Aquaculture Production Trends Analysis

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FAO definitions employed in this report:

Aquaculture: the farming of aquatic organisms, including fish, molluscs, crustaceans and aquatic plants. Farming implies some form of intervention in the rearing process to enhance production, such as regular stocking, feeding, protection from predators etc. Farming also implies individual or corporate ownership of the stock being cultivated. For statistical purposes, aquatic organisms harvested by an individual or corporate body that has owned them throughout their rearing period contribute to aquaculture, while aquatic organisms that are exploitable by the public as a common property resource, with or without appropriate licenses, are the harvest of fisheries.

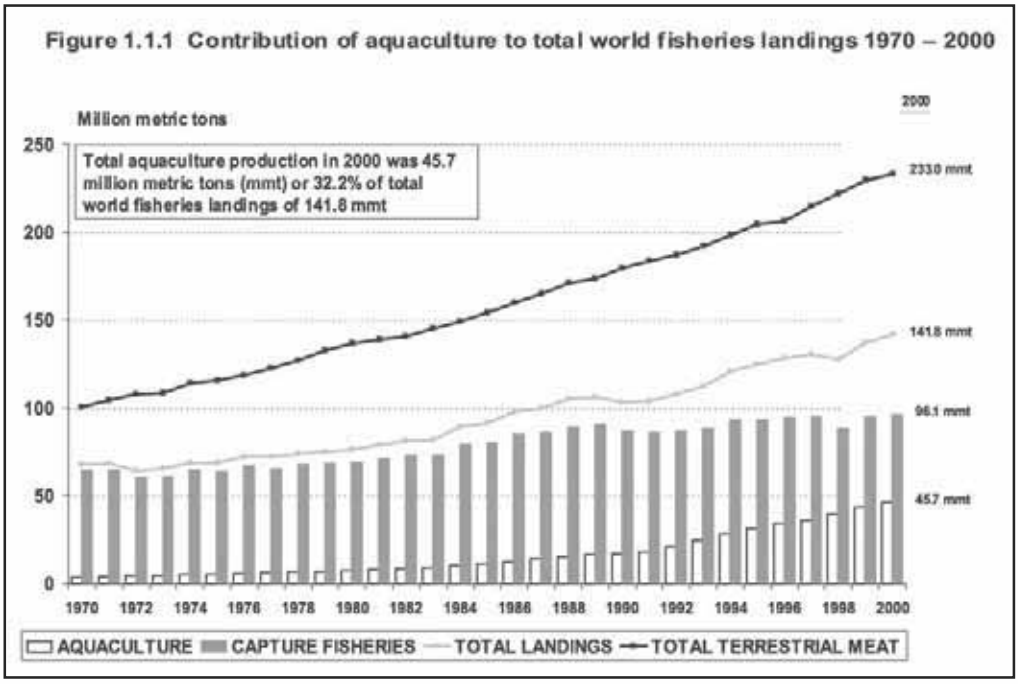
Aquaculture production: specifically refers to output from aquaculture activities that is designated for final harvest for consumption or other purposes (e.g. ornamental purposes). Output is reported in weight (generally in tonnes of live weight equivalent for aquatic animals and in wet weight for aquatic plants). Aquaculture production is also reported by three culture environments, namely fresh water, brackish water and marine water:

- Fresh water is water with a consistently negligible salinity.
- Brackish water is water that may reach high salinity levels, but this is not constant. It is usually characterized by regular daily and seasonal fluctuations in salinity due to freshwater and full strength marine water influxes. Enclosed coastal and inland water bodies in which the salinity is greater than fresh water but less than marine water are also regarded as brackish.
- Marine water is coastal and offshore water in which the salinity is maximal and not subject to significant daily or seasonal variations.

Countries included in the Low Income Food Deficit (LIFDC) grouping are those classified (i) by the World Bank as low-income in terms of Gross National Product (GNP) *per caput,* and (ii) by FAO as having a trade deficit for food in terms of calorific values. Countries that have formally objected to being included in this grouping are not included (for a current listing see http://www.fao.org/spfs)

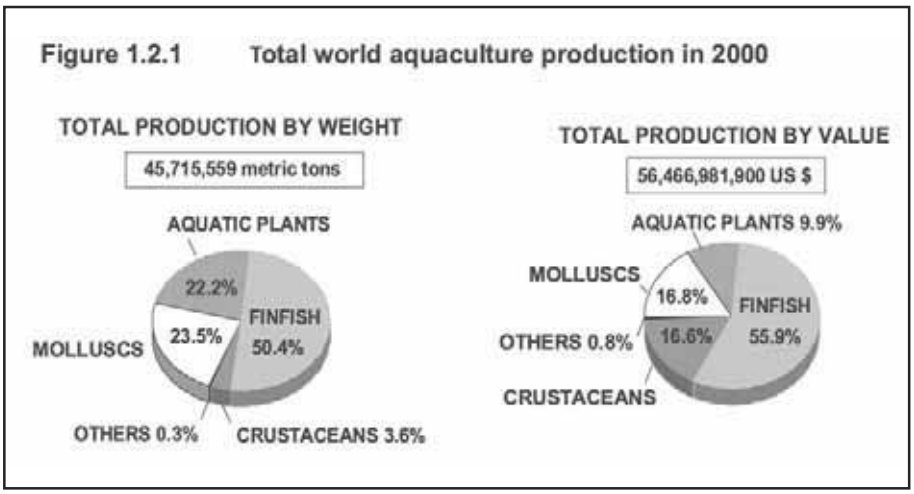
1.1 GLOBAL FISHERIES LANDINGS

Aquaculture's contribution to total global fisheries landings continues to grow, increasing from 5.3% in 1970 to 32.2% of total fisheries landings by weight in 2000 (Figure 1.1.1). Moreover, aquaculture continues to dominate all other animal food-producing sectors in terms of its growth. The sector has grown at an average Annual Percent Rate (APR – average annual compounded growth rate in percent) of 8.9% per year since 1970, compared with 1.4% for capture fisheries and 2.8% for terrestrial farmed meat production systems over the same period (Figure 1.1.1).



1.2 GLOBAL AQUACULTURE PRODUCTION

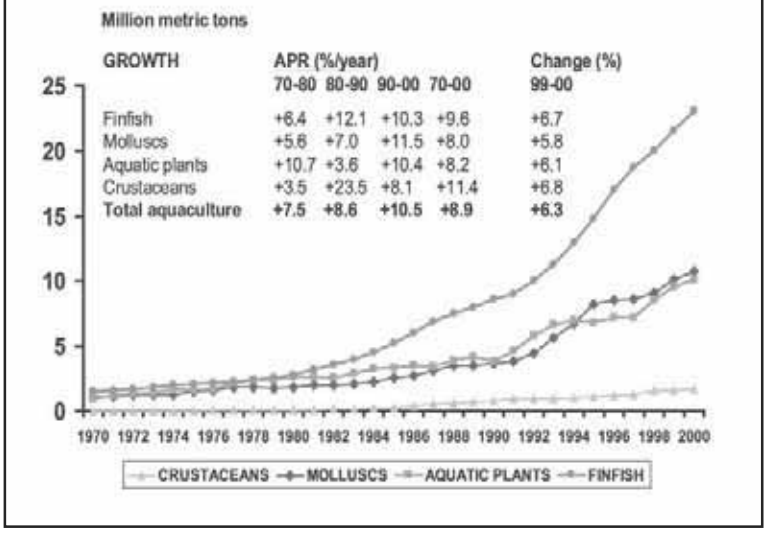
Total aquaculture production in 2000 was reported as 45.71 million metric tonnes (mmt) by weight and valued at US$56.47 thousand million (Figure 1.2.1), with production up by 6.3% by weight and 4.8% by value since 1999. Over half of the total global aquaculture production in 2000 was in the form of finfish (23.07 mmt or 50.4% of total production), followed by molluscs (10.73 mmt or 23.5%), aquatic plants (10.13 mmt or 22.2%), crustaceans (1.65 mmt or 3.6%), amphibians and reptiles (100,271 metric tonnes (mt) or 0.22%) and miscellaneous aquatic invertebrates (36,965 mt or 0.08%). Although crustaceans represented only 3.6% of total production by weight, they comprised 16.6% of total global aquaculture by value in 2000 (Figure 1.2.1).



The growth of the different major species groups continues to be modest to good, with production from 1999 increasing by 6.7% by weight in the case of finfish, 5.8% for molluscs, 6.1% for aquatic plants, 6.8% for crustaceans and 12.1% for amphibians and reptiles. However, production decreased by 15.2% in the case of miscellaneous aquatic invertebrates (includes sea squirts and sea urchins) over this period. Although the overall rate of growth of total aquaculture production has been steadily increasing (APRs of 7.5%, 8.6% and 10.5% between 1970 and 1980, 1980 and 1990, and 1990 and 2000, respectively), this increase has not been uniform for all species groups. Crustacean and finfish growth (APR) has decreased from 23.5% to 8.1% and from 12.1% to 10.3% from the eighties to the nineties, respectively (Figure 1.2.2).

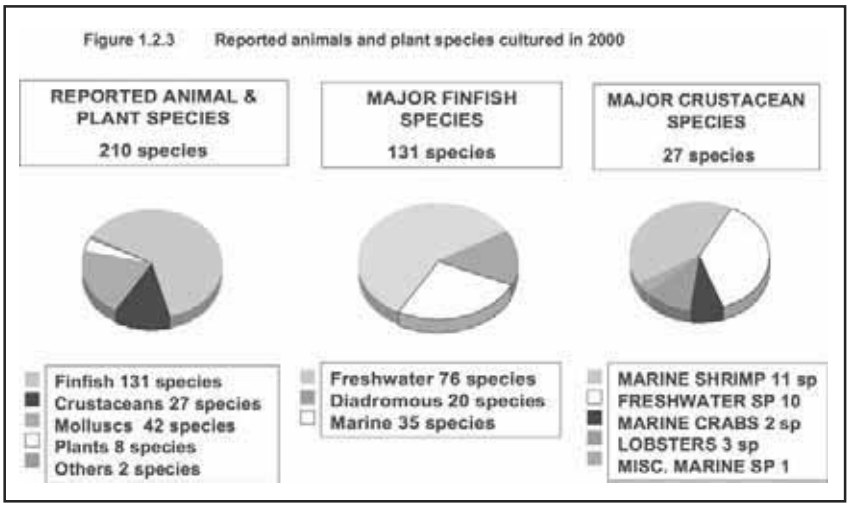
Aquaculture species

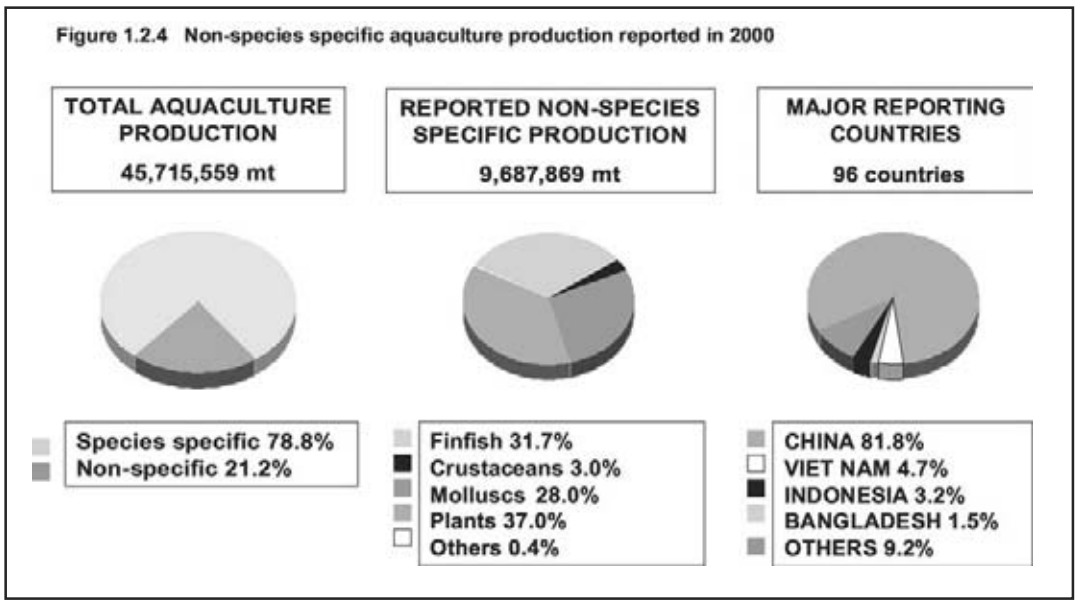
Figure 1.2.2 Total world aquaculture production by major species groups 1970-2000



In contrast to terrestrial farming systems, where the bulk of global production is based on a limited number of animal and plant species, 210 different farmed aquatic animal and plant species were reported in 2000. These include 131 finfish species, 42 molluscan species, 27 crustacean species, eight plant species, and two amphibian and reptile species (Figure 1.2.3). The large number of species cultivated reflects the wide range of potential candidate species available within the different countries and regions of the world and the wide variety of production systems employed by farmers. However, it must be pointed out that this figure could be considerably higher, as over 9.7 mmt or 21.2% of global aquaculture production was not reported to species level in 2000 (Figure 1.2.4). For example, at present China provides no statistical information to FAO concerning marine finfish species production; total marine finfish production was reported as being 426 957 mt in 2000, with no species breakdown provided.

