

Business Indicators ♦ September 2000

British Columbia's Aquaculture Industry¹

This article is the third in a series of excerpts from a BC STATS report on the province's fisheries and aquaculture sector, published earlier this year. It is available through the New Releases section of the BC STATS website at: <http://www.bcstats.gov.bc.ca>.

Aquaculture defined

The aquaculture industry includes all establishments primarily engaged in farm-raising finfish, shellfish, or any other kind of aquatic animal. These establishments use some form of intervention in the rearing process to enhance production, such as keeping animals in captivity, regular stocking and feeding, and protecting them from predators.

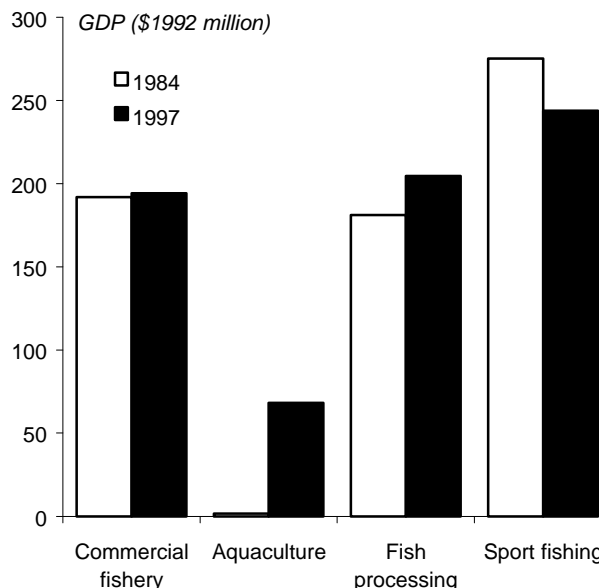
Aquaculture is becoming an increasingly important component of the fisheries and aquaculture sector

Aquaculture is an industry with a long history in British Columbia. The commercial cultivation of the Pacific oyster dates back to the beginning of the 1900s. Finfish farming in the province has developed more recently, and together with shellfish farming, is now a significant force within the fisheries and aquaculture sector.

Gross domestic product (\$1992 million)	1997	% change since 1984
Fisheries and aquaculture	710.8	9.4
Commercial fishery	194.3	1.3
Aquaculture	68.1	4,046.0
Fish processing	204.6	13.0
Sport fishing	243.8	-11.4

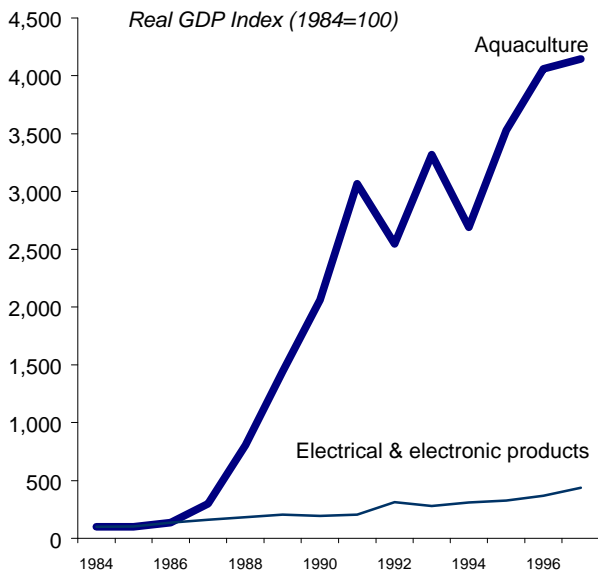
Although it is still small when compared to other industries within the sector, aquaculture has seen phenomenal growth during the period since 1984, when the industry's gross domestic product (GDP) was estimated at \$1.6 million (1992 dollars)—less than one percent of that in the commercial fishery. By 1997, fish and shellfish farming was about a third the size of the commercial fishery, and aquaculture was contributing more (\$68.1 million) to the province's GDP than the salmon fishery (\$65.9 million). In 1997, aquaculture generated about 10% of the fisheries and aquaculture sector's total gross domestic product (GDP), up from less than half a percent in 1984.

