expansion of Australia's plantation resource base for many years. For instance, the National Afforestation Program (NAP) was established in 1987–88 as a three year grants program to stimulate an expansion in the commercial hardwood timber resource and to assist in land rehabilitation through broadacre commercial plantations (including farm forestry).

The Government has continued to support and stimulate commercial plantation development on cleared agricultural land through the Farm Forestry Program and the Community Rainforest Reforestation Program. The Government announced the implementation of a range of measures to encourage plantation and farm forestry development in the Wood and Paper Industry Strategy, issued in December 1995.

In July 1996, the Federal Primary Industries Minister, John Anderson, who is also Chairman (Forestry) of the Ministerial Council on Forestry, Fisheries and Aquaculture (MCFFA), announced that the third meeting of the Council agreed to a national goal of trebling Australia's forest plantations estate by the year 2020.

15.2 PLANTATION AREAS, Classified By Species — 31 March 1995

Species group	NSW no.	Vic. no.	Qld no.	SA no.	WA no.	Tas. no.	NT no.	ACT no.	Aust. no.
Coniferous									
Pinus radiata	251 354	213 209	3 444	102 291	60 830	80 204	—	14 399	725 731
Pinus elliotii	5 552	8	63 490	—	120	—	—	—	69 170
Pinus pinaster	79	1 313	—	2 156	27 300	5	—	—	30 853
Pinus caribaea	61	3	54 720	—	10	—	2 745	—	57 539
Araucaria species	1 648	—	45 052	—	—	—	—	—	46 700
Other	8 205	2 018	18 945	335	610	648	2 711	408	33 880
Total	266 899	216 551	185 651	104 782	88 870	80 857	5 456	14 807	963 873
Broadleaved									
Eucalyptus species	28 212	18 074	1 359	1 744	45 110	56 140	64	—	150 703
Populus species	894	151	—	—	—	3	—	—	1 048
Other	111	126	210	—	—	2 752	—	—	3 199
Total	29 217	18 351	1 569	1 744	45 110	58 895	64	—	154 950
Total	296 116	234 902	187 220	106 526	133 980	139 752	5 520	14 807	1 118 823

Source: State and Territory forest services.

Tropical forests

Over half of the world's known plant and animal species are found in rainforests. Rainforests are the traditional home of many tribal peoples and also play an important role in contributing to global climatic stability. However, destruction of tropical forests in developing countries is occurring because of activities largely associated with population pressures and poverty.

Australia has only a relatively small area of tropical forest (an estimated 1.4 million hectares out of a total forested area of 41 million hectares), confined to northern and eastern Queensland, the Northern Territory and Western Australia. Much of this forest is already under various forms of protection. For example, the Queensland Wet Tropics World Heritage Area covers almost 890,000 hectares, including most of the tropical forest in North Queensland.

As a developed country with considerable experience and expertise in sustainable forest management, Australia can make a positive contribution to the improvement of forest management practices in developing countries, by providing education, training and technical expertise.

Wood and paper products

Australia's wood and paper products industries are important components of Australia's primary and secondary industries. They are particularly important in providing economic development and employment in many regions of rural Australia. The industries include hardwood and softwood sawmilling, plywood and panels manufacturing, woodchip export and pulp and paper industries. Over 61,000 people are directly employed in growing and harvesting of wood and the manufacture and processing of wood and paper products. The wood and paper products industries contribute about 2% to gross domestic product. In 1993–94, the value of turnover in the wood and paper products industries was \$10.7b, of which wood processing establishments (log sawmilling, timber dressing and other wood product manufacturing) contributed turnover of \$5.8b (table 15.3).

In 1994–95 total roundwood removed from forests rose by 4% to nearly 19.6 million cubic metres. While the removal of broadleaved wood (primarily from native forests) increased by 11% in 1994–95 to 10.9 million cubic metres, the

removal of coniferous wood (mainly from plantations) fell by 3%.

In 1994–95, the value of exports of forest products totalled \$1,004m, of which 56% were woodchips and 22% paper and paperboard products. In the same year, the value of imports of forest products was \$2,999m, of which 53% was paper and paperboard products and 18% sawnwood. This indicates a trade deficit in forest products of \$1,995m in 1994–95. Australia produces 79% of its sawn timber needs, of which native forests provide about 43%, with the balance coming from softwood plantations. Imported sawn timber is mostly Douglas Fir from North America, and Radiata Pine from New Zealand.

The hardwood and softwood sawmilling industries comprise mills of various sizes which process wood into sawn timber and other products such as veneers, mouldings and floorings. The hardwood mills are generally small scale and scattered. The softwood mills are generally of a larger scale and more highly integrated with other wood processing facilities. Australia's production of sawn timber increased by 7.6% in 1994–95 to 3,691,000 cubic metres, of which 57% was softwood.

Other value added timber products include plywood, wood-based panels and reconstituted wood products. Australian wood based panels include particleboard, medium density fibreboard and hardboard made from softwood or hardwood pulp logs, sawmill residues or thinnings.

Pulp and paper mills use roundwood thinnings, low quality logs, harvesting residues and sawmill waste, and recycled paper and paperboard to produce a broad range of pulp and paper products. Around a third of domestically consumed paper is imported. The majority of paper products produced domestically are packaging and industrial papers, newsprint, printing and writing papers, and tissue paper. Each requires different inputs and technologies. Recycled paper is now a major source of fibre in the production of paper and paperboard. Its use has increased from about 34% of fibre input in 1989–90 to 48% in 1993–94, and it is forecast to increase to 55% by 1995–96.

Woodchips are the main source of export earnings for the forestry sector in Australia. In 1994–95 the value of woodchips exported represented 56% of the total value of forest

products exported. Woodchips are mainly used in the production of paper and paper products, and the woodchip export industry uses sawmill residues and timber which is unsuitable for sawmilling and not required by the Australian pulp, paper and reconstituted board industries. Before the advent of the woodchip export industry, much of this material was left in the forest after logging. Considerable quantities of

sawmill waste material, which would otherwise be burnt, are also chipped for local pulpwood-using industries and for export. Until recently, at least 95% of woodchips exported from Australia have been eucalypt, but increasing quantities of softwood woodchips are now becoming available from pine plantations. In 1994-95, 22% of the total value of woodchips exported was from softwood woodchips.