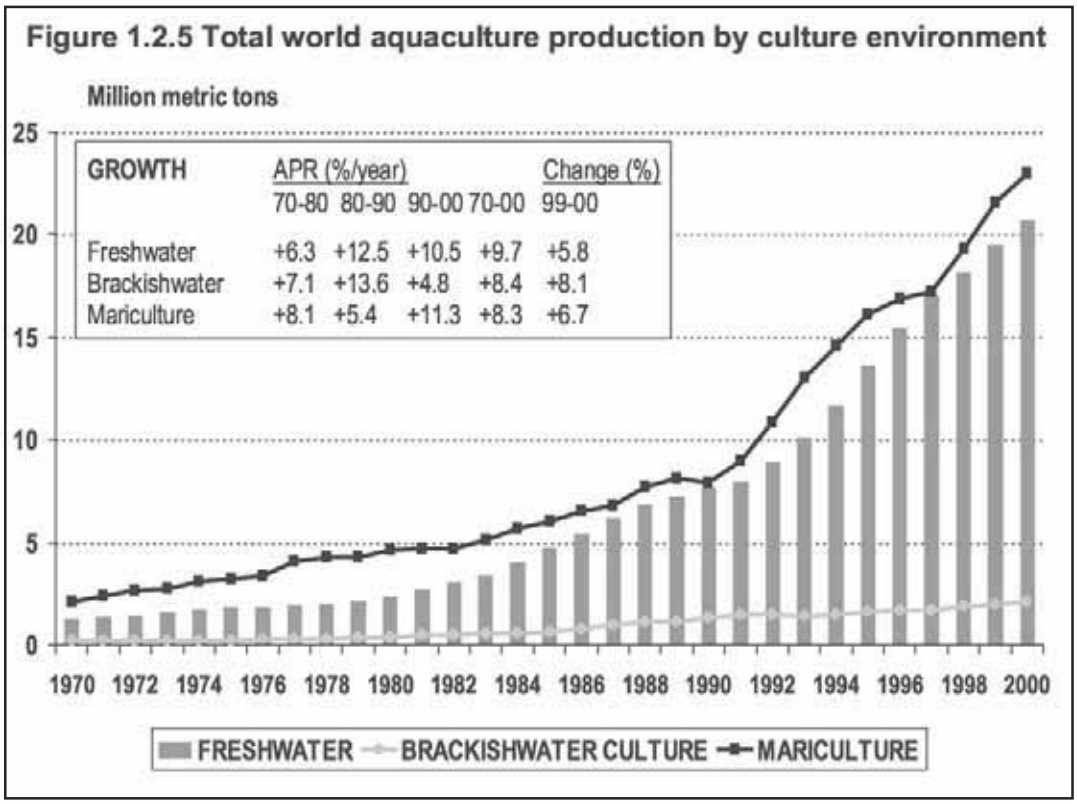
Figure 1.2.3 Reported animals and plant species cultured in 2000

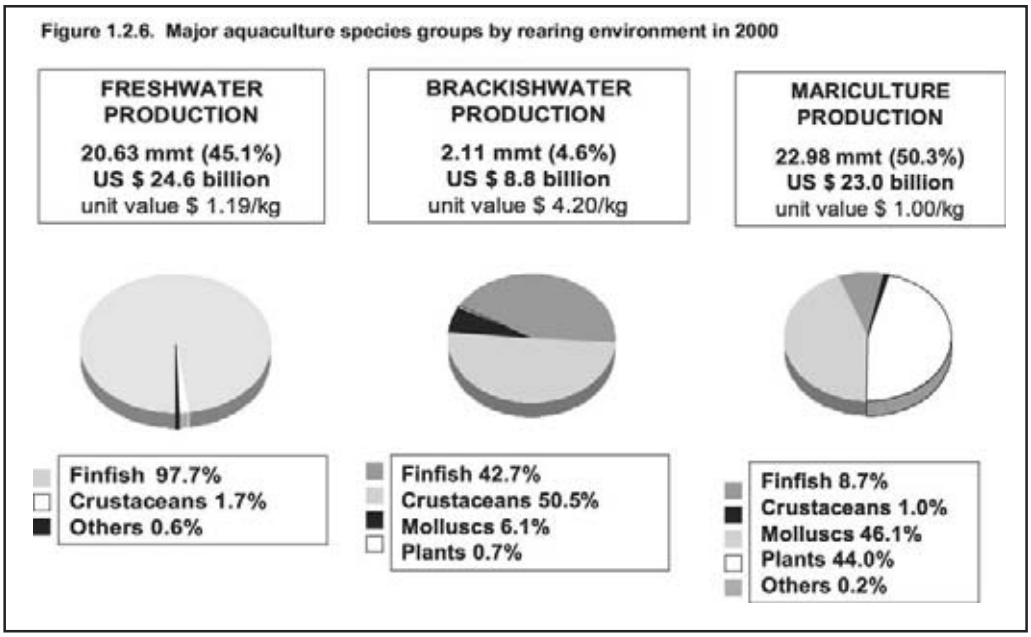




Production by culture environment

Over half (54.9%) of global aquaculture production originated from marine or brackish coastal waters in 2000, as compared with 45.1% for freshwater aquaculture production. The mean APR (period 1970-2000) was highest for freshwater aquaculture production (9.7%), closely followed by brackishwater production (8.4%) and mariculture (8.3%) (Figures 1.2.5 & 1.2.6). Although brackishwater production represented only 4.6% of total global aquaculture production by weight in 2000, it contributed 15.7% of total production by value (Figure 1.2.6). The main species groups reared in fresh water were finfish (97.7%). High value crustaceans and finfish predominated in brackish water (50.5% and 42.7%, respectively), and molluscs and aquatic plants in marine waters (46.1% and 44.0%, respectively (Figure 1.2.6).

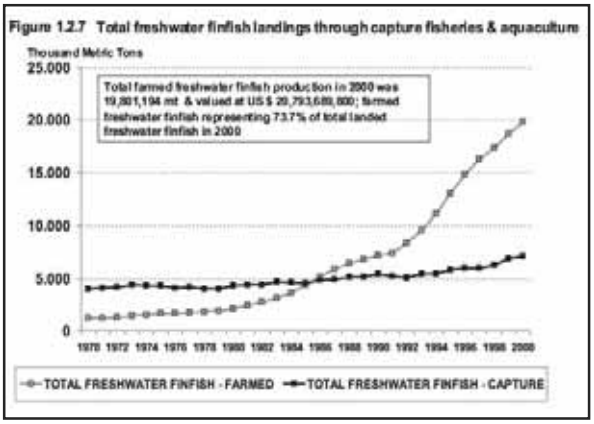


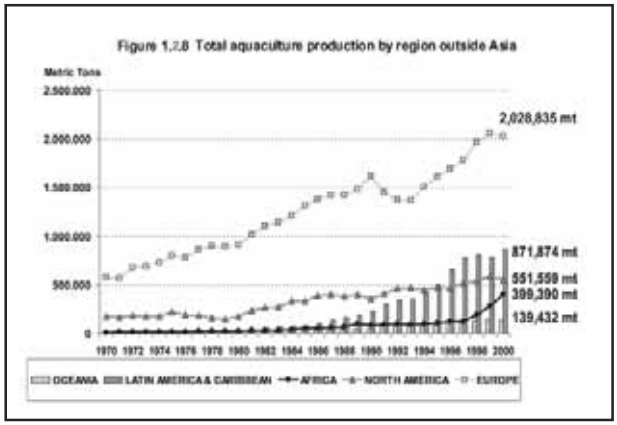


Production by species and species groups

Finfish

Inland freshwater species continued to dominate global finfish aquaculture production in 2000 (10.80 mmt or 85.8% of total finfish production), followed by diadromous species (2.26 mmt or 9.8%) and marine species (1.01 mmt or 4.4%). Aquaculture currently provides 73.7%, 65.3% and 1.4% of total global landings of freshwater finfish species (Figure 1.2.7), salmonid diadromous finfish species (Figure 1.2.8) and marine finfish species (Figure 1.2.9), respectively. The observed growth rates of these different groups were very similar, the average APR (period 1970-2000) being 9.9% for freshwater species, 10.6% for marine species and 10.6% for salmonid species.





The major finfish groups and species cultivated in 2000 are shown in Figure 1.2.10 and Table 1, and can be summarized by weight and value as follows:

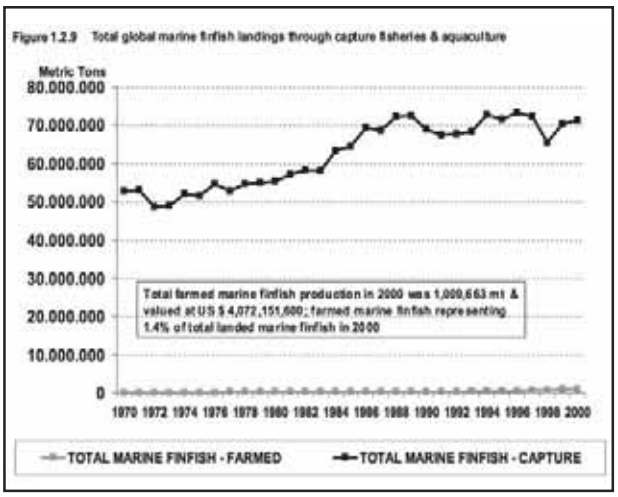
Freshwater species
Cyprinids: 15 707 109 mt, valued at US$15 251 525 100 (Figure 1.2.11)
Tilapia: 1 265 780 mt, valued at US$1 706 538 200 (Figure 1.2.12)
Catfish: 421 709 mt, valued at US$655 419 500 (Figure 1.2.13)

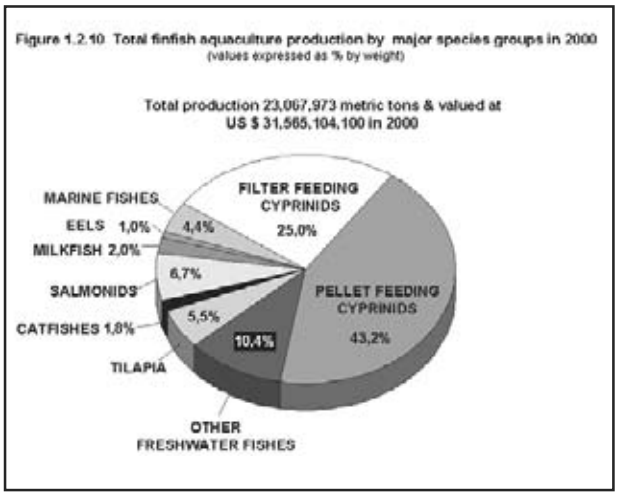
Diadromous species

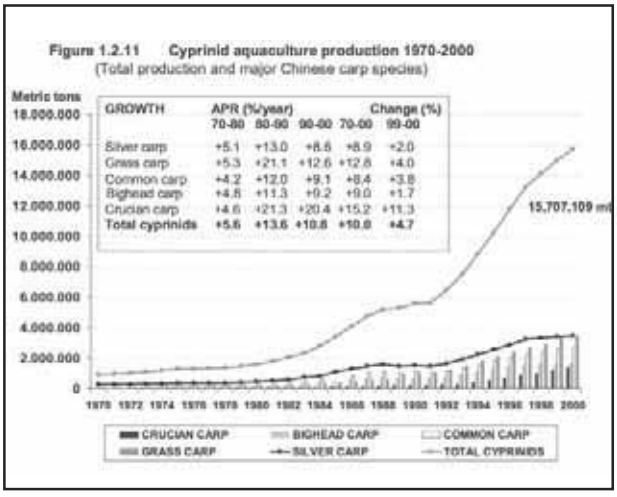
Salmonids: 1 533 824 mt, valued at US$4 875 552,400 (Figure 1.2.15)
Milkfish: 461 857 mt, valued at US$715 091 100 (Figure 1.2.15)
Eels: 232 815 mt, valued at US$975 005 700 (Figure 1.2.15)

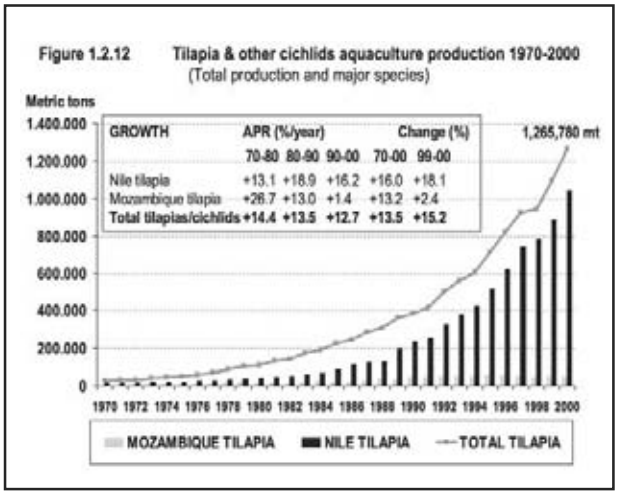
Marine species

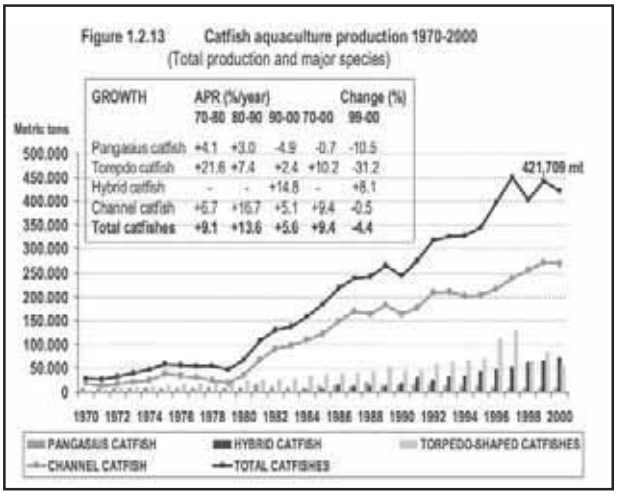
Marine fishes: 1 009 663 mt, valued at US$4 072 151 600 (Figure 1.2.16)

