

BRITISH COLUMBIA'S FISHERIES  
AND AQUACULTURE SECTOR  
2022  
Edition

Lillian Hallin Consulting  
21-1950 Cultra Avenue, Saanichton BC V8M 1Y9  
[lhallin@telus.net](mailto:lhallin@telus.net)  
250 4155352

- Executive Summary..... 4
  - Fisheries and Aquaculture Sector ..... 4
  - Capture Fishery ..... 5
  - Aquaculture..... 6
  - Fish and Seafood Processing ..... 7
  - Sport Fishing ..... 8
  - International Trade in Fish and Seafood Products ..... 9
- Introduction ..... 11
  - What’s Included in the Fisheries and Aquaculture Sector? ..... 11
  - Economic Indicators ..... 11
  - What’s New in This Edition? ..... 11
  - Interpreting the Data ..... 12
- An Overview of the Fisheries and Aquaculture Sector ..... 13
  - Gross Domestic Product in the Fisheries and Aquaculture Sector ..... 13
  - Employment in the Fisheries and Aquaculture Sector..... 16
  - Labour income in the Fisheries and Aquaculture Sector ..... 18
  - Fisheries and Aquaculture Sector Revenue ..... 19
- Capture Fishery ..... 22
  - Gross Domestic Product in the Capture Fishery ..... 22
  - Employment in the Capture Fishery ..... 25
  - Labour and Mixed Income in the Capture Fishery..... 28
  - Capture Fishery Revenues..... 28
  - Location of Businesses in the Capture Fishery..... 29
- Aquaculture..... 31
  - Gross Domestic Product in Aquaculture ..... 31
  - Employment in Aquaculture ..... 33
  - Labour Income in Aquaculture..... 34
  - Aquaculture Revenues ..... 35
  - Location of Businesses in Aquaculture ..... 35
- Fish and Seafood Processing ..... 37
  - Gross Domestic Product in Fish and Seafood Processing ..... 37
  - Employment in Fish and Seafood Processing..... 38
  - Labour Income in Fish and Seafood Processing..... 38

Fish and Seafood Processing Revenues.....	39
Location of Businesses in Fish and Seafood Processing.....	40
Sport fishing.....	41
About the Sport Fishing Industry.....	41
Gross Domestic Product in the Sport Fishing Industry.....	41
Employment in the Sport Fishing Industry.....	47
Labour Income in the Sport Fishing Industry.....	48
Sport Fishing Industry Revenues.....	48
Location of Businesses in the Sport Fishing Industry.....	49
A Note About Sport Fishing Estimates.....	49
Supply and Use of Fish and Seafood Products in British Columbia.....	51
Supply of Fish and Seafood Products in British Columbia.....	51
Demand for Fish and Seafood Products in British Columbia.....	52
Household food expenditures.....	52
Upstream Industries: Wholesale, Retail and Transportation Services.....	53
International Exports of Fish and Seafood Products.....	55
The Valuation of Exports.....	55
International Exports of Fish and Seafood Products.....	55
Exports by Species.....	56
Exports by level of processing.....	59
Exports by Destination.....	60
International Imports of Fish and Seafood Products Consumed in British Columbia.....	62
A note about import estimates.....	62
The Valuation of Imports.....	63
International Imports of Fish and Seafood Products.....	64
Imports by Species.....	64
Imports by Level of Processing.....	65
Imports by Country of Origin.....	66
Interprovincial Trade in Fish and Seafood Products.....	69
Input-Output Multipliers.....	70
How to use multipliers: an example for the capture fishery.....	70
Multipliers for the sport fishing industry.....	72
Technical Notes.....	73

- 1. What is GDP and How is it Measured? ..... 73
- 2. What is Real GDP?..... 75
- 3. Defining the Fisheries and Aquaculture Sector..... 77
- 4. Defining the Sport Fishing Industry..... 79
- 5. Commercial fishing boats versus those used in the sport fishing industry: why are they treated differently? ..... 81
- 6. Input-Output Terminology ..... 82
- Appendices..... 83
  - 1: Methodologies for estimating GDP..... 83
  - 2. Methodology, Capture Fishery Estimates ..... 85
  - 3. Methodology, Aquaculture Estimates..... 88
  - 4. Methodology, Fish and Seafood Processing Estimates ..... 89
  - 5. Methodology, Sport Fishing Estimates..... 90
  - 6. Sources of Data ..... 95
  - 7. Statistical Tables ..... 98

## Executive Summary

### Fisheries and Aquaculture Sector

Text Table 1: Key Indicators for the Fisheries and Aquaculture Sector

Fisheries and Aquaculture Sector	1991	2001	2011	2021	2022	% change since 1991	% change since 2001	% change since 2011	% change since 2021
<b>GDP (\$million)</b>	724.1	739.9	773.9	954.7	1,038.8	43.5	40.4	34.2	8.8
% change from previous year		0.0	-7.5	6.8	8.8				
% of total economy	0.9	0.6	0.4	0.3	0.3				
<b>Real GDP (millions of 2017 dollars)</b>	1,057.5	980.3	1,081.1	1,074.7	1,067.3	0.9	8.9	-1.3	-0.7
% change from previous year		10.5	-8.0	2.6	-0.7				
% of total economy	0.8	0.6	0.5	0.4	0.4				
<b>Revenue (\$million)</b>	1,545.6	1,970.8	2,162.3	3,276.5	3,443.8	122.8	74.7	59.3	5.1
% change from previous year		5.3	-3.8	17.0	5.1				
% of total economy	1.3	1.0	0.6	0.6	0.5				
<b>Employment</b>	13,753	13,701	11,322	9,872	9,986	-27.4	-27.1	-11.8	1.2
% change from previous year		4.7	-1.2	3.4	1.2				
% of total economy	0.8	0.7	0.5	0.4	0.4				
<b>Labour income (\$million)</b>	428.0	435.7	438.1	505.4	561.4	31.2	28.9	28.1	11.1
% change from previous year		9.1	0.3	4.4	11.1				
% of total economy	0.8	0.6	0.4	0.3	0.3				

Data Sources: Lillian Hallin Consulting, derived using data from Fisheries and Oceans Canada, Ministry of Water, Land and Resource Stewardship, Ministry of Agriculture and Food, and Statistics Canada

- British Columbia's fisheries and aquaculture sector<sup>1</sup> contributed \$1.1 billion to the province's economy in 2022, accounting for 0.4% of the province's total real<sup>2</sup> gross domestic product (GDP)
- in that year. However, real GDP in the sector was down 0.7% from the 2021 value.
- The fisheries and aquaculture sector has seen periods of growth and decline during the last three decades, but the long-run trend for the sector as a whole is relatively flat, reflecting downturns in some industries (notably the capture fishery) which have been only partly offset by stronger growth in other component industries.
- Sector revenues totalled \$3.4 billion in 2022, up 5.1% from the previous year.
- Employment in the fisheries and aquaculture sector was estimated at 9,986 in 2022. The number of jobs in the sector has been falling, and in 2022 was 27.4% lower than in 1991.
- Wages, salaries and benefits reached an estimated \$561.4 million in 2022.

<sup>1</sup> A description of how the Fisheries and Aquaculture Sector has been defined and is measured can be found in the Technical Notes and Appendix.

<sup>2</sup> Real GDP figures are used throughout the text to describe changes in economic activity over time. They are reported in chained 2017 dollars. For more information about how GDP is measured, and how real GDP figures are calculated over time, see the Technical Notes.

## Capture Fishery

Text Table 2: Key Indicators for the Capture Fishery

Capture Fishery	1991	2001	2011	2021	2022	% change since 1991	% change since 2001	% change since 2011	% change since 2021
<b>GDP (\$million)</b>	289.2	142.3	167.1	127.3	117.3	-59.4	-17.6	-29.8	-7.9
<i>% change from previous year</i>		-23.8	-1.9	-20.3	-7.9				
<i>% of sector total</i>	39.9	19.2	21.6	13.3	11.3				
<b>Real GDP (millions of 2017 dollars)</b>	544.7	195.2	222.8	211.2	189.8	-65.2	-2.8	-14.8	-10.1
<i>% change from previous year</i>		-17.3	-5.2	0.9	-10.1				
<i>% of sector total</i>	51.5	19.9	20.6	19.7	17.8				
<b>Revenue (\$million)</b>	376.7	359.7	347.9	442.0	441.0	17.1	22.6	26.8	-0.2
<i>% change from previous year</i>		-3.5	3.9	31.6	-0.2				
<i>% of sector total</i>	24.4	18.3	16.1	13.5	12.8				
<b>Employment</b>	4,355	1,825	1,100	1,105	1,055	-75.8	-42.2	-4.1	-4.5
<i>% change from previous year</i>		1.4	-2.7	-6.0	-4.5				
<i>% of sector total</i>	31.7	13.3	9.7	11.2	10.6				
<b>Labour income (\$million)</b>	154.8	67.0	53.5	69.4	68.7	-55.6	2.5	28.4	-1.0
<i>% change from previous year</i>		-2.3	-2.7	-2.3	-1.0				
<i>% of sector total</i>	36.2	15.4	12.2	13.7	12.2				

*Data Sources: Lillian Hallin Consulting, derived using data from Fisheries and Oceans Canada, Ministry of Water, Land and Resource Stewardship, and Statistics Canada*

- In 2022, the capture fishery's real GDP was \$189.8 million, down 10.1% from the previous year.
- The capture fishery accounted for 17.8% of the fisheries and aquaculture sector's total real GDP in 2022. By comparison, 51.5% of real GDP in the sector was generated by the capture fishery in 1991.
- There have been significant changes in the capture fishery during the last three decades. Salmon, once the dominant species caught in British Columbia, accounts for a dwindling share of total GDP and revenues while other fisheries (such as crab and geoduck) have become more prominent.
- Capture fishery revenues, measured by the value of fish and seafood products landed, were \$441.0 million in 2022, virtually unchanged (-0.2%) from the 2021 level.
- Average annual employment<sup>3</sup> in the capture fishery was estimated at 1,055 in 2022, down 4.5% from 2021, and about a quarter of the 1991 figure (4,355).
- Labour income, including wages, salaries and benefits paid to both employed and self-employed workers, reached \$68.7 million in 2022, representing 12.2% of total labour income in the sector.

<sup>3</sup> Employment estimates indicate average annual employment levels.

## Aquaculture

Text Table 3: Key Indicators for Aquaculture

Aquaculture	1991	2001	2011	2021	2022	% change since 1991	% change since 2001	% change since 2011	% change since 2021
<b>GDP (\$million)</b>	55.8	120.5	183.3	280.0	340.2	509.7	182.3	85.6	21.5
% change from previous year		-12.0	-16.8	1.5	21.5				
% of sector total	7.7	16.3	23.7	29.3	32.7				
<b>Real GDP (millions of 2017 dollars)</b>	106.9	268.3	400.3	399.7	400.4	274.6	49.2	0.0	0.2
% change from previous year		45.0	-11.0	-0.3	0.2				
% of sector total	10.1	27.4	37.0	37.2	37.5				
<b>Revenue (\$million)</b>	115.5	288.5	463.9	739.1	916.9	693.9	217.8	97.7	24.1
% change from previous year		-1.3	-13.9	11.1	24.1				
% of sector total	7.5	14.6	21.5	22.6	26.6				
<b>Employment</b>	1,365	1,450	1,630	1,380	1,600	17.2	10.3	-1.8	15.9
% change from previous year		-5.5	3.5	-7.1	15.9				
% of sector total	9.9	10.6	14.4	14.0	16.0				
<b>Labour income (\$million)</b>	28.3	47.1	79.1	92.2	114.4	304.2	142.9	44.6	24.1
% change from previous year		-1.3	4.1	-3.4	24.1				
% of sector total	6.6	10.8	18.1	18.2	20.4				

Data Sources: Statistics Canada and Lillian Hallin Consulting

- Real GDP in the aquaculture industry was \$400.4 million in 2022, virtually unchanged (+0.2%) from the previous year, and similar to the level in 2011. Since 1991, real GDP in aquaculture has increased 274.6%, with most of the growth occurring during the early part of the period
- More than a third (37.5%) of the fisheries and aquaculture sector's real GDP originated in aquaculture production in 2022.
- While farmed salmon is the main product of the province's aquaculture industry, aquaculture operations in the province also produce other finfish as well as a variety of invertebrates such as oysters, geoducks and clams, mussels and scallops.
- Revenues of aquaculture operations totaled \$916.9 million in 2022, up significantly (+24.1%) over the 2021 level.
- Employment in aquaculture was estimated at 1,600 in 2022.
- Wages, salaries and benefits paid to workers were \$114.4 million in 2022.

## Fish and Seafood Processing

Text Table 4: Key Indicators for Fish and Seafood Processing

Fish and Seafood Processing	1991	2001	2011	2021	2022	% change since 1991	% change since 2001	% change since 2011	% change since 2021
<b>GDP (\$million)</b>	224.4	232.4	156.7	198.4	172.5	-23.1	-25.8	10.1	-13.1
<i>% change from previous year</i>		22.0	-2.2	23.1	-13.1				
<i>% of sector total</i>	31.0	31.4	20.2	20.8	16.6				
<b>Real GDP (millions of 2017 dollars)</b>	152.5	195.4	158.7	144.2	133.3	-12.6	-31.8	-16.0	-7.6
<i>% change from previous year</i>		24.8	-5.5	1.1	-7.6				
<i>% of sector total</i>	14.4	19.9	14.7	13.4	12.5				
<b>Revenue (\$million)</b>	709.7	735.5	585.0	1,077.1	950.8	34.0	29.3	62.5	-11.7
<i>% change from previous year</i>		12.3	7.4	25.5	-11.7				
<i>% of sector total</i>	45.9	37.3	27.1	32.9	27.6				
<b>Employment</b>	3,343	5,065	3,645	2,440	2,465	-26.3	-51.3	-32.4	1.0
<i>% change from previous year</i>		11.3	10.3	3.4	1.0				
<i>% of sector total</i>	24.3	37.0	32.2	24.7	24.7				
<b>Labour income (\$million)</b>	140.6	173.4	126.6	124.4	138.3	-1.6	-20.2	9.2	11.2
<i>% change from previous year</i>		16.5	12.7	5.9	11.2				
<i>% of sector total</i>	32.9	39.8	28.9	24.6	24.6				

*Data Sources: Statistics Canada and Lillian Hallin Consulting*

- The fish and seafood processing industry contributed \$133.3 million to the province's economy in 2022. Real GDP in the industry was down 7.6% from the previous year.
- The industry accounted for 12.5% of real GDP in the fisheries and aquaculture sector.
- Industry revenues were estimated at \$950.8 million in 2022, down 11.7% from the previous year.
- There were 2,465 jobs in fish and seafood processing in 2022. This compares to 3,343 jobs in 1991.
- Labour income in the fish and seafood processing industry was estimated at \$138.3 million in 2022, up 11.2% over the previous year.



## Sport Fishing

Text Table 5: Key Indicators for Sport Fishing

<b>Sport Fishing</b>	<b>1991</b>	<b>2001</b>	<b>2011</b>	<b>2021</b>	<b>2022</b>	<b>% change since 1991</b>	<b>% change since 2001</b>	<b>% change since 2011</b>	<b>% change since 2021</b>
<b>GDP (\$million)</b>	<b>154.7</b>	<b>244.7</b>	<b>266.8</b>	<b>349.0</b>	<b>408.8</b>	<b>164.3</b>	<b>67.1</b>	<b>53.2</b>	<b>17.1</b>
<i>% change from previous year</i>		<b>8.2</b>	<b>-6.5</b>	<b>17.5</b>	<b>17.1</b>				
<i>% of sector total</i>	<b>21.4</b>	<b>33.1</b>	<b>34.5</b>	<b>36.6</b>	<b>39.4</b>				
<b>Real GDP (millions of 2017 dollars)</b>	<b>253.4</b>	<b>321.4</b>	<b>299.3</b>	<b>319.5</b>	<b>343.7</b>	<b>35.6</b>	<b>6.9</b>	<b>14.8</b>	<b>7.6</b>
<i>% change from previous year</i>		<b>4.0</b>	<b>-7.1</b>	<b>8.5</b>	<b>7.6</b>				
<i>% of sector total</i>	<b>24.0</b>	<b>32.8</b>	<b>27.7</b>	<b>29.7</b>	<b>32.2</b>				
<b>Revenue (\$million)</b>	<b>343.7</b>	<b>587.1</b>	<b>765.5</b>	<b>1,018.3</b>	<b>1,135.1</b>	<b>230.3</b>	<b>93.3</b>	<b>48.3</b>	<b>11.5</b>
<i>% change from previous year</i>		<b>6.6</b>	<b>-7.6</b>	<b>8.2</b>	<b>11.5</b>				
<i>% of sector total</i>	<b>22.2</b>	<b>29.8</b>	<b>35.4</b>	<b>31.1</b>	<b>33.0</b>				
<b>Employment</b>	<b>4,690</b>	<b>5,361</b>	<b>4,948</b>	<b>4,947</b>	<b>4,866</b>	<b>3.8</b>	<b>-9.2</b>	<b>-1.7</b>	<b>-1.6</b>
<i>% change from previous year</i>		<b>3.1</b>	<b>-9.1</b>	<b>9.2</b>	<b>-1.6</b>				
<i>% of sector total</i>	<b>34.1</b>	<b>39.1</b>	<b>43.7</b>	<b>50.1</b>	<b>48.7</b>				
<b>Labour income (\$million)</b>	<b>104.3</b>	<b>148.2</b>	<b>178.9</b>	<b>219.4</b>	<b>240.0</b>	<b>130.1</b>	<b>61.9</b>	<b>34.2</b>	<b>9.4</b>
<i>% change from previous year</i>		<b>10.2</b>	<b>-7.5</b>	<b>9.5</b>	<b>9.4</b>				
<i>% of sector total</i>	<b>24.4</b>	<b>34.0</b>	<b>40.8</b>	<b>43.4</b>	<b>42.8</b>				

*Data Sources: Lillian Hallin Consulting, derived using data from Fisheries and Oceans Canada and Statistics Canada*

- In 2022, salt water and freshwater sport fishing added \$343.7 million to the province's real GDP, accounting for just under a third (32.2%) of the sector's total GDP.
- Revenue associated with spending by sport fishers was estimated at \$1.1 billion (+11.5%) in 2022, accounting for 33.0% of total revenue in the fisheries and aquaculture sector.
- Nearly half (4,866) of the employment in the fisheries and aquaculture sector in 2022 was in industries benefitting from spending by sport fishers.
- Total labour income in the sport fishing industry was estimated at \$240.0 million in 2022.

## International Trade in Fish and Seafood Products

Text Table 6: International Exports of British Columbia Fish and Seafood Products by Destination

International Exports of Fish and Seafood Products Produced in British Columbia	1991	2001	2011	2021	2022	% change since 1991	% change since 2001	% change since 2011	% change since 2021
<b>All Countries</b>	696.2	965.6	911.4	1,386.9	1,554.0	123.2	60.9	70.5	12.0
% change from previous year		7.8	-4.8	5.8	12.0				
% of total exports	100.0	100.0	100.0	100.0	100.0				
<b>USA</b>	228.3	617.5	517.7	932.2	1,056.0	362.5	71.0	104.0	13.3
% change from previous year		20.7	-3.1	10.8	13.3				
% of total exports	32.8	63.9	56.8	67.2	68.0				
<b>China (includes Hong Kong and Macau)</b>	20.6	61.0	157.5	263.6	311.6	1,412.6	410.8	97.8	18.2
% change from previous year		-18.2	21.4	-3.7	18.2				
% of total exports	3.0	6.3	17.3	19.0	20.1				
<b>Japan</b>	292.9	198.0	108.8	75.8	80.8	-72.4	-59.2	-25.7	6.6
% change from previous year		-15.4	-36.4	8.0	6.6				
% of total exports	42.1	20.5	11.9	5.5	5.2				
<b>Rest of Asia</b>	5.8	19.6	29.1	15.3	20.2	248.3	3.1	-30.6	32.0
% change from previous year		60.7	21.3	-36.8	32.0				
% of total exports	0.8	2.0	3.2	1.1	1.3				
<b>Rest of World</b>	148.6	69.5	98.3	100.0	85.4	-42.5	22.9	-13.1	-14.6
% change from previous year		9.6	0.4	-1.3	-14.6				
% of total exports	21.3	7.2	10.8	7.2	5.5				

Data Source: Statistics Canada, Canadian International Merchandise Trade Database

- International exports of B.C. fish and seafood products increased 12.0% in 2022, rising to nearly \$1.6 billion.
- Salmon, both farmed (40.6%) and wild (13.4%) accounted for the bulk of the province's exports of fish and seafood products, with crab making up another 12.5% of the total value of the fish and seafood exports in that year.
- The United States remains the largest market (68.0%) for British Columbia fish and seafood products, with \$1.1 billion of the province's fish and seafood product exports destined for south of the border.
- Japan's share of total exports has dropped significantly since 1991, when 42.1% (\$292.9 million) of British Columbia's fish and seafood products were destined for Japan. In 2022 the share was just 5.2%, with exports to Japan valued at \$80.8 million.
- In contrast, China was the destination of 20.1% (\$311.6 million) of international fish and seafood exports in 2022, compared to just 3.0% (\$20.6 million) three decades earlier.

Text Table 7: International Imports of Fish and Seafood Products Consumed in British Columbia by Region of Origin

International Imports of Fish and Seafood Products Consumed in British Columbia	1991	2001	2011	2021	2022	% change since 1991	% change since 2001	% change since 2011	% change since 2021
<b>All Countries</b>	165.2	460.2	535.4	948.4	1,048.3	534.6	127.8	95.8	10.5
% change from previous year		1.7	3.2	18.0	10.5				
% of total imports	100.0	100.0	100.0	100.0	100.0				
<b>USA</b>	87.3	221.6	204.9	359.7	304.3	248.6	37.3	48.5	-15.4
% change from previous year		1.8	-2.8	39.0	-15.4				
% of total imports	52.8	48.2	38.3	37.9	29.0				
<b>China (includes Hong Kong and Macau)</b>	10.1	27.1	81.9	103.7	138.9	1,275.2	412.5	69.6	33.9
% change from previous year		12.4	7.9	-1.0	33.9				
% of total imports	6.1	5.9	15.3	10.9	13.3				
<b>Japan</b>	2.5	2.9	4.1	6.5	9.5	280.0	227.6	131.7	46.2
% change from previous year		-31.0	-8.9	-1.5	46.2				
% of total imports	1.5	0.6	0.8	0.7	0.9				
<b>Rest of Asia</b>	36.0	101.5	139.8	191.5	266.0	638.9	162.1	90.3	38.9
% change from previous year		5.3	9.0	0.9	38.9				
% of total imports	21.8	22.1	26.1	20.2	25.4				
<b>Rest of World</b>	29.3	107.1	104.7	287.0	329.6	1,024.9	207.7	214.8	14.8
% change from previous year		-2.6	5.4	17.7	14.8				
% of total imports	17.7	23.3	19.6	30.3	31.4				

Data Sources: Lillian Hallin Consulting, derived using data from Statistics Canada, Canadian International Merchandise Trade Database and Supply Use Tables

- International imports of fish and seafood products consumed in British Columbia<sup>4</sup> totalled \$1.0 billion in 2022, an increase of 10.5% over the previous year.
- The United States was a key source of international fish and seafood products consumed in the province, with imports estimated at \$304.3 million in 2022.
- China (\$138.9 million) was another important source of fish and seafood products, accounting for 13.3% of the total value in 2022. This compares to 6.1% of all imports in 1991.
- There has been a significant increase in imports from other countries, with nearly a third (\$329.6 million, or 31.4%) of total imports of fish and seafood products coming from the rest of the world in 2022. In 1991, these countries accounted for just 17.7% (\$29.3 million) of the total value of imported fish and seafood products. Other parts of Asia (excluding Japan) were an important source of imports, with an estimated \$266.0 million (25.4%) of fish and seafood products consumed in BC originating in these countries in 2022.