Finfish and shellfish farming now generates about a tenth of the fisheries and aquaculture sector's GDP



¹ As this report is excerpted from a BC STATS study released in February 2000, the data reported here do not include the latest information released by Statistics Canada in August. Those figures will be incorporated into the next edition of the larger study, which is due to be released early next year.

BC's aquaculture industry has grown ten times as much as the fast-growing electrical and electronic products industry



The aquaculture industry has expanded more than most industries in the province during the last decade and a half. Overall, BC's GDP increased by 48% between 1984 and 1997. In aquaculture, the cumulative growth since 1984 exceeded 4,000%, meaning that the industry is more than forty times bigger than it was in 1984. This expansion is quite remarkable. Of all the industries for which GDP estimates are produced, only three (miscellaneous petroleum and coal products; plastic film and sheeting; and electrical transformer manufacturing) have outperformed aquaculture during this period. Aquaculture has increased ten times as much as the electrical and electronic products manufacturing industry, one of the fastest growing in the province since 1984. The high-tech sector, by comparison, has increased 175% during the same period. The electrical and electronic products industry is the fastest-growing component within the high-tech sector.

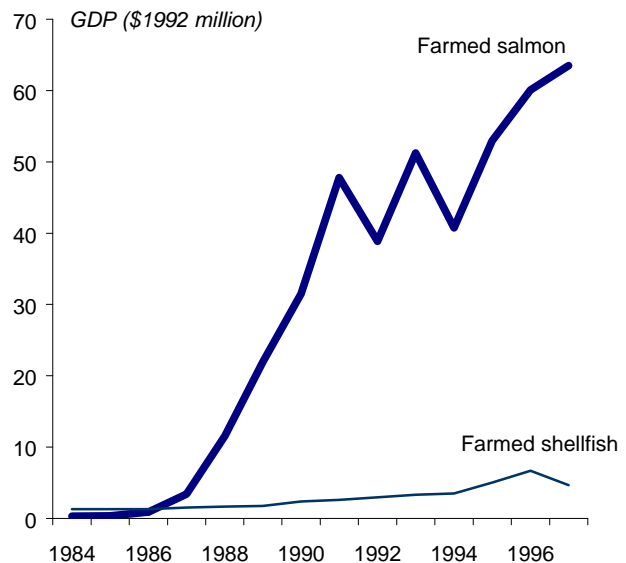
The industry's focus has shifted from shellfish to finfish farming during the last decade and a half

The very strong growth seen in aquaculture reflects the fact that the biggest component of this industry—finfish farming—has developed from in-

fancy to maturity during the last decade and a half, paralleling the changes that have occurred in agriculture since people first began to raise livestock and plant crops.

Part of the maturation process has involved the diversification of the industry from a primary concentration on the production of shellfish, to a much greater emphasis on finfish (mainly salmon) production. Salmon farming now dominates BC's aquaculture industry, accounting for the bulk of the industry's output and GDP. Ninety-six percent of the industry's revenues in 1997, and 93% of its GDP, originated in salmon farming activities. By comparison, in 1984, salmon farming generated about a third of total aquaculture revenues, and a fifth of the industry's GDP.

The rapid expansion in aquaculture is largely due to salmon farming, which now dominates the industry



Unlike the commercial fishery, where the main costs are those related to the harvesting of the resource, aquaculture operators must purchase their stock and then nurture it until it is ready to harvest. Their capital investment is tied up in pens, nets and other gear rather than in boats. Although aquaculture production is more labour-intensive than commercial fishing, labour and capital costs in this industry represent a smaller share of the total cost of production, because fish farmers also

incur other costs for feed, stock, and so on, which represent a significant share of total spending.

The GDP to output ratio in aquaculture is about 35%, well below the average of about 60% seen in the commercial fishery during most of the period covered by this study. In other words, the labour and capital inputs of a fish farmer represent a smaller portion of his total costs than they would in the case of a commercial fisherman.