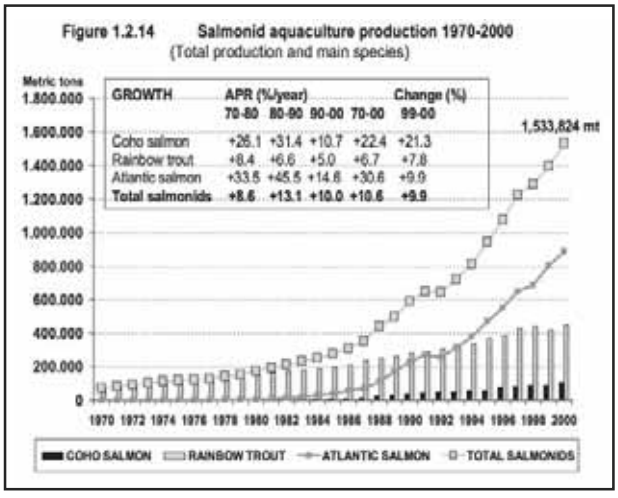


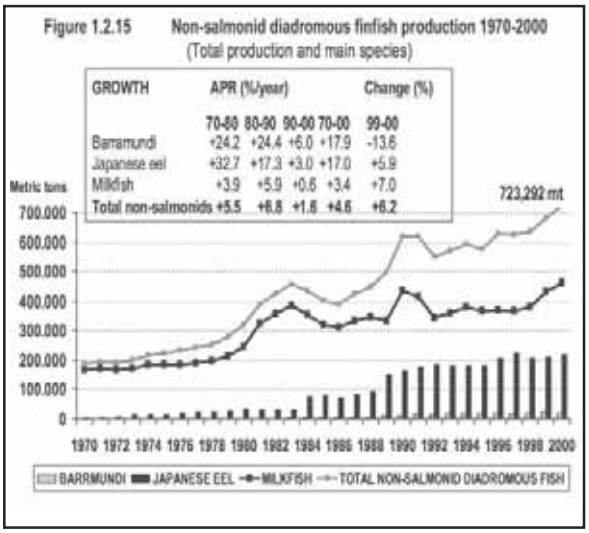


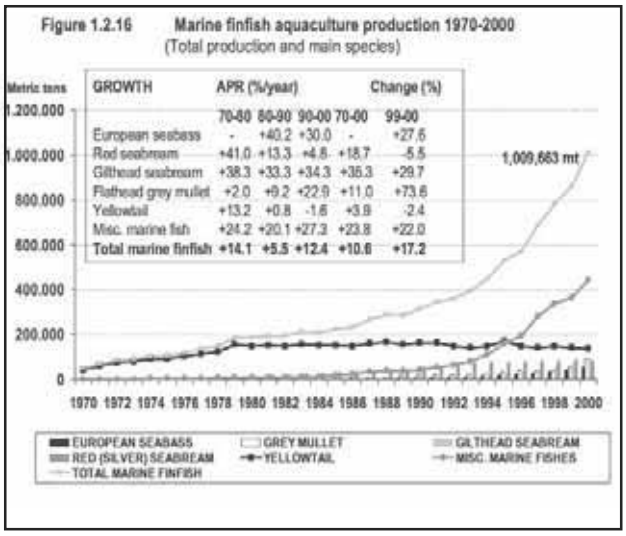






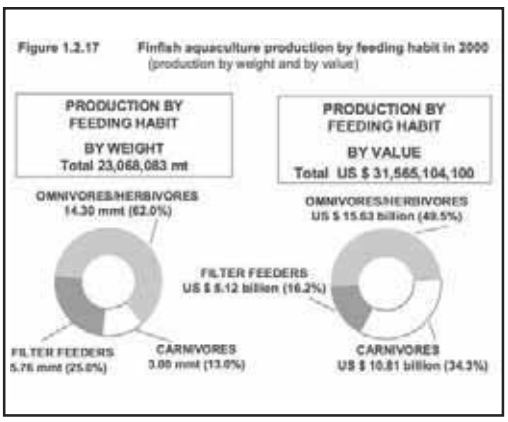


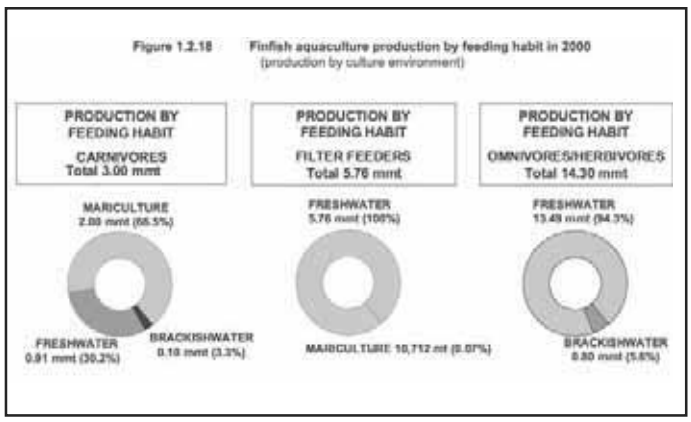


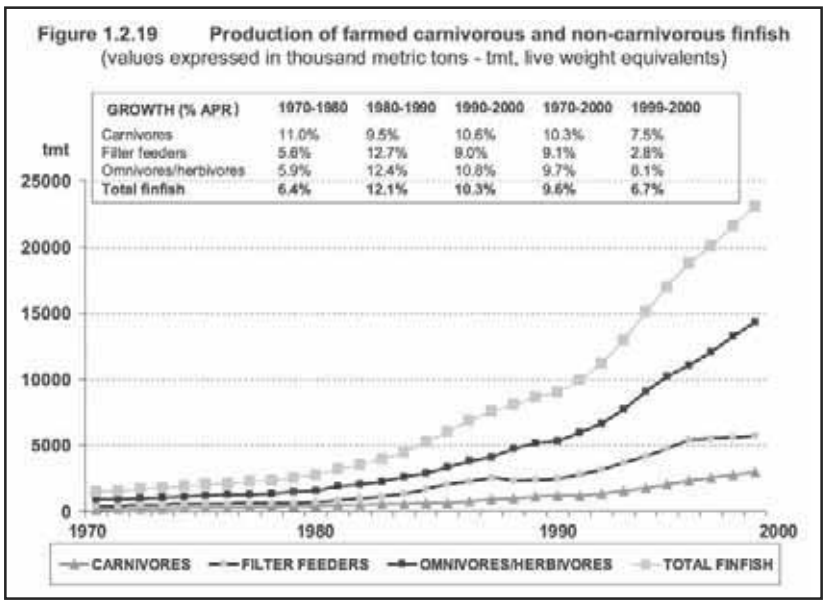


Of particular note is the fact that the top five cultivated species were cyprinids, representing over half of the total global finfish aquaculture production in 2000 (Table 1 see page 89). However, it is important to mention here that the growth of silver carp (*Hypophthalmichthys molitrix*) and bighead carp (*Aristichthys nobilis*) (both key filter-feeding species) has declined significantly during recent years compared with other cyprinid species (Figure 1.2.11).

Moreover, analysis of finfish feeding habits in 2000 indicated that 62.0% were omnivorous/herbivorous species (94.3% freshwater species, such as grass carp *(Ctenopharyngodon idellus)*, common carp *(Cyprinus carpio)*, Crucian carp *(Carassius carassius)*, Nile tilapia *(Oreochromis niloticus)*, rohu *(Labeo rohita)*, mrigal *(Cirrhinus cirrhosus)*, White Amur bream *(Parabramis pekinensis)*, and channel catfish *(Ictalurus punctatus)*); 25.0% were filter-feeding species (100% freshwater species, such as silver carp, bighead carp and catla *(Catla catla)*); and 13.0% were carnivorous species (68% marine and brackishwater species, such as Atlantic salmon *(Salmo salar)*, rainbow trout *(Onchorhynchus mykiss)*, Japanese eel *(Anguilla japonica)*, black carp *(Mylopharyngodon piceus)*, Japanese amberjack *(Seriola quinqueradiata)*, coho salmon *(O. kisutch)* and mandarin fish *(Siniperca chuatsi))* (Figures 1.2.17 & 1.2.18). The relative growth of these different species groups is shown in Figure 1.2.19, with mean APRs approaching 10% within all groups and markedly reduced growth for filter-feeding species during recent years. However, although carnivorous species represented only 13.0% of total global finfish production by weight in 2000, they comprised 34.3% of total production by value, the majority of carnivorous finfish species having considerably higher unit market values than their filter-feeding or more omnivorous counterparts (Table 1 see page 89).

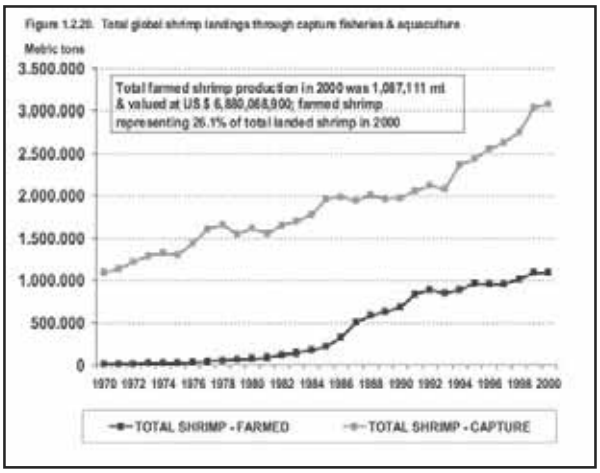


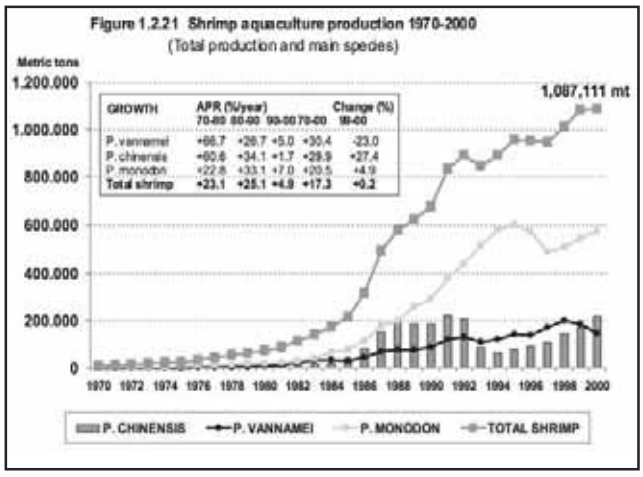




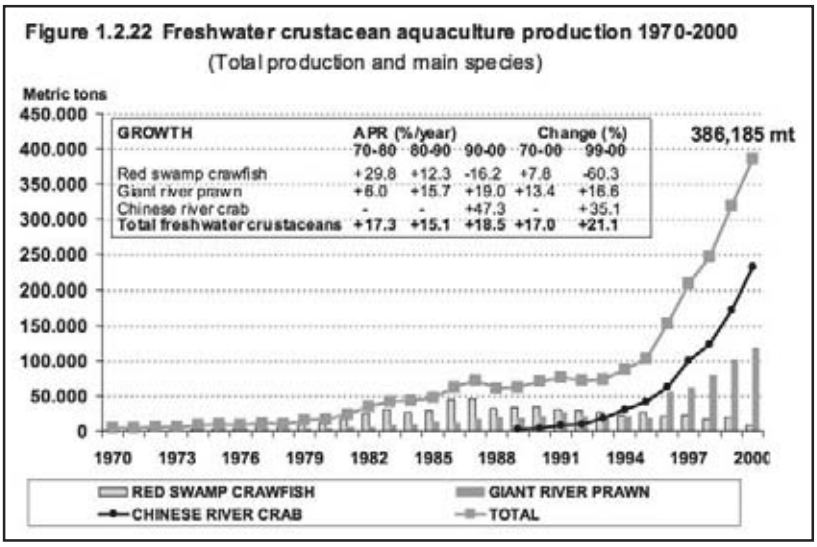
Crustaceans

As in previous years, marine shrimp continued to dominate crustacean aquaculture, with shrimp production in 2000 reaching 1 087 111 mt (66.0% of global crustacean aquaculture production) and valued at US$6 880 068 900 (73.4% of total value). Aquaculture currently provides just over a quarter (26.1%) of total global shrimp landings (Figure 1.2.20). The main cultivated species are the giant tiger prawn (*Penaeus monodon*), the fleshy prawn (*P. chinensis*) and the whiteleg shrimp (*P. vannamei*), these three species accounting for over 86% of total shrimp aquaculture production in 2000 (Figure 1.2.21, Table 2 see page 90). Although the giant tiger prawn only ranked 20th by weight in terms of global aquaculture production by species weight in 2000, it ranked first by value at US$4 046 751 000. In terms of growth, shrimp production has decreased to more modest levels over the last decade (averaging 5%) as compared to the double digit growth rates observed during the seventies (23%) and eighties (25%) (Figure 1.2.21).



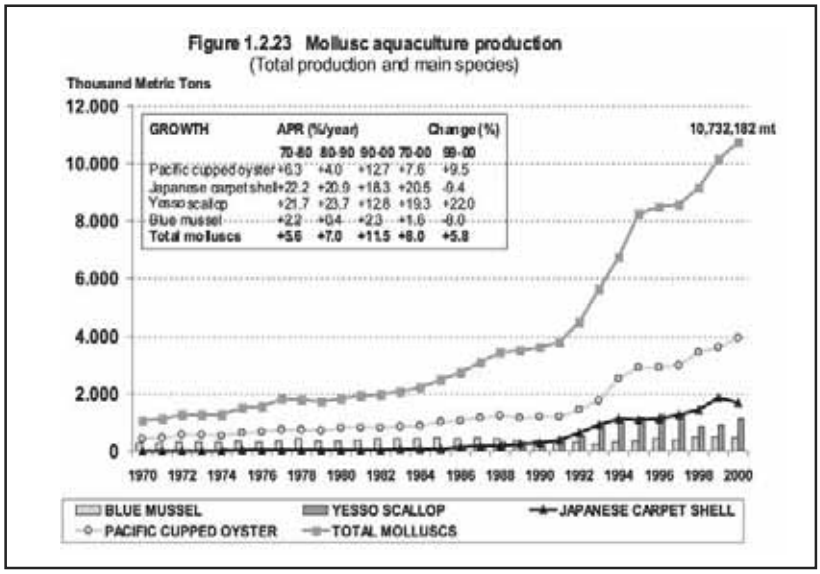


Other crustaceans farmed in 2000 included freshwater crustaceans (386 185 mt or 23.4% of global crustacean production), and sea-spiders and crabs (140 256 mt or 8.5% of global production (Figure 1.2.22, Table 2 see page 90). Of particular note has been the recent appearance and rapid growth of the Chinese river crab (*Eriocheir sinensis*), with production reportedly increasing from zero in 1998 to 232 391 mt in 2000 (Table 2 see page 90). Equally impressive growth rates have also recently been observed for the giant river prawn (*Macrobrachium rosenbergii*), with production reaching 118 501 mt in 2000 (Figure 1.2.22).