15.3 SUMMARY OF OPERATIONS FOR WOOD PRODUCT MANUFACTURING ESTABLISHMENTS — 1993-94

Species group	Establishments at 30 June no.	Employment at 30 June(a) '000	Wages and salaries(b) \$m	Turnover \$m
Log sawmilling and timber dressing				
Log sawmilling	552	7.5	174.0	886.6
Wood chipping	35	0.8	29.1	367.7
Timber resawing and dressing	132	6.3	159.1	988.3
Total	719	14.6	362.2	2 242.5
Other wood product manufacturing				
Plywood and veneer manufacturing	38	1.8	49.3	273.3
Fabricated wood manufacturing	68	3.8	133.1	797.2
Wooden structural component manufacturing	1 834	17.1	386.9	1 897.2
Wood product manufacturing n.e.c.	986	6.9	137.2	614.3
Total	2 925	29.5	706.6	3 582.0

(a) Includes working proprietors. (b) Excludes the drawings of working proprietors.

Source: Australian Bureau of Statistics.

15.4 PRODUCTION OF WOOD AND SELECTED WOOD PRODUCTS(a)

Commodity	Quantity	1991-92	1992-93	1993-94	1994-95p
Sawn Australian grown timber					
Coniferous	'000 m ³	1 570	1 660	1 898	2 121
Broadleaved	'000 m ³	1 371	1 440	1 533	1 570
Total	'000 m ³	2 941	3 100	3 431	3 691
Hardwood woodchips(a)	'000 t	4 454	4 536	4 612	5 437
Railway sleepers	'000 m ³	100	87	82	84
Plywood	'000 m ³	107	122	138	145
Unlaminated particle board(a)	'000 m ³	642	662	751	845
Medium density fibreboard	'000 m ³	275	318	421	436
Wood pulp(a)	'000 t	1 019	996	996	1 009
Paper and paperboard					
Newsprint(a)	'000 t	404	433	411	423
Printing and writing	'000 t	n.a.	369	386	365
Household and sanitary	'000 t	143	165	170	173
Packaging and industrial	'000 t	n.a.	1 164	1 255	1 312

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

Source: Australian Bureau of Statistics and Australian Bureau of Agricultural and Resource Economics.

Government administration

Land and forests management is primarily the responsibility of State and Territory Governments. Each State has a forest authority responsible for the management and control of publicly-owned forests, in accordance with the Forestry Acts and Regulations of the State or Territory concerned.

The Department of Primary Industries and Energy (DPIE) and the Department of the Environment, Sport and Territories (DEST) are the two key agencies which have responsibilities relating to forest management at the national level. Close liaison is maintained between the two agencies on relevant issues. DPIE's main responsibilities are the development of a national approach to forest management; providing advice to the Commonwealth Minister responsible for forest matters; administration of export licensing responsibilities in relation to unprocessed timber; liaison with State, national and international organisations concerned with forestry; provision of a Secretariat for the Ministerial Council on Forestry, Fisheries and Aquaculture (MCFFA); and management of policy and program initiatives.

DEST has responsibilities for environmental matters relating to forests. DEST provides policy advice to its Minister and the Government on conservation and environmental matters pertaining to Australia's forests, including biological diversity and climate change. The Australian Heritage Commission, the Australian Nature Conservation Agency and the Commonwealth Environment Protection Agency within the Environment Portfolio have assessment, management and monitoring roles in respect of the national estate, endangered species and environmental impacts in Australia's forests.

DPIE and DEST, in close cooperation with the States, Territories and Ministerial Councils, were extensively involved in the development of the National Forest Policy Statement and in the development of the National Forest Inventory.

The MCFFA consists of State, Territory and Commonwealth, and New Zealand Ministers responsible for forestry. The Council is chaired jointly by the Commonwealth Minister for Primary Industries and Energy and the Commonwealth Minister for Resources and Energy. MCFFA, the successor of the Australian

Forestry Council formed in 1964, works to provide leadership and facilitate cooperation at the national level.

Initiatives fostered by the MCFFA are aimed at promoting the enhanced management of the nation's forest resources in the general interest of the community. Most recently it has been involved in the development and implementation of initiatives under the National Forest Policy Statement in cooperation with the Australian and New Zealand Environment and Conservation Council.

Commonwealth government initiatives

National Forest Policy Statement (NFPS)

The NFPS was signed by the Commonwealth and all mainland State and Territory Governments, at the Council of Australian Governments meeting in Perth in December 1992. In 1995 Tasmania also became a signatory.

The Statement provides a policy framework for the future management of Australia's public and private forests and outlines a vision for the ecologically sustainable management of Australia's forests comprising 11 broad national goals in the following areas:

- Conservation — to maintain an extensive and permanent native forest estate in Australia and to manage that estate in an ecologically sustainable manner so as to conserve all values including biological diversity, heritage and Aboriginal and other cultural values.
- Wood production and industry development — to develop internationally competitive and ecologically sustainable wood production and wood products industries.
- Integrated and coordinated decision making and management — to reduce fragmentation and duplication in the land use decision-making process between the States and the Commonwealth.
- Private native forests — to ensure that private native forests are maintained and managed in an ecologically sustainable manner, as part of the permanent native forest estate.

- Plantations — to expand Australia's commercial plantations of softwoods and hardwoods so as to provide an additional, economically viable, reliable and high-quality wood resource for industry and to meet other environmental and economic objectives, in particular the rehabilitation of cleared agricultural land and the improvement of water quality.
- Water supply and catchment management — to ensure the availability of reliable, high-quality water supplies from forested land and to protect catchment values.
- Tourism and other economic and social opportunities — to manage Australia's forests in an ecologically sustainable manner for a range of uses, including tourism, recreation and production of non-wood products.
- Employment, work force education and training — to expand employment opportunities and the skills base of people working in forest management and forest-based industries.
- Public awareness, education and involvement — to foster community understanding of, and support for, ecologically sustainable forest management.
- Research and development — to increase Australia's national forest research and development effort and to ensure that it is well coordinated, efficiently undertaken and effectively applied.
- International responsibilities — to promote nature conservation and sustainable use of forests outside Australia and to ensure that Australia fulfills its obligations under relevant international agreements.