<sup>4</sup> The value of imports consumed in the province is not the same as the value of imports entering via customs ports in British Columbia. These estimates are based on data from the Supply Use Tables (SUT), together with customs-based information, and measure the value of all international imports used in the province, regardless of where they entered the country.

## Introduction

This is the seventh edition of a report on British Columbia's Fisheries and Aquaculture Sector. This edition updates previously published information and extends the data to cover the period to 2022.

### What's Included in the Fisheries and Aquaculture Sector?

The fisheries and aquaculture sector includes the activities of four industries that rely on access to, or cultivation and use of, fish and seafood resources in the province. The included industries are:

- Capture fishery (commercial fishing);
- Aquaculture (fish and shellfish farming);
- Fish and seafood processing; and
- Sport fishing (freshwater and saltwater).

#### A Note About Sport Fishing Estimates

Data for the capture fishery, aquaculture and fish and seafood processing industries is available from Statistics Canada, at a summary level. However, sport fishing is not a standard industry for which economic data is published. Estimates of GDP, revenue, employment and labour income in the sport fishery were derived based on a definition and methodology<sup>5</sup> that was originally developed in the late 1990s, when the first issue of this report was produced.

### Economic Indicators

The following indicators are included in this report:

- GDP;
- Revenue;
- Employment;
- Labour income;
- International trade in fish and seafood products;
- Business location counts; and
- Economic impact multipliers.

### What's New in This Edition?

#### Data Revisions

Revisions to underlying data series used to calculate the estimates have resulted in changes to the historical data published in this report. Since the last edition of this report (which included data up to 2016), estimates of GDP and output published by Statistics Canada have been updated and revised, with changes going all the way back to 1997. The chained GDP estimates are now reported in 2017 dollars. To ensure that growth rates over time are consistent, the pre-1997 data have been adjusted to be consistent with the changes to the data starting in 1997.

The reported value of exports and imports have been revised, reflecting revisions to customs-based data published by Statistics Canada.

---

<sup>5</sup> The definition, methodology and data sources for measuring the sport fishing industry are described in more detail in Technical Note 4 and Appendix 5.

Economic impact multipliers have been updated to reflect the structure of the economy in 2019.

### Changes to Data Sources<sup>6</sup>

Previously, employment estimates for the sport fishery were derived using information from the Survey of Employment, Payrolls and Hours (SEPH). Other employment estimates (for the capture fishery, aquaculture, and fish and seafood processing) were based on Labour Force Survey (LFS) data. The LFS, which is a household survey, includes both employees and self-employed workers. However, SEPH, which is an employer survey, does not include self-employment.

For this edition of the Fisheries and Aquaculture Sector report, employment numbers for all industries in the sector are based on System of National Accounts (SNA) data on labour productivity and related measures. The SNA employment and labour income numbers are derived using data from both the LFS and SEPH surveys, together with information from income tax files. They are consistent with SNA concepts and data, and as a result, they are also consistent with the labour income and GDP estimates published by Statistics Canada for each industry.

### Methodology Revisions

There have also been some revisions and updates to the methodologies used to measure the size of the sector. Most notably, the methodology used to derive the sport fishing estimates has been modified to incorporate revisions to key data sources (e.g., GDP, revenue, and employment estimates produced by Statistics Canada) and to incorporate revised estimates of tourism-related GDP, revenue, employment and labour income. The new methodology for developing the tourism-related data is based on methods previously used for measuring the size of the province's tourism sector, updated to incorporate definitions and concepts used by Statistics Canada in the Tourism Satellite Accounts.

The methodologies used to derive detailed GDP estimates for the capture fishery and aquaculture industry (by species) were also reviewed and some adjustments were made to the calculations.

Because of all these changes, the numbers in this report are not directly comparable to those presented in previous editions.

## Interpreting the Data

Economic indicators show trends in an industry over time, but do not, of themselves, explain the reasons for those trends, nor do they account for social, environmental and other costs and benefits to both producers and consumers.

The fisheries and aquaculture sector has seen many changes over the past three decades. Access to, and use of, natural resources such as the fish stock or water is managed to ensure the long-term viability of the resource, as well as to meet specific policy objectives. Ecosystems, natural processes and cycles, resource management policies, and other factors, together with market forces, all affect the trends that have been observed in the fisheries and aquaculture sector over the past three decades.

---

<sup>6</sup> The data sources and methodologies used to calculate the estimates for each industry are described in the Appendix.

# An Overview of the Fisheries and Aquaculture Sector

## Gross Domestic Product in the Fisheries and Aquaculture Sector

Text Table 8: Real GDP, Fisheries and Aquaculture Sector

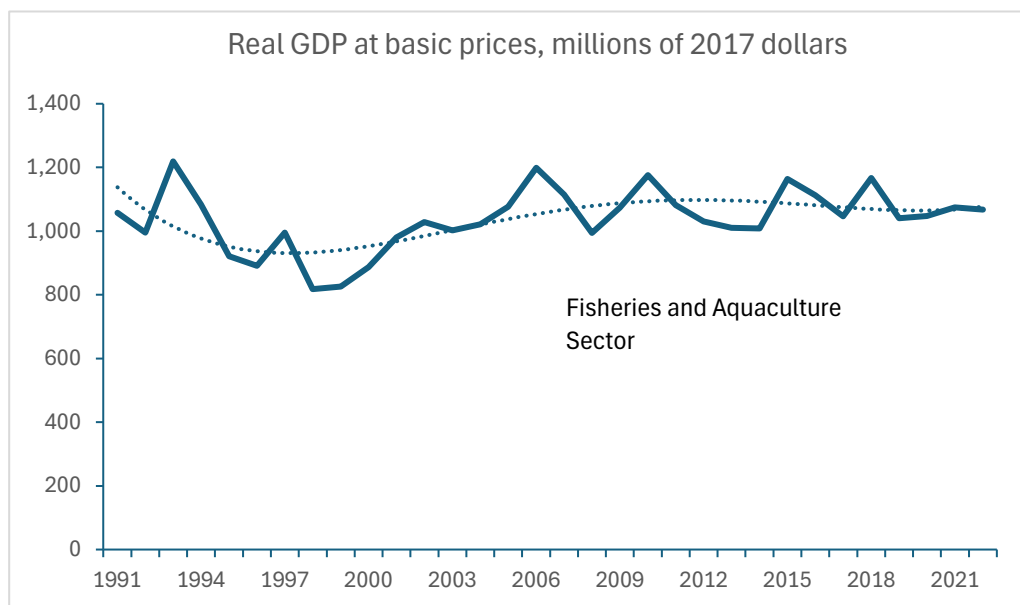
GDP at basic prices, \$2017 million	1991	2001	2011	2021	2022	% change since 1991	% change since 2001	% change since 2011	% change since 2021
<b>Total, fisheries and aquaculture sector</b>	<b>1,057.5</b>	<b>980.3</b>	<b>1,081.1</b>	<b>1,074.7</b>	<b>1,067.3</b>	<b>0.9</b>	<b>8.9</b>	<b>-1.3</b>	<b>-0.7</b>
Capture Fishery	544.7	195.2	222.8	211.2	189.8	-65.2	-2.8	-14.8	-10.1
Aquaculture	106.9	268.3	400.3	399.7	400.4	274.6	49.2	0.0	0.2
Fish and Seafood Processing	152.5	195.4	158.7	144.2	133.3	-12.6	-31.8	-16.0	-7.6
Sport Fishing	253.4	321.4	299.3	319.5	343.7	35.6	6.9	14.8	7.6

*Data Sources: Lillian Hallin Consulting, derived using data from Fisheries and Oceans Canada, Ministry of Water, Land and Resource Stewardship, Ministry of Agriculture and Food, and Statistics Canada*

Real GDP in the fisheries and aquaculture sector declined 0.7% to \$1.1 billion in 2022, after increasing 2.6% in the previous year. Although there have been significant changes in some industries within the sector, overall, the sector has seen real GDP remain at just over \$1.0 billion since 2008.

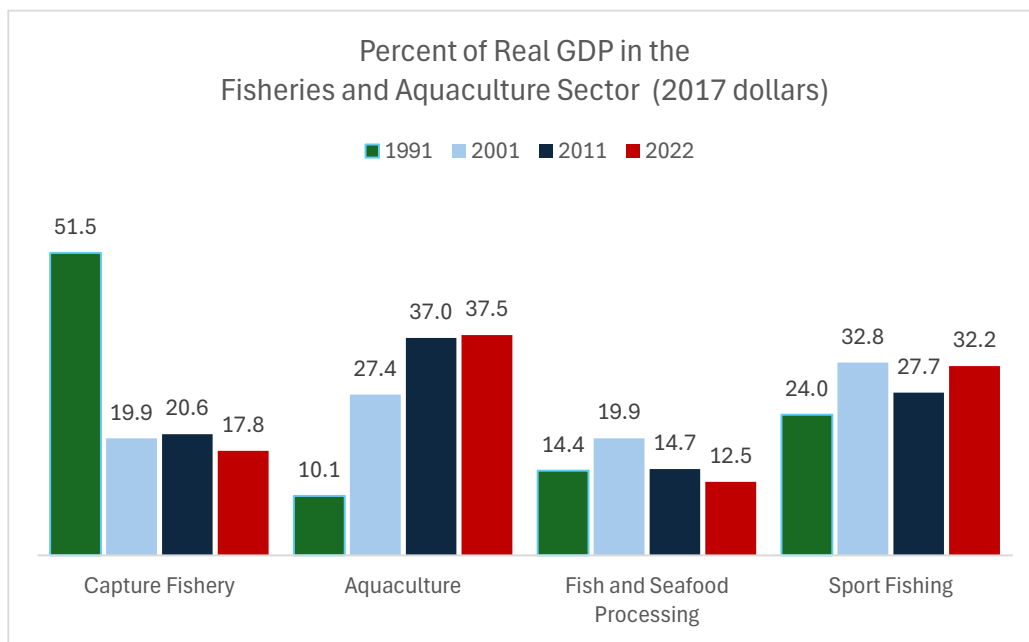
The 1990s was a decade of decline for the fisheries and aquaculture sector, which saw real GDP fall from \$1.1 billion to a low of \$818.1 billion (-22.6%) between 1991 and 1998. The sector regained some ground during the period from 1998 to 2006, but has faced challenges in more recent years. Overall, the long-run trend in the sector has been relatively flat.

Chart 1: Real GDP in the fisheries and aquaculture sector has remained relatively stable in recent years



*Data Sources: Lillian Hallin Consulting, derived using data from Fisheries and Oceans Canada, Ministry of Water, Land and Resource Stewardship, Ministry of Agriculture and Food, and Statistics Canada*

Chart 2: The structure of the fisheries and aquaculture sector has changed significantly since 1991



*Data Sources: Lillian Hallin Consulting, derived using data from Fisheries and Oceans Canada, Ministry of Water, Land and Resource Stewardship, Ministry of Agriculture and Food, and Statistics Canada*

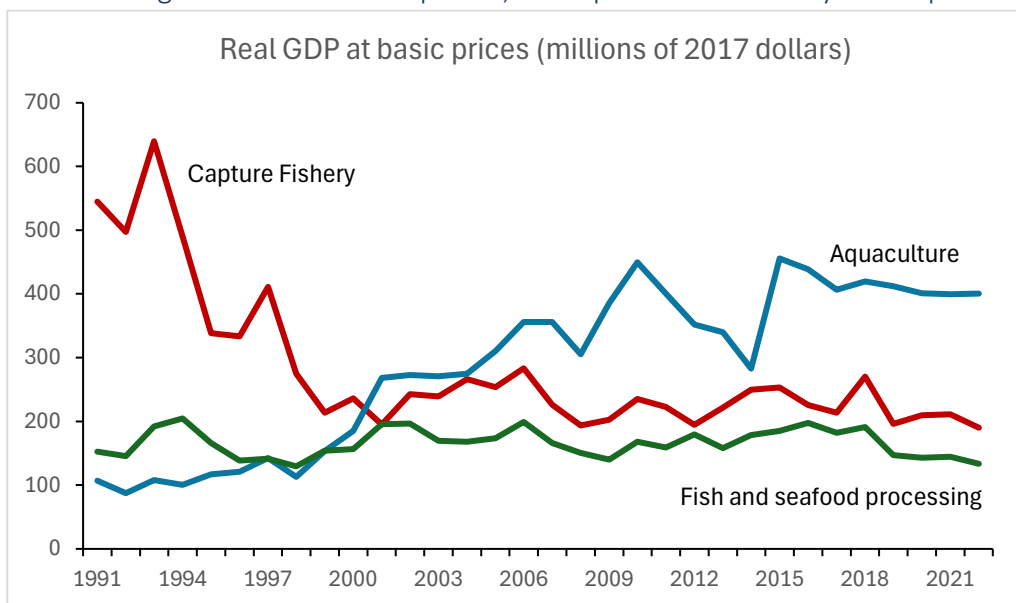
There have been structural changes in the fisheries and aquaculture sector over time, as declines in some industries have been offset by significant growth in others during much of the period. In 1991, the capture fishery accounted for 51.5% of the sector's total real GDP. By 2022, its share had shrunk to just 17.8%, with most of that decline occurring during the 1990s.

Growth in other industries, such as aquaculture (which saw its share of total sector GDP rise from 10.1% to 27.4% between 1991 and 2001) only partly offset the effect of the significant decline in the size of the capture fishery during the 1990s. While the aquaculture industry continued to expand at a relatively rapid pace throughout the first two decades, the industry has seen little or no growth in recent years, as it has been adjusting to policy changes that affect how and where fish and seafood farming activities occur in the province. In 2022, aquaculture accounted for 37.5% of the sector's real GDP.

The fish and seafood processing industry, which handles products of both the capture fishery and aquaculture industry, accounted for 14.4% of the sector's real GDP in 1991, and a slightly smaller share (12.5%) in 2022. Over the longer run, the fish and seafood processing industry's share has remained comparatively stable, as an increase in processing activities related to aquaculture production may have helped offset the effects of the long-run decline in the capture fishery.

Sport fishing accounted for nearly a quarter (24.0%) of real GDP in the fisheries and aquaculture sector in 1991 but saw its share increase to just under a third (32.2%) by 2022.

Chart 3: The capture fishery shrank during the 1990s and remains considerably smaller than it was three decades ago. For much of this period, the aquaculture industry was expanding.



Data Sources: Lillian Hallin Consulting, derived using data from Fisheries and Oceans Canada, Ministry of Water, Land and Resource Stewardship, Ministry of Agriculture and Food, and Statistics Canada

#### Preliminary GDP data for 2023

Preliminary estimates of real GDP<sup>7</sup> indicate that key industries in the sector continued to shrink in 2023. Real GDP in the capture fishery was down 12.6% in 2023, after falling 10.1% in the previous year. In aquaculture, real GDP fell 17.1%, the first double-digit decline seen since 2014 (-16.9%). With less activity in both the capture fishery and aquaculture industries, fish and seafood processing contracted for a second straight year, falling 19.8% after posting a 7.6% decline in 2022.

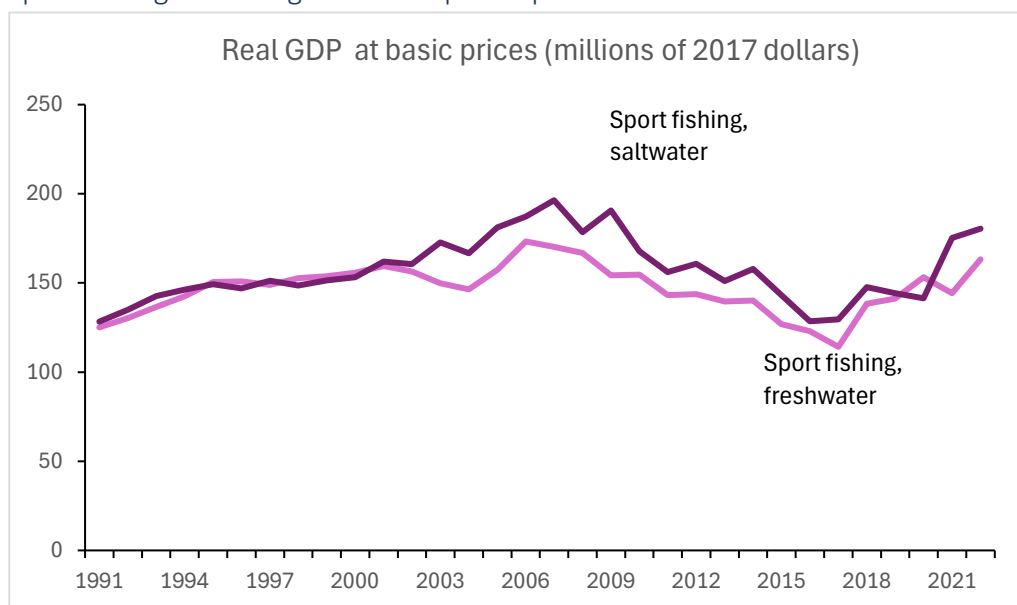
By comparison, the province's goods industries shrank an estimated 0.8% in 2023, while real GDP in the service sector was up 2.4, boosting overall GDP growth to 1.6%.

Preliminary estimates for 2023 are not available for the sport fishing industry.

<sup>7</sup> Preliminary estimates of real GDP by industry for 2023 were published by Statistics Canada in May 2024.



Chart 4: Sport fishing is once again on an upward path



Data Sources: Lillian Hallin Consulting, derived using data from Fisheries and Oceans Canada, Ministry of Water, Land and Resource Stewardship, Ministry of Agriculture and Food, and Statistics Canada

The sport fishing industry experienced a period of sustained growth in the 1990s followed by a downturn during the second half of the study period. It has picked up speed in recent years, despite the effects of COVID-related declines in many tourism industries. One reason for the relatively strong performance during the COVID period is that the sport fishing industry includes the economic impact of angling-related activities by both tourist and non-tourist anglers. During COVID, when many indoor activities were restricted, outdoor recreation was a more accessible option, and this may have encouraged more participation in the sport. The number of visitors to the province who were anglers remained stable even though tourism was down significantly. Some types of fishing activities that did not require the use of tourist venues continued throughout the pandemic. At the same time, increased spending on vehicles and equipment attributed to sport fishing activities helped offset the impact of a decline in some tourist-related activities.

## Employment in the Fisheries and Aquaculture Sector

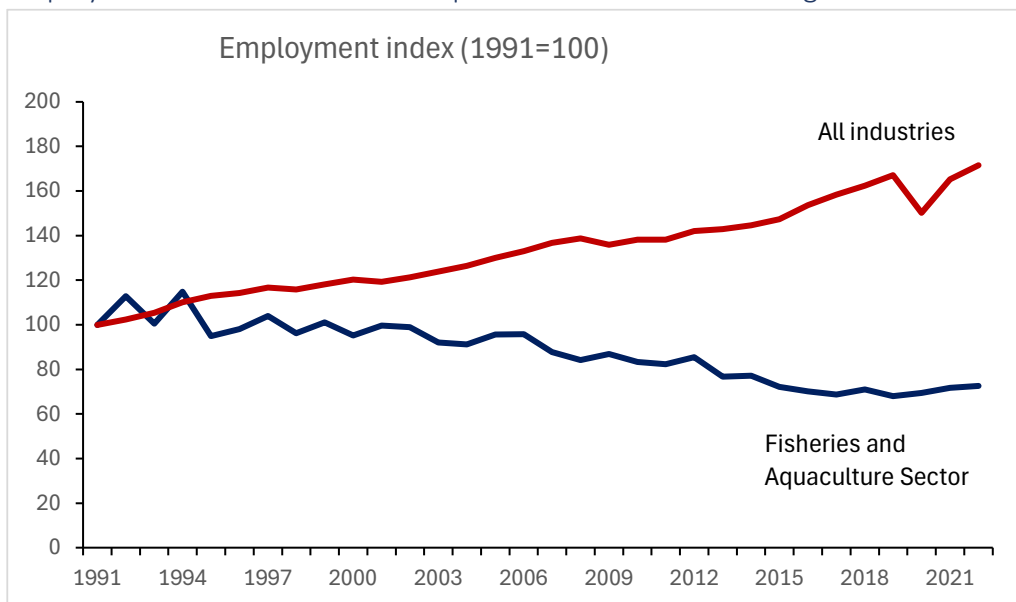
Text Table 9: Employment in the Fisheries and Aquaculture Sector

Employment	1991	2001	2011	2021	2022	% change since 1991	% change since 2001	% change since 2011	% change since 2021
<b>Total, fisheries and aquaculture sector</b>	<b>13,753</b>	<b>13,701</b>	<b>11,322</b>	<b>9,872</b>	<b>9,986</b>	<b>-27.4</b>	<b>-27.1</b>	<b>-11.8</b>	<b>1.2</b>
Capture Fishery	4,355	1,825	1,100	1,105	1,055	-75.8	-42.2	-4.1	-4.5
Aquaculture	1,365	1,450	1,630	1,380	1,600	17.2	10.3	-1.8	15.9
Fish and Seafood Processing	3,343	5,065	3,645	2,440	2,465	-26.3	-51.3	-32.4	1.0
Sport Fishing	4,690	5,361	4,948	4,947	4,866	3.8	-9.2	-1.7	-1.6

Data Sources: Lillian Hallin Consulting, derived using data from Fisheries and Oceans Canada, Ministry of Water, Land and Resource Stewardship, and Statistics Canada

In 2022, employment in the fisheries and aquaculture sector was estimated at 9,986. This included 1,055 paid and self-employed workers in the capture fishery, 1,600 jobs in aquaculture, 2,465 jobs in the fish and seafood processing industry, and 4,866 jobs in the sport fishing industry.