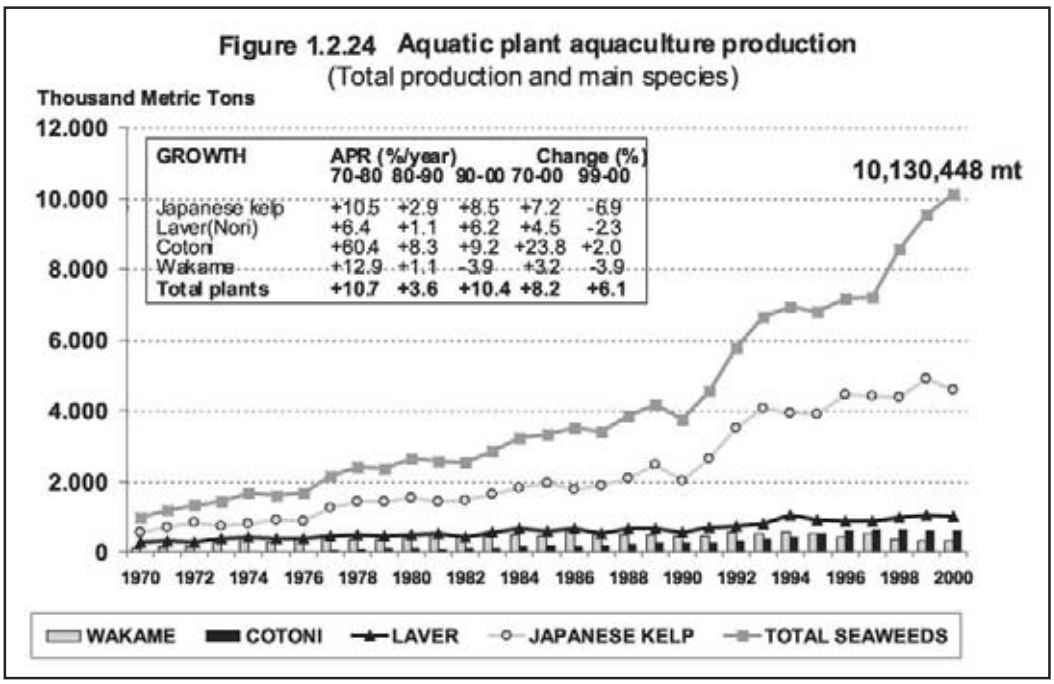
Molluscs

Total global mollusc production in 2000 topped 10.7 mmt (up 5.8% from the previous year) and was valued at US$9 496 615 000 (Figure 1.2.23). The Pacific cupped oyster (*Crassostrea gigas*) was the second most widely cultivated farmed aquatic species by weight at 3 944 042 mt and represented over 36% of total mollusc aquaculture production in 2000 (Table 3 see page 91). Other major cultivated molluscan species in 2000 included the Japanese carpet shell (*Ruditapes philippinarum*; 1 693 thousand metric tonnes (tmt)), the Yesso scallop (*Pectin yessoensis*; 1 132 tmt), blue mussel (*Mytilus edulis*; 458 tmt) and the blood cockle (*Anadara granosa*; 319 tmt). The growth of the sector has been steadily increasing, averaging 5.6% per year in the seventies, 7% in the eighties and 11.5% in the nineties (Figure 1.2.23).



Aquatic plants

Farmed aquatic plant production in 2000 reached 10.1 mmt (up 6.1% from the previous year) and was valued at US$5 607 835 000 (Figure 1.2.24). The Japanese kelp (*Laminaria japonica*) remained the top farmed aquatic species by weight at 4 580 056 mt and represented 45.2% of total aquatic plant aquaculture production in 2000 (Table 4 see page 92). Other major aquatic plant species produced in 2000 included laver (*Porphyra tenera*; 1 011 tmt), cotoni (*Eucheuma cottonii*; 605 tmt) and wakame (*Undaria pinnatifida*; 311 tmt). The growth of the sector has been relatively steady, averaging at 8.2% per year from 1970 to 2000 (Figure 1.2.23).



1.3 COUNTRY AND REGIONAL AQUACULTURE PRODUCTION

Production by economic country groupings

Approximately 91.2% and 83.9% of total aquaculture production in 2000 was produced within developing countries (41.68 mmt) and in particular, within Low-Income Food Deficit Countries or LIFDCs (38.35 mmt) in 2000 (Figure 1.3.1). According to the FAO aquaculture database, 57 LIFDC countries reported aquaculture production in 2000, including Africa - Burkina Faso, Burundi, Cameroon, Central African Republic, Congo Democratic Republic, Congo Republic, Cote d'Ivoire, Egypt, Ghana, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Morocco, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, Sudan, Swaziland, Tanzania, Togo and Zambia; Americas – Bolivia, Cuba, Ecuador, Guatemala, Honduras and Nicaragua; Asia - Armenia, Azerbaijan, Bangladesh, Bhutan, Cambodia, China, Georgia, India, Indonesia, Korea DPR, Kyrgzstan, Laos, Nepal, Pakistan, Philippines, Sri Lanka, Tajikistan, Turkmenistan and Uzbekistan; Europe – Albania and Macedonia; and Oceania – Kiribati, Papua New Guinea and Solomon Islands (FAO, 2002).

Of particular significance is the fact that the growth of aquaculture production within developing countries and LIFDCs has been steadily increasing. In the last decade, the aquaculture sector within LIFDCs has been growing over seven times faster (over the period 1970 to 2000) than the aquaculture sector within developed countries (total production 4.03 mmt in 2000) (Figure 1.3.1). The bulk (93%) of the total finfish production within developing countries in 2000 was contributed by omnivorous/herbivorous and filter-feeding fish species (Figure 1.3.2). In contrast, 73.8% of the total finfish production within developed countries in 2000 was due to the culture of carnivorous fish species (Figure 1.3.3).

Figure 1.3.1 Total world aquaculture production by major economic country groupings

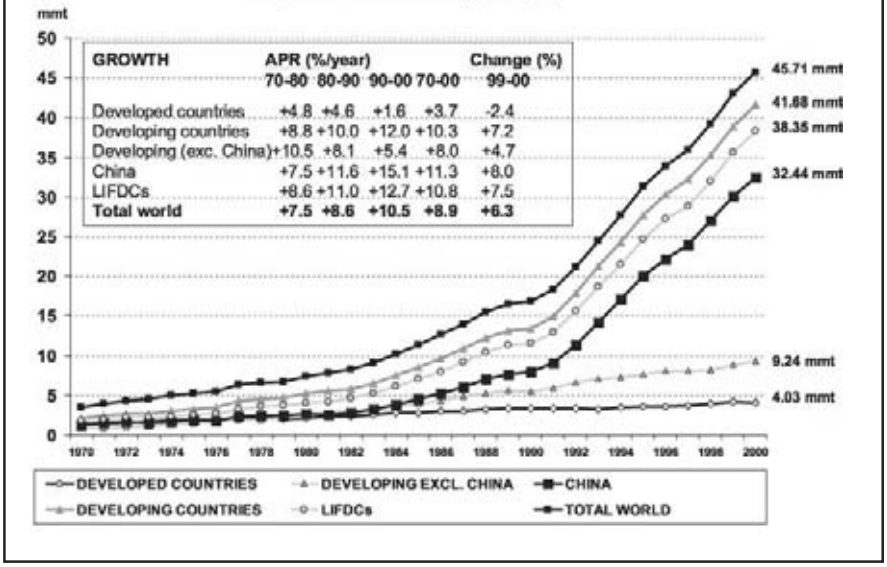


Figure 1.3.2 Production pyramid of top twenty farmed finfish and crustaceans within developing countries in 2000

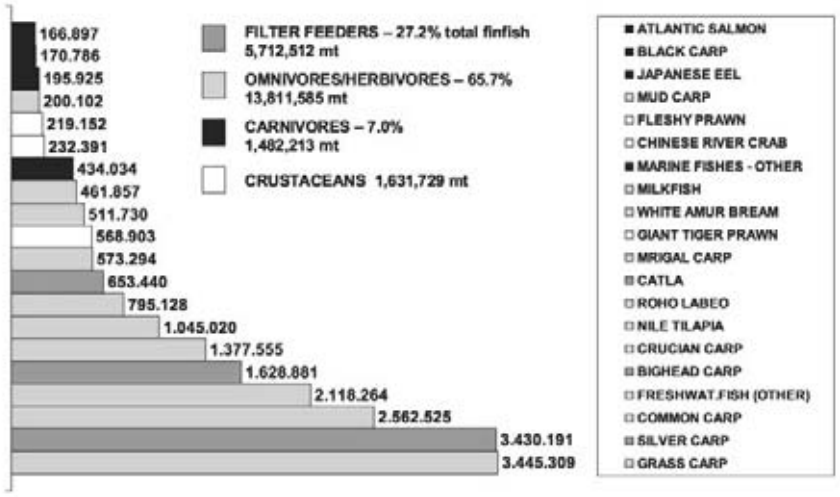
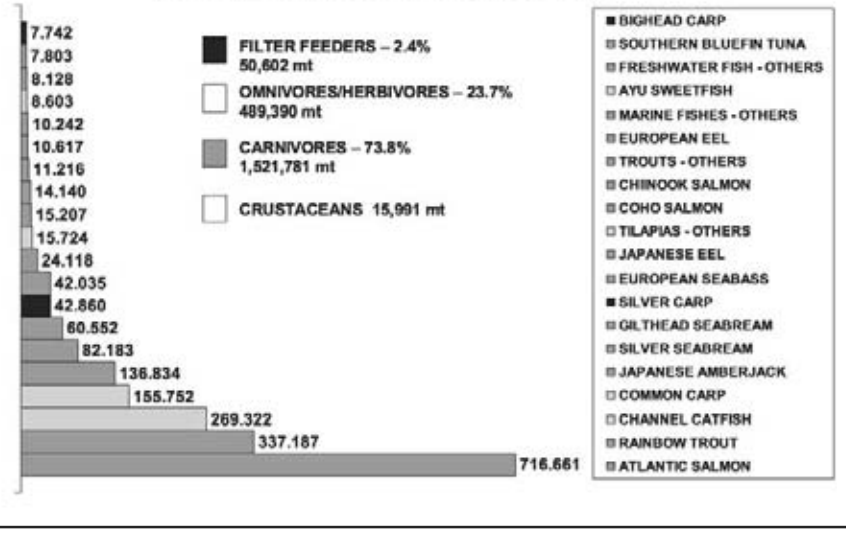
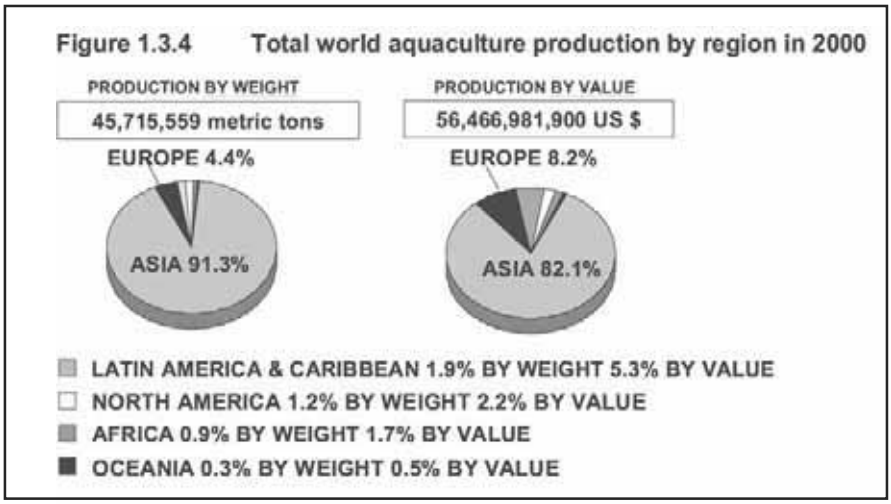


Figure 1.3.3 Production pyramid of top twenty farmed finfish & crustaceans within developed countries in 2000

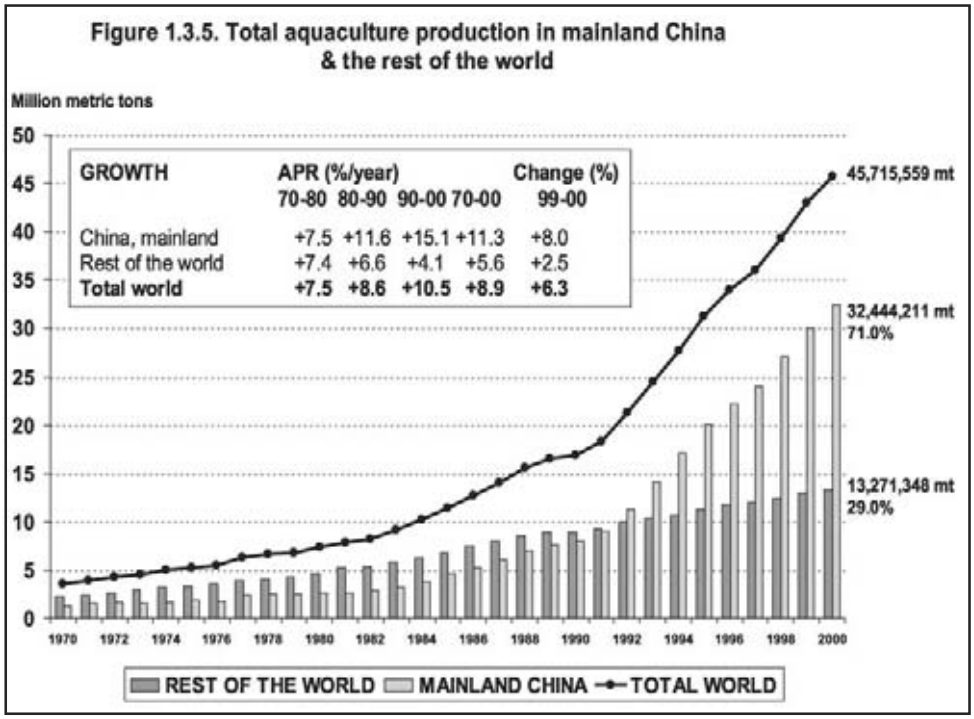


Production by country and region

By region, over 91.3% of the total aquaculture production by weight was produced within the Asian region (41.72 mmt) in 2000, followed by Europe (2.03 mmt or 4.4%), Latin America and the Caribbean (0.87 mmt or 1.9%), North America (0.55 mmt or 1.2%), Africa (0.40 mmt or 0.9%) and Oceania (0.14 mmt or 0.3% (Figure 1.3.4). Not surprisingly, the top nine aquaculture-producing countries were located within the Asian region, and included China (32.44 mmt or 71.0% of total global aquaculture production), India (2.09 mmt), Japan (1.29 mmt), Philippines (1.04 mmt), Indonesia (994 tmt), Thailand (707 tmt), Korea (Republic of) (698 tmt), Bangladesh (657 tmt) and Viet Nam (525 tmt) (Table 5 see page 93).



It must be pointed out that the aquaculture production figures for China may need to be revised following a downward revision of the official Chinese statistics for terrestrial meat production (FAO, 2000). In fact, analysis of global aquaculture production excluding mainland China showed only a modest growth, with production in the rest of the world increasing over six-fold, from 2.23 mmt in 1970 to 13.27 mmt in 2000, and the growth of the sector decreasing from a high of 7.4% during the seventies to 6.6% during eighties, and to 4.1% during the nineties (Figure 1.3.5).