Plantation initiatives under the NFPS

In 1993, under the NFPS, the Commonwealth established two plantations initiatives: the Farm Forestry Program (FFP) and the North Queensland Community Rainforest Reforestation Program (CRRP).

Commonwealth funding of the CRRP and FFP has continued since 1992. The CRRP is a joint initiative, sponsored by Commonwealth, State and local government.

Farm forestry

Farm forestry is defined in the Wood and Paper Industry Strategy as the incorporation of commercial tree growing into farming systems. An objective of both the FFP and the CRRP is to promote commercial wood production on cleared agricultural land so as to provide an additional, reliable, high-quality wood resource for sustainable regional industries, as well as to diversify farm incomes. The programs aim to encourage the integration of farm forestry with agricultural activities and promote appropriate linkages between tree growers and wood processing industries. Other objectives of the programs are to address problems of land degradation and provide for improved water quality and, in the case of the CRRP, to train a work force and landowners to support the long-term practice of rainforest plantation establishment and management.

In 1996, funding of nearly \$15m was allocated to more than 50 regional and national projects under the Commonwealth Government's Farm Forestry Program. In addition, \$3m was provided for the CRRP. The National Forest Policy Statement identified the following National plantation goals:

- to expand Australia's commercial plantations of softwoods and hardwoods so as to provide an additional, economically viable, reliable and high quality wood resource for industry; and
- to increase plantings to rehabilitate cleared agricultural land, to improve water quality, and to meet other environmental, economic or aesthetic objectives.

Regional Forest Agreements

The National Forest Policy Statement outlines a process for the development of Regional Forest Agreements, which are a mechanism by which the Commonwealth and a State Government can reach agreement on the management of forests in a region. A central objective is to remove uncertainty and duplication in government decision making by producing a durable agreement on forest management. An agreement should protect environment and heritage values and provide industry with secure access to resources. The Commonwealth Government has provided an additional \$48m over three years in the 1996-97 Budget to accelerate the Regional Forest Agreement process.

Wood and Paper Industry Strategy

The Commonwealth outlined new plantation initiatives in the Wood and Paper Industry Strategy released in December 1995. The strategy is intended to build upon the Regional Forest Agreement process, and provide for restructuring of the wood and paper industries. The strategy also aims to facilitate a positive environment for investment in downstream processing based on resources from sustainably managed native forests and plantations. The strategy seeks to include specific measures to enhance the development of a viable value adding forests products industry by removing impediments and disincentives to investment. About \$32m has been allocated to the Wood and Paper Industry Strategy in the 1996–97 Budget over the four years 1995–96 to 1999–2000.

Forestry Industry Structural Adjustment Package

The 1996–97 Budget allocated \$98.6m to the Forest Industry Structural Adjustment Package (FISAP) to assist businesses and workers involved in native forest industries to adjust to changes as a result of the interim Deferred Forest Agreements and Regional Forest Agreements.

National Forests Inventory

In many of the debates over forest management, the information base on forest attributes, such as timber, fauna and flora, has been found to be incomplete. Accordingly, in late 1988, the Commonwealth Government initiated a National Forest Inventory (NFI). A State of the Forests Report (SOFR) is being prepared by the NFI, which will include a description of the resource, forest use and management, and an examination of the social forces framing public opinion.

National Plantations Inventory

The need for a National Plantations Inventory (NPI) was highlighted in the Wood and Paper Industry Strategy. The purpose of the NPI is to describe in detail Australia's plantation resource in terms of location, species, age class, and expected regional and national wood flows.

A comprehensive information base will lead to more informed discussion and decision making about the future of Australia's forests by identifying and describing forest communities and their current conservation status, and providing information to enable the planning of efficient, sustainable forest utilisation.

Tropical timber

In June 1992 the Commonwealth Government announced its International Tropical Forest Conservation and Sustainable Land Use Policy. A key aspect of the policy is a commitment to the year 2000 target set by the International Tropical Timber Organisation (ITTO), by which date all tropical timber products entering international trade should be derived from sustainably managed forests.

Other aspects of the policy include support for the conservation of biodiversity, reforestation through agroforestry and plantations, and the provision of technical and scientific assistance to other countries, largely in the Asia–Pacific region, to promote better forest management practices. These policy measures complement initiatives arising from the Rio Earth Summit including the Conventions on Climate Change and Biodiversity, Agenda 21 and The Statement of Principles on Forests.

The Agreement under which the ITTO was established, the International Tropical Timber Agreement 1983, is to be replaced by a successor Agreement, which was successfully negotiated in early 1994. The new Agreement was ratified by Australia in December 1995.

Pulp mill guidelines

In December 1989 the Commonwealth established environmental guidelines for the development of new bleached eucalypt kraft pulp mills. To ensure the effective implementation of the Commonwealth guidelines and to streamline approval processes, the Commonwealth concluded agreements with Tasmania, Western Australia and Victoria.

To ensure that the Commonwealth guidelines remain current with international developments in pulping and bleaching technologies, the Government also announced in December 1989 the establishment of a National Pulp Mills Research Program (NPMRP). The NPMRP is a cooperative venture involving the Commonwealth Government and State Governments, community interest groups, industry and the Commonwealth Scientific and Industrial Research Organisation (CSIRO). The Program's principal objectives are the expansion of basic knowledge in pulping of eucalypt woods and bleaching of the pulps; improving the currently available technology; and developing more relevant and superior biological monitoring systems for the receiving waters.

The Commonwealth has released a set of guidelines based on recent international research under the Pulp and Paper Research Program and recent international developments in the wood pulping industry.