Chart 5: Employment in the fisheries and aquaculture sector is declining



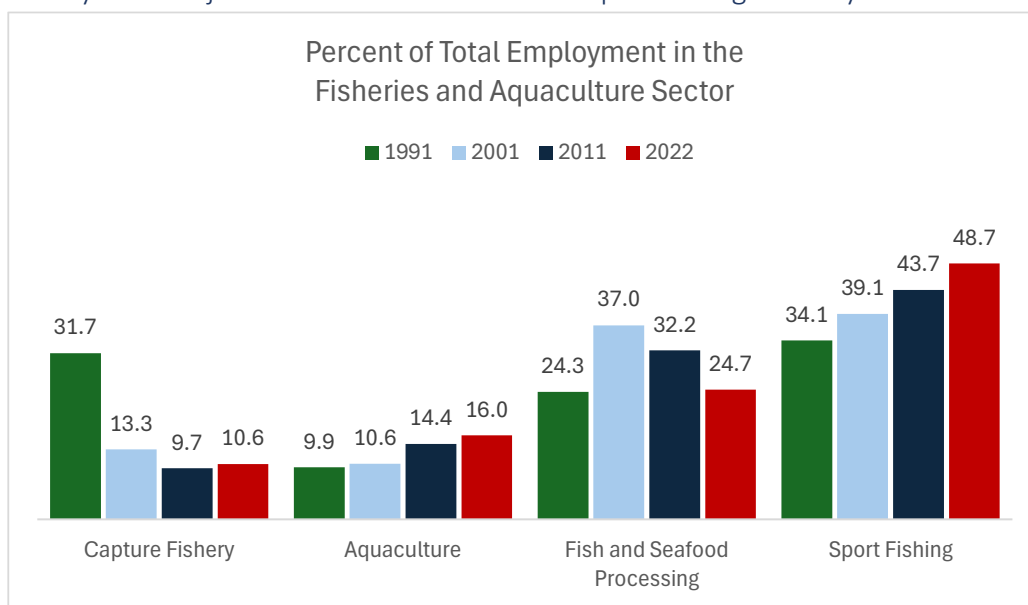
*Data Sources: Lillian Hallin Consulting, derived using data from Fisheries and Oceans Canada, Ministry of Water, Land and Resource Stewardship, and Statistics Canada*

While total employment in the province has increased 71.6% since 1991, the number of jobs in the fisheries and aquaculture sector fell 27.4% over the same period. There were an estimated 13,753 jobs in the sector in 1991.

Employment in the capture fishery has contracted significantly since 1991, when there were an estimated 4,355 jobs in the capture fishery. By 2022, the number had fallen to 1,055, a 75.8% decline. Over the same period, aquaculture employment climbed (+17.2%) from 1,365 to 1,600, with most of the job growth occurring during the period from 1991 to 2011. Employment in the province's fish and seafood processing industry was 2,465 in 2022, down 26.3% from the 1991 level. In the sport fishing industry, employment remained relatively stable, with an estimated 4,866 jobs in industries providing goods and services used by sport fishers in 2022, up 3.8% from the estimate for 1991 (4,690).

Sport fishing employed 48.7% of the workers in the fisheries and aquaculture sector in 2022, followed by fish and seafood processing (24.7%), aquaculture (16.0%) and the capture fishery (10.6%). By comparison, the capture fishery was the second-largest employer in the sector in 1991, with 31.7% of all jobs in that industry, just slightly less than the 34.1% share of the sport fishery.

Chart 6: Nearly half the jobs in the sector were in the sport fishing industry in 2022



Data Sources: Lillian Hallin Consulting, derived using data from Fisheries and Oceans Canada, Ministry of Water, Land and Resource Stewardship, and Statistics Canada

## Labour income in the Fisheries and Aquaculture Sector

Text Table 10: Labour Income in the Fisheries and Aquaculture Sector

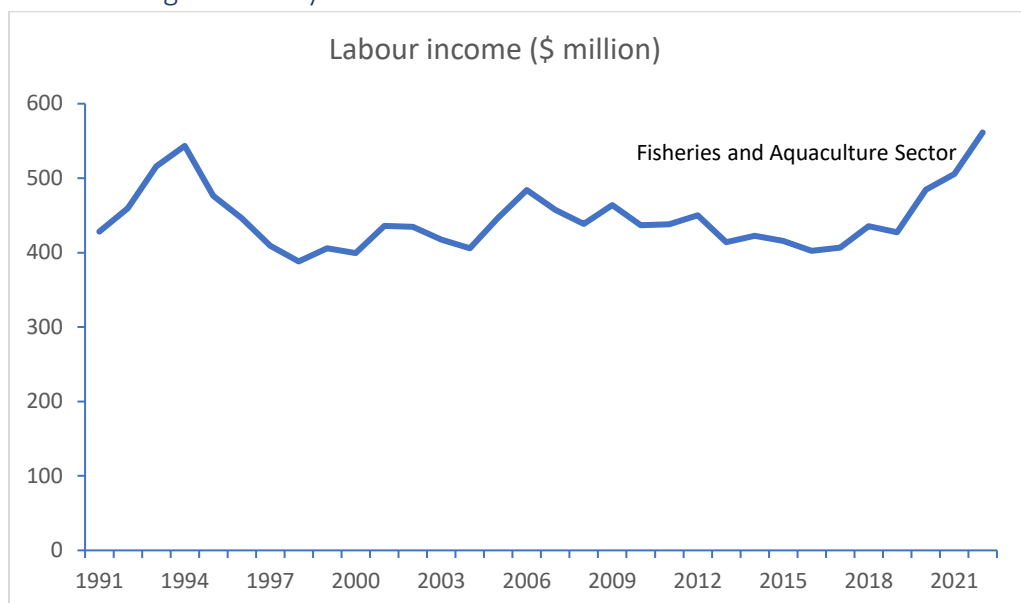
Labour Income (\$million)	1991	2001	2011	2021	2022	% change since 1991	% change since 2001	% change since 2011	% change since 2021
<b>Total, fisheries and aquaculture sector</b>	<b>428.0</b>	<b>435.7</b>	<b>438.1</b>	<b>505.4</b>	<b>561.4</b>	<b>31.2</b>	<b>28.9</b>	<b>28.1</b>	<b>11.1</b>
Capture Fishery	154.8	67.0	53.5	69.4	68.7	-55.6	2.5	28.4	-1.0
Aquaculture	28.3	47.1	79.1	92.2	114.4	304.2	142.9	44.6	24.1
Fish and Seafood Processing	140.6	173.4	126.6	124.4	138.3	-1.6	-20.2	9.2	11.2
Sport Fishing	104.3	148.2	178.9	219.4	240.0	130.1	61.9	34.2	9.4

Data Sources: Lillian Hallin Consulting, derived using data from Fisheries and Oceans Canada, Ministry of Water, Land and Resource Stewardship, and Statistics Canada

Total wages, salaries and benefits of workers in the fisheries and aquaculture sector were estimated at \$561.4 million in 2022, with nearly half (\$240.0 million, or 42.8%) of those wages earned by workers in the sport fishing industry. Fish and seafood processing (\$138.3 million, or 24.6%), aquaculture (\$114.4 million, or 20.4%) and the capture fishery (\$68.7 million, or 12.2%) accounted for smaller shares of total labour income, reflecting the lower employment levels in those industries.

Labour income in the fisheries and aquaculture sector increased 11.1% in 2022, with wages, salaries and benefits rising in all industries except the capture fishery (-1.0%). Aquaculture (+24.1%) and fish and seafood processing (+11.2%) saw double-digit growth in labour income in 2022, while labour income in sport fishing was up 9.4%.

Chart 7: Although employment has declined, labour income in the fisheries and aquaculture sector has been rising in recent years



Data Sources: Lillian Hallin Consulting, derived using data from Fisheries and Oceans Canada, Ministry of Water, Land and Resource Stewardship, and Statistics Canada

The average labour income of workers employed in the fisheries and aquaculture sector was \$56,219 in 2022. This compares to average earnings of \$71,918 for all workers in British Columbia. Average labour income in the goods sector was \$86,626 while service sector workers in the province received an average remuneration of \$68,294 in that year.

## Fisheries and Aquaculture Sector Revenue

Text Table 11: Revenue in the Fisheries and Aquaculture Sector

Revenue (\$million)	1991	2001	2011	2021	2022	% change since 1991	% change since 2001	% change since 2011	% change since 2021
<b>Total, fisheries and aquaculture sector</b>	<b>1,545.6</b>	<b>1,970.8</b>	<b>2,162.3</b>	<b>3,276.5</b>	<b>3,443.8</b>	<b>122.8</b>	<b>74.7</b>	<b>59.3</b>	<b>5.1</b>
Capture Fishery	376.7	359.7	347.9	442.0	441.0	17.1	22.6	26.8	-0.2
Aquaculture	115.5	288.5	463.9	739.1	916.9	693.9	217.8	97.7	24.1
Fish and Seafood Processing	709.7	735.5	585.0	1,077.1	950.8	34.0	29.3	62.5	-11.7
Sport Fishing	343.7	587.1	765.5	1,018.3	1,135.1	230.3	93.3	48.3	11.5

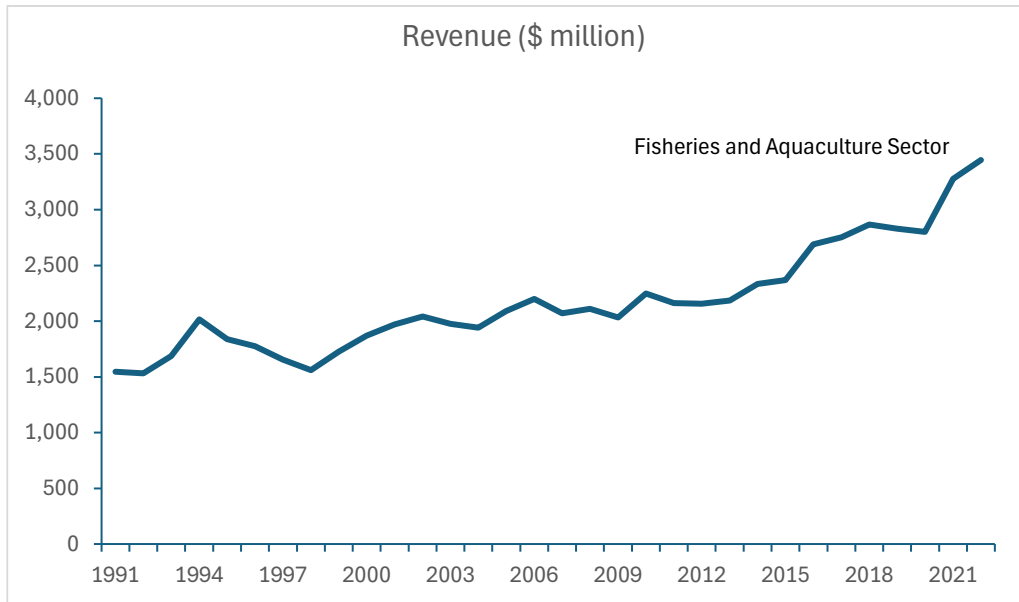
Data Sources: Lillian Hallin Consulting, derived using data from Fisheries and Oceans Canada, Ministry of Water, Land and Resource Stewardship, and Statistics Canada

Total revenue in the fisheries and aquaculture sector was estimated at \$3.4 billion in 2022, up 5.1% over the level in 2021. Estimated revenue in the sport fishing industry was \$1.1 billion, with another \$950.8 million in fish and seafood processing, \$916.9 million in aquaculture and \$441.0 million in the capture fishery.

Revenue data are reported in current dollars, and include the effects of both price and volume changes over time. Given that prices have increased significantly since 1991, total revenue in all four industries in

the fisheries and aquaculture sector was higher in 2022 than in 1991, even in those industries where real GDP has declined.

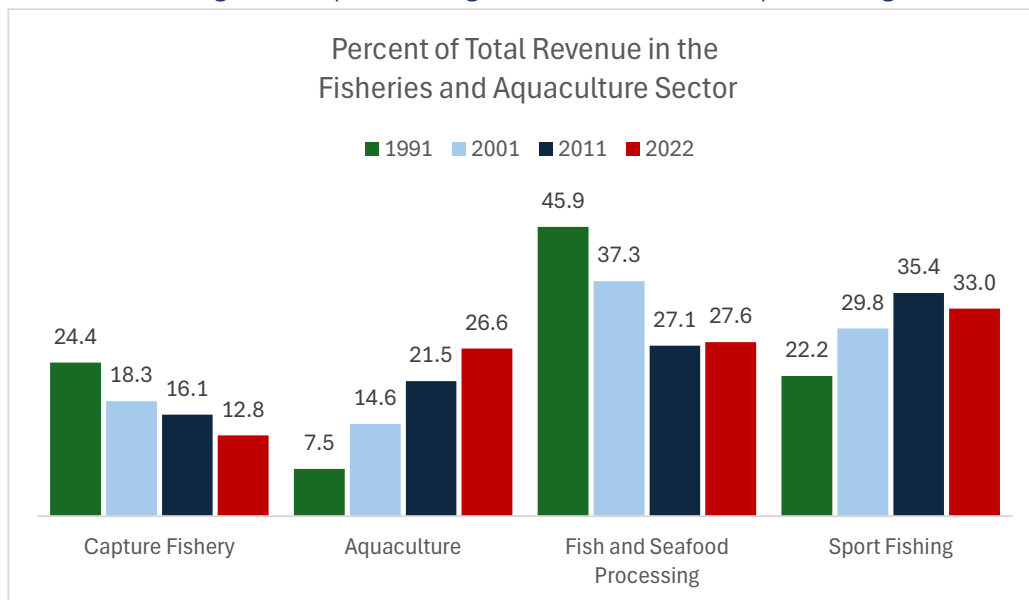
Chart 8: Revenue in the fisheries and aquaculture sector has more than doubled since 1991



Data Sources: Lillian Hallin Consulting, derived using data from Fisheries and Oceans Canada, Ministry of Water, Land and Resource Stewardship, and Statistics Canada

Aquaculture (+693.9%) saw significant revenue growth during the period from 1991 to 2022. At the same time, revenues in sport fishing (+230.3%) more than tripled with more modest revenue growth seen in fish and seafood processing (+34.0%) and the capture fishery (+17.1%) over the longer term.

Chart 9: Revenues are highest in sport fishing and fish and seafood processing



Data Sources: Lillian Hallin Consulting, derived using data from Fisheries and Oceans Canada, Ministry of Water, Land and Resource Stewardship, and Statistics Canada

In 2022, sport fishing accounted for 33.0% of total sector revenues, with fish and seafood processing (27.6 %) and aquaculture (26.6%) comprising relatively similar shares of total revenues in that year. Just 12.8% of revenues in the sector originated in the capture fishery, down from 24.4% of the total in 1991.

When comparing revenues in fish and seafood processing with those in the capture fishery and aquaculture, it is important to keep in mind that the latter industries provide the key input used by the fish and seafood processing industry. Since the value of goods sold by the fish and seafood processing industry includes the value of purchased inputs as well as the cost of materials, labour and capital used to produce them, it is not surprising that revenues are higher in fish and seafood processing. GDP estimates, which measure the value added at each stage of the production process, are a better measure for comparing economic impacts across industries.

## Capture Fishery

Text Table 12: Key Indicators for the Capture Fishery

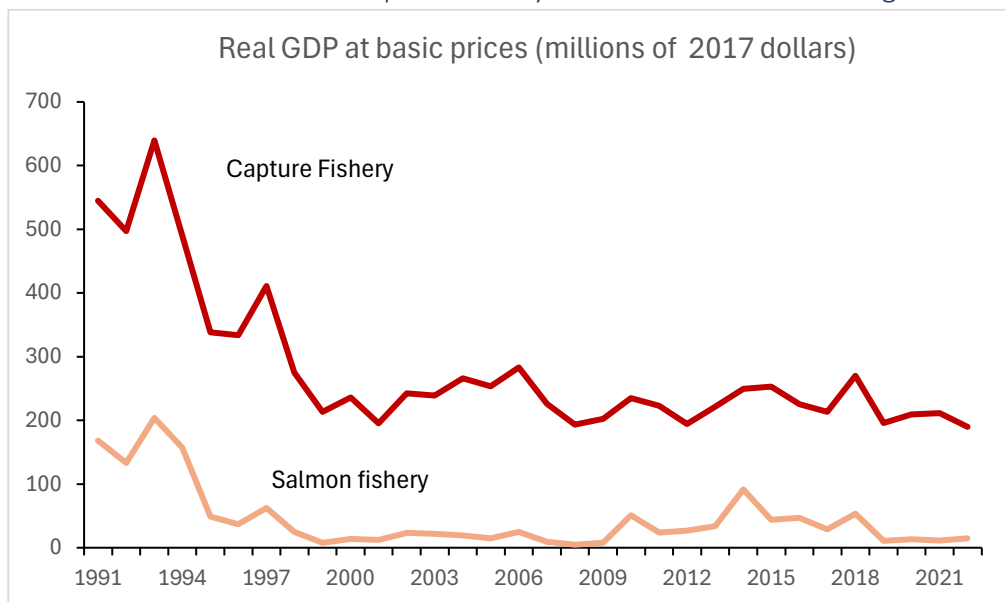
Capture Fishery	1991	2001	2011	2021	2022	% change since 1991	% change since 2001	% change since 2011	% change since 2021
<b>GDP (\$million)</b>	<b>289.2</b>	<b>142.3</b>	<b>167.1</b>	<b>127.3</b>	<b>117.3</b>	<b>-59.4</b>	<b>-17.6</b>	<b>-29.8</b>	<b>-7.9</b>
<i>% of sector total</i>	<i>39.9</i>	<i>19.2</i>	<i>21.6</i>	<i>13.3</i>	<i>11.3</i>				
<b>Real GDP (millions of 2017 dollars)</b>	<b>544.7</b>	<b>195.2</b>	<b>222.8</b>	<b>211.2</b>	<b>189.8</b>	<b>-65.2</b>	<b>-2.8</b>	<b>-14.8</b>	<b>-10.1</b>
<i>% of sector total</i>	<i>51.5</i>	<i>19.9</i>	<i>20.6</i>	<i>19.7</i>	<i>17.8</i>				
<b>Revenue (\$million)</b>	<b>376.7</b>	<b>359.7</b>	<b>347.9</b>	<b>442.0</b>	<b>441.0</b>	<b>17.1</b>	<b>22.6</b>	<b>26.8</b>	<b>-0.2</b>
<i>% of sector total</i>	<i>24.4</i>	<i>18.3</i>	<i>16.1</i>	<i>13.5</i>	<i>12.8</i>				
<b>Employment</b>	<b>4,355</b>	<b>1,825</b>	<b>1,100</b>	<b>1,105</b>	<b>1,055</b>	<b>-75.8</b>	<b>-42.2</b>	<b>-4.1</b>	<b>-4.5</b>
<i>% of sector total</i>	<i>31.7</i>	<i>13.3</i>	<i>9.7</i>	<i>11.2</i>	<i>10.6</i>				
<b>Labour income (\$million)</b>	<b>154.8</b>	<b>67.0</b>	<b>53.5</b>	<b>69.4</b>	<b>68.7</b>	<b>-55.6</b>	<b>2.5</b>	<b>28.4</b>	<b>-1.0</b>
<i>% of sector total</i>	<i>36.2</i>	<i>15.4</i>	<i>12.2</i>	<i>13.7</i>	<i>12.2</i>				

Data Sources: Lillian Hallin Consulting, derived using data from Fisheries and Oceans Canada, Ministry of Water, Land and Resource Stewardship, and Statistics Canada

## Gross Domestic Product in the Capture Fishery

Real GDP in the capture fishery was estimated at \$189.8<sup>8</sup> million in 2022, down 10.1% from 2021 and 65.2% lower than the 1991 value (\$544.7 million).

Chart 10: Most of the decline in the capture fishery's real GDP occurred during the 1990s



Data Sources: Lillian Hallin Consulting, derived using data from Fisheries and Oceans Canada, Ministry of Water, Land and Resource Stewardship, and Statistics Canada

<sup>8</sup> Capture fishery GDP, employment and labour income numbers differ from those published by Statistics Canada because they have been adjusted to remove the hunting and trapping component of the fishing, hunting and trapping industry.

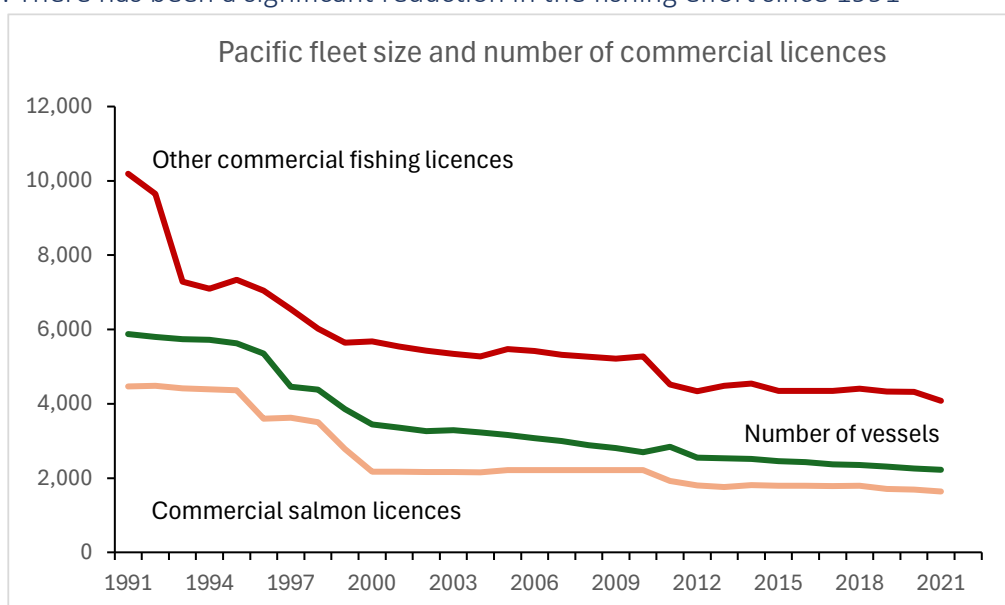
The decline was widespread, with real GDP shrinking in all major fisheries except crab (+245.1%) and tuna (+1,667%) during the period from 1991 to 2022. The salmon fishery's real GDP was estimated at \$168.1 million in 1991, accounting for nearly a third (30.9%) of the capture fishery's total GDP. By 2022, the salmon fishery generated just \$15.0 million (7.9%) of the industry's GDP.

Preliminary GDP estimates for 2023 suggest that the industry shrank another 12.6% in 2023.

A smaller fleet, with fewer commercial licences issued in the Pacific Region

Data on the size of the Pacific fishing fleet, and the number of commercial fishing licences issued since 1991 show that there has been a significant reduction in the fishing effort in many of the traditional fisheries. In 1991, there were 5,876 vessels in the Pacific fleet. By 2021 (the last year for which this information is available), the number of vessels in the fleet had fallen to 2,227.

Chart 11: There has been a significant reduction in the fishing effort since 1991



Data Source: Fisheries and Oceans Canada

Over the same period, the number of commercial licences issued by the Pacific Region of the DFO fell from 14,660 to 5,727. Salmon licences continue to account for just under thirty percent of all licences issued, with 1,643 salmon licences issued in 2022 (down from 4,467 in 1991). There were 10,193 licences issued for other fisheries in 1991. By 2021, the number of licences for these fisheries had fallen to 4,084.

The composition of the capture fishery has changed

The composition of the capture fishery has changed, partly in response to government initiatives intended to protect the stock of British Columbia's fish and seafood resources. The crab (25.8%), geoduck (12.8%), halibut (11.9%), tuna (8.4%) and prawn (8.0%) fisheries together accounted for two-thirds (66.9%) of the industry's real GDP in 2022, nearly double the 34.5% share in 1991.