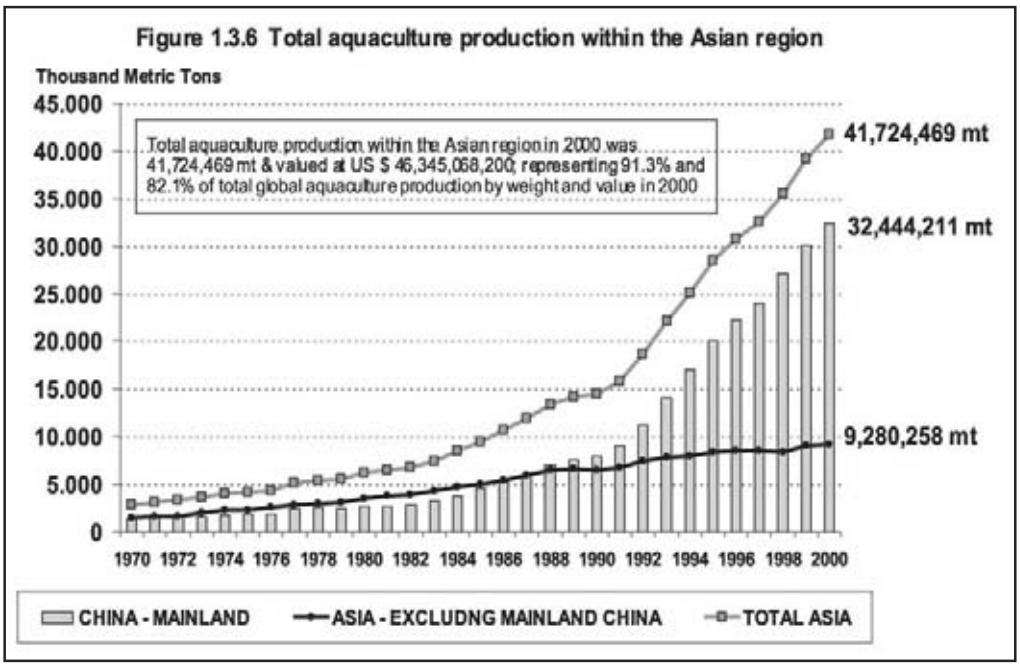


The second top ten country aquaculture producers by weight in 2000 included Norway (488 tmt), Korea DPR (698 tmt), the United States of America (428 tmt), Chile (425 tmt), Egypt (340 tmt), Spain (312 tmt), France (268 tmt), Taiwan, POC (256 tmt), Italy (216 tmt), Malaysia (168 tmt) and Brazil (153 tmt) (Table 5 see page 93).

Asia regional profile

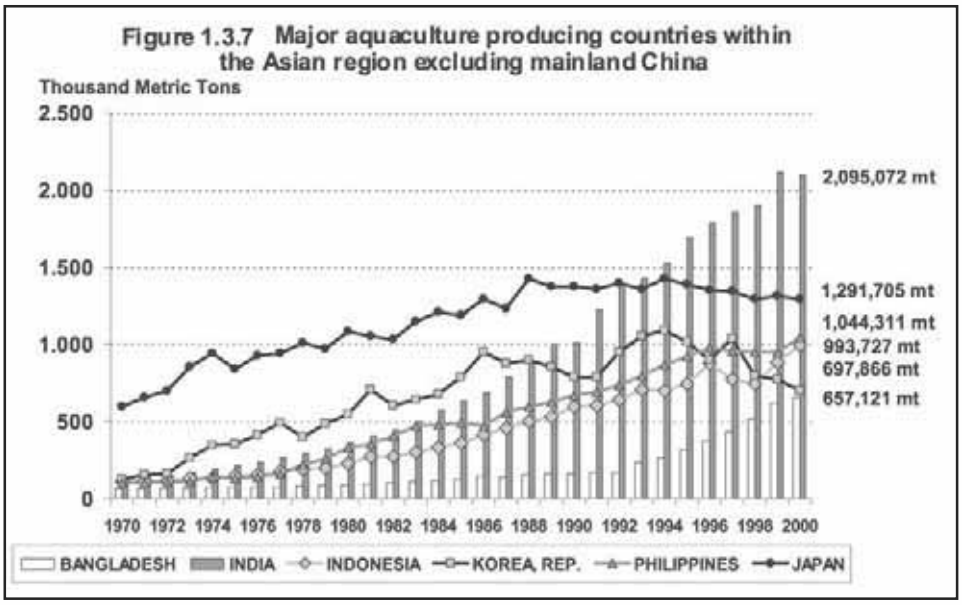
Forty-two countries reported aquaculture production within the Asian region in 2000: Armenia, Azerbaijan, Bahrain, Bangladesh, Bhutan, Brunei Darussalam, Cambodia, China (Mainland), China (Hong Kong SAR), China (Taiwan), Cyprus, Georgia, India, Indonesia, Iran (Islamic Rep. of), Iraq, Israel, Japan, Jordan, Kazakhstan, Korea (Dem. People's Rep.), Korea (Republic of), Kuwait, Kyrgyzstan, Lao People's Dem. Rep., Lebanon, Malaysia, Myanmar, Nepal, Oman, Pakistan, Philippines, Saudi Arabia, Singapore, Sri Lanka, Syrian Arab Republic, Tajikistan, Thailand, Turkey, Turkmenistan, Uzbekistan and Viet Nam (FAO, 2002).

The total reported aquaculture production within the region has increased 14-fold by weight, from 2 811 549 mt in 1970 (78.5% of total global production) to 41 724 469 mt in 2000 (representing 91.3% of total global production) (Figure 1.3.4). The annual percent growth of the sector within the region has increased from 8.2% per year (period 1970-1980), to 8.9% per year (period 1980-1990), to 11.1% per year (period 1990-2000), with the sector displaying an overall growth of 9.4% per year for the period 1970-2000 (Figure 1.3.6).



The total number of reported cultured species within the region has increased from 55 in 1970 to 107 in 2000 (FAO, 2002). The major species groups cultivated in 2000 included finfish (20.34 mmt or 48.7%), aquatic plants (10.07 mmt or 24.1%), molluscs (9.69 mmt or 23.2%), crustaceans (1.47 mmt or 3.5%), amphibians and reptiles (99,499 mt or 0.24%) and miscellaneous invertebrates (36,965 mt or 0.09%) (FAO, 2002). The top cultivated species in 2000 included the Japanese kelp (4 580 tmt or 11.0%), Pacific cupped oyster (3 741 tmt or 9.0%), silver carp (3 405 tmt or 8.2%), grass carp (3 379 tmt or 8.1%), common carp (2 499 tmt or 6.0%), Japanese carpet shell (1 635 tmt or 3.9%), bighead carp (1 631 tmt or 3.9%), Crucian carp (1 379 tmt or 3.3%), Yesso scallop (1 133 tmt or 2.7%) and laver (nori: 1 011 tmt or 2.4%) (FAO, 2002).

The top ten country producers within the Asian region in 2000 included China (Mainland) (32.44 mmt or 77.7%), India (2.09 mmt or 5.0%), Japan (1.29 mmt or 3.1%), Philippines (1.04 mmt or 2.5%), Indonesia (994 tmt or 2.4%), Thailand (707 tmt or 1.7%), Korea (Republic of) (698 tmt or 1.7%), Bangladesh (657 tmt or 1.6%), Viet Nam (525 tmt or 1.3%) and Korea (Dem. People's Rep.) (468 tmt or 1.1%) (Figure 1.3.7).



By value, aquaculture production within the region has increased over four-fold, from US$9.4 thousand million in 1984 to US$46.3 thousand million in 2000 (representing 82.1% of total global aquaculture production by value). The main species groups by value in 2000 included finfish (US$23.7 thousand million or 51.2%), molluscs (US$8.3 thousand million or 18.0%), crustaceans (US$8.3 thousand million or 17.9%), aquatic plants (US$5.6 thousand million or 12.0%), amphibians/reptiles (US$0.39 thousand million or 0.8%) and miscellaneous invertebrates (US$29 million or 0.06%). The top aquaculture species by value in 2000 included the giant tiger prawn (US$4.0 thousand million or 8.6%), Pacific cupped oyster (US$3.1 thousand million or 6.8%), silver carp (US$2.9 thousand million or 6.4%), Japanese kelp (US$2.8 thousand million or 6.1%), grass carp (US$2.8 thousand million or 6.0%), common carp (US$2.3 thousand million or 4.8%), Japanese carpet shell (US$2.0 thousand million or 4.2%), Yesso scallop (US$1.5 thousand million or 3.3%), rohu (US$1.5 thousand million or 3.2%), bighead carp (US$1.4 thousand million or 3.0%), fleshy prawn (US$1.3 thousand million or 2.8%) and the Japanese amberjack (US$1.2 thousand million or 2.7%) (FAO, 2002).

The top ten country producers by value within the region in 2000 included China (Mainland) (US$28.1 thousand million or 60.7%), Japan (US$4.4 thousand million or 9.6%), Thailand (US$2.4 thousand million or 5.2%), Indonesia (US$2.3 thousand million or 4.9%), India (US$2.2 thousand million or 4.7%), Bangladesh (US$1.2 thousand million or 2.5%), Viet Nam (US$1.1 thousand million or 2.4%), China (Taiwan) (US$0.85 thousand million or 1.8%), Myanmar (US$0.81 thousand million or 1.7%) and the Philippines (US$0.73 thousand million or 1.6%) (Table 5 see page 93).

The total production of farmed aquatic meat (values calculated using mean conversion values of 1.15 for finfish, 2.8 for crustaceans and 9.0 for molluscs) within the region has increased 16-fold, from 1 127 548 mt in 1970 (94.1% finfish, 5.6% molluscs, 0.3% crustaceans) to 19 295 523 mt in 2000 (91.7% finfish, 5.6% molluscs, 2.7% crustaceans). The calculated per capita production of farmed aquatic meat within the region has increased nine-fold, from 0.54 kg in 1970 to 5.25 kg in 2000.

China country profile

Total reported aquaculture production within mainland China has increased 25-fold by weight, from 1 294 180 mt in 1970 to 32 444 211 mt in 2000, with production up by 8.0% by weight since 1999 (FAO, 2002). Annual percent growth has increased from 7.5% per year (period 1970-1980), to 11.6% per year (period 1980-1990), and to 15.1% per year (period 1990-2000), with the sector displaying an overall growth of 11.3% per year for the period 1970-2000 (Table 5 see page 93 & Figure 1.3.6).

The total number of reported cultured species within mainland China has increased from 14 in 1970 to 21 in 2000 (FAO, 2002; Table 6 see page 95). The main species groups cultivated in 2000 included finfish (15.17 mmt or 46.8% of total production; 96.1% freshwater finfish, 2.8% marine finfish and 1.1% diadromous finfish), molluscs (8.61 mmt or 26.5% of total production), aquatic plants (7.86 mmt or 24.2%), crustaceans (0.71 mmt or 2.2%) and reptiles (92 tmt or 0.28%). The top cultured species in 2000 included the Japanese kelp (4 152 tmt or 12.8% of total production), Pacific cupped oyster (3 292 tmt or 10.1%), silver carp (3 228 tmt or 9.9%), grass carp (3 162 tmt or 9.7%), common carp (2 120 tmt or 6.5%), Japanese carpet shell (1 616 tmt or 5.0%), bighead carp (1 614 tmt or 5.0%), Crucian carp (1 375 tmt or 4.2%), Yesso scallop (920 tmt or 2.8%) and Nile tilapia (629 tmt or 1.9%) (Table 6 see page 95). The above ten species/species groups represented 68.1% of the total reported aquaculture production in mainland China in 2000.

However, 7 873 682 mt or 24.3% of the total reported aquaculture production in 2000 within mainland China was not reported to the species level. This included other aquatic plants (3 229 900 mt), other marine molluscs (1 492 691 mt), other freshwater fishes (1 477 534 mt), other razor clams (552 792 mt), other sea mussels (534 503 mt), other marine fishes (426 957 mt), other marine crabs (125 190 mt) and other marine crustaceans (34 115 mt). For example, apart from the Japanese eel, no cultivated marine or diadromous finfish species is currently reported to FAO.

According to the above statistical information, mainland China produced 71.0% of the total global aquaculture production by weight in 2000, including 65.8% of the total farmed finfish, 80.2% of the total farmed molluscs, 77.6% of the total farmed aquatic plants and 42.9% of the total farmed crustaceans (FAO, 2002).

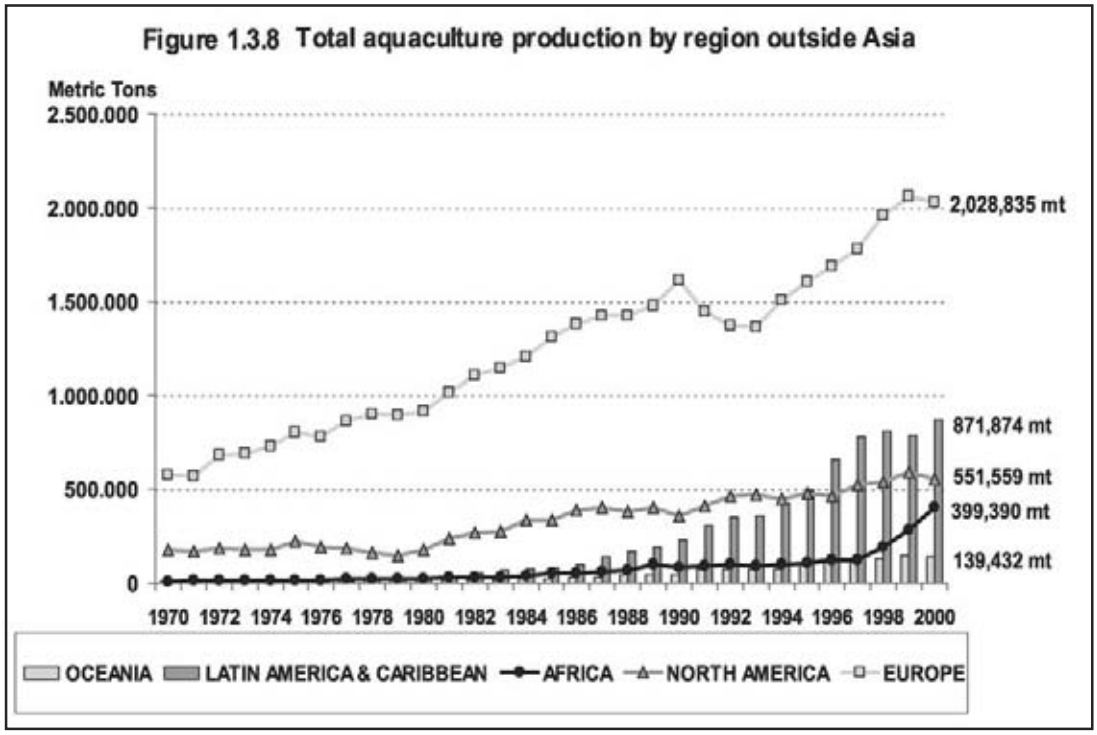
By value, aquaculture production within China has increased over six-fold, from US$ 4.1 thousand million in 1984 to US$ 28.1 thousand million in 2000 (representing 49.8% of the total global aquaculture production by value). The main cultivated species groups by value in 2000 were finfish (US$ 13.2 thousand million or 47.1% of the total value of aquaculture production), molluscs (US$ 7.2 thousand million or 25.5%), aquatic plants (US$ 4.0 thousand million or 14.2%), crustaceans (US$ 3.4 thousand million or 12.0%) and reptiles (softshell turtle) (US$ 342 million or 1.2%) (FAO, 2002). The top aquaculture species by value in 2000 included the Pacific cupped oyster (US$ 2.6 thousand million or 9.4%), silver carp (US$ 2.6 thousand million or 9.2%), grass carp (US$ 2.5 thousand million or 9.0%), Japanese kelp (US$ 2.5 thousand million or 8.9%), Japanese carpet shell (US$ 1.9 thousand million or 6.9%), common carp (US$ 1.6 thousand million or 5.6%), bighead carp (US$ 1.4 thousand million or 4.9%), fleshy prawn (US$ 1.3 thousand million or 4.6%), other aquatic plants (species not given) (US$ 1.3 thousand million or 4.6%) and the Yesso scallop (US$ 1.2 thousand million or 4.2%) (FAO, 2002).