Forest and Wood Products Research and Development Corporation

The Forest and Wood Products Research and Development Corporation was established in 1994 as a key initiative under the National Forest Policy Statement to assist the forest industries to improve their international competitiveness and to realise their growth potential. The Corporation has structured its work around four key research programs:

- sustainability and environmental management;
- better structural/building systems;
- process and new product development; and
- plantation and regrowth timber — from forest to market.

The Corporation is jointly funded by industry and the Commonwealth.

CSIRO

Forestry wood and paper research is conducted primarily within the Division of Forestry and Forest Products. The emphasis is on strategic research concerned with commercial production and processing of wood from native eucalypt forests and plantations of eucalypts and softwoods.

CSIRO Forestry and Forest Products Division has its headquarters and main laboratory in Canberra, a forest products laboratory at Clayton, Victoria with other laboratories in Hobart, Tasmania; Mount Gambier, South Australia; and Perth, Western Australia. The Cooperative Research Centre for Temperate Hardwood Forestry is co-located with the Division on the campus of the University of Tasmania. The Cooperative Research Centre for Hardwood Fibre and Paper Science operates from the CSIRO–Monash University site at Clayton. The CSIRO Divisions of Wildlife and Ecology and Plant Industry undertake studies of rainforest ecology from the Tropical Forest Research Centre at Atherton, Queensland.

The research undertaken by CSIRO Forestry and Forest Products is closely aligned to major forest resources and industries: softwood plantations, hardwood plantations, native forests, solid wood processing and production, wood protection, wood composites, and pulp and paper. Important disciplines are tree physiology, nutrition, genetics, chemistry, wood science and engineering. Major projects include genetic improvement, regrowth forest management, later age stand management in softwood plantations, irrigation forestry, processing small hardwood logs, development of wood preservatives and improved pulping technologies.

Sustained high value production has long been a major goal of forest managers and researchers. Australia has endorsed the criteria and indicators for the sustainable management of native forests developed through the Montreal Process. The National Forest Policy Statement and the Wood and Paper Industry Strategy provide the framework for cooperative national action on this issue. The Division is actively involved in research for defining and monitoring ecologically sustainable forest management.

Fishing

Fisheries resources

This section covers Australia's fisheries resources and activities relating to their protection and use, both commercial and recreational.

Australia's fisheries stocks are extremely diverse but, by world standards, its marine ecosystem is relatively unproductive. The Australian Fishing Zone (AFZ) covers an area 16% larger than the Australian land mass and is the third largest fishing zone in the world. However, Australia's fish production is insignificant by world standards. This reflects low productivity of the oceans rather than under-exploitation of the resource. However, while some species are currently overharvested, some fish resources such as albacore and southern whiting are not being used optimally.

Over 3,000 species of marine and freshwater fish and at least an equal number of crustacean and mollusc species occur in and around Australia. Less than 100 of these are commercially exploited. Australia's major commercially exploited species are prawns, rock lobster, abalone, tuna, other fin fish, scallops, oysters and pearls. Australian fishing operators concentrate their efforts on estuarine, coastal, pelagic (surface) species and demersal (bottom living) species that occur on the continental shelf.

In 1993–94, Australians consumed 3.5 kg of edible weight fresh and frozen fish per person, sourced from Australian waters, and 2.1 kg of imported fish. The consumption per person of crustaceans and molluscs (such as prawns, lobsters, crabs and oysters) was 1.5 kg. A further 3.1 kg per person were consumed in the form of prepared seafood products.

The level of fishing effort exerted by the fishing fleet has increased rapidly over the last decade to the point where almost all the major known fish, crustacean and mollusc resources are fully exploited. Some major fisheries such as southern bluefin tuna, gemfish and shark have suffered serious biological depletion.

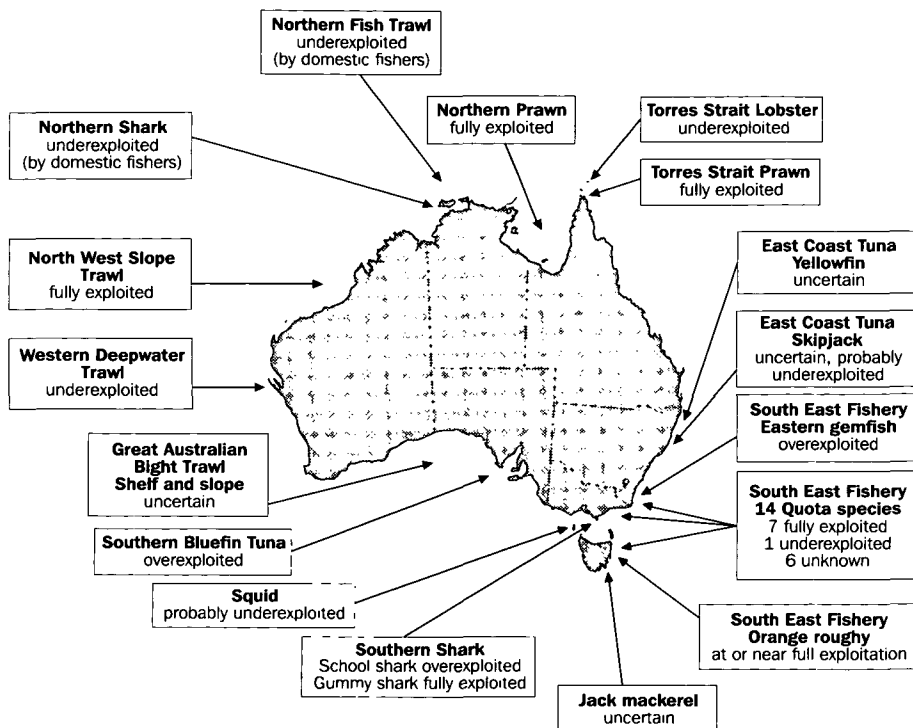
Australia has enjoyed a relatively long history of success in the farming of the Sydney rock oyster. Pearl culture operations and ornamental fish farming are well established. The production of juveniles of several species of fin fish, molluscs and crustaceans has been undertaken for some years, initially for restocking wild populations and subsequently for grow-out operations. As in many other developed countries, there has been a surge of interest and investment in many types of aquatic farms over the last decade. Notable successes are the salmon industry in Tasmania and commercial cultivation of the Pacific oyster, blue mussel and rainbow trout.