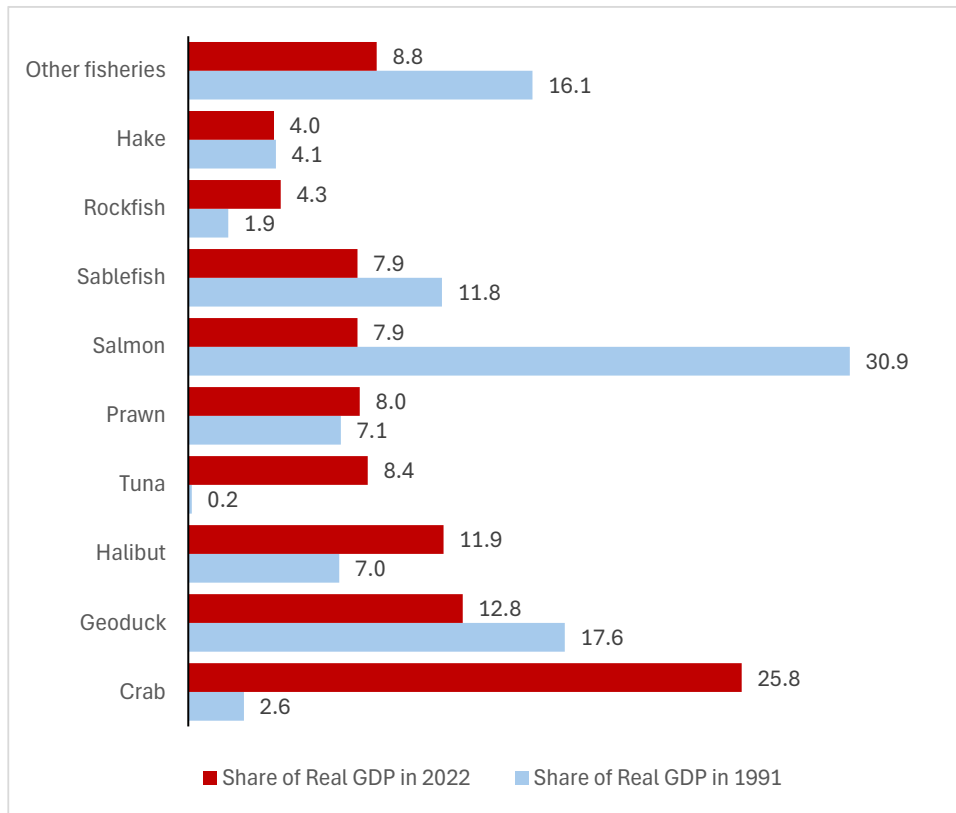
The once-dominant salmon fishery (7.9%) was ranked seventh among the fisheries in that year. This compares to its 30.9% share of the capture fishery's real GDP in 1991.



The very strong growth in the tuna fishery reflects the fact that the value of the tuna catch in the early 1990s was negligible. Despite the long-term increase, the tuna fishery's GDP in 2022 was well below the levels seen during the early 2000s.

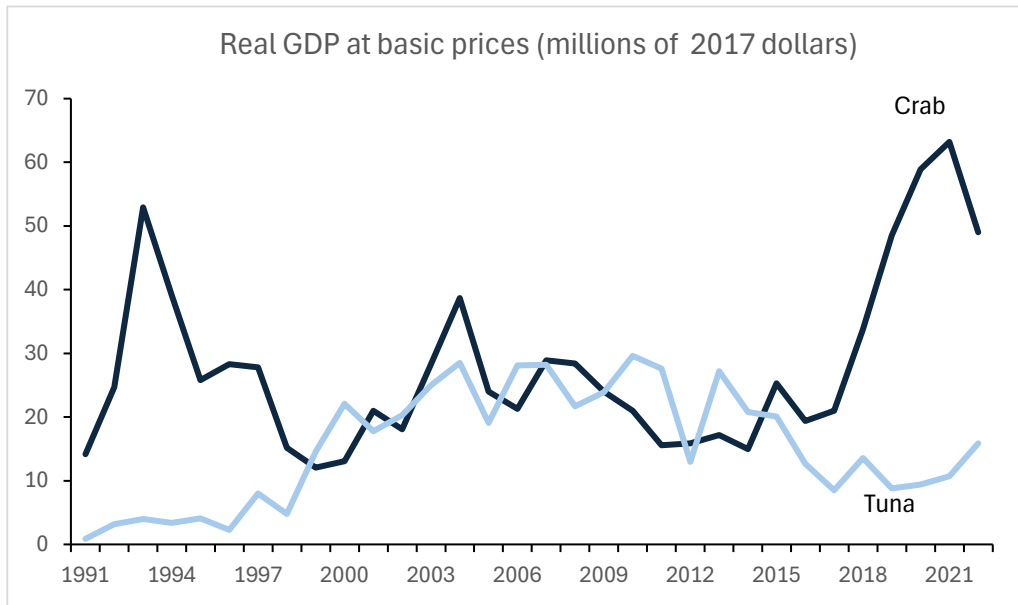
Other important fisheries include the sablefish (7.9%), rockfish (4.3%) and hake (4.0%) fisheries. Other types of groundfish (3.2%), lingcod (2.4%), sea cucumbers (1.5%), sea urchins (red (0.8%), and green (0.3%)), herring (0.4%) and shrimp (0.2%) are also harvested by the B.C. fishing fleet.

Chart 12: Salmon fishing is no longer the dominant activity in the capture fishery



Data Sources: Lillian Hallin Consulting, derived using data from Fisheries and Oceans Canada, Ministry of Water, Land and Resource Stewardship, and Statistics Canada

Chart 13: The crab fishery saw rapid growth during most of the last decade

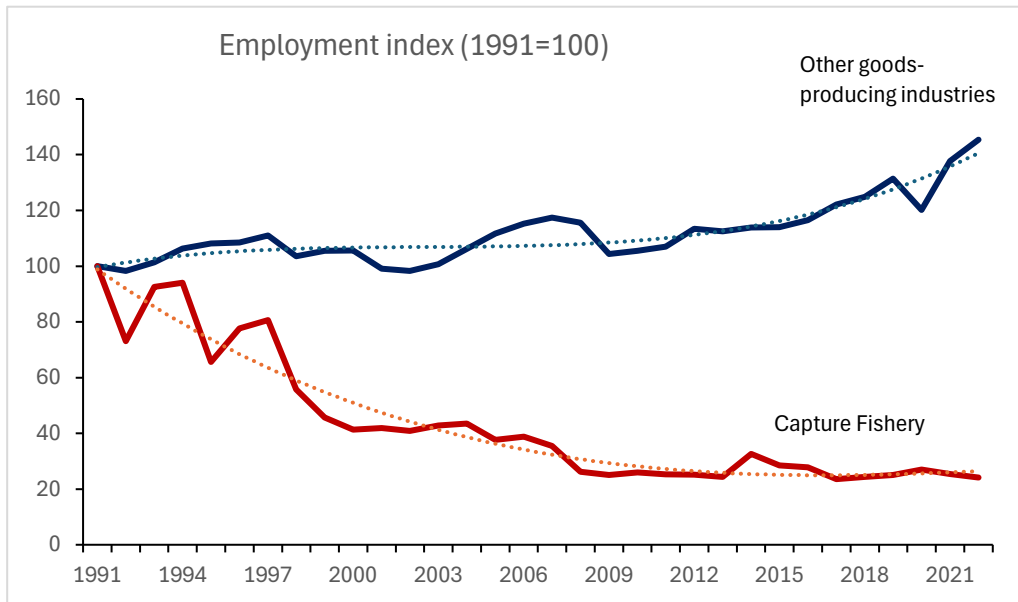


Data Sources: Lillian Hallin Consulting, derived using data from Fisheries and Oceans Canada, Ministry of Water, Land and Resource Stewardship, and Statistics Canada

### Employment in the Capture Fishery

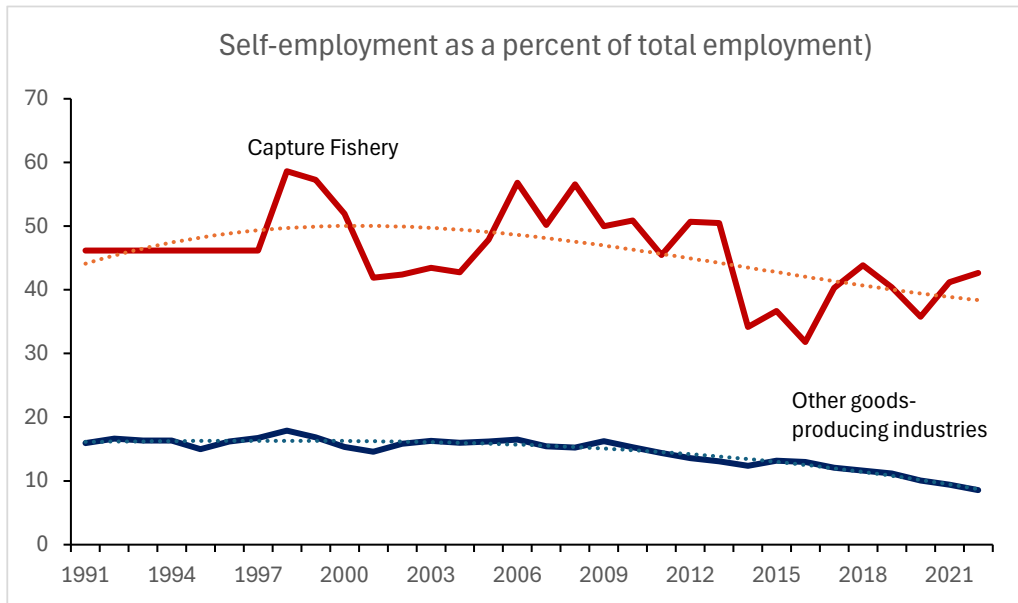
From 1991 to 2022, the number of jobs in the capture fishery fell 75.8%, with most of the decline occurring during the first fifteen years of that period. Over the same period, the total number of jobs in other goods-producing industries rose 45.4%.

Chart 14: Employment in the capture fishery has declined



Data Source: Statistics Canada, SNA labour statistics

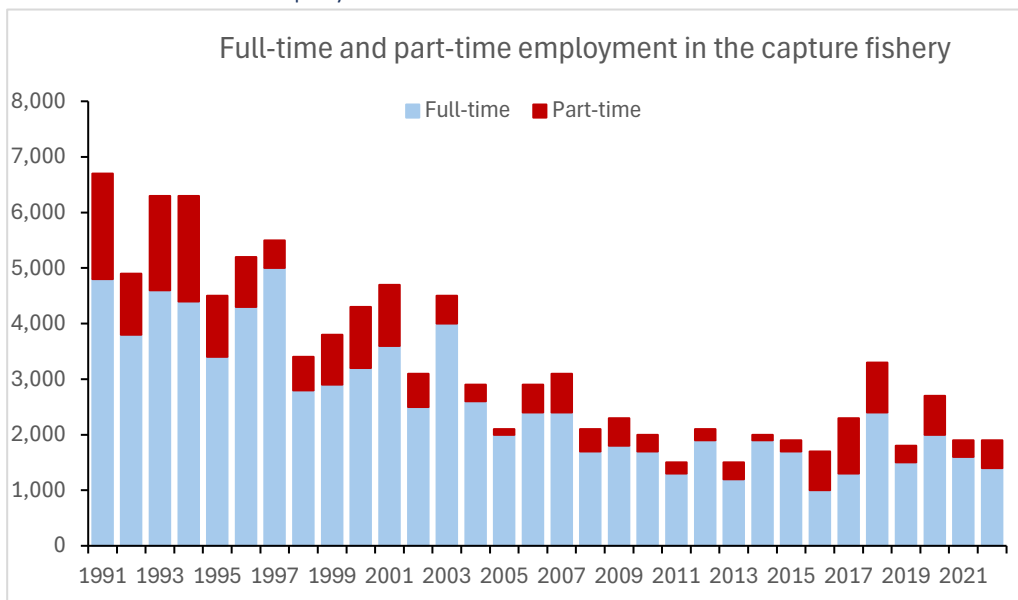
Chart 15: Four out of ten workers in the capture fishery were self-employed in 2022



Data Source: Statistics Canada, SNA labour statistics

Self-employment is relatively common in this industry, with 42.7% of workers self-employed in 2022. This was about five times the average (8.5%) in other goods-producing industries. Most of the people who work in the capture fishery hold full-time jobs, meaning that they usually spend at least 30 hours a week on the job when they are working.

Chart 16: Most workers are employed full-time



Data Source: Statistics Canada, Labour Force Survey

### A note about employment data and seasonal variations in employment

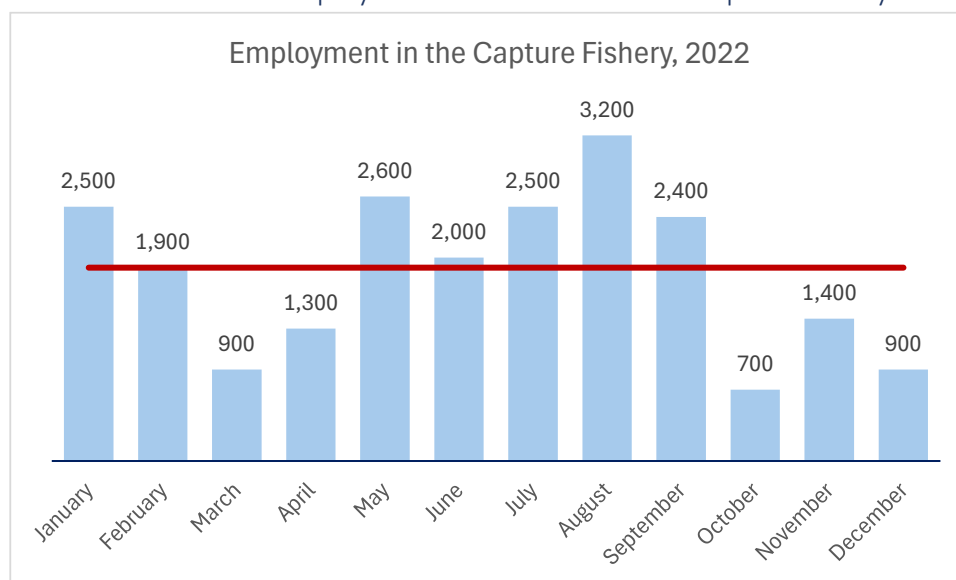
Employment figures reported by Statistics Canada are annual averages. They do not measure the total number of people who may be working in the capture fishery at a given point in time. Instead, they measure the average number of people who work in the industry over the course of a year.

In other words, employment figures for the capture fishery are not the same as the actual number of people who work in the fishery at some point during the year. Some may work only when a specific fishery is open, or in several fisheries, but only in certain months of the year. The employment estimates will, in principle, reflect their employment when it occurs. But job counts are averaged over a month, and then over a year, so will be different from a count of people with employment ties to the capture fishery.

The SNA labour statistics used to generate the employment estimates reported are only available on an annual basis, but annual and monthly data from the Labour Force Survey (LFS) help illustrate the seasonal nature of the capture fishery. In 2022, average annual employment in the capture fishery was 1,900, according to the LFS. During the year, however, monthly employment fluctuated from a high of 3,200 in August to a low of 700 in October.

The LFS is a household survey, taken during one week of the month, with a sample of households that is changed every six months, on a rolling basis. The sample is designed to be statistically representative, but for small industries, like the capture fishery, the LFS estimates can be volatile depending on who has been selected to be in the sample for a given month, and, in seasonal industries such as the capture fishery, also depending on whether the selected week is one in which they are actually working in the industry. Even when the overall estimates are very solid, employment data for small industries may be over- or under-represented from time to time. This is one of the reasons why the SNA labour statistics, which are based on survey data but also linked to income tax files, are likely more reliable than the LFS numbers.

Chart 17: Seasonal variations in employment are common in the capture fishery

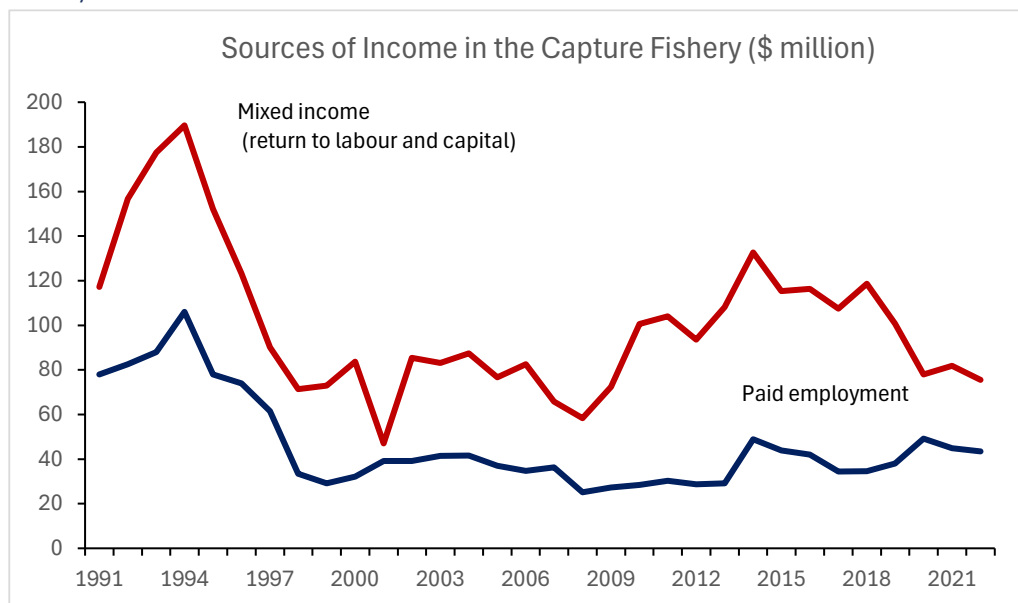


Data Source: Statistics Canada, Labour Force Survey

## Labour and Mixed Income in the Capture Fishery

The capture fishery has a comparatively large number of self-employed workers. Total mixed income was estimated at \$75.5 million in 2022. This includes self-employed labour income of \$25.3 million (a return to the labour of owner-operators) and another \$50.2 million attributable to returns to the capital investments of owner-operators (e.g., boats and other equipment used in the fishery). Paid labour income<sup>9</sup> (wages, salaries and benefits paid to employees) was estimated at \$43.4 million.

Chart 18: Mixed (unincorporated business) income is an important source of income in the capture fishery



Data Source: Statistics Canada, SNA labour statistics and Lillian Hallin Consulting

Including both paid and self-employed income, the average labour income in the capture fishery was \$65,119 in 2022 (or 15.8% more than the average for the sector as a whole).

## Capture Fishery Revenues

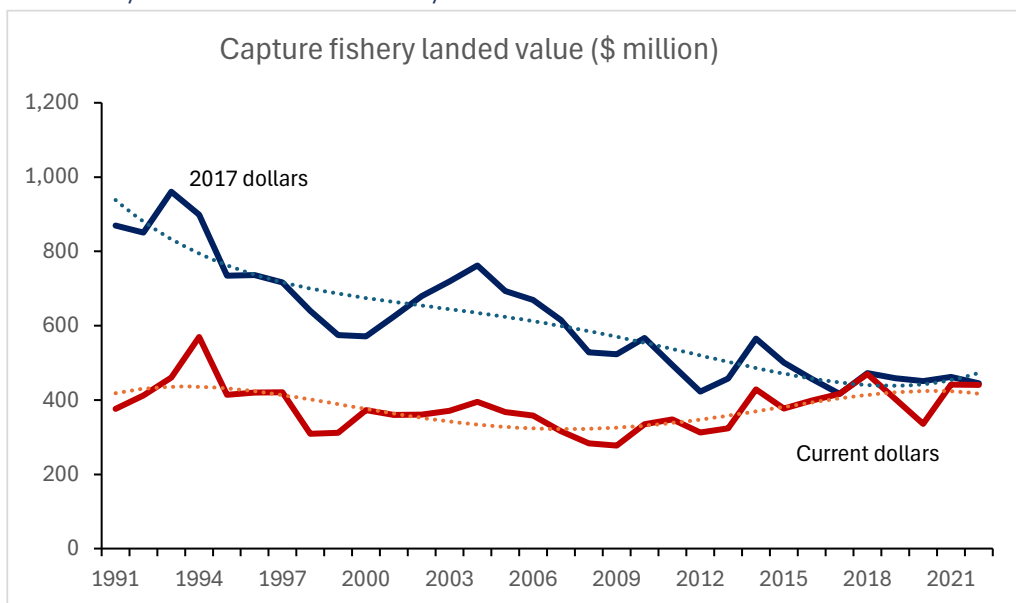
Total revenues in the capture fishery were estimated at \$441.0 million in 2022, virtually unchanged (-0.2%) from the value in the previous year. Revenues in the capture fishery have remained relatively flat since 1991, when the landed value was \$376.7 million.

Changes in the value of fish and seafood products landed in British Columbia reflect both price and volume effects. When the value of the catch is expressed in constant 2017 dollars<sup>10</sup>, the real dollar revenue estimate for the fishery shows a significant decline over the long term, which mirrors the downturns seen in real GDP and employment.

<sup>9</sup> The total estimate of labour income for the capture fishery (\$68.7 million in 2022) includes both paid and self-employed wages, salaries and benefits.

<sup>10</sup> Constant dollar figures were calculated by valuing the tonnes of fish or seafood products landed in each year (by species) at the 2017 price for each species. This removes the effect of price changes over time.

Chart 19: After adjusting for inflation, the landed value of fish and seafood products harvested by the capture fishery has remained relatively stable since 2018



Data Sources: Lillian Hallin Consulting, derived using data from Fisheries and Oceans Canada, Ministry of Water, Land and Resource Stewardship, and Statistics Canada

## Location of Businesses in the Capture Fishery

In June 2022, there were 257 business locations with employees in the province's capture fishery, and another 1,957 businesses that had no employees. The latter figure would include self-employed fishers (incorporated businesses) or business locations with no employees but revenues of at least \$30,000.

### More than half of all business locations are in Vancouver Island/Coast

More than half (135) of the business locations were in Vancouver Island/Coast, with concentrations in Strathcona (30), Nanaimo (29), the Capital region (27) and Comox Valley (26). Another 84 business locations were in Mainland/Southwest and 26 were in North Coast, primarily Skeena-Queen Charlotte (25). The remaining businesses were in Thompson-Okanagan (7), Kootenay (4) and Northeast (1).

### Three-quarters are small businesses

Small businesses are predominant in the capture fishery. Three out of four (194) business locations with employees had one to four employees and another 15% (39) employed five to nine people. Only one of the business locations (in Mainland/Southwest) had more than 200 employees. By comparison, 57% of business locations with employees in British Columbia had fewer than four employees, while 12% had between five and nine employees.

### Most are in the saltwater fishing industry

British Columbia's capture fishery includes a small number of freshwater fishing businesses (18), most (17) of which had fewer than ten employees. In the saltwater fishing (239) industry, there were some larger operators, but just over three-quarters (77%) of the business locations in this industry had fewer than four employees.