The total production of farmed aquatic meat within mainland China has increased 27-fold, from 526 628 mt in 1970 (96.1% finfish, 3.8% molluscs) to 14 403 815 mt in 2000 (91.6% finfish, 6.6% molluscs, 1.8% crustaceans). The calculated *per capita* production of farmed aquatic meat within mainland China has increased 17-fold, from 0.63 kg in 1970 to 11.23 kg in 2000.

Europe regional profile

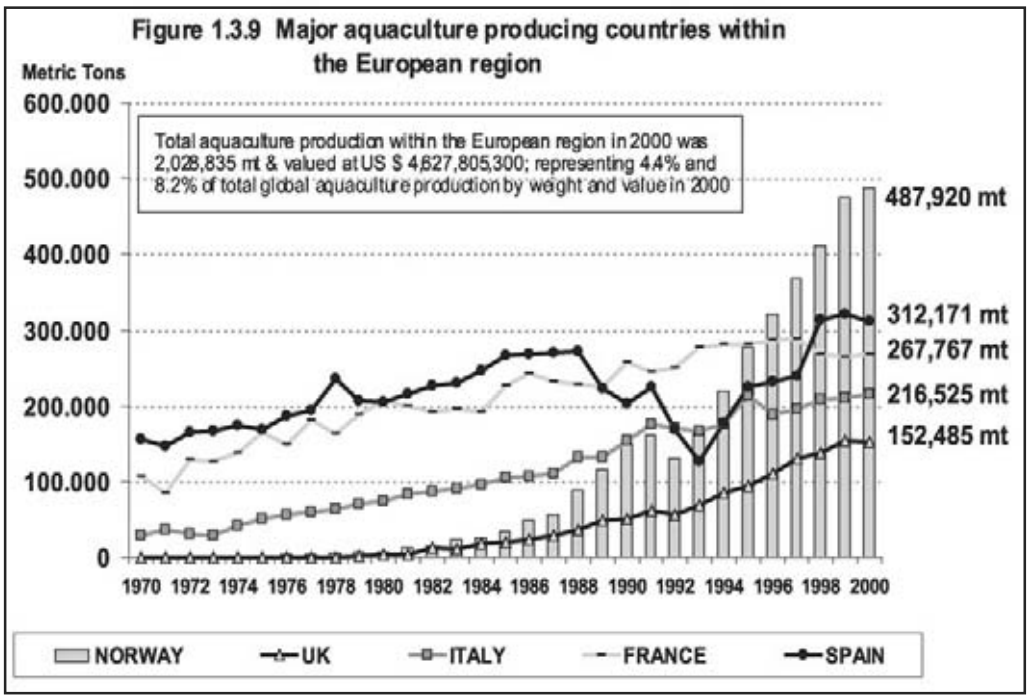
Thirty-eight countries reported aquaculture production within the European region in 2000, including Albania, Austria, Belarus, Belgium, Bulgaria, Channel Islands, Croatia, Czech Republic, Denmark, Estonia, Faeroe Islands, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Macedonia (Fmr Yug Rp of), Malta, Moldova (Republic of), Netherlands, Norway, Poland, Portugal, Romania, Russian Federation, Slovakia, Slovenia, Spain, Sweden, Switzerland, Ukraine, United Kingdom and Yugoslavia (Fed. Rep. of) (FAO, 2002).

The total reported aquaculture production within the region has increased over four-fold by weight, from 497 898 mt in 1970 (13.9% of the total global production) to 2 028 835 mt in 2000 (4.4% of total global production). The annual percent growth of the sector has decreased from 4.3% per year (period 1970-1980) and 7.8% per year (period 1980-1990), to 2.3% per year (period 1990-2000), with the sector displaying an overall growth of 4.8% per year during the period 1970-2000 (Figure 1.3.8).



The total number of reported cultured species within the region has tripled, increasing from 19 in 1970 to 60 in 2000, with the main species groups cultivated in 2000 being finfish (1.25 mmt or 61.8%), molluscs (769 tmt or 37.9%), aquatic plants (6,028 mt or 0.3%) and crustaceans (209 mt) (FAO, 2002). The top cultured species by weight within the region in 2000 included the Atlantic salmon (615 tmt or 30.3%), blue mussel (435 tmt or 21.4%), rainbow trout (289 tmt or 14.2%), Pacific cupped oyster (141 tmt or 6.9%), common carp (138 tmt or 6.8%), Mediterranean mussel (*Mytilus galloprovincialis*) (115 tmt or 5.7%), gilthead seabream (*Sparus auratus*) (58,041 mt or 2.9%), Japanese carpet shells (55,858 mt or 2.7%), European seabass (*Dicentarchus labrax*) (41,885 mt or 2.1%), silver carp (37,732 mt or 1.9%) and the European eel (*Anguilla anguilla*) (10,617 mt or 0.5%).

The top country producers within the region in 2000 included Norway (488 tmt or 24.0%), Spain (312 tmt or 15.4%), France (268 tmt or 13.2%), Italy (216 tmt or 10.7%), United Kingdom (152 tmt or 7.5%), Greece (80 tmt or 3.9%), Russian Federation (77 tmt or 3.8%), Netherlands (75 tmt or 3.7%), Germany (60 tmt or 2.9%) and Ireland (74 tmt or 2.5%) (Figure 1.3.9 & Table 5 see page 93).



By value, aquaculture production within the region has increased over three-fold, from US$ 1.42 thousand million in 1984 to US$ 4.63 thousand million in 2000 (representing 8.2% of the total global aquaculture production by value), with the main species groups being finfish (US$ 3.79 thousand or 81.9%) and molluscs (US$ 819 million or 17.7%). The top ten cultivated species by value in 2000 included the Atlantic salmon (US$ 1.77 thousand million or 41.6%), rainbow trout (US$ 768 million or 16.6%), common carp (US$ 308 million or 6.7%), gilthead seabream (US$ 278 million or 6.0%), blue mussel (US$ 273 million or 5.9%), European seabass (US$ 226 million or 4.9%), Pacific cupped oyster (US$ 214 million or 4.6%), Japanese carpet shells (US$ 165 million or 3.6%), European eel (US$ 85 million or 1.8%) and Mediterranean mussel (US$ 74 million or 1.6 %).

By country, the top aquaculture producers by value in 2000 within the region included Norway (US$1.36 thousand million or 29.3%), United Kingdom (US$461 million or 10.0%), Italy (US$456 million or 9.8%), France (US$434 million or 9.4%), Spain (US$382 million or 8.3%), Greece (US$287 million or 6.2%), Russian Federation (US$205 million or 4.4%), Denmark (US$147 million or 3.2 %), Germany (US$118 or 2.5%) and the Netherlands (US$107 million or 2.3%) (FAO, 2002).

The total production of farmed aquatic meat within the region has increased seven-fold, from 159 224 mt in 1970 (74.8% finfish, 25.2% molluscs) to 1 175 838 mt in 2000 (92.7% finfish, 7.3% molluscs). The calculated per capita production of farmed aquatic meat within the region has increased three-fold, from 0.35 kg in 1970 to 1.62 kg in 2000.

Latin America and Caribbean regional profile

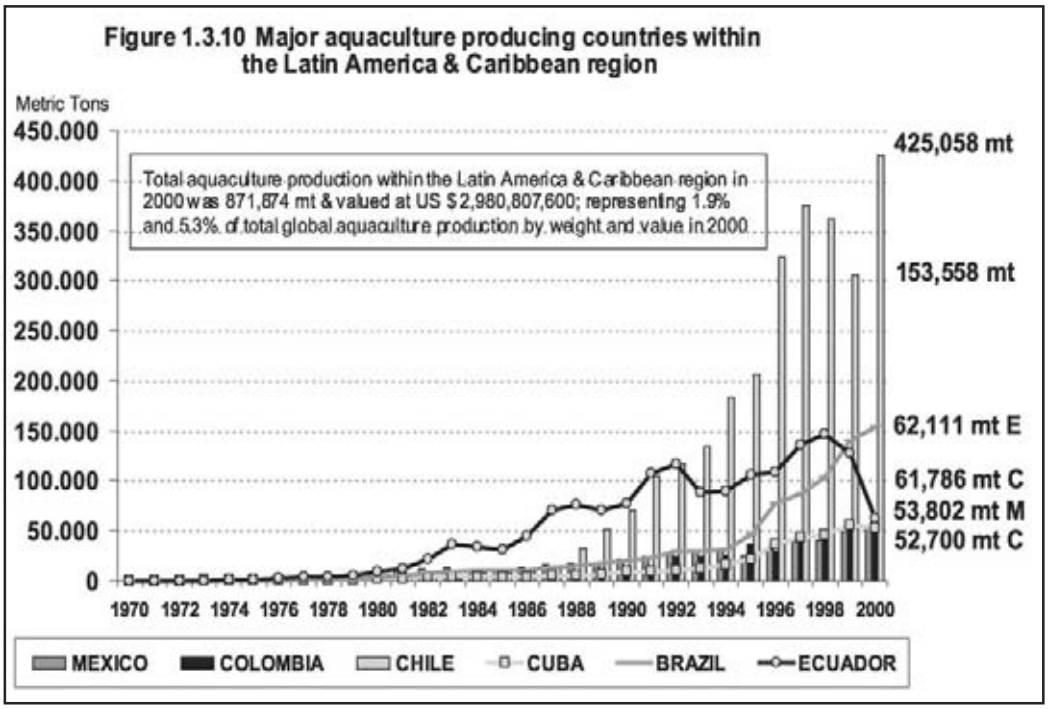
Thirty-five countries reported aquaculture production within the Latin America and Caribbean Region in 2000, including Argentina, Bahamas, Belize, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominica, Dominican Republic, Ecuador, El Salvador, Grenada, French Guiana, Guadeloupe, Guatemala, Guyana, Honduras, Jamaica, Martinique, Mexico, Netherlands Antilles, Nicaragua, Panama, Paraguay, Peru, Puerto Rico, Saint Kitts and Nevis, Saint Lucia, Suriname, Trinidad and Tobago, Turks and Caicos Islands, Uruguay and Venezuela (FAO, 2002).

Total reported aquaculture production within the region has increased over 714-fold by weight, from 1 221 mt in 1970 (0.03% of total global production) to 871 874 mt in 2000 (representing 1.9% of total global production). The annual percent growth of the sector within the region has decreased from 34.4% per year (period 1970-1980) and 23.3% per year (period 1980-1990), to 14.2 % per year (period 1990-2000), with the sector displaying an overall growth of 24.5% per year during the period 1970-2000 (Figure 1.3.8).

The total number of reported cultured species within the region has increased dramatically, from eight in 1970 to 46 in 2000. The main cultivated species groups in 2000 included finfish (624 tmt or 71.6%), crustaceans (153 tmt or 17.6%), molluscs (60 tmt or 6.9%), aquatic plants (34 tmt or 3.8%) and amphibians (772 mt or 0.09%). The top ten cultured species by weight within the region in 2000 included Atlantic salmon (166 897 mt or 19.1%), whiteleg shrimp (139 264 mt or 16.0%), rainbow trout (97 479 mt or 11.2%), coho salmon (93 419 mt or 10.7%), tilapia (85 246 mt or 9.8%), common carp (62 241 mt or 7.1%), *Gracilaria* seaweed (33 642 mt or 3.8%), silver carp (30 000 mt or 3.4%), Chilean mussel (*Mytilus chilensis*) (23 477 mt or 2.7%) and the Peruvian calico scallop (*Argopectin purpuratus*) (21 295 mt or 2.4%) (FAO, 2002).

The top country producers within the region in 2000 included Chile (425 058 mt or 48.7%), Brazil (153 558 mt or 17.6%), Ecuador (62, 11 mt or 7.1%), Colombia (61 786 mt or 7.1%), Mexico (53 802 mt or 6.2%), Cuba (52 700 mt or 6.0%), Venezuela (12 830 mt or 1.5%), Costa Rica (9 708 mt or 1.1%), Honduras (8 542 mt or 1.0%) and Peru (6 812 mt or 0.8%) (Figure 1.3.10).

Figure 1.3.10 Major aquaculture producing countries within the Latin America & Caribbean region



By value, aquaculture production within the region has increased over eight-fold, from US$337 million in 1984 to US$2.98 thousand million in 2000 (representing 5.3% of the total global aquaculture production by value). The main species groups by value in 2000 were finfish (US$1.89 billion or 63.4%), crustaceans (US$0.94 billion or 31.5%) and molluscs (US$128 million or 4.3%), with the top cultured species being the whiteleg shrimp (US$848 million or 28.4%), Atlantic salmon (US$567 million or 19.0%), coho salmon (US$346 million or 11.6%), rainbow trout (US$291 million or 9.7%), tilapia (US$221 million or 7.4%), common carp (US$176 million or 5.9%), Peruvian calico scallop (US$93 million or 3.1%), penaeid shrimp (species not given) (US$77 million or 2.6%), cachama (*Colossoma*) (US$75 million or 2.5%) and silver carp (US$21 million or 0.7%).