Aquaculture, or 'fish farming', is an alternative to harvesting the naturally occurring fish stocks and has considerable potential as a means of ensuring sustainability of harvesting yields. Aquaculture industries are established in all States, with species involved ranging from pearl oysters to freshwater trout. Aquaculture has experienced rapid growth during the past six years, with the value of production rising from \$188m in 1989–90 to \$419m in 1994–95.

Developmental work is taking place in a number of areas including barramundi, freshwater crayfish (yabbies and marron), prawns, mussels and algae. Research is continuing into the hatchery rearing of species such as abalone, scallops, giant clams, flat and pearl oysters. Over half of the established aquaculture output by value goes to markets other than for direct consumption. However, the newer emerging industries are producing mainly food. A strategy for the development of Australian aquaculture is being formulated by a Working Group of Commonwealth and State fisheries agencies.

The status of Australia's Commonwealth or jointly managed fisheries resources is summarised in figure 15.5.

15.5 STATUS OF COMMONWEALTH OR JOINTLY MANAGED FISHERIES RESOURCES



Source: Bureau of Resource Sciences.

Production, processing and exports and imports of fisheries products

Value of fisheries production

Table 15.6 shows the gross value of the Australian commercial fishing industry. As the value of materials used in the course of production is not available, it is not possible to show 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 treated as the principal markets.

The gross value of fisheries production in 1994-95 is estimated to have been \$1,745m (table 15.7). Although this was a 3% rise in value over the previous year it is a much lower rate of increase than the average of 11% from 1989-90 to 1993-94. Between 1993-94 and 1994-95 the main increase in gross value of production occurred in pearls (particularly in Western Australia, up 90%), tuna (7%), prawns (4%) and rock lobster (1%).

The gross value of production in some fisheries fell in 1994–95. Although landings of abalone rose, lower prices depressed the total value of production by 17% to \$148m. Decreased landings depressed the value of scallop production to \$51m. Reflecting increases in production, the gross value of fin fish increased by 3% to \$478m.

Western Australia recorded both the highest increase in gross value of any State (15%) and also the largest aggregate value (\$595m). On the other hand, Victoria recorded both the largest decrease in value of any State (18%) and also the smallest aggregate value of \$86m.

In 1994–95 the gross value of aquaculture production increased significantly, from \$319m in 1993–94 to \$419m in 1994–95, an increase of 31% (table 15.8). Pearl oysters remained the most valuable aquaculture industry and increased in value in 1994–95 by 58% to \$206m. Other aquaculture industries to increase in value included salmon, up 40% to \$67m, and prawns, up 23% to \$28m.

Commonwealth fisheries are those managed for the Commonwealth Government by the Australian Fisheries Management Authority. State Governments manage inland fisheries and aquaculture in addition to those salt water fisheries not managed by the Commonwealth. The distribution of the management of fisheries between the Commonwealth and the States is determined following consultations held under the Offshore Constitutional Settlement Agreement. Australian fisheries production refers to total production from both Commonwealth and State managed fisheries and production from aquaculture (see tables 15.9 and 15.10).

15.6 GROSS VALUE OF FISHERIES PRODUCTION

	Value \$m
1976–77	206
1977–78	233
1978–79	279
1979–80	326
1980–81	330
1981–82	344
1982–83	423
1983–84	449
1984–85	522
1985–86	635
1986–87	702
1987–88	828
1988–89	1 022
1989–90	1 092
1990–91	1 223
1991–92	1 376
1992–93	1 493
1993–94	1 686
1994–95p	1 745

Source: Australian Bureau of Agricultural and Resource Economics and the Australian Fisheries Service.

15.7 GROSS VALUE OF SELECTED MAJOR FISHERIES CATEGORIES(a)

	1992–93 \$m	1993–94 \$m	1994–95p \$m
Prawns	287	316	329
Rock lobster	349	430	435
Tuna	116	108	115
Other fin fish	322	355	363
Abalone	128	178	148
Scallops	88	72	51
Oysters	41	42	42
Pearls	120	130	206
Other(a)	42	55	56
Total	1 493	1 686	1 745

(a) Other fisheries production not elsewhere included.

Source: Australian Bureau of Agricultural and Resource Economics.

15.8 GROSS VALUE OF AQUACULTURE PRODUCTION(a)

	1992-93 \$m	1993-94 \$m	1994-95p \$m
Fish			
Salmon	49.0	48.0	67.0
Tuna	10.2	24.2	24.2
Trout	11.9	38.8	38.6
Other(b)	4.8	5.4	5.3
Total	75.9	116.5	135.1
Crustaceans			
Prawn	14.8	22.5	27.7
Other(c)	2.8	4.5	4.9
Total	17.6	27.1	32.6
Molluscs			
Pearl oyster	119.6	130.2	206.2
Edible oysters	41.2	42.4	42.2
Other(d)	1.3	2.7	2.6
Total	162.0	175.4	251
Total	255.5	318.9	418.7

(a) Excludes aquarium fish, hatcheries production, crocodiles, microalgae, and aquarium worms. (b) Includes eels and other native fish. (c) Includes crabs and brine shrimp. (d) Includes mussels, scallops and giant clams.

Source: Australian Bureau of Agricultural and Resource Economics.

15.9 AUSTRALIAN FISHERIES PRODUCTION, By Category(a)

	1992-93 tonnes	1993-94 tonnes	1994-95p tonnes
Fish			
Tuna	10 220	7 703	7 937
Other	134 958	123 573	129 259
Total	145 179	131 275	137 197
Crustaceans			
Prawns	24 805	22 766	25 259
Rock lobster	18 434	16 770	16 329
Other	5 562	7 543	7 606
Total	48 800	47 080	49 194
Molluscs			
Abalone	4 668	4 673	5 101
Scallops	33 630	24 141	12 199
Oysters	8 561	8 707	8 434
Other	4 940	5 136	6 148
Total	51 798	42 657	31 882
Total	245 777	221 012	218 273

(a) Includes an estimated value for aquaculture production but excludes production from inland commercial fisheries.