Text Table 13: Business Locations in the Capture Fishery, June 2022

Capture Fishery	1 to 4 employees	5 to 9 employees	10 to 19 employees	20 to 49 employees	50 to 99 employees	100 to 199 employees	200 to 499 employees	Total, with employees	No Employees
<b>Kootenay</b>	<b>3</b>	<b>1</b>						<b>4</b>	
Central Kootenay	2							2	
East Kootenay		1						1	
Kootenay Boundary	1							1	
<b>Mainland/SW</b>	<b>60</b>	<b>14</b>	<b>4</b>	<b>4</b>	<b>1</b>		<b>1</b>	<b>84</b>	
Fraser Valley	5							5	
Greater Vancouver	42	14	4	4	1		1	66	
Sunshine Coast	13							13	
<b>North Coast</b>	<b>19</b>	<b>5</b>	<b>1</b>	<b>1</b>				<b>26</b>	
Kitimat-Stikine		1						1	
Skeena-Queen Charlotte	19	4	1	1				25	
<b>Northeast</b>	<b>1</b>							<b>1</b>	
Peace River	1							1	
<b>Thompson-Okanagan</b>	<b>4</b>	<b>1</b>	<b>1</b>	<b>1</b>				<b>7</b>	
Central Okanagan	2			1				3	
North Okanagan	1	1	1					3	
Thompson-Nicola	1							1	
<b>Vancouver Island/Coast</b>	<b>107</b>	<b>18</b>	<b>6</b>	<b>3</b>		<b>1</b>		<b>135</b>	
Alberni-Clayoquot	5		1					6	
Capital	20	4	2			1		27	
Central Coast	1							1	
Comox Valley	23	3						26	
Cowichan Valley	6	1		1				8	
Mount Waddington	4	1		1				6	
Nanaimo	25	2	1	1				29	
Powell River	2							2	
Strathcona	21	7	2					30	
<b>B.C. Total</b>	<b>194</b>	<b>39</b>	<b>12</b>	<b>9</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>257</b>	<b>1,957</b>
Freshwater fishing	11	6	1	0	0	0	0	18	135
Saltwater fishing	183	33	11	9	1	1	1	239	1,822

Data Sources: Lillian Hallin Consulting, derived using data from Statistics Canada, Canadian Business Counts

## Aquaculture

Text Table 14: Key Indicators for Aquaculture

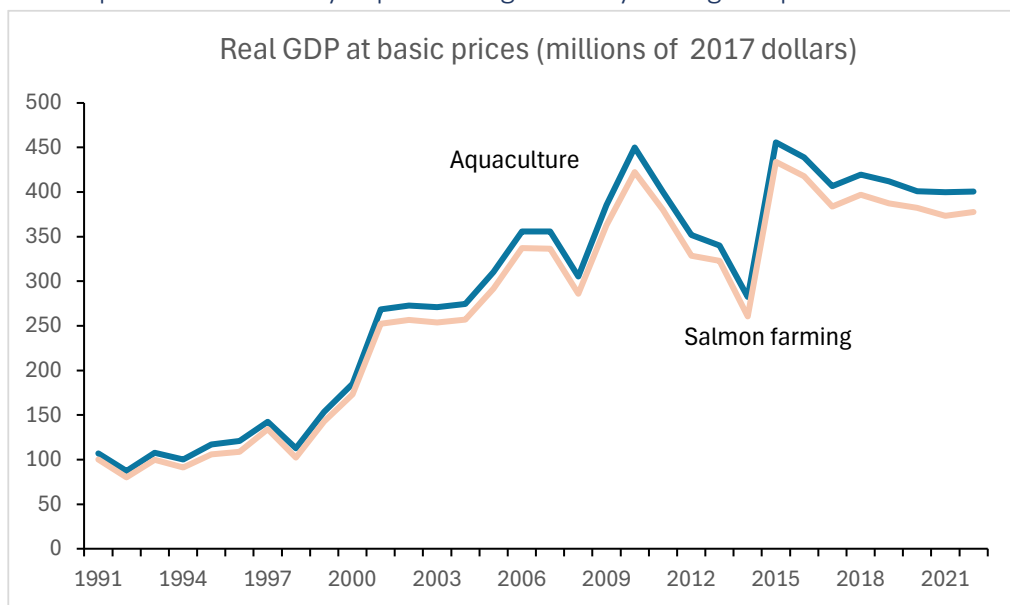
Aquaculture	1991	2001	2011	2021	2022	% change since 1991	% change since 2001	% change since 2011	% change since 2021
<b>GDP (\$million)</b>	<b>55.8</b>	<b>120.5</b>	<b>183.3</b>	<b>280.0</b>	<b>340.2</b>	<b>509.7</b>	<b>182.3</b>	<b>85.6</b>	<b>21.5</b>
<i>% of sector total</i>	<i>7.7</i>	<i>16.3</i>	<i>23.7</i>	<i>29.3</i>	<i>32.7</i>				
<b>Real GDP (millions of 2017 dollars)</b>	<b>106.9</b>	<b>268.3</b>	<b>400.3</b>	<b>399.7</b>	<b>400.4</b>	<b>274.6</b>	<b>49.2</b>	<b>0.0</b>	<b>0.2</b>
<i>% of sector total</i>	<i>10.1</i>	<i>27.4</i>	<i>37.0</i>	<i>37.2</i>	<i>37.5</i>				
<b>Revenue (\$million)</b>	<b>115.5</b>	<b>288.5</b>	<b>463.9</b>	<b>739.1</b>	<b>916.9</b>	<b>693.9</b>	<b>217.8</b>	<b>97.7</b>	<b>24.1</b>
<i>% of sector total</i>	<i>7.5</i>	<i>14.6</i>	<i>21.5</i>	<i>22.6</i>	<i>26.6</i>				
<b>Employment</b>	<b>1,365</b>	<b>1,450</b>	<b>1,630</b>	<b>1,380</b>	<b>1,600</b>	<b>17.2</b>	<b>10.3</b>	<b>-1.8</b>	<b>15.9</b>
<i>% of sector total</i>	<i>9.9</i>	<i>10.6</i>	<i>14.4</i>	<i>14.0</i>	<i>16.0</i>				
<b>Labour income (\$million)</b>	<b>28.3</b>	<b>47.1</b>	<b>79.1</b>	<b>92.2</b>	<b>114.4</b>	<b>304.2</b>	<b>142.9</b>	<b>44.6</b>	<b>24.1</b>
<i>% of sector total</i>	<i>6.6</i>	<i>10.8</i>	<i>18.1</i>	<i>18.2</i>	<i>20.4</i>				

Data Sources: Statistics Canada and Lillian Hallin Consulting

### Gross Domestic Product in Aquaculture

Real GDP in the aquaculture industry was estimated at \$400.4 million in 2022, virtually unchanged (+0.2%) from the 2021 level. Preliminary data suggest that the industry shrank (-17.1%) in 2023, falling to \$331.8 million.

Chart 20: The aquaculture industry expanded significantly during the period from 1991 to 2010



Data Sources: Lillian Hallin Consulting, derived using data from Statistics Canada

Aquaculture saw a period of rapid expansion between 1991 and 2010, with real GDP growing 320.8% (from \$106.9 million to \$449.8 million). Since then, however, the industry has faced challenges, and its rapid growth has been halted.



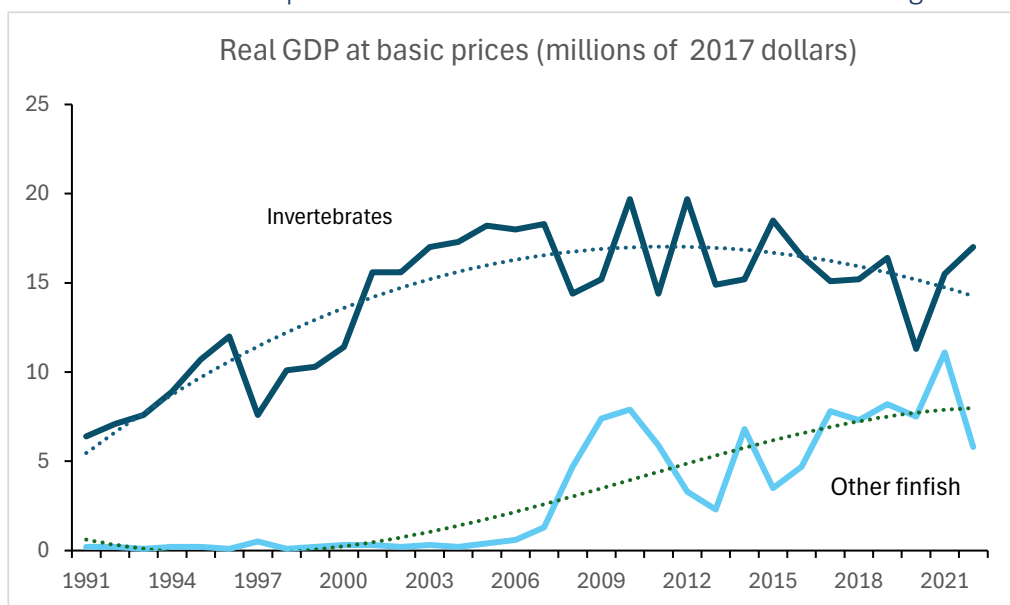
Salmon farming remains the dominant activity, accounting for 94.3% of real GDP in 2022, similar to the share in 1991 (93.8%). Salmon has historically been farmed in sea-pens, but further expansion of these operations has been halted by policy initiatives aimed at protecting the environment and the wild salmon stock.

#### Limitations on open-pen aquaculture operations

In 2018, the government of British Columbia signed a letter of understanding with three First Nations in the Broughton Archipelago that will see the number of open-pen operations severely limited<sup>11</sup>. In June 2022<sup>12</sup>, the government committed to limiting tenures for fish farming operations only to those operators who have satisfied the DFO that their farms would not adversely affect the wild salmon stock and have also negotiated agreements with First Nations in whose territories they would be operating.

Alternative methods of salmon farming, such as RAS (Recirculating Aquaculture Systems) farms, which involve closed systems that can be located on land, are being considered but at present most salmon farming operations are in tidal waters.

Chart 21: Production of finfish products such as trout and steelhead is increasing



Data Sources: Lillian Hallin Consulting, derived using data from Statistics Canada

GDP attributed to production of other finfish increased from just \$0.2 million (0.2% of real GDP) in 1991 to \$5.8 million (1.4% of total aquaculture GDP) in 2022. However, this was down sharply from \$11.1 million in the previous year.

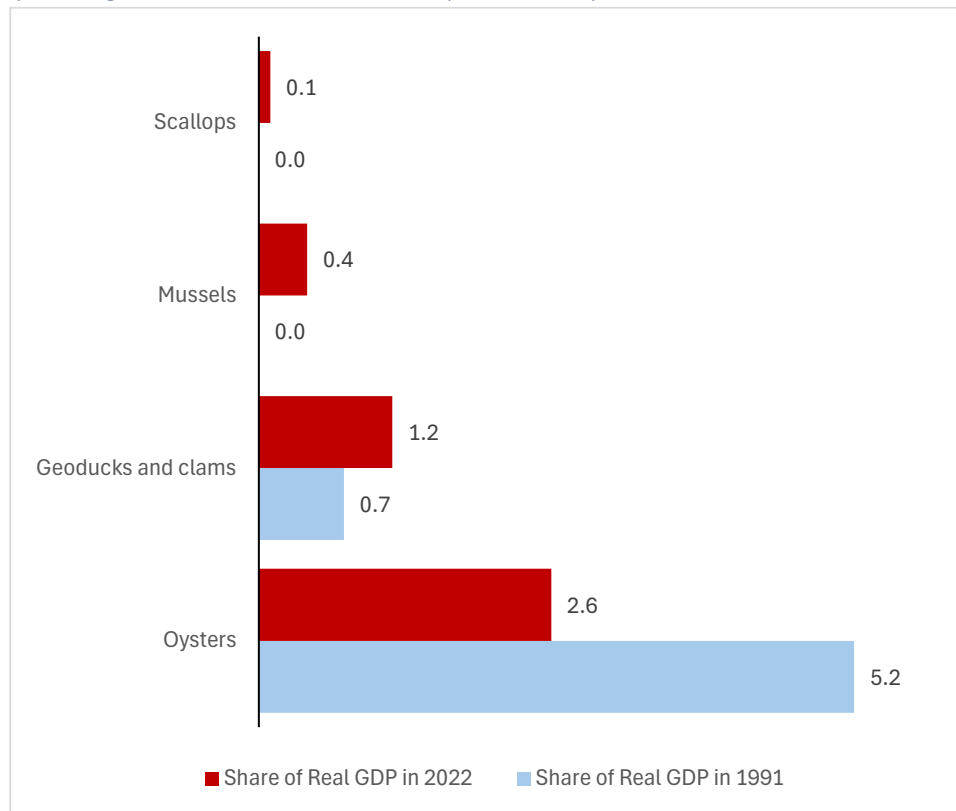
Aquaculture operations in the province also produce a variety of shellfish and invertebrates, including oysters (2.6% of GDP in 2022), geoducks and clams (1.2%), mussels (0.4%) and scallops (0.1%). Together, these species accounted for 4.2% of total aquaculture GDP in 2022, a smaller share than in 1991, when 6.0% of the sector's GDP was associated with shellfish and invertebrate production.

<sup>11</sup> [Government, First Nations chart path for aquaculture in Broughton Archipelago | BC Gov News](#)

<sup>12</sup> [Salmon aquaculture in British Columbia | BC Gov News](#)

There have been some changes in the composition of shellfish and invertebrate products, as farming of geoducks and clams, mussels and scallops accounts for a growing share of total aquaculture GDP. At the same time, oyster farming has not grown as quickly as the rest of the industry.

Chart 22: Oysters, geoducks and clams are key shellfish species farmed in B.C.



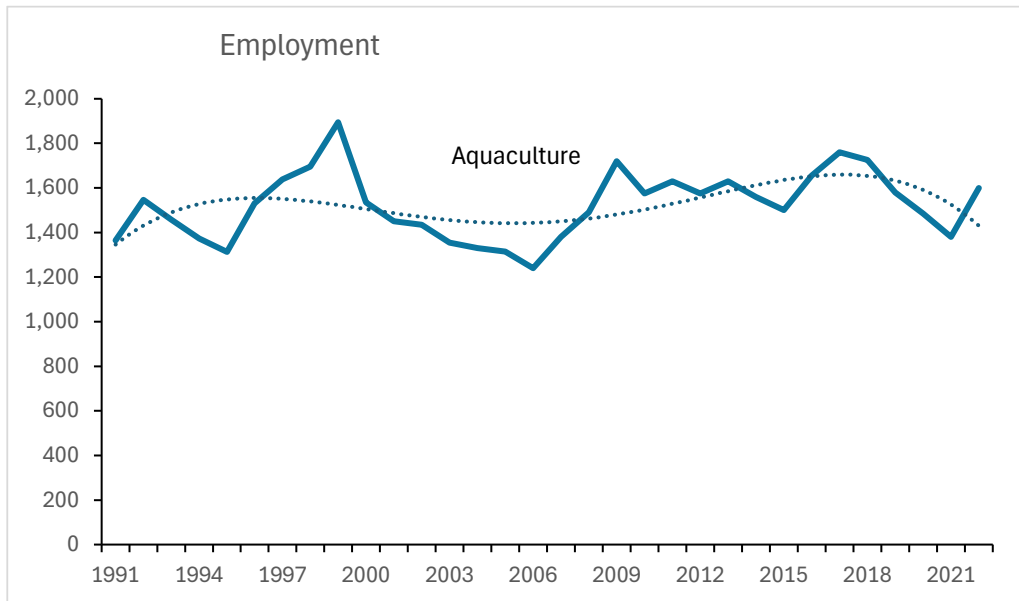
Data Sources: Lillian Hallin Consulting, derived using data from Statistics Canada

## Employment in Aquaculture

In 2022, there were 1,600 people employed in the province's aquaculture industry, up 15.9% from 1,380 in the previous year, as the number of jobs in the industry increased for the first time since 2017. Aquaculture employment has fluctuated during the last three decades, but has remained quite stable over the longer term. In 1991, there were 1,365 jobs in aquaculture, virtually the same number as in 2021.

Most (1,535) of the people working in this industry were paid employees in 2022. Self-employment accounted for just 4.1% of total employment in aquaculture in that year.

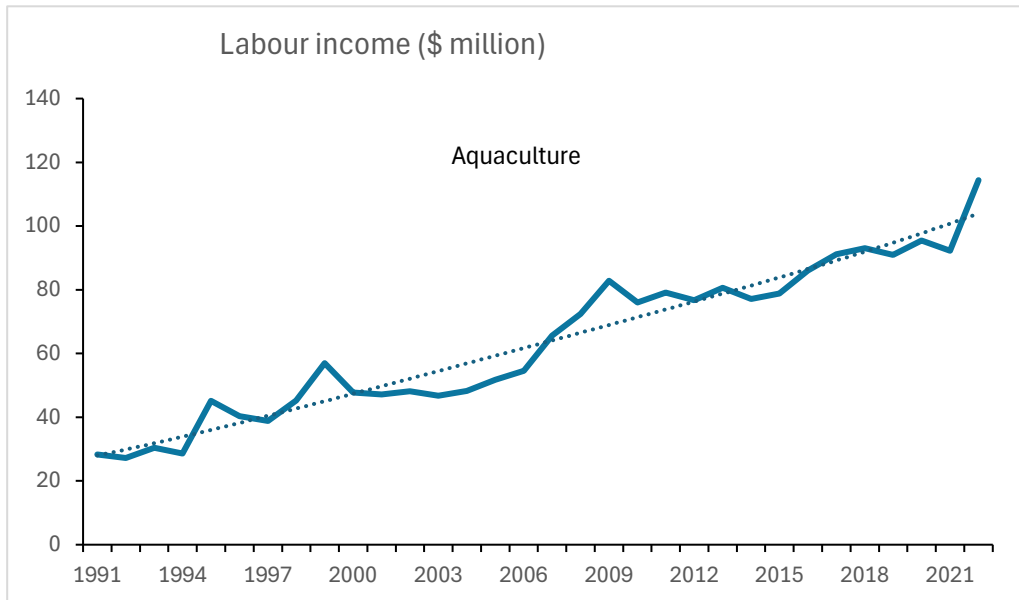
Chart 23: Aquaculture employment fluctuates from year to year, but the long-term trend is relatively flat



Data Source: Statistics Canada, SNA labour statistics

## Labour Income in Aquaculture

Chart 24: Labour income reached \$114.4 million in 2022



Data Source: Statistics Canada, SNA labour statistics

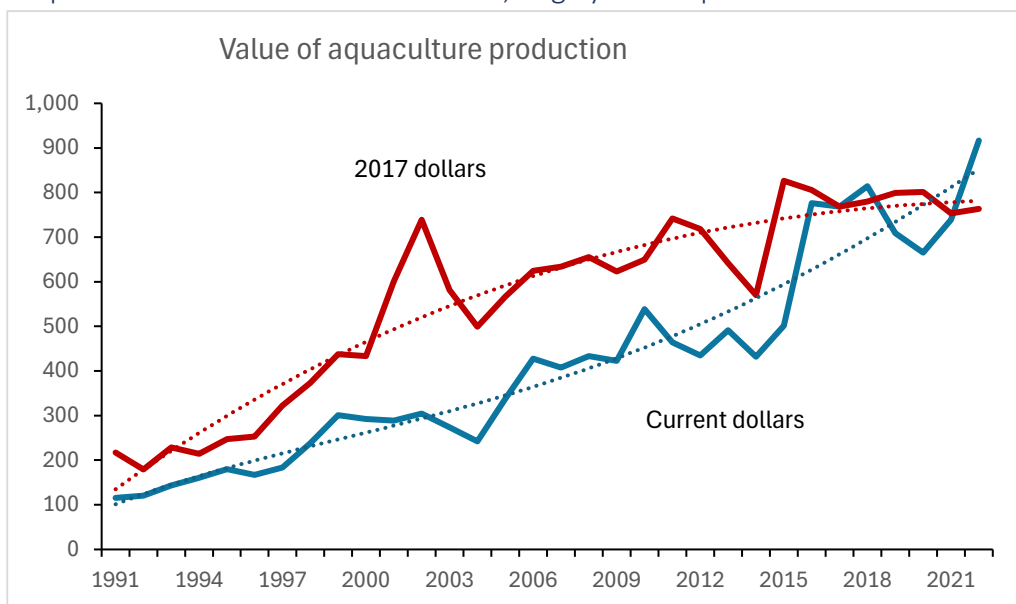
Labour income in the aquaculture industry was estimated at \$114.4 million in 2022, up 24.1% from \$92.2 million in the previous year. Aquaculture workers had the highest average income (\$71,500) in the fisheries and aquaculture sector, 27.2% above the sector average of \$56,219 in 2022. Aquaculture was

the only industry in the sector where average labour income was similar to the all-industry average of \$71,918 in 2022.

## Aquaculture Revenues

In 2022, the total value of aquaculture production in the province increased 24.1% to \$916.9 million, nearly eight times the value recorded in 1991 (\$115.5 million). However, the strong revenue growth in 2022 was largely due to price changes. Excluding the effect of price changes, the value of aquaculture production was up just 1.4% in 2022. Over the longer run, the increase in real dollar value was 252.0%.

Chart 25: Aquaculture revenue climbed in 2022, largely due to price effects



Data Sources: Lillian Hallin Consulting, derived using data from Statistics Canada

## Location of Businesses in Aquaculture

Three-quarters of the province's aquaculture businesses are located in Vancouver Island/Coast. There were 73 business locations in the province's aquaculture industry in June 2022. Three-quarters (55) of these business locations were in Vancouver Island/Coast. Another 12 were in Mainland/Southwest, with other locations in Thompson-Okanagan (3) and Cariboo (1)<sup>13</sup>. In addition, there were 91 aquaculture business locations that had no employees, but had business revenue of at least \$30,000 or were incorporated.

### Three out of four employed fewer than ten workers

Three out of four aquaculture locations in the province employed fewer than ten workers. Forty-one (56%) employed one to four workers and another 14 (19%) had five to nine employees. By comparison, 57% of business locations with employees in British Columbia had fewer than four employees, while 12% had between five and nine employees.

<sup>13</sup> The remaining two businesses were in an unknown location.

However, there were some larger operations in the province. Three aquaculture locations in Strathcona (Vancouver Island/Coast) had 200 to 499 employees and there was another location with 100 to 199 employees in the Capital region.

Text Table 15: Business Locations in Aquaculture, June 2022

Aquaculture	1 to 4 employees	5 to 9 employees	10 to 19 employees	20 to 49 employees	50 to 99 employees	100 to 199 employees	200 to 499 employees	Total, with employees	No Employees
<b>Cariboo</b>			1					1	
<i>Fraser-Fort George</i>			1					1	
<b>Mainland/SW</b>	8	1	2	1				12	
<i>Fraser Valley</i>	3							3	
<i>Greater Vancouver</i>	5	1	1	1				8	
<i>Sunshine Coast</i>			1					1	
<b>Thompson-Okanagan</b>	2		1					3	
<i>Thompson-Nicola</i>	2		1					3	
<b>Vancouver Island/Coast</b>	29	13	3	3	3	1	3	55	
<i>Alberni-Clayoquot</i>	6		2		1			9	
<i>Capital</i>	3			2		1		6	
<i>Comox Valley</i>	6	3			2			11	
<i>Cowichan Valley</i>	1							1	
<i>Nanaimo</i>	5	5	1	1				12	
<i>Powell River</i>	4	1						5	
<i>Strathcona</i>	4	4					3	11	
<b>Unknown</b>	2							2	
<b>B.C. Total</b>	41	14	7	4	3	1	3	73	91

*Data Sources: Lillian Hallin Consulting, derived using data from Statistics Canada, Canadian Business Counts*

#### A note about the regional location counts

It should be noted that Statistics Canada's data on business counts is reported in three separate tables: one table (361-00568) includes data by detailed industry, province and employment size for businesses with employees, a second table (361-00569) includes data by detailed industry and province for businesses with no employees, and the third table (361-00576) includes data at a more aggregated industry level, for businesses with employees, by employment size and by region (Census Subdivision and Census Metropolitan Area). The "unknown" category in the text table captures the difference between the aggregated regional data from the regional table and the reported total from the province-level table. The reasons for the difference are not known.