The top country producers by value within the region in 2000 included Chile (US$1,266 million or 42.5%), Brasil (US$617 million or 20.7%), Ecuador (US$324 million or 10.8%), Colombia (US$258 million or 8.6%), Mexico (US$181 million or 7.0%), Honduras (US$59 million or 2.0%), Cuba (US$47 million or 1.6%), Venezuela (US$43 million or 1.1%). Costa Rica (US$33 million or 1.4%) and Peru (US$ 28 million or 0.9%).

The total production of farmed aquatic meat within the region has increased just under a thousand-fold, from 612 mt in 1970 (86.5% finfish, 11.5% molluscs and 3.5% crustaceans) to 604 168 mt in 2000 (89.8% finfish, 9.0% crustaceans and 1.1% molluscs). The calculated *per capita* production of farmed aquatic meat within the region has increased from 0.002 kg in 1970 to 1.16 kg in 2000.

North America regional profile

Two countries reported aquaculture production within the North American region in 2000, Canada and the United States of America (USA). Total combined aquaculture production by these countries has increased over three-fold by weight, from 172 272 mt in 1970 (4.9% of the total global production) to 551 559 mt in 2000 (representing 1.2% of total global production by weight). The annual percent growth of aquaculture within this region increased from <0.02% per year (period 1970-1980) to 7.6% per year (period 1980-1990), and then decreased to 4.4% per year (period 1990-2000), with the sector displaying an overall growth of 3.9% per year for the period 1970-2000 (Figure 1.3.11).

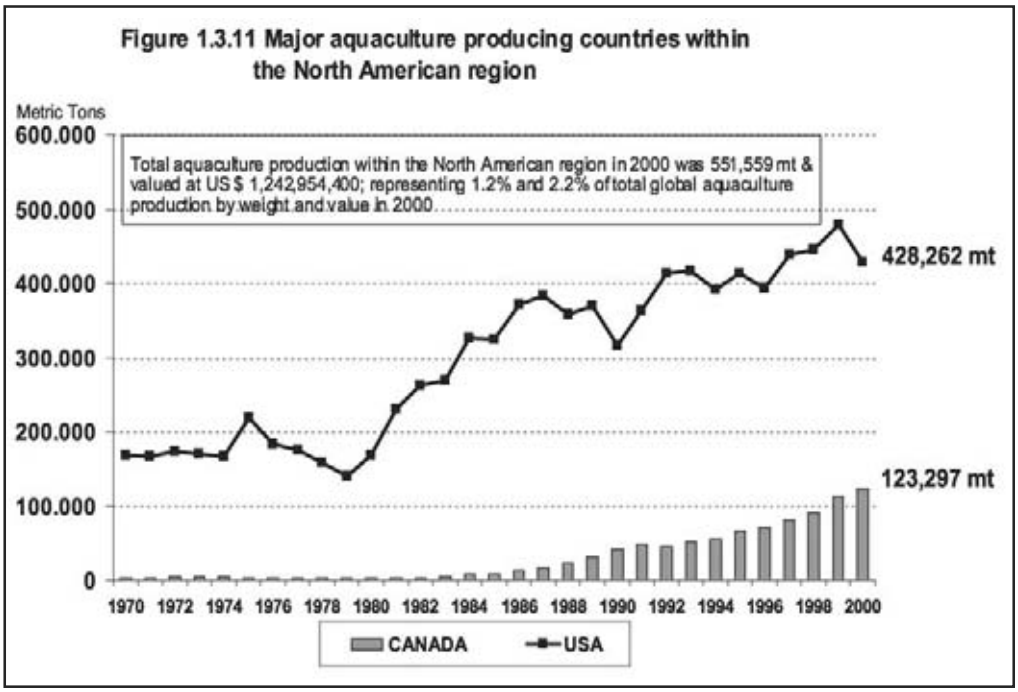


Figure 1.3.11 Major aquaculture producing countries within the North American region

The total number of reported cultured species within the region has doubled, increasing from nine in 1970 to 19 in 2000, with the main species groups cultivated being finfish (430 905 mt or 78.1%), molluscs (110 290 mt or 20.0%) and crustaceans (10 364 mt or 1.9%). The top cultured species within the region in 2000 included the channel catfish (269 257 mt or 48.8%), Atlantic salmon (90 790 mt or 16.5%), Pacific cupped oyster (44 318 mt or 8.0%), rainbow trout (32 360 mt or 5.9%), Northern quahog (= hard clam, *Mercenaria mercenaria*) (23 985 mt or 4.3%), blue mussel (23 535 mt or 4.3%), American cupped oyster (14 596 mt or 2.6%), tilapias (species not given) (8 051 mt or 1.4%), chinook salmon (8 000 mt or 1.4%), red swamp crawfish (*Procambarus clarkii*) (7 713 mt or 1.4%) and trouts (species not given) (6 407 mt or 1.25%) (FAO, 2002).

Total aquaculture production within the North American region in 2000 was reported to be 428 262 mt in the USA (77.6% of the regional total) and 123 297 mt in Canada (22.4% of the regional total (Table 5 & Figure 1.3.11). By value, aquaculture production within the region has increased over two-fold, from US$498 million in 1984 to US$ 1.24 thousand million in 2000 (representing 2.2% of total global aquaculture production by value). The main species groups cultivated by value in 2000 were finfish (US$1.0 thousand million or 85.0%), molluscs (US$140 million or 11.2%) and crustaceans (US$46 million or 3.7%). The top cultivated species by value in 2000 were channel catfish (US$447 million or 36.0%), Atlantic salmon (US$355 million or 28.5%), rainbow trout (US$82 million or 6.6%), American cupped oyster (US$53 million or 4.2%), golden shiner (*Notemigonus crysoleucas*) (US$46 million or 3.7%), chinook salmon (US$37 million or 3.0%), striped bass hybrid (*Morone saxatilis x M. crysops*) (US$29 million or 2.4%), northern quahog (=hard clam) US$28.1 million or 2.2%), red swamp crawfish (US$28 million or 2.2%) and Pacific cupped oyster (US$27 million or 2.1%). The total value of aquaculture production in the United States of America and Canada in 2000 was reported to be US$870 million and US$373 million, respectively (Table 5 see page 93).

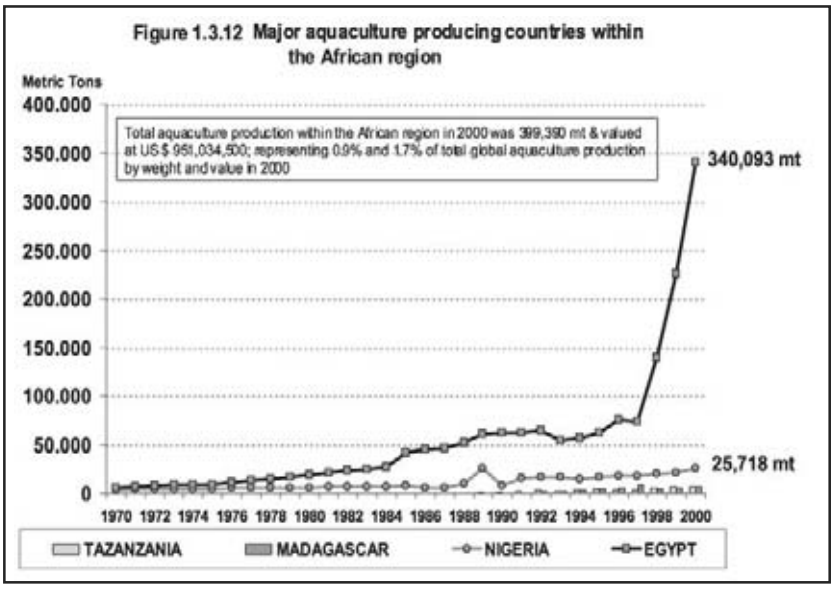
The total production of farmed aquatic meat within the region has increased over eight-fold, from 47 587 mt in 1970 (68.1% finfish, 31.3% molluscs and 0.6% crustaceans) to 390 655 mt in 2000 (95.9% finfish, 3.1% molluscs and 1.0% crustaceans). The calculated *per capita* production of farmed aquatic meat within the region increased over six-fold, from 0.21 kg in 1970 to 1.24 kg in 2000.

Africa regional profile

Thirty-eight countries reported aquaculture production within the African region in 2000, including Algeria, Burkina Faso, Burundi, Cameroon, Central African Republic, Congo (Dem. Rep. of the), Congo (Republic of), Côte d'Ivoire, Egypt, Gabon, Gambia, Ghana, Kenya, Lesotho, Liberia, Libyan Arab Jamahiriya, Madagascar, Malawi, Mali, Mauritius, Mayotte, Morocco, Namibia, Niger, Nigeria, Rwanda, Senegal, Seychelles, Sierra Leone, South Africa, Sudan, Swaziland, Tanzania (United Rep. of), Togo, Tunisia, Uganda, Zambia and Zimbabwe (FAO, 2002).

Total reported aquaculture production within the region has increased over 38-fold by weight, from 10 271 mt in 1970 (0.3% of the total global production) to 399 390 mt in 2000 (representing 0.9% of total global production by weight). The annual percent growth of aquaculture production within the region increased from 9.8% per year (period 1970-1980) to 12.1% per year (period 1980-1990), and then to 17.1% per year (period 1990-2000), with the sector displaying an overall growth of 13.0% per year for the period 1970-2000 (Figure 1.3.12).

Figure 1.3.12 Major aquaculture producing countries within the African region



The total number of reported cultured species within the region has increased sharply from only five in 1970 to 43 in 2000, with the main species groups cultivated in 2000 being finfish (384 337 mt or 96.2%), aquatic plants (7 177 mt or 1.8%), crustaceans (5 425 mt or 1.4%) and molluscs (2 451 mt or 0.6% (FAO, 2002). The top cultivated species within the region in 2000 included Nile tilapia (161 958 mt or 40.5%), flathead grey mullet (*Mugil cephalus*) (80 827 mt or 20.2%), grass carp (66 531 mt or 16.6%), common carp (19 590 mt or 4.9%), European seabass (10 483 mt or 2.6%), gilthead seabream (9 681 mt or 2.4%), *Eucheuma* seaweeds (7 000 mt or 1.7%), giant tiger prawn (5 225 mt or 1.3%), torpedo shaped catfish (4 201 mt or 1.0%) and tilapias (species not given) (3 820 mt or 0.9%; excludes three spotted tilapia at 2 750 mt or 0.7%) (FAO, 2002).

The top country aquaculture producers within the region in 2000 included Egypt (340 093 mt or 85.1%), Nigeria (25 718 mt or 6.4%), Madagascar (7 280 mt or 1.8%), Tanzania (7 210 mt or 1.8%), Zambia (4 240 mt or 1.1 %), South Africa (4 108 mt or 1.0%), Morocco (1 847 mt or 0.5%), Tunisia (1 553 mt or 0.4%), Cote d'Ivoire (1 197 mt or 0.3%) and Sudan (1 000 mt or 0.25%) (Figure 1.3.12).

By value, aquaculture production within the region has increased over 32-fold, from US$29 million in 1984 to US$951 million in 2000 (representing 1.7% of the total global aquaculture production by value), with the main species groups in 2000 being finfish (US$911 million or 95.8%), crustaceans (US$30 million or 3.2%), molluscs (US$7.5 million or 0.80%) and aquatic plants (US$1.4 million or 0.14%). The top aquaculture species by value within the region in 2000 were the flathead grey mullet (US$280 million or 29.4%), Nile tilapia (US$279 million or 29.3%), grass carp (US$115 million or 12.1%), European seabass (US$73 million or 7.6%), gilthead seabream (US$61 million or 6.5%), common carp (US$28 million or 3.0%), giant tiger prawn (US$28 million or 2.9%), torpedo shaped catfishes (US$12.8 million or 1.3%), tilapias (species not given) (US$7.4 million or 0.8%) and rainbow trout (US$6.6 million or 0.7%).

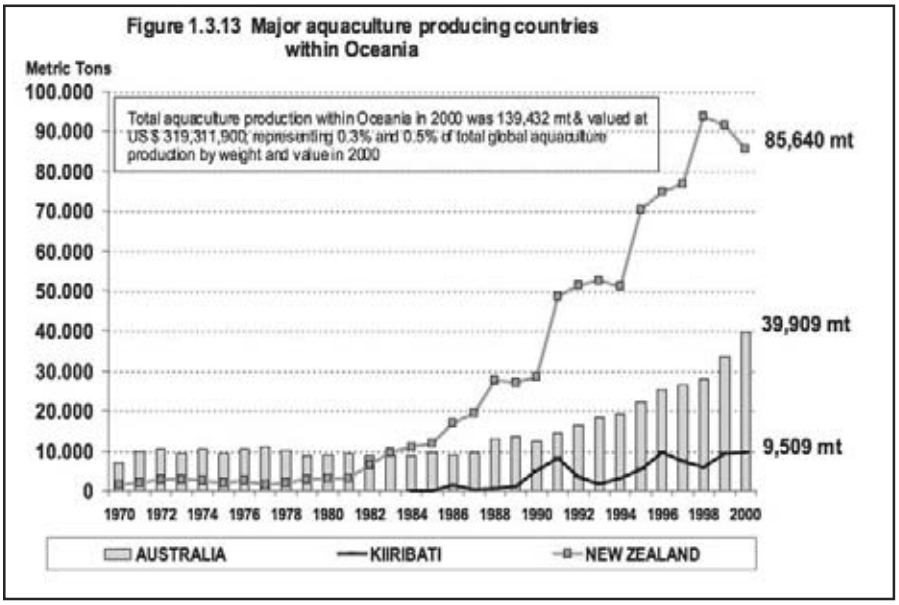
The top country producers by value within the region in 2000 included Egypt (US$815 million or 85.7%), Nigeria (US$57 million or 5.9%), Madagascar (US$28 million or 2.9%), South Africa (US$14 million or 1.4%), Tunisia (US$7.1 million or 0.7%), Zambia (US$7.0 million or 0.7%), Morocco (US$4.8 million or 0.5%), Seychelles (US$4.1 million or 0.4%), Cote d'Ivoire (US$1.6 million or 0.17%) and Sudan (US$1.5 million or 0.015%) (FAO, 2002).