Source: Australian Bureau of Agricultural and Resource Economics.

15.10 COMMONWEALTH FISHERIES PRODUCTION, By Fishery and Category

	1992-93 tonnes	1993-94 tonnes	1994-95p tonnes
Northern prawn			
Prawn			
Tiger	2 891	2 806	3 520
Banana	4 058	2 433	4 095
Endeavour	813	794	756
King	49	40	70
Total	7 811	6 073	8 441
Torres Strait			
Prawn			
Tiger	586	533	568
Endeavour	988	1 087	1 051
King	44	48	32
Other	5	8	4
Total	1 622	1 676	1 655
Tropical rock lobster	174	185	180
Spanish mackerel	102	102	70
Total	1 898	1 963	1 905
South East			
Trawl			
Orange roughy	12 023	9 965	6 527
Jackass morwong	848	780	808
Tiger flathead	1 549	1 483	1 585
Gemfish	717	406	260
Blue grenadier	3 039	3 048	3 240
Ocean perch	262	286	255
School whiting	900	1 169	993
Ling	805	959	1 023
Redfish	839	608	1 016
Mirror dory	260	302	292
Blue warehou	968	865	673
Other	7 333	6 261	7 103
Total	29 543	26 132	23 775
Non-trawl	1 551	2 160	2 160
Great Australian Bight			
Orange roughy	432	668	27
King flathead	504	448	1 273
Gemfish	5	15	22
Bight redfish	128	107	164
Jackass morwong	40	40	53
Boarfish	24	28	41
Leatherjacket	44	38	87
Angel shark	64	47	98
Knifejaw	15	10	34
Squid	20	23	70
Other	284	173	334
Total	1 560	1 597	2 202
Southern shark			
School and gummy	5 448	5 136	4 943
Other shark	858	839	798
Total	6 306	5 975	5 741

For footnotes see end of table.

...continued

**15.10 COMMONWEALTH FISHERIES
PRODUCTION, By Fishery and Category —**
continued

	1992-93 tonnes	1993-94 tonnes	1994-95p tonnes
East coast tuna			
Yellowfin	752	679	820
Albacore	156	261	349
Bigeye	23	45	128
Skipjack	397	—	12
Other	52	110	116
Total	1 381	1 095	1 425
East coast purse seine			
Yellowfin	6	27	9
Skipjack	3 855	1 674	1 168
Others	—	114	5
Total	3 861	1 815	1 182
Southern bluefin tuna			
Domestic	1 774	2 415	2 867
Joint venture	2 471	2 012	1 684
Other	650	270	650
Total	4 895	4 697	5 201
Other fisheries(a)	329	353	322
Total production	59 134	51 860	52 354

(a) Includes North West Slope and Kimberley Coast prawn fisheries.

Source: Australian Bureau of Agricultural and Resource Economics.

Processing of fish, crustaceans and molluscs

There is very little value added processing of fish products in Australia. Processing establishments vary in size, scope of operations and sophistication of technologies employed. The majority of establishments undertake only the most basic cleaning, filleting, chilling, freezing and packaging processes, but some do have the capacity for significant product transformation. Much of the value that is added to the catch is

due to correct handling and quick delivery by air to local or overseas markets.

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-chilled to markets.

Exports and imports

Exports of fisheries products come under Commonwealth jurisdiction, while domestic market activity comes under those of the States and Territories.

A significant proportion of Australian fisheries production (edible and non-edible) is exported. In 1994-95 the value of exports was \$1,358m, approximately 78% of the total value of Australian production. The Australian fisheries export industry depends on a limited range of products sold on a few major markets, and in 1994-95 exports to Japan, Hong Kong and Taiwan accounted for approximately 76% of the value of all exports of fisheries products (see table 15.11). In 1994-95 the most valuable exports included rock lobster (\$474m), prawns (\$231m) and pearls (\$211m).

An important element in the maintenance of rock lobster export value has been a shift in product positioning in the export market to live, fresh or chilled product exports in 1994-95, following a 22% growth in the previous year. The value of prawn exports increased by 17% as a result of a 24% increase in volume exported.

Abalone exports fell by \$20m or 11%, despite a 14% increase in volume, while exports of scallop fell only 12% although volume fell by 40%.

15.11 DESTINATION OF EXPORTS OF AUSTRALIAN FISHERIES PRODUCTS

Country	1992-93		1993-94		1994-95p	
	\$m	%	\$m	%	\$m	%
Japan	491	45.3	551	44.5	556	40.9
USA	151	13.9	111	9.0	74	5.4
Taiwan	160	14.7	220	17.8	203	14.9
Hong Kong	162	14.9	232	18.8	269	19.8
Spain	13	1.2	6	0.5	14	1.0
Singapore	28	2.6	39	3.2	41	3.0
France	22	2.0	19	1.5	13	1.0
Thailand	7	0.6	9	0.7	13	1.0
Saudi Arabia	2	0.2	1	0.1	—	—
Other	49	4.5	49	4.0	175	12.9
Total	1 085	100.0	1 237	100.0	1 358	100.0

Source: ABS International Merchandise Trade Statistics.

In the same period, Australia imported \$666m of edible and non-edible fisheries products, 25% of which came from Thailand and 18% from New Zealand (see table 15.12). The most valuable categories of seafood imported

included prawns from Thailand (\$66m), canned fish from Thailand (\$39m) and from the United States (\$33m), and frozen fish fillets from New Zealand (\$36m).

15.12 SOURCE OF AUSTRALIAN IMPORTS OF FISHERIES PRODUCTS

Country	1992-93		1993-94		1994-95p	
	\$m	%	\$m	%	\$m	%
Thailand	104	19.7	131	22.1	166	24.9
New Zealand	94	17.8	104	17.5	117	17.6
Canada	36	6.8	25	4.2	24	3.6
Malaysia	36	6.8	39	6.6	38	5.7
USA	29	5.5	31	5.2	48	7.2
Peru	10	1.9	26	4.4	21	3.2
Japan	24	4.5	22	3.7	20	3.0
Chile	16	3.0	15	2.5	14	2.1
Singapore	12	2.3	14	2.4	13	2.0
South Korea	14	2.6	10	1.7	11	1.7
Indonesia	8	1.5	7	1.2	9	1.4
Other	146	27.6	169	28.5	185	27.8
Total	529	100.0	593	100.0	666	100.0

Source: ABS International Merchandise Trade Statistics.