## Fish and Seafood Processing

Text Table 16: Key Indicators for Fish and Seafood Processing

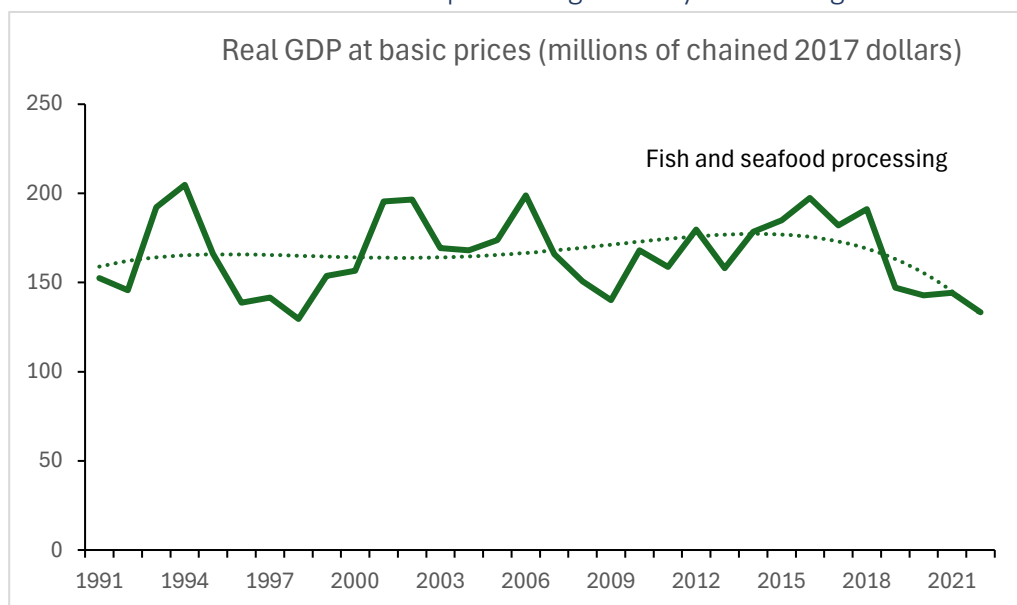
Fish and Seafood Processing	1991	2001	2011	2021	2022	% change since 1991	% change since 2001	% change since 2011	% change since 2021
<b>GDP (\$million)</b>	<b>224.4</b>	<b>232.4</b>	<b>156.7</b>	<b>198.4</b>	<b>172.5</b>	<b>-23.1</b>	<b>-25.8</b>	<b>10.1</b>	<b>-13.1</b>
<i>% of sector total</i>	<i>31.0</i>	<i>31.4</i>	<i>20.2</i>	<i>20.8</i>	<i>16.6</i>				
<b>Real GDP (millions of 2017 dollars)</b>	<b>152.5</b>	<b>195.4</b>	<b>158.7</b>	<b>144.2</b>	<b>133.3</b>	<b>-12.6</b>	<b>-31.8</b>	<b>-16.0</b>	<b>-7.6</b>
<i>% of sector total</i>	<i>14.4</i>	<i>19.9</i>	<i>14.7</i>	<i>13.4</i>	<i>12.5</i>				
<b>Revenue (\$million)</b>	<b>709.7</b>	<b>735.5</b>	<b>585.0</b>	<b>1,077.1</b>	<b>950.8</b>	<b>34.0</b>	<b>29.3</b>	<b>62.5</b>	<b>-11.7</b>
<i>% of sector total</i>	<i>45.9</i>	<i>37.3</i>	<i>27.1</i>	<i>32.9</i>	<i>27.6</i>				
<b>Employment</b>	<b>3,343</b>	<b>5,065</b>	<b>3,645</b>	<b>2,440</b>	<b>2,465</b>	<b>-26.3</b>	<b>-51.3</b>	<b>-32.4</b>	<b>1.0</b>
<i>% of sector total</i>	<i>24.3</i>	<i>37.0</i>	<i>32.2</i>	<i>24.7</i>	<i>24.7</i>				
<b>Labour income (\$million)</b>	<b>140.6</b>	<b>173.4</b>	<b>126.6</b>	<b>124.4</b>	<b>138.3</b>	<b>-1.6</b>	<b>-20.2</b>	<b>9.2</b>	<b>11.2</b>
<i>% of sector total</i>	<i>32.9</i>	<i>39.8</i>	<i>28.9</i>	<i>24.6</i>	<i>24.6</i>				

Data Sources: Statistics Canada and Lillian Hallin Consulting

### Gross Domestic Product in Fish and Seafood Processing

Real GDP in British Columbia's fish and seafood processing industry fell 7.6% to \$133.3 million in 2022, with preliminary estimates for 2023 suggesting a further 19.8% decline (to \$106.9 million) in the industry's value added in that year. Since the capture fishery and aquaculture industries are primary sources of supply for fish and seafood processing, the downturn in these industries almost certainly contributed to the decline in fish and seafood processing GDP in both 2022 and 2023.

Chart 26: Real GDP in the fish and seafood processing industry is declining

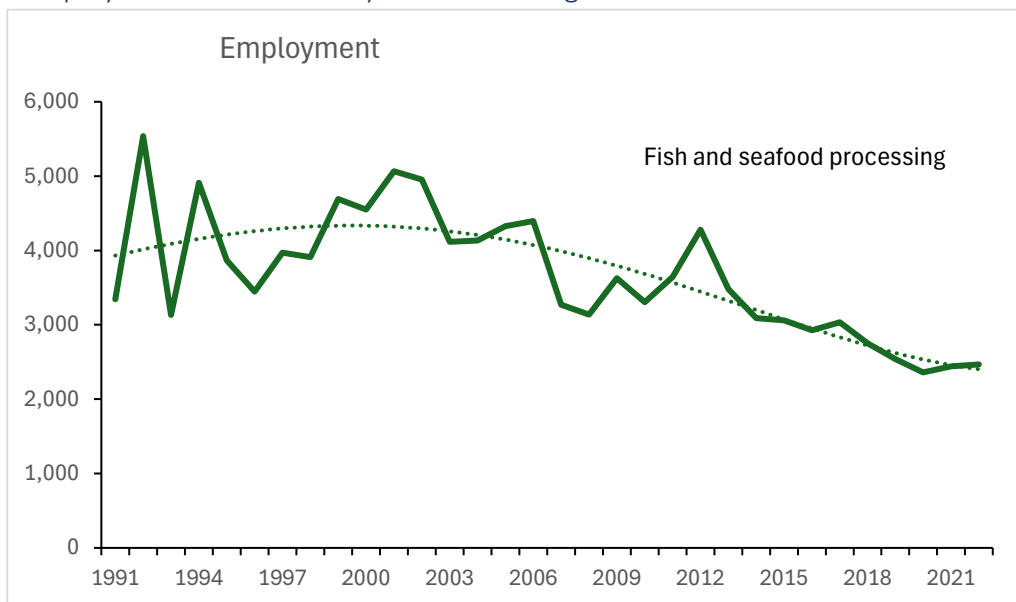


Data Source: Statistics Canada and Lillian Hallin Consulting

While the industry has shown some volatility during the last three decades, until recently, the long-term trend in real GDP has been quite flat. Since 2018, however, the trend has been downward.

## Employment in Fish and Seafood Processing

Chart 27: Employment in the industry is also trending down



Data Source: Statistics Canada, SNA Labour Statistics

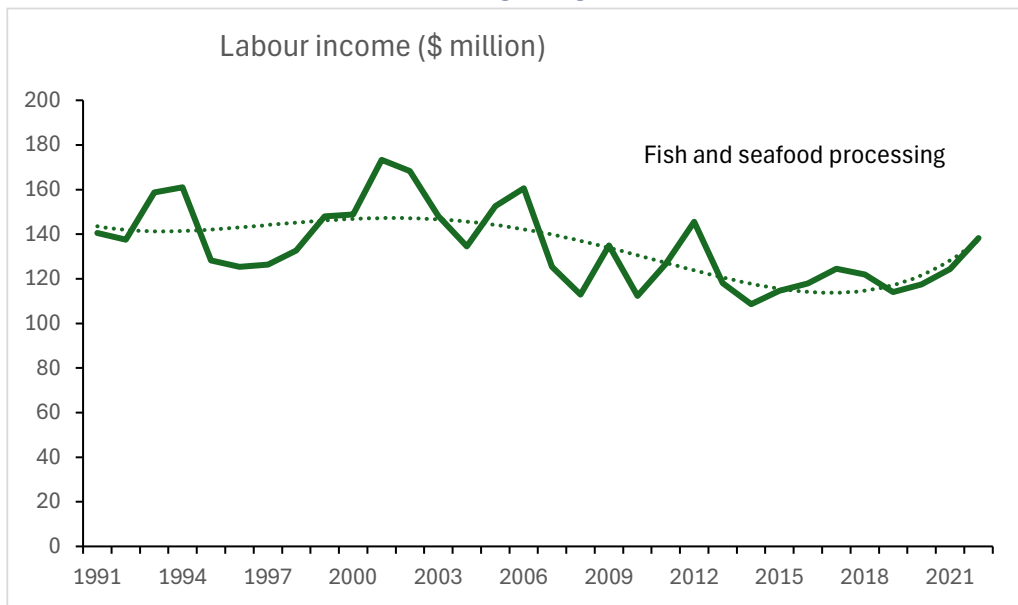
The fish and seafood processing industry employed 2,465 British Columbians in 2022, marginally (+1.0%) more than in the previous year. Over the longer term, employment in this industry has been falling, declining 26.3% since 1991. Virtually all (98.8%) of the people working in this industry in 2022 were paid employees.

## Labour Income in Fish and Seafood Processing

Wages, salaries and benefits earned by workers in the fish and seafood processing industry totalled \$138.3 million in 2022, an increase of 11.2% over the previous year. This increase was primarily due to higher average income in the industry. Average labour income was \$56,106 in 2022, up 10.0% from \$51,025 in the previous year.

Labour income in the fish and seafood processing industry was marginally lower than the average for all industries in the fisheries and aquaculture sector (\$56,219 in 2022) and well below the \$71,918 all-industry average for that year.

Chart 28: Labour income rose in 2022, as average wages climbed

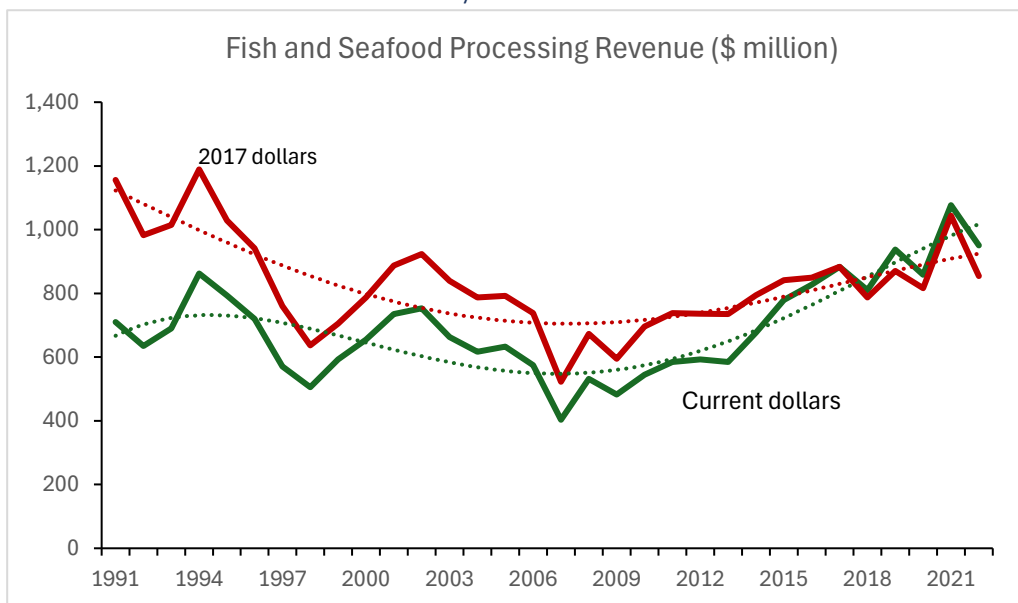


Data Source: Statistics Canada, SNA Labour Statistics

### Fish and Seafood Processing Revenues

Fish and seafood processing revenues fell 11.7% in 2022, dropping to \$950.8 million. While current dollar revenues in 2022 were 34.0% higher than in 1991, much of the increase was price related. When inflation is taken into account, industry revenues in 2022 were 26.1% lower than three decades earlier.

Chart 29: Although current dollar revenues have risen, when inflation is factored in, the value of revenues is below the levels seen in the early 1990s



Data Sources: Statistics Canada and Lillian Hallin Consulting



## Location of Businesses in Fish and Seafood Processing

More than half of the fish and seafood processing businesses were in Mainland/Southwest. In June 2022, there were 68 business locations in British Columbia's fish and seafood processing industry. Just over half (37) of these business locations were in the Mainland/Southwest Region, primarily Greater Vancouver. Another 22 (32%) were located in Vancouver Island/Coast, with seven locations reported in the North Coast region. Another 40 locations had no employees, but had revenues of at least \$30,000 or were incorporated.

Larger operations are more common in fish and seafood processing

Fish and seafood processing operations are more likely to be larger businesses than is the case in the capture fishery and aquaculture industries. Just 22% (15) of all business locations had fewer than five employees while 10% (7) had from five to nine employees.

One in three business locations employed at least 50 people. There were three locations that employed between 200 and 499 workers, including one in North Coast and two in Mainland/Southwest. Another 6 locations with 100 to 199 employees were found in Mainland/Southwest (3) and Vancouver Island/Coast (3), and there were 13 locations with 50 to 99 employees.

Text Table 17: Business Locations in Fish and Seafood Processing, June 2022

Fish and Seafood Processing	1 to 4 employees	5 to 9 employees	10 to 19 employees	20 to 49 employees	50 to 99 employees	100 to 199 employees	200 to 499 employees	Total, with employees	No Employees
<b>Mainland/SW</b>	10	4	4	10	4	3	2	37	
Fraser Valley	1							1	
Greater Vancouver	8	4	4	10	4	3	2	35	
Sunshine Coast	1							1	
<b>North Coast</b>	2	1		2	1		1	7	
Skeena-Queen Charlotte	2	1		2	1		1	7	
<b>Vancouver Island/Coast</b>	3	2	6	1	7	3		22	
Alberni-Clayoquot	1		1		1	1		4	
Capital	1	1	3					5	
Central Coast				1				1	
Comox Valley			1					1	
Cowichan Valley			1					1	
Mount Waddington	1				3			4	
Nanaimo					2	1		3	
Strathcona		1			1	1		3	
<b>Unknown</b>			1		1			2	
<b>B.C. Total</b>	15	7	11	13	13	6	3	68	40

Data Sources: Lillian Hallin Consulting, derived using data from Statistics Canada, Canadian Business Counts

A note about the regional location counts

It should be noted that Statistics Canada's data on business counts is reported in three separate tables: one table (361-00568) includes data by detailed industry, province and employment size for businesses with employees, a second table (361-00569) includes data by detailed industry and province for businesses with no employees, and the third table (361-00576) includes data at a more aggregated industry level, for businesses with employees, by employment size and by region (Census Subdivision and Census Metropolitan Area). The "unknown" category in the text table captures the difference between the aggregated regional data from the regional table and the reported total from the province-level table. The reasons for the difference are not known.

## Sport fishing

Text Table 18: Key Indicators in the Sport Fishing Industry

Sport Fishing	1991	2001	2011	2021	2022	% change since 1991	% change since 2001	% change since 2011	% change since 2021
<b>GDP (\$million)</b>	154.7	244.7	266.8	349.0	408.8	164.3	67.1	53.2	17.1
<i>% of sector total</i>	21.4	33.1	34.5	36.6	39.4				
<b>Real GDP (millions of 2017 dollars)</b>	253.4	321.4	299.3	319.5	343.7	35.6	6.9	14.8	7.6
<i>% of sector total</i>	24.0	32.8	27.7	29.7	32.2				
<b>Revenue (\$million)</b>	343.7	587.1	765.5	1,018.3	1,135.1	230.3	93.3	48.3	11.5
<i>% of sector total</i>	22.2	29.8	35.4	31.1	33.0				
<b>Employment</b>	4,690	5,361	4,948	4,947	4,866	3.8	-9.2	-1.7	-1.6
<i>% of sector total</i>	34.1	39.1	43.7	50.1	48.7				
<b>Labour income (\$million)</b>	104.3	148.2	178.9	219.4	240.0	130.1	61.9	34.2	9.4
<i>% of sector total</i>	24.4	34.0	40.8	43.4	42.8				

Data Sources: Lillian Hallin Consulting, derived using data from Fisheries and Oceans Canada and Statistics Canada

### About the Sport Fishing Industry

Sport fishing is not a standard industry<sup>14</sup> for which GDP, employment, income and revenue figures are available from Statistics Canada. Instead, the industry is comprised of a portion of the activities of many businesses in industries (e.g., transportation, accommodation or food services) that provide goods and services used directly by sport fishers in the province.

The sport fishing estimates presented in this report have been developed using an approach similar to the one historically used to measure the value of the province's tourism sector. More information about the methodology used can be found in the appendix.

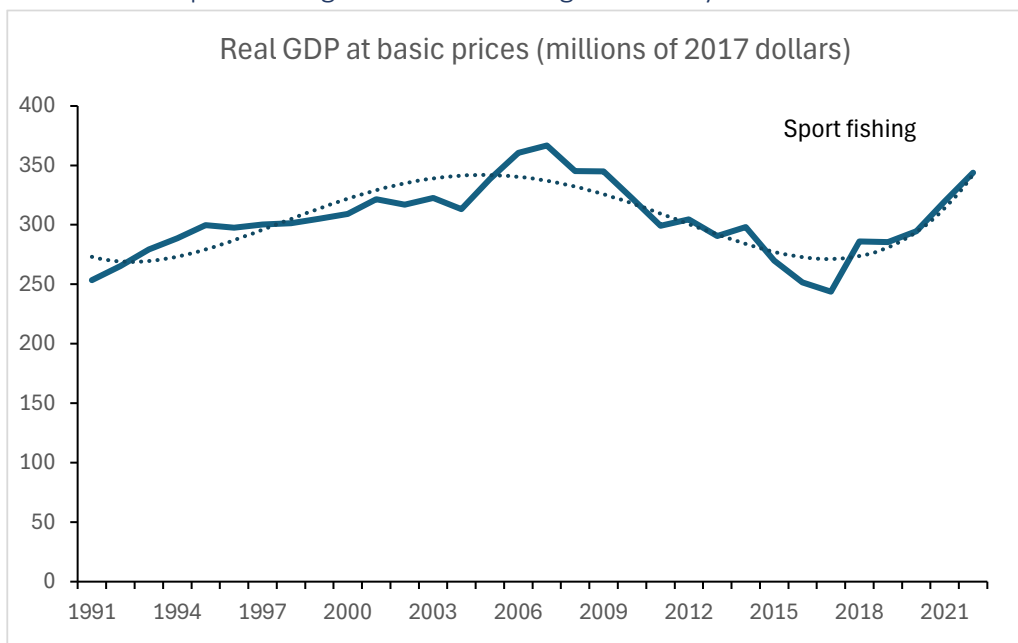
### Gross Domestic Product in the Sport Fishing Industry

Real GDP in the sport fishing industry was estimated at \$343.7 million in 2022, an increase of 7.6% over the previous year<sup>15</sup>. Although sport fishing has expanded by 35.6% since 1991, the industry has seen some ups and downs during the last three decades. For the first 15 years of the study period, the industry was on an upward path, but after peaking at \$366.7 million in 2007, real GDP fell to a low of \$243.8 million in 2017. Since then, the industry has been growing.

<sup>14</sup> Standard industries are industries included in the North American Industrial Classification System.

<sup>15</sup> Preliminary real GDP data for 2023 are not available for this industry.

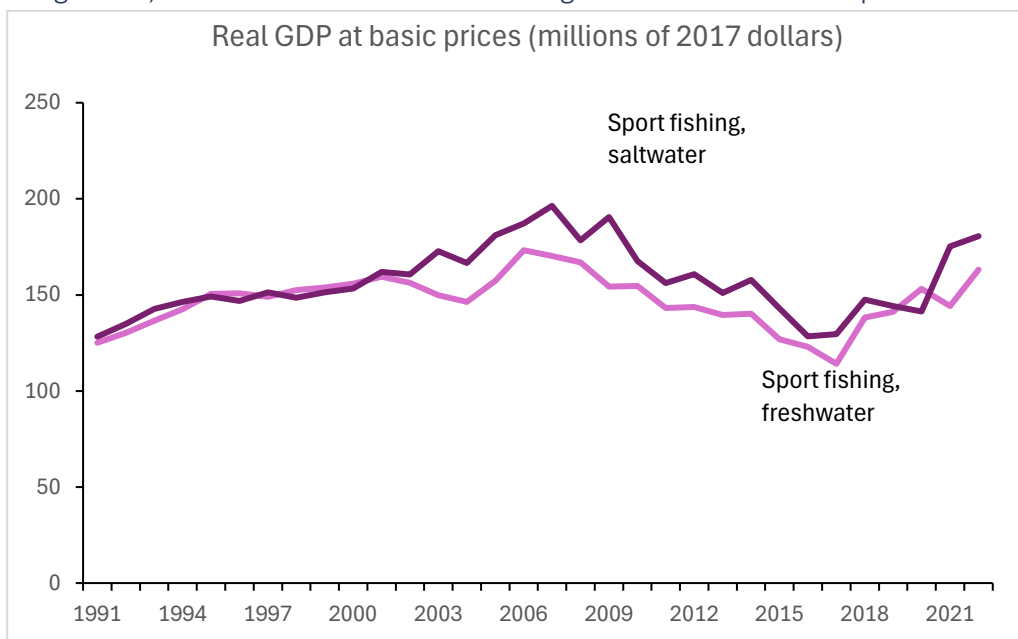
Chart 30: Real GDP in sport fishing has been climbing in recent years



Data Sources: Lillian Hallin Consulting, derived using data from Fisheries and Oceans Canada and Statistics Canada

Both the saltwater and freshwater components of the sport fishing industry have seen similar trends during the last three decades. The saltwater sport fishing industry is slightly larger (\$180.5 million in real GDP in 2022) than the freshwater industry (\$163.2 million).