The total production of farmed aquatic meat within the region has increased over 38-fold, from 8 834 mt in 1970 (99.8% finfish, 0.2% molluscs) to 336 415 mt in 2000 (99.3% finfish, 0.6% crustaceans and 0.1% molluscs). The calculated *per capita* production of farmed aquatic meat within the region has increased from 0.02 kg in 1970 to 0.42 kg in 2000.

Oceania regional profile

Ten countries reported aquaculture production within Oceania in 2000: Australia, Fiji Islands, French Polynesia, Guam, Kiribati, New Caledonia, New Zealand, Palau, Papua New Guinea and the Solomon Islands.

Total reported aquaculture production within the region increased over 16-fold by weight, from 8 421 mt in 1970 (0.2% of the total global production) to 139 432 mt in 2000 (representing 0.3% of total global production by weight). The annual percent growth of aquaculture production within the region increased from 3.8% per year (period 1970-1980) to 14.6% per year (period 1980-1990) and to 11.35 per year (period 1990-2000), with the sector displaying an overall growth of 9.8% per year for the period 1970-2000 (Figure 1.3.13).



The total number of reported cultured species within the region has increased from three in 1970 to 30 in 2000, with the main species groups cultivated in 2000 being molluscs (95 576 mt or 68.5%), finfish (28 763 mt or 20.6%), aquatic plants (10 020 mt or 7.2%) and crustaceans (5 073 mt or 3.6%). The top cultivated species within the region in 2000 included New Zealand mussel (*Perma canaliculus*) (76 000 mt or 54.5%), Atlantic salmon (10 907 mt or 7.8%), Pacific cupped oyster (10 773 mt or 7.7%), *Eucheuma* seaweeds (10 020 mt or 7.2%), southern bluefin tuna (*Thynnus maccoyii*) (7 803 mt or 5.6%), chinook salmon (6 140 mt or 4.4 %), Sydney rock oyster (*Saccostrea commercialis*) (5 584 mt or 4.0%), giant tiger prawn (2 654 mt or 1.9%), rainbow trout (1 949 mt or 1.4%) and Australian mussel (*Mytilus planulatus*) (1 771 mt or 1.3%).

By country, the top aquaculture producers within the region in 2000 included New Zealand (85 640 mt or 61.4%), Australia (39 909 mt or 28.6%), Kiribati (9 509 mt or 6.8%), Fiji Islands (2 299 mt or 1.6%), New Caledonia (1 754 mt or 1.3%), Guam (232 mt), French Polynesia (53 mt), Papua New Guinea (19 mt), Solomon Islands (15 mt) and Palau (2 mt) (FAO, 2002).

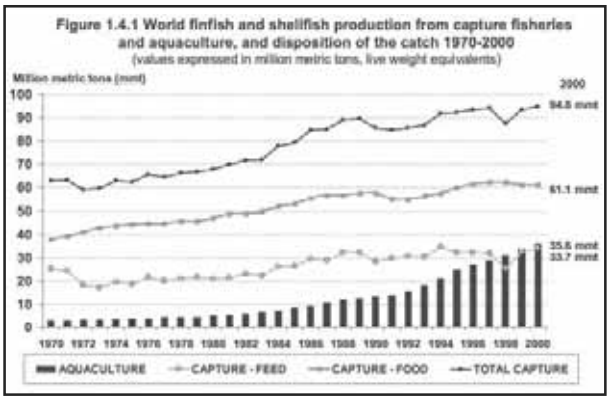
The total value of aquaculture production within the region has increased over nine-fold, from US$32 million in 1984 to US$319 million in 2000 (representing 0.5% of the total global aquaculture production by value), the main species by value in 2000 being finfish (US$202 million or 63.2%), molluscs (US$69 million or 21.7%), crustaceans (US$44 million or 13.9%) and aquatic plants (US$4.1 million or 1.3%). The top aquaculture species by value within the region in 2000 included the southern bluefin tuna (US$118 million or 36.9%), Atlantic salmon (US$49 million or 15.5%), New Zealand mussel (US$30 million or 9.5%), giant tiger prawn (US$22 million or 7.0%), Pacific cupped oyster (US$18 million or 5.8%), chinook salmon (US$18 million or 5.8%), Sydney rock oyster (US$17 million or 5.2%), penaeid shrimp (species not given) (US$12 million or 3.8%), rainbow trout (US$7.2 million or 2.3%) and Kuruma prawn (*Penaeus japonicus*) (US$5.9 million or 1.9%).

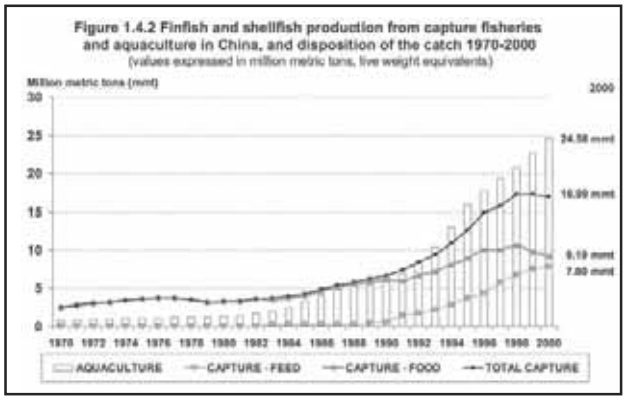
By country, the top producers by value within the region in 2000 included Australia (US$246 million or 77.0%), New Zealand (US$54 million or 16.9%), New Caledonia (US$12 million or 3.8%), Kiribati (US$3.8 million or 1.2%) and the Fiji Islands (US$1.8 million (FAO, 2002).

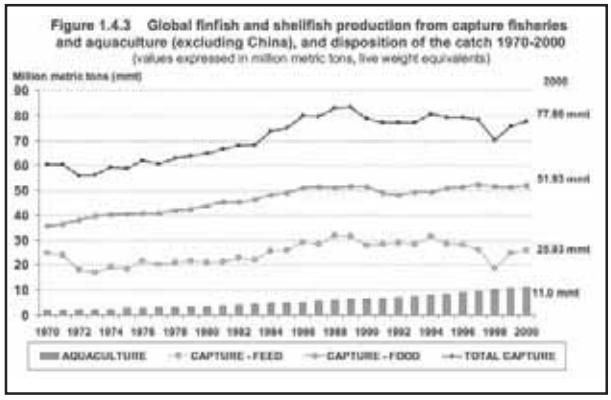
The total production of farmed aquatic meat within the region has increased over 40-fold, from 936 mt in 1970 (100% molluscs) to 37 442 mt in 2000 (66.8% finfish, 28.4% molluscs and 4.8% crustaceans). The calculated *per capita* production of farmed aquatic meat within the region has increased from 0.05 kg in 1970 to 1.23 kg in 2000.

1.4 CONTRIBUTION TO GLOBAL FOOD SUPPLY

In terms of global food-fish supply (i.e. the production of aquatic finfish and shellfish products on a whole live weight basis, and excluding aquatic plants), the aquaculture sector produced 35.6 mmt of farmed aquatic products in 2000 (24.58 mmt from China and 11.00 mmt from the rest of the world), compared with 61.1 mmt from capture fisheries (9.19 mmt from China, 51.93 mmt from the rest of the world), destined for direct human consumption (Figure 1.4.1).

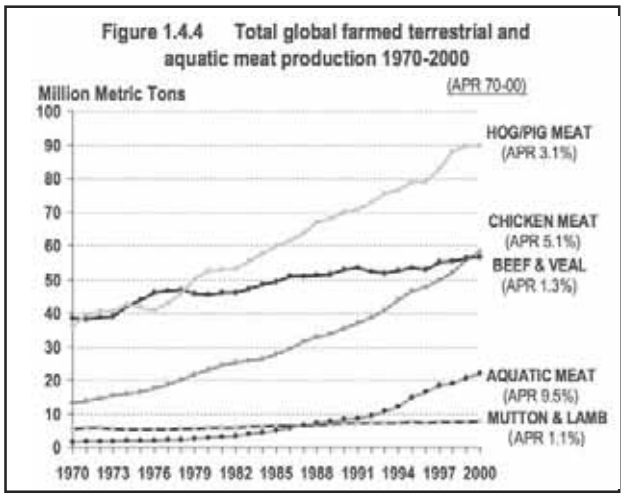






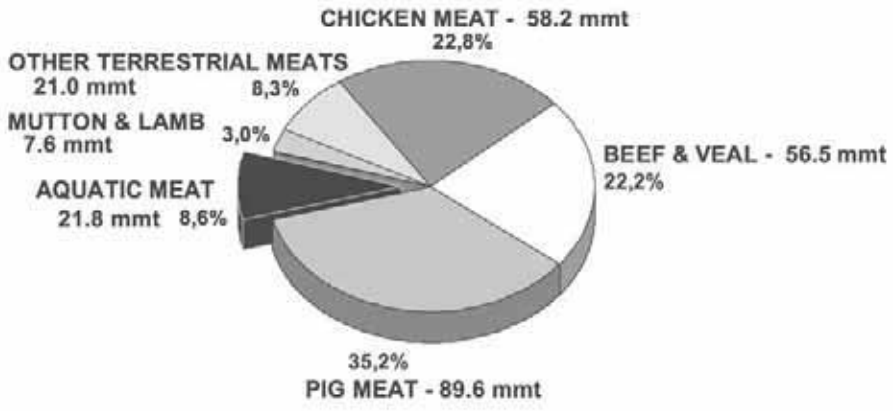
On the basis of the above figures, *per caput* food fish supply from aquaculture has increased eight-fold, from 0.71 kg in 1970 (0.9 kg from China, 0.6 kg from the rest of the world) to 5.87 kg in 2000 (19.6 kg from China, 2.3 kg from the rest of the world), with *per caput* global supply growing at an average compound rate of 7.3% per year (10.8% per year for China, 4.6% per year for the rest of the world). In contrast, the *per capita* supply of food fish derived from capture fisheries (i.e. 61.1 mmt in 2000, excluding captured fish destined for reduction into fishmeal) has remained relatively static, decreasing from 10.27 kg in 1970 to 10.09 kg in 2000. On the basis of the above data, over 36.8% of total global food-fish supplies were supplied by the aquaculture sector in 2000. However, separation of the data between China and the rest of the world shows a completely different picture; *per caput* supply from capture fisheries in China has increased from 3.0 kg in 1970 to 7.3 kg in 2000, whereas in the rest of the world it has decreased from 12.4 kg in 1970 to 10.8 kg in 2000. Moreover, whereas in China the total reported *per caput* supply from capture fisheries and aquaculture totalled 26.9 kg in 2000 (aquaculture's share being 72.9%), in the rest of the world the total calculated *per caput* supply was half this at 13.1 kg, and aquaculture's share was only 17.5% (FAO, 2002).

The total global production of farmed aquatic meat (i.e. finfish – gutted, head on; crustaceans – tails/meat, peeled; molluscs – meat, without shells, fresh weight basis) increased 15-fold, from 1.43 mmt in 1970 (0.39 kg *per caput*) to 21.84 mmt in 2000 (3.61 kg *per caput*). Moreover, farmed aquatic meat production has been growing at an average APR of 9.5% (period 1970-2000) (Figure 1.4.4), or over three times faster than total terrestrial meat production (APR 2.8%) (Figure 1.1.1) over the same period.



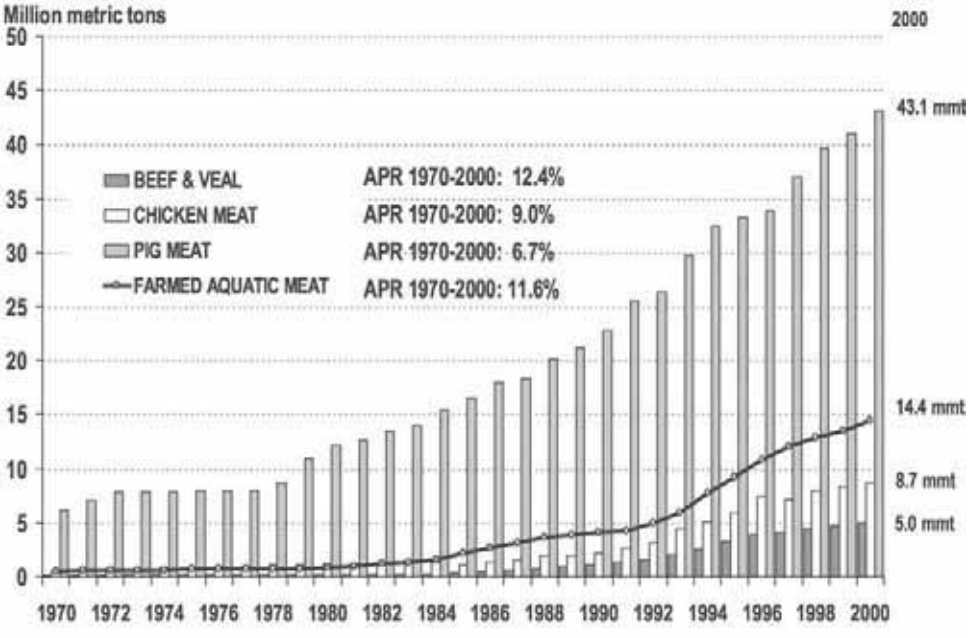
Although aquaculture currently ranks fourth in terms of global farmed meat production (21.8 mmt in 2000) after pig meat (89.6 mmt), chicken meat (58.2 mmt) and beef and veal (56.5 mmt (Figure 1.4.5), in China it ranks second to pig meat production (Figure 1.4.6).

Figure 1.4.5 Total farmed terrestrial and aquatic meat production in 2000



Total farmed terrestrial & aquatic meat production in 2000 – 254.8 million metric tons

Figure 1.4.6 Total farmed terrestrial and aquatic meat production in mainland China 1970 – 2000



In terms of animal protein supply, food fish (from capture fisheries and aquaculture) represented 15.9% of the total supply in 2000. In general, people living within Asia and Africa (including LIFDCs) are much more dependent on fish as part of their daily diets than people living within most developed countries and other regions of the world (Figure 1.4.7). For example, figures for 2000 show that while fish represented only 5.7% of the total animal protein supplies in South America, 7.1% in North and Central America, 9.4% in Oceania, and 10.3% in Europe, they provided 19.4% of total animal protein supplies in Africa, 21.1% in China and 23.3% in Asia (FAO, 2002).

Figure 1.4.7 Contribution of food fish to the human diet: 2000