Revenue and expenditure data for hog farming, an industry believed to be similar to aquaculture in its cost structure, suggest that the GDP to output ratio in that industry is somewhat lower, at about 25%. As in the aquaculture industry, most of the value of the output produced by hog farmers represents a recovery of costs such as feed, stock and equipment purchased by the farming operation in order to produce its output.

The number of jobs² in aquaculture is expanding

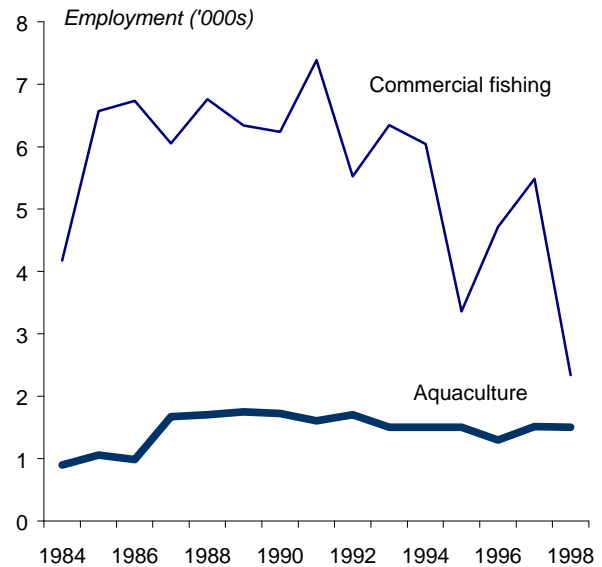
Employment in the aquaculture industry was estimated at about 1,500 in 1998. Unlike the commercial fishery, where employment has been declining since the beginning of this decade, the number of jobs in aquaculture is expanding. In the commercial fishery, the number of jobs fell from 7,400 in 1991 to 2,300 in 1998 as the fleet shrank in response to programs designed to help preserve the salmon stock and boost the long-term viability of the salmon fishery. Almost 1,600 commercial salmon licences were voluntarily retired and the fleet has been further reduced through licence stacking policies.

It is important to remember that the employment data, which are derived from the Labour Force Survey, are based on a fairly small sample of the population. Annual fluctuations in the data may indicate changes in the composition of the sample rather than growth or decline, especially for an industry like aquaculture, which employs relatively few workers. Probably the strongest conclusion one should draw from these numbers is that roughly 1,500 people work in aquaculture, while

² Employment data are from the Labour Force Survey, a survey of households

the commercial fishing industry employs a declining share of the total workforce.

About 1,500 people work in BC's aquaculture industry



It was not possible to report wages and salaries in the aquaculture industry separately from those in the commercial fishery. Wages and salaries in the commercial fishery and aquaculture industries combined were estimated at \$44 million in 1997, about a sixth of the total (\$269 million) for the fisheries and aquaculture sector.

Aquaculture revenue reached \$183 million in 1997

Aquaculture revenue reached \$183 million in 1997. Of this total, \$176 million was from salmon farming, while other aquaculture activities generated revenue totalling \$7 million. In 1984, aquaculture revenue were just over \$3 million, of which \$1 million came from salmon farming, while \$2 million originated in other fish farming (mainly shellfish farming) activities.

What's ahead for aquaculture in BC?

The rapid development of the aquaculture industry during the last decade and a half has helped boost the overall performance of the fisheries and aquaculture sector. At the same time, there are

always growing pains associated with new methods of production, and the next decade will likely see further developments as the industry adapts to a changing environment.

Some of these changes are already occurring. Ownership of fish farming operations is becoming more concentrated. Last year, the top five companies produced over 75% of the total provincial farmed salmon harvest. In shellfish aquaculture, about 5 operations control half the production.

BC's aquaculture industry is becoming more vertically integrated, with operations covering all stages of production, from hatcheries to growout, fish processing and marketing activities. It faces stiff international competition from places such as Scandinavia and South America. At the same time, a regulatory environment is being established which will provide for more rigorous environmental monitoring, allow some farms to relocate to more suitable sites, and set up pilot projects to test new technologies. Finfish farming will continue to focus on tidal operations, but there will likely be some diversification to growing species of wild caught fish such as halibut.