Chart 31: In general, freshwater and saltwater fishing have followed similar paths

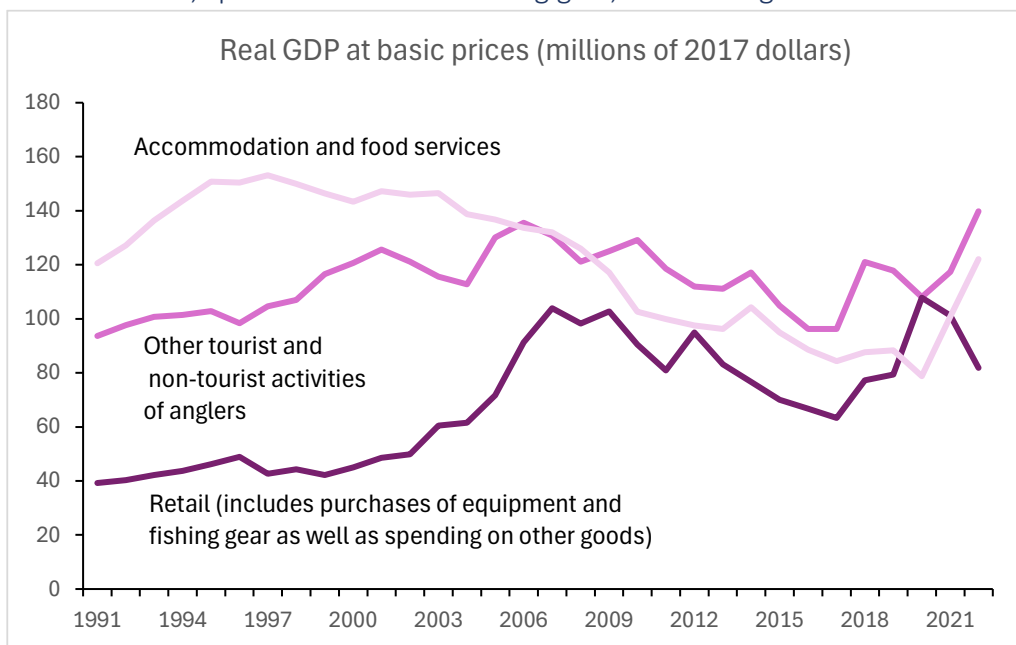


Data Sources: Lillian Hallin Consulting, derived using data from Fisheries and Oceans Canada and Statistics Canada

### Industries that provide services to sport fishers

Many different types of activities are included in the sport fishing industry. Businesses providing accommodation and food services used by anglers (35.5%) and retailers selling special vehicles, equipment, fishing gear, food and beverages, gas and other items (e.g., clothing or souvenirs) to anglers (23.8%) together accounted for more than half of the sector's real GDP in 2022.

Chart 32: Businesses providing services to anglers include accommodation and food services, and retailers who sell boats, special vehicles and fishing gear, and other goods



Data Sources: Lillian Hallin Consulting, derived using data from Fisheries and Oceans Canada and Statistics Canada

Arts, entertainment and recreation (17.2%) includes guiding as well as other services such as recreation, visits to museums and gambling services purchased by tourist anglers while travelling in British Columbia.

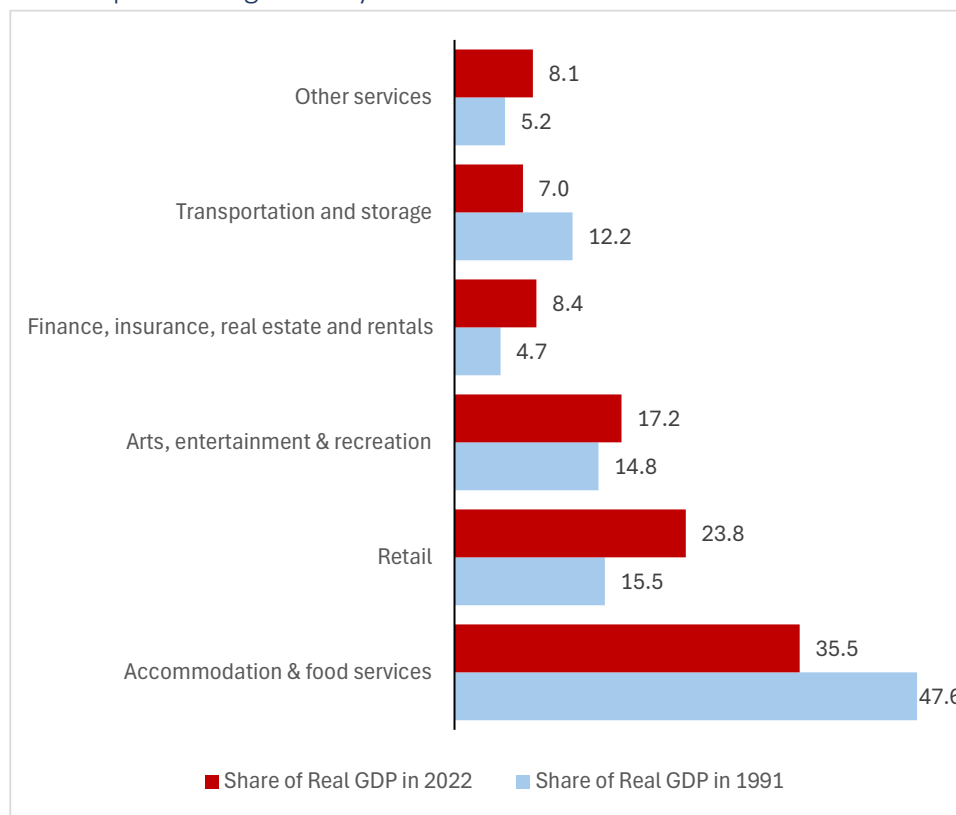
Finance, insurance, real estate and rentals (8.4%) includes vehicle and equipment rentals, an estimate of insurance costs related to boats and special vehicles exclusively used for fishing, and an estimate of the imputed rental income<sup>16</sup> on cabins, cottages and other owner-occupied housing that is used primarily when fishing.

Transportation and storage (7.0%) is mainly air and water transportation and associated support services, but also includes taxis and other ground transportation services used by tourist anglers while travelling in British Columbia.

Repairs, travel agents, provincial park services, and similar services made up the remaining 8.1% of total sport fishing GDP in 2022.

<sup>16</sup> There are no jobs or revenues associated with imputed rental income. This measure is only included in GDP.

Chart 33: Accommodation and food services and retail trade together accounted for nearly 60% of real GDP in the sport fishing industry in 2022



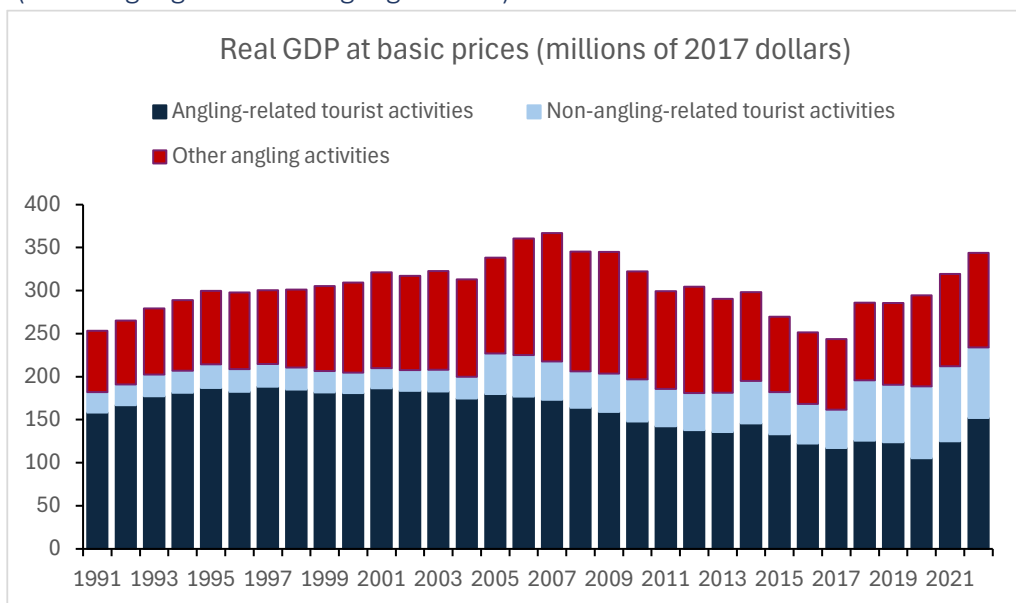
Data Sources: Lillian Hallin Consulting, derived using data from Fisheries and Oceans Canada and Statistics Canada

#### Tourist and non-tourist activities of anglers

Sport fishing includes both tourist and non-tourist activities of anglers. If they travel 80 kilometres or more outside their usual environment, residents of the province, and visitors from the rest of Canada or other countries would be considered tourists. Residents who can participate in sport fishing inside their usual environment would not be considered tourists.

Tourists may engage in both angling-related and other activities, and these are all accounted for in the estimates. In 2022, an estimated 44.4% of real GDP in sport fishing originated in angling-related tourist activities, with another 31.9% in other angling activities (those that are not tourist-related, including activities of residents who do not have to travel, and purchases of vehicles and equipment that are wholly attributable to sport fishing). Another 23.4% of the industry's real GDP in 2022 originated in non-angling tourist activities.

Chart 34: Just over two thirds of the sport fishing industry's real GDP originates in tourist activities (both angling and non-angling-related)



Data Sources: Lillian Hallin Consulting, derived using data from Fisheries and Oceans Canada and Statistics Canada

### Sport fishing during the COVID years

The sport fishing industry continued to expand even during the COVID years, a period when many activities were severely curtailed. This suggests that the demand for some types of angling-related services was not affected in the same way that other activities were.

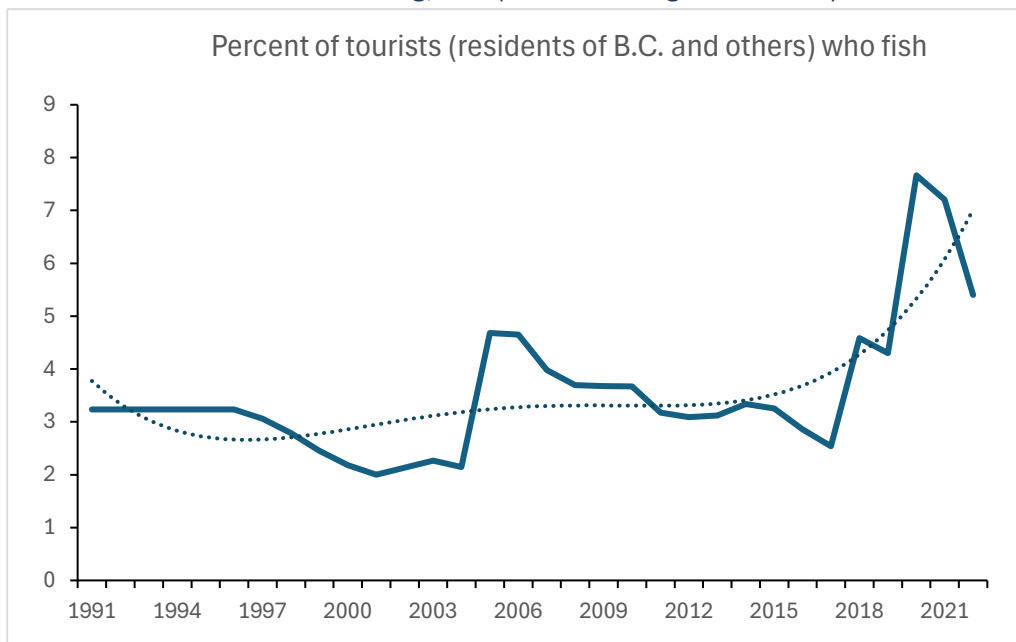
Data from the National Travel Survey indicate that the number of domestic travellers coming to B.C. fell sharply (-44.0%) in 2020 and did not recover to pre-COVID levels until 2022. International travel to the province was also strictly limited during this period, and this affected operators in the industry whose clientele includes a large proportion of non-residents.

At the same time, the number of domestic travellers who said they fished while visiting the province remained stable in 2020 and increased in 2021. Since the percentage of tourists who fish is one of the indicators used to estimate the sport-fishing component of non-angling related tourist activities, this had the effect of boosting sport fishing's share of industry totals in those years. The percentage of tourists who fish had already been climbing prior to the pandemic.

Resident anglers, both tourists and non-tourists, would not necessarily have to hire guides or stay at fishing or other lodges. For example, those with fishing cabins, or other accommodations such as trailers and campers would not have been restricted by mandated limitations on social activities during the pandemic. As well, a significant portion of the industry's GDP originates in retail businesses that sell boats, trailers, special vehicles, fishing gear and other goods to anglers, where that spending is reported as being entirely attributable to sport fishing. During the COVID period, retail spending on these items

increased, helping offset the impact of reduced spending by anglers on accommodation and other services<sup>17</sup>.

Chart 35: Historically, about 5% of tourists in British Columbia reported participating in fishing activities but the share has been climbing, and peaked during the COVID years



Data Sources: Lillian Hallin Consulting, derived using data from Statistics Canada, various travel surveys

#### Fewer saltwater, but more freshwater, licences sold in 2020

Licensing<sup>18</sup> data show that in 2020, the number of saltwater licences issued dropped sharply as non-residents were unable to travel to the province to participate in this activity. There were no saltwater licences issued to non-residents in that year, and only 6,904 licences were issued to non-resident saltwater fishers in 2021. This compares to 54,195 licences issued in 2019, before the pandemic. Non-resident sport fishers are an important source of income for the sport fishing industry, and the absence of these fishers contributed greatly to the decline in saltwater fishing activity recorded in 2020<sup>19</sup>. The number of licences issued to residents of the province increased 6.0% between 2019 and 2020, not enough to offset the effect of the drop in non-resident saltwater angling.

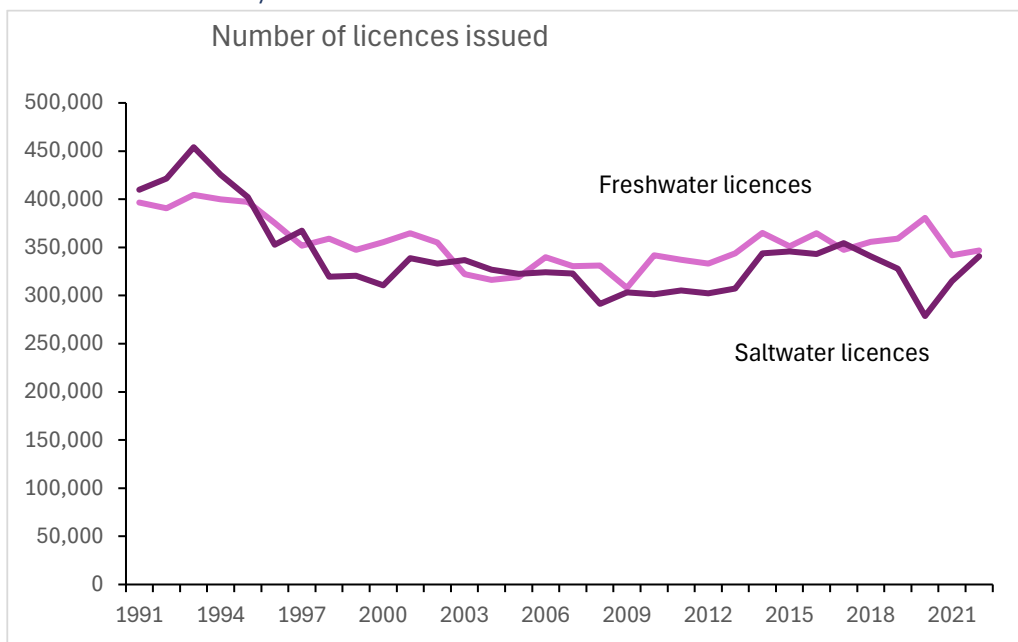
However, there were more licences issued to freshwater fishers in 2020 than in both the previous and subsequent years, largely because the number of basic licences sold to residents jumped 17.4% in 2020, more than enough to counteract the effect of a reduction in licences sold to visitors from outside the province. Freshwater fishing is a sport in which individuals can more easily engage without having to purchase services from industries providing guiding or accommodation services, and this is likely one of the reasons why the freshwater fishing industry grew in 2020.

<sup>17</sup> See Chart 32

<sup>18</sup> Although licences may be purchased by anglers who do not actually fish in a given year, changes in licencing data can be viewed as an indicator of activity in the industry, since it is unlikely that the percentage of non-participants would change significantly from year to year.

<sup>19</sup> See Chart 31

Chart 36: The number of saltwater licences issued dropped in 2020, but more freshwater licences were issued in that year

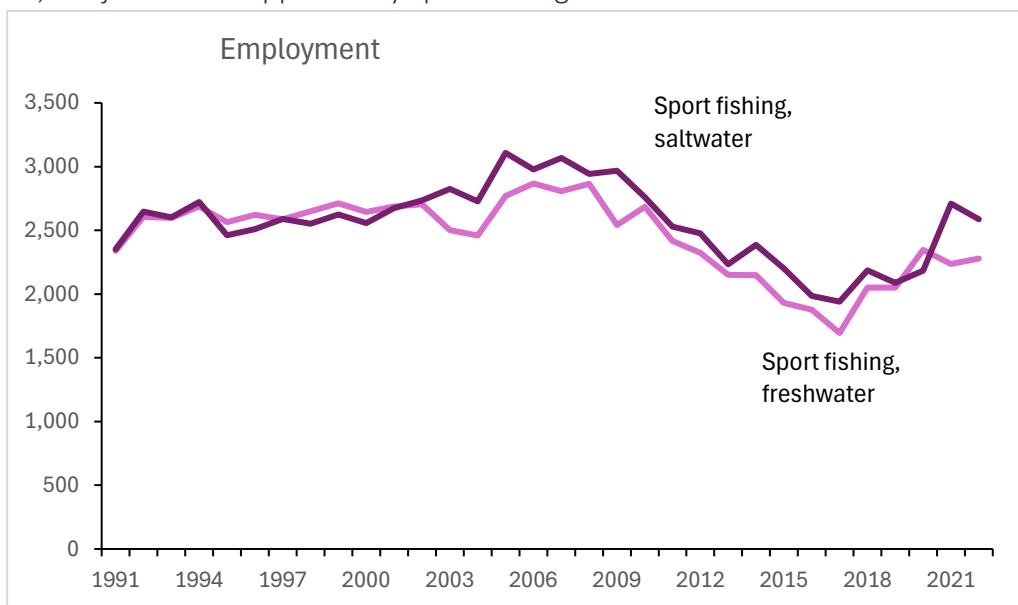


Data Sources: Fisheries and Oceans Canada, Ministry of Water, Land and Resource Management

It appears that both the saltwater and freshwater sport fishing industries may be getting back to normal after the COVID-induced shocks that affected the numbers for 2020 and 2021.

### Employment in the Sport Fishing Industry

Chart 37: 4,866 jobs were supported by sport fishing in 2022



Data Sources: Lillian Hallin Consulting, derived using data from Fisheries and Oceans Canada and Statistics Canada

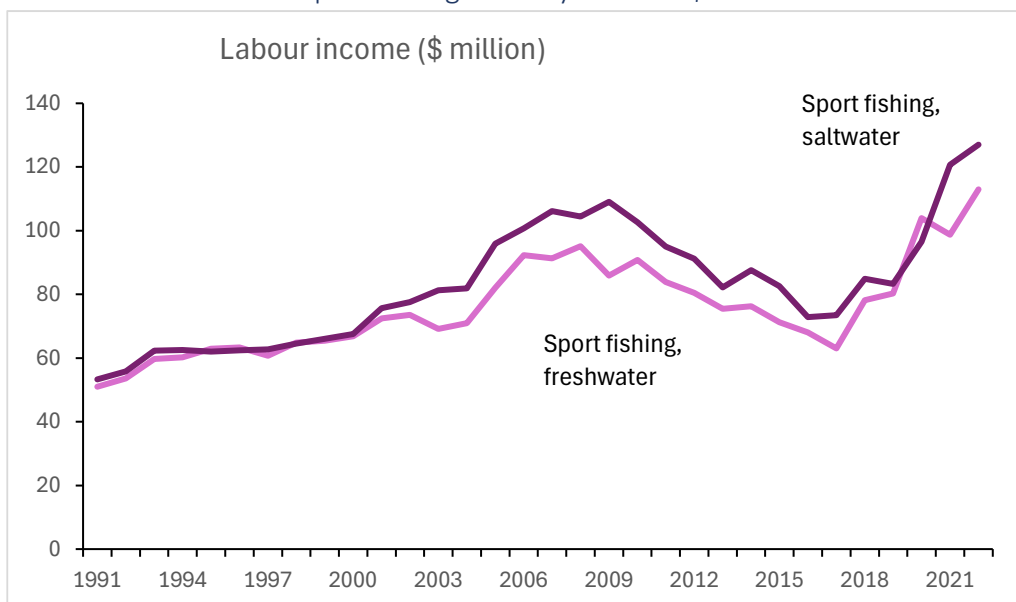


Employment in the province's sport fishing industry was estimated at 4,866 in 2022, marginally less (-1.6%) than in the previous year. Of this total, saltwater sport fishing supported an estimated 2,587 jobs compared to 2,279 in freshwater fishing.

Sport fishing is the largest employer in the fisheries and aquaculture sector, accounting for nearly half (48.7%) of the jobs in 2022. Historically, it has been the largest employer in the fisheries and aquaculture sector, but the differences were not as great in the early 1990s, when 34.1% of the jobs were in sport fishing, compared to 31.7% in the capture fishery and 24.3% in fish and seafood processing.

## Labour Income in the Sport Fishing Industry

Chart 38: Labour income in the sport fishing industry reached \$240 million in 2022



Data Sources: Lillian Hallin Consulting, derived using data from Fisheries and Oceans Canada and Statistics Canada

Wages, salaries and benefits received by workers in this industry totaled \$264.0 million in 2022, up 8.8% over the 2021 level. Both saltwater (+5.2%, to \$127.0 million) and freshwater (+14.5%, to \$113.0 million) fishing saw labour income rise in 2022. Labour income in this industry was more than double (+130.1%) the 1991 level of \$104.3 million.

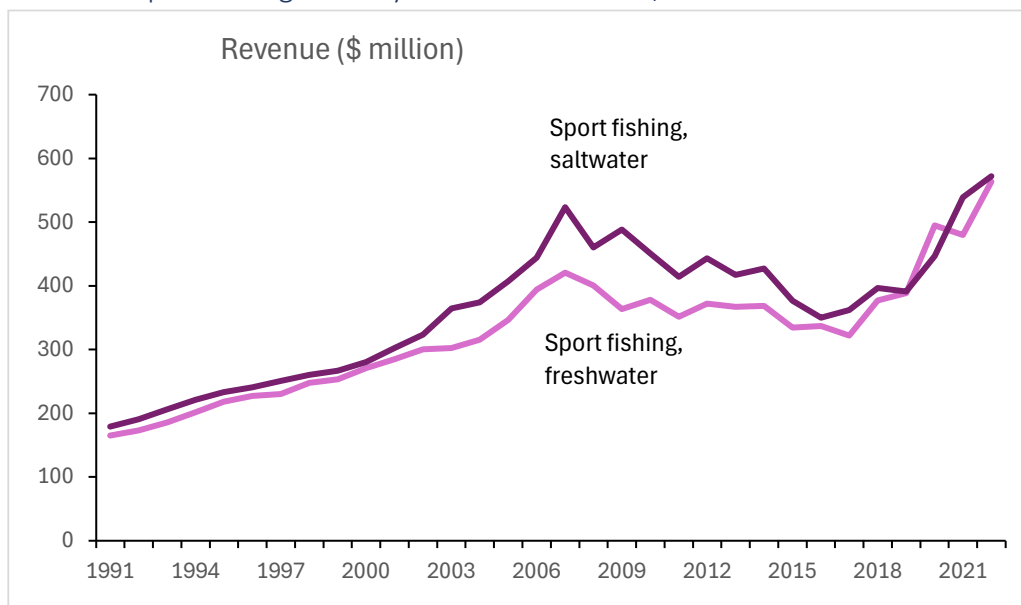
The average labour income in sport fishing was \$49,322 in 2022, about 88% of the average income in the fisheries and aquaculture sector and 69% of the all industry average. Labour income tends to be somewhat lower in service industries (averaging \$68,294 for all service industries in British Columbia in 2022) than in goods-producing industries (where the average was \$86,626 in that year).