Fisheries legislation and territorial arrangements

The Commonwealth Parliament has enacted a number of laws governing fisheries in the Australian Fishing Zone (AFZ). Where appropriate arrangements under the Offshore Constitutional Settlement (OCS) have been concluded with the States or the Northern Territory, these laws can also have application in coastal waters.

The fisheries laws of the States and the Northern Territory apply to fishing in inland waters and, in the absence of OCS arrangements, to marine waters up to three nautical miles seaward of the territorial sea baseline. Where appropriate OCS arrangements have been concluded with the Commonwealth, these laws can also cover a part or the whole of the AFZ adjacent to that State or Territory.

Commonwealth and State/Territory fisheries laws enable the management of commercial fisheries. They generally provide for this to be done through licensing regimes, fisheries notices or individual fishery management plans.

Fisheries Management Act 1991 and the Australian Fishing Zone

The *Commonwealth Fisheries Management Act 1991* applies to commercial fishing for swimming and sedentary species in the AFZ, excluding any waters that have been declared excepted waters. The AFZ is the area of waters generally between 3 and 200 nautical miles seaward of the territorial sea baseline of Australia and its external territories, excluding waters falling within the exclusive economic zone of another country, and covers a total of 8.9 million km². The establishment of the AFZ in 1979 brought portions of oceanic tuna stocks, and demersal and pelagic fish stocks previously exploited by foreign fishing vessels, under Australian control.

Fishery management plans are central to the Act and are to contain all essential rules applying to the management of a fishery. A management plan normally operates through a system of statutory fishing rights, which allows long-term access to the fishery. The Act also provides for limited term fishing permits, which are primarily designed for the management of fish resources

that are not yet under a management plan. Individual transferable quotas (ITQs) are used as the preferred tool to achieve a reduction in fishing levels. A particular fishery is assigned a total allowable catch, and the market for ITQs will determine the most efficient allocation of resources.

Australia has an international obligation, under the United Nations Convention on the Law of the Sea, to allow foreign nations access to resources within the AFZ that are surplus to domestic fisheries requirements and where such access does not conflict with Australian management and development objectives. To facilitate the process, the Act allows Australia to make bilateral agreements or joint venture arrangements with the government or commercial interests of another country under which foreign fishing licences will be granted to boats from that country.

In 1996, Japan was the only country maintaining a licensed foreign fishing presence in the AFZ. Japanese vessels fished certain areas of the AFZ under an annually renewable bilateral access agreement between the Japanese Government and the Australian Government. Foreign fishing licences are available under the bilateral access arrangement. The main species caught by Japanese vessels in the AFZ are yellowfin, southern bluefin, and bigeye and albacore tunas.

Australia, Japan and New Zealand are parties to the Convention for the Conservation of Southern Bluefin Tuna (CCSBT), which came into force in 1994. As part of its conservation management responsibilities for the global southern bluefin tuna industry, the CCSBT Commission annually determines a total allowable catch for the fishery and allocates this between the three CCSBT parties in the form of national quotas.

In 1996, Australia had maritime delimitation agreements with Papua New Guinea, the Solomon Islands and France. In addition, a maritime delimitation agreement was being negotiated with Indonesia (a Provisional Fisheries Surveillance and Enforcement Line having been agreed in 1981). Australia has yet to enter into a maritime delimitation agreement with New Zealand.

The Treaty on Fisheries between the Governments of Certain Pacific Island States and the Government of the United States forms the

Schedule to the Act. The effect of this is that United States tuna boats are given treaty licences in accordance with the provisions of the Treaty.

Whales are a protected species in the AFZ.

Australian Fisheries Management Authority

The *Fisheries Administration Act 1991* establishes the Australian Fisheries Management Authority (AFMA) and prescribes its objectives. These are:

- implementing efficient and cost-effective fisheries management on behalf of the Commonwealth;
- ensuring that the exploitation of fisheries resources and the carrying on of any related activities are conducted in a manner consistent with the principles of ecologically sustainable development, in particular the need to have regard to the impact of fishing activities on non-target species and the marine environment;
- maximising economic efficiency in the exploitation of fisheries resources;
- ensuring accountability to the fishing industry and to the Australian community in AFMA's management of fisheries resources; and
- achieving government targets in relation to the recovery of the cost of AFMA.

The Act specifies AFMA's functions, which include a duty to engage in appropriate consultation and to devise and implement management plans, adjustment programs and exploratory/feasibility fishing programs. AFMA is also to establish priorities for management related research and arrange for such research to be undertaken. AFMA's management responsibilities include arrangements with States and Territories. Under the Fisheries Management Act, AFMA is given additional functions in areas such as keeping a register of statutory fishing rights, surveillance and enforcement.

Other legislation

The *Fishing Levy Act 1991*, *Foreign Fishing Licences Levy Act 1991* and *Fisheries Agreements (Payments) Act 1991* enable the imposition of management levies and access fees payable by Australian and foreign fishermen, foreign

governments and foreign commercial interests. The *Statutory Fishing Rights Charge Act 1991* enables a charge to be levied on the grant of new fishing rights

The *Torres Strait Fisheries Act 1984* gives effect in Australian law to the fisheries elements of the Torres Strait Treaty. The Act applies in the area of Australian jurisdiction in the Torres Strait Protected Zone, and in areas outside but near that zone that have been proclaimed in respect of particular fisheries which Australia and Papua New Guinea have agreed to manage jointly under the treaty or which are referred to in the treaty.

Fisheries 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 sustainable utilisation of fisheries resources. Much of the research already undertaken has been directed at formulating recommendations for management of various fisheries. Research work, including feasibility fishing projects involving foreign fishing vessels, is also carried out and is expected to lead to the development of new fisheries, the expansion of under-exploited fisheries, greater economy in operations and the use of more efficient equipment and methods.

The Fisheries Research and Development Corporation (FRDC) was established in July 1991 by Regulations under the *Primary Industries and Energy Research and Development Act 1989*. Its objectives include:

- increasing the economic, environmental or social benefits to members of the Australian fishing and aquaculture industry and to the community generally by improving the production, processing, storage, transport or marketing of fish and fish products; and
- achieving the sustainable use and the sustainable management of fisheries resources.

FRDC investigates and evaluates the requirements for research and development in relation to the fishing industry; coordinates and funds such research and development activities; and facilitates the dissemination, adoption and commercialisation of results.

FRDC is funded by an annual unmatched grant equal to 0.5% of GVP (the average gross value of fisheries production over the three immediately preceding financial years) and by research levies collected from the fishing industry which the Government matches to a maximum of 0.25% of GVP. In 1995–96, revenue to FRDC totalled some \$12.9m, of which the Government contributed approximately \$10.4m.

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

- CSIRO Division of Fisheries Research, which has its headquarters and main laboratory in Hobart, Tasmania, and regional laboratories in Western Australia and Queensland (fisheries science);
- CSIRO Division of Oceanography, which has its headquarters and laboratory at Hobart, Tasmania;
- CSIRO Division of Food Research, which conducts research into handling, storage, processing and transportation of fish at its laboratory in Hobart, Tasmania;
- The Australian Fisheries Service, Department of Primary Industries and Energy, Canberra;
- Bureau of Resource Sciences, Department of Primary Industries and Energy, Canberra;
- Australian Bureau of Agricultural and Resource Economics, Department of Primary Industries and Energy, Canberra;
- State and Territory fisheries departments (research vessels are operated by all States);
- Great Barrier Reef Marine Park Authority (GBRMPA) located in Townsville and Canberra universities; and
- private fishing companies (surveys of fisheries resources, research into handling, processing and marketing).

Aquaculture

Aquaculture is one of Australia's fastest growing rural industries. In 1994–95 the annual production of 23,507 tonnes represented a farmgate value of \$419m. The major sectors represented in this growth are pearls, edible oysters, tuna, salmon and prawns.

Australian aquaculture is expected to continue to show strong growth for the next 10 years and, on current estimates, the value of production will be in excess of \$1b by the end of this period.

In 1994 the National Strategy for Aquaculture in Australia was released, and the first review of this strategy was taking place in 1996. This will determine the progress made in implementing the following key goals identified in this strategy:

- industry structure and organisation;
- relationship between aquaculture and capture fisheries;
- government framework;
- environmental management;
- water and land use planning;
- research and development;
- marketing and product development;
- education and training;
- extension services; and
- quarantine and movement.

The operational responsibility for the development of aquaculture in Australia rests with State and Territory governments. A number of States have in place aquaculture and coastal development plans. These plans take into account the needs of the multiple user groups and provide a focus for aquaculture as an industry and as a legitimate user of water and land resources.

Aquaculture provides a basis for improved biological understanding of Australia's native marine and freshwater species and can be used to re-establish populations of endangered aquatic species. In the future, aquaculture may also be able to improve the catch in both recreational and commercial fisheries through re-stocking programs.

Recreational fishing

In August 1996 the Federal Minister for Resources and Energy launched The National Code of Practice for Recreational and Sport Fishing. This new code will help to conserve fish stocks by encouraging people to take no more than they need and to protect the environment. The code provided guidelines on environmentally responsible fishing and boating practices, and on the humane treatment of fishes. It also calls on people to respect the rights of others, for example by seeking the permission of landholders and traditional owners to enter land.

People fishing for recreation and pleasure reported an estimated catch of 23,152 tonnes of fish, 2,800 tonnes of crabs and 1,400 tonnes of yabbies/marron in the year ending April 1992. On average, every Australian household casting a line or net caught 27.1 kg of seafood.

The pastime of recreational fishing was most popular in New South Wales, with 296,900 households reporting that a member had caught fish for home consumption, followed by 245,900 households in Queensland and 235,500 households in Victoria.

Queensland recreational anglers had the most success by landing nearly 7,300 tonnes (23.5% of the total fish catch) of seafood, compared with just under 6,600 tonnes (21.3%) caught in New South Wales and 5,200 tonnes (16.8%) in Western Australia (table 15.13).

15.13 RECREATIONAL FISHING CATCH, Year Ended April 1992

	NSW tonnes	Vic. tonnes	Qld tonnes	SA tonnes	WA tonnes	Tas. tonnes	NT tonnes	ACT tonnes	Aust. tonnes
Abalone	20.8	36.4	0.2	8.1	32.3	25.1	—	3.3	126.0
Crabs	335.8	51.9	869.6	865.6	648.1	10.2	54.5	5.9	2 841.5
Fish	5 046.9	4 164.4	5 732.1	3 184.7	3 371.8	1 014.7	388.2	248.8	23 151.7
Lobster, crayfish	127.4	46.1	50.0	53.3	357.7	56.9	4.3	3.3	698.9
Mussels	9.9	20.5	2.7	15.6	48.1	21.6	3.9	1.6	123.9
Octopus	79.9	18.6	3.4	10.5	56.3	2.3	—	0.6	171.5
Oysters	132.2	4.8	129.7	11.8	29.3	16.5	2.7	3.0	330.0
Prawns	251.6	119.8	316.0	14.4	117.0	0.9	11.0	4.7	835.6
Scallops	—	149.6	19.5	17.3	3.2	7.5	0.4	0.3	197.7
Squid	96.7	148.6	53.0	330.1	142.5	32.1	2.8	5.7	811.4
Yabbies, marron	399.6	339.6	78.6	215.1	351.2	0.2	3.2	11.0	1 398.5
Other seafood	85.5	72.7	29.5	29.0	35.4	3.2	0.5	0.6	256.3
Total seafood	6 586.3	5 173.1	7 284.3	4 755.5	5 192.9	1 191.1	471.4	288.6	30 943.2

Source: Home Production of Selected Foodstuffs, Australia (7110.0).

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