Average labour income in the freshwater fishing industry (\$49,583) was virtually the same as in saltwater fishing (\$49,092) in 2022.

## Sport Fishing Industry Revenues

Revenues in the sport fishing industry increased 11.5% in 2022, rising to \$1.1 billion. Both the saltwater (+6.2%, to \$571.9 million) and freshwater (+17.4%, to \$563.2 million) industries posted revenue growth in 2022.

Chart 39: Sport fishing industry revenues reached \$1.1 billion in 2022



Data Sources: Lillian Hallin Consulting, derived using data from Fisheries and Oceans Canada and Statistics Canada

## Location of Businesses in the Sport Fishing Industry

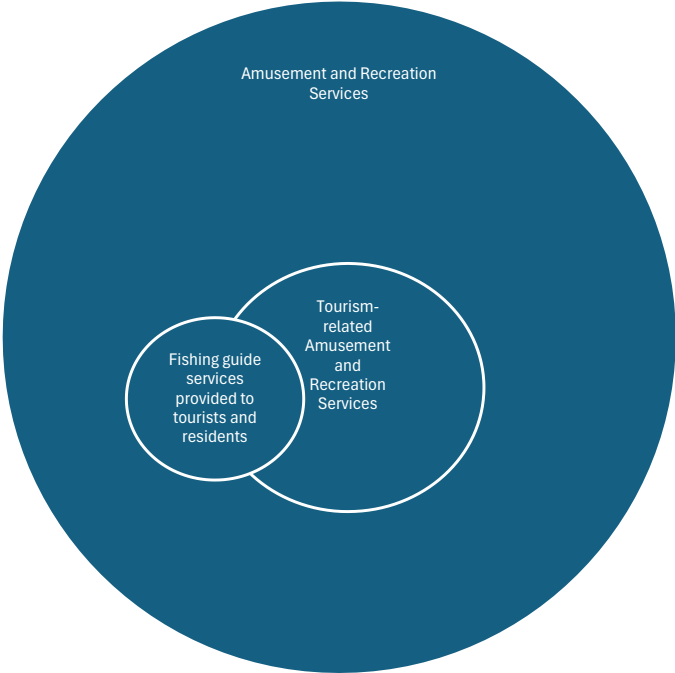
Because sport fishing is not a standard industry, business location counts are not available for this industry. Location counts would include all businesses in related industries such as accommodation, food services or air transportation, so would not provide meaningful information in this case since only a small number of these businesses would be selling goods and services to sport fishers.

## A Note About Sport Fishing Estimates

While the sport fishing estimates have been derived from, and are therefore consistent with, the standard industry data published by Statistics Canada, care should be taken when making industry comparisons, because the estimates are not mutually exclusive. For example, fishing guide services are included in NAICS 713999 (all other amusement and recreation industries). Fishing guides may be hired by tourists<sup>20</sup> or by residents who are in their usual environment (.e.g, a resident of the lower Mainland who hires a fishing guide to fish in local waters). In this case, only part of the sport fishing component of the amusement and recreation industry related to fishing guide services would also be included in the tourism sector estimates. Because of the overlap between sport fishing, tourism and the standard industries, comparisons are best made with larger industry groupings (e.g., all services or the total economy).

<sup>20</sup> A tourist is defined as someone travelling or staying outside their usual environment (typically a distance of 80 km or more from their home).

Figure 1: Published data for NAICS industries and estimates for tourism and sport fishing are not mutually exclusive



Note: Figure is NOT to scale; for illustrative purposes only

## Supply and Use of Fish and Seafood Products in British Columbia

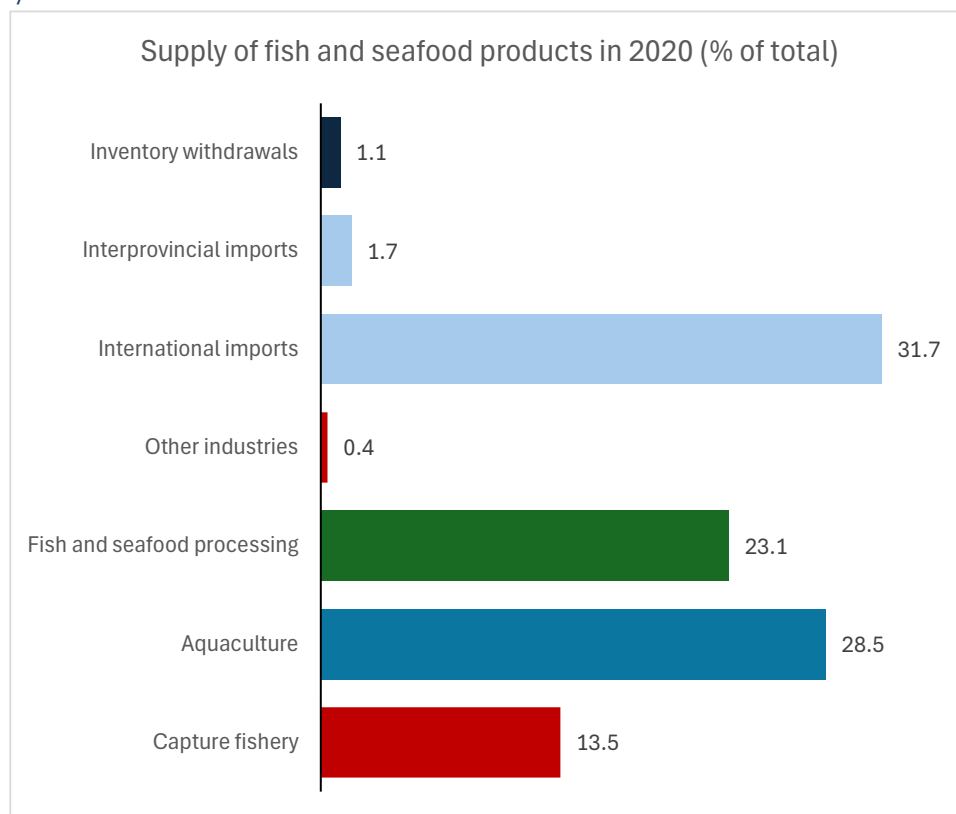
### Supply of Fish and Seafood Products in British Columbia

Data from the Supply Use Tables (SUT) for British Columbia show the sources of supply and the disposition of fish and seafood products consumed in the province in 2020 (the latest year for which this information is available).

In 2020, the total supply of fish and seafood products in British Columbia was valued at \$2.5 billion. Of this total, nearly two-thirds (65.5%) came from domestic producers, including aquaculture (28.5%), fish and seafood processing (23.1%), the capture fishery (13.5%), and other industries (0.4%).

International (31.7%) and interprovincial (1.7%) imports, together with inventory withdrawals from previous years' production (1.1%) made up the remaining third of the total supply of fish and seafood products available for consumption in 2020.

Chart 40: Two-thirds of the fish and seafood products consumed in B.C. were produced domestically in 2020



Data Source: Statistics Canada Supply Use Tables for 2020

### Unprocessed and Processed Fish and Seafood Products

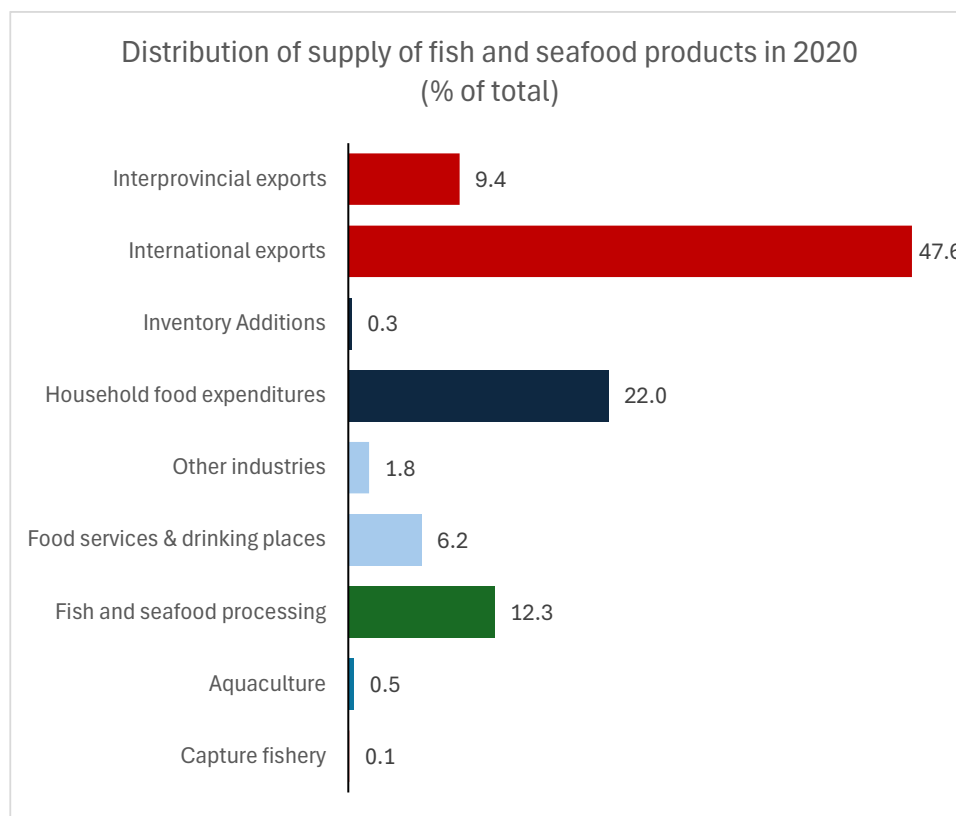
Fish and seafood products include both unprocessed and processed fish and seafood. Almost all (81.6%) of the provincial supply of unprocessed fish and seafood products was produced by B.C. industries, with

15.3% coming from international imports, 1.9% from other provinces and 1.2% from inventories held by producers. In contrast, 59.0% of prepared and packaged seafood products were imported from other countries, while 37.5% was produced by British Columbia's fish and seafood processing industry.

## Demand for Fish and Seafood Products in British Columbia

In 2020, just over a fifth (20.8%) of the province's total supply of fish and seafood products was used by domestic industries. The main consuming industries were fish and seafood processing (12.3%) and food services and drinking places (6.2%). Other industries accounted for a relatively small share (2.3%) of the total domestic supply.

Chart 41: Nearly half of the total supply of fish and seafood in 2020 was exported to other countries



Data Source: Statistics Canada Supply Use Tables for 2020

The domestic supply was primarily destined for use by international (47.6%) and interprovincial (9.4%) consumers, while 22.0% of the supply was used by households in the province. The bulk (94.8%) of the province's international exports of fish and seafood products were produced by domestic industries, with a small share (5.2%) being re-exports of goods that had previously been imported into the province. Just under three-quarters (73.1%) of the total value of production of fish and seafood products in British Columbia in 2020 was destined for use in other countries.

## Household food expenditures

Data from the Survey of Household Spending show trends in consumer purchases of fish and seafood over time. In 2001 (the first year for which comparable information is available), fish and seafood

products accounted for 3.8% of the total value of food purchased from stores. In 2021, these products accounted for 3.0% of household food expenditures at stores.

The average household in British Columbia spent \$8,208 on groceries in 2021, including \$245 on fish and seafood products. Fresh or frozen fish (\$112) accounted for the largest share of the total, with the average household spending another \$90 on seafood and other marine products (including shrimp and prawns, lobster, crab, mussels and other shellfish). Household spending on canned and preserved fish averaged \$43 in 2021.

Text Table 19: Spending by B.C. Households on Fish and Seafood Products

	Average Expenditure (\$)	Distribution of Expenditures (%)		
	2021	2001	2011	2021
<b>Household Food expenditures</b>	<b>11,341</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
Food purchased from restaurants	3,075	32.7	29.5	27.1
Food purchased from stores	8,208	67.3	70.5	72.4
		<i>% of total spending on food purchased from stores</i>		
<b>Fish and seafood</b>	<b>245</b>	<b>3.8</b>	<b>3.5</b>	<b>3.0</b>
<b>Fresh or frozen fish</b>	<b>112</b>	<b>1.9</b>	<b>1.5</b>	<b>1.4</b>
<i>Salmon (fresh or frozen, uncooked)</i>	71	0.9	0.6	0.9
<i>Other fish (fresh or frozen, uncooked)</i>	34	1.0	0.7	0.4
<i>Cod, flounder, sole and haddock (fresh or frozen, uncooked)</i>	-	-	0.1	0.0
<b>Canned fish or other preserved fish</b>	<b>43</b>	<b>0.9</b>	<b>0.7</b>	<b>0.5</b>
Tuna (canned)	11	0.2	0.3	0.1
Salmon (canned)	-	0.3	0.2	0.0
Other fish (canned or bottled)	14	-	0.1	0.2
Cured fish	16	-	0.1	0.2
<b>Seafood and other marine products</b>	<b>90</b>	<b>1.0</b>	<b>1.3</b>	<b>1.1</b>
Shrimp and prawns	57	0.6	0.7	0.7
Other seafood and marine products	33	0.4	0.7	0.4

Data Source: Statistics Canada, Survey of Household Spending

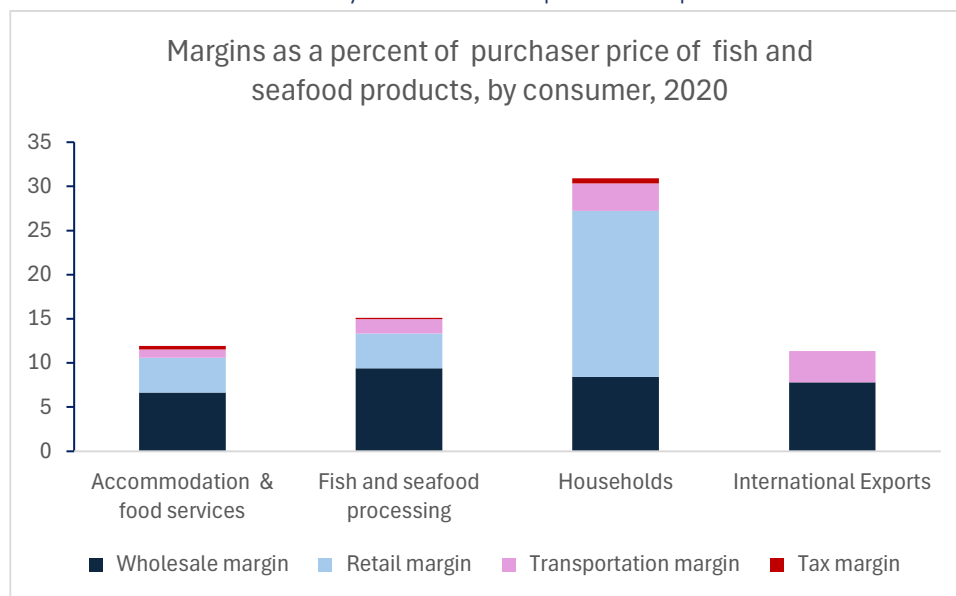
## Upstream Industries: Wholesale, Retail and Transportation Services

Upstream industries include producers who are involved in bringing fish and seafood products to market. When a good or service is sold to a final consumer, the selling price includes, in addition to the value of the product, the cost of services provided by other industries who have handled the product as it moves up along the supply chain. In the case of fish and seafood products, this includes transportation, wholesaling and retailing services that are needed to get the product from the original producer to the final consumer. These services are embedded in the selling price at every step along the supply chain.

One way to measure the impact of fish and seafood production on upstream industries is to look at the value of margins embedded in the final selling price of these products. This information is available in the Supply Use Tables.

The distribution of wholesale, retail and transportation margins varies considerably by consumer. For households, nearly a third (30.9%) of the purchase price of fish and seafood products in 2020 represented margins. Retail margins (the mark-up charged by retailers for their services) accounted for 18.8% of the cost paid by households. Another 8.4% of the purchase price was wholesale margins (the cost of wholesale services embedded in the prices), while transportation margins (the cost of transporting the goods from the original producer to the retailer) accounted for 3.1% of the price and tax margins (various taxes, such as gas and other taxes embedded in the price of the product) made up another 0.6% of the final price.

Chart 42: Wholesale, retail, transportation and tax margins embedded in the cost of fish and seafood products accounted for nearly a third of the purchaser price in 2020



Data Source: Statistics Canada Supply Use Tables for 2020

Looking at the value of international exports, wholesale (7.8%) and transportation (3.6%) margins made up a relatively small share of the purchaser price. There are no retail or tax margins embedded in the purchaser price of fish and seafood product exports.

In the fish and seafood processing industry, wholesale margins accounted for 9.4% of the purchaser price paid by the industry, while retail (3.9%), transportation (1.6%), and tax (0.1%) margins accounted for relatively small shares of the total.

## International Exports of Fish and Seafood Products

The figures in this section include exports of fish and seafood produced by the province's capture fishery, aquaculture and fish and seafood processing industries. They do not include the value of fish and seafood products exported to other provinces, nor do they include an estimate of the value of sport fishing services exported to or imported from other countries or provinces.

Text Table 20: International Exports of Fish and Seafood Products

International Exports of Fish and Seafood Products Produced in British Columbia	1991	2001	2011	2021	2022	% of total in 1991	% of total in 2001	% of total in 2011	% of total in 2021	% of total in 2022
<b>International Exports (\$million)</b>	<b>696.2</b>	<b>965.6</b>	<b>911.4</b>	<b>1,386.9</b>	<b>1,554.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
<b>Exports by species (\$million)</b>										
<i>Wild finfish products (includes freshwater)</i>	602.7	552.3	395.1	450.2	495.2	86.6	57.2	43.4	32.5	31.9
<i>Wild shellfish products</i>	60.9	148.5	194.1	445.3	423.7	8.7	15.4	21.3	32.1	27.3
<i>Farmed finfish &amp; shellfish products</i>	32.6	263.3	320.5	491.3	634.7	4.7	27.3	35.2	35.4	40.8
<b>Exports by level of processing (\$million)</b>										
<i>Live, Fresh, Chilled</i>	201.3	555.2	503.2	1,031.6	1,162.9	28.9	57.5	55.2	74.4	74.8
<i>Frozen</i>	211.1	169.7	262.2	302.6	317.5	30.3	17.6	28.8	21.8	20.4
<i>Other types of processing</i>	284.0	240.7	146.0	53.1	73.8	40.8	24.9	16.0	3.8	4.7
<b>Exports by destination (\$million)</b>										
<i>USA</i>	228.3	617.5	517.7	932.2	1,056.0	32.8	63.9	56.8	67.2	68.0
<i>EU nations (current list)</i>	50.1	17.0	20.4	23.4	38.1	7.2	1.8	2.2	1.7	2.5
<i>China (includes Hong Kong and Macau)</i>	20.6	61.0	157.5	263.6	311.6	3.0	6.3	17.3	19.0	20.1
<i>Japan</i>	292.9	198.0	108.8	75.8	80.8	42.1	20.5	11.9	5.5	5.2
<i>All other regions</i>	104.3	72.1	107.0	91.9	67.5	15.0	7.5	11.7	6.6	4.3

*Data Sources: Lillian Hallin Consulting, derived using data from Statistics Canada, Canadian International Merchandise Trade Database*

## The Valuation of Exports

The export data reported in this section are in current Canadian dollars, meaning that they have not been adjusted to remove the effects of inflation. When comparing values (or shares) over time, it is important to remember that growth (or decline) can be due to changes in the volume of fish and seafood products exported as well as changes in the prices (and relative prices by species or level of processing) of these products. As well, some exports may be denominated in foreign currencies, and changes in the value of the Canadian dollar vis-à-vis those currencies may also have an effect. The extent to which some of the trends noted in this section are affected by relative price changes has not been determined.

While these effects should be kept in mind when looking at trends over time, changes in the current dollar data reveal shifts in the composition and relative importance of export markets and different types of products.

## International Exports of Fish and Seafood Products

The value of fish and seafood exports produced in British Columbia increased 12.0% to \$1.6 billion in 2022. Exports of British Columbia fish and seafood products, which had remained quite stable during the period from 2001 to 2011, climbed 70.5% between 2011 and 2022.



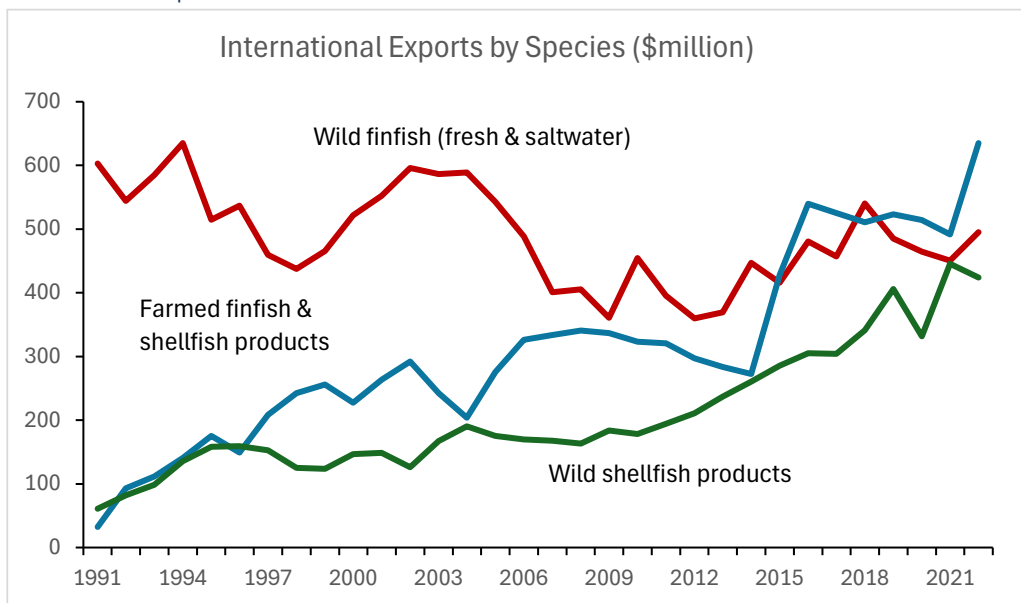
Chart 43: The total value of fish and seafood products exported from British Columbia reached \$1.6 billion in 2022



Data Source: Statistics Canada, Canadian International Merchandise Trade Database

### Exports by Species

Chart 44: Farmed finfish and shellfish exports accounted for more than a third of the total value of fish and seafood exports in 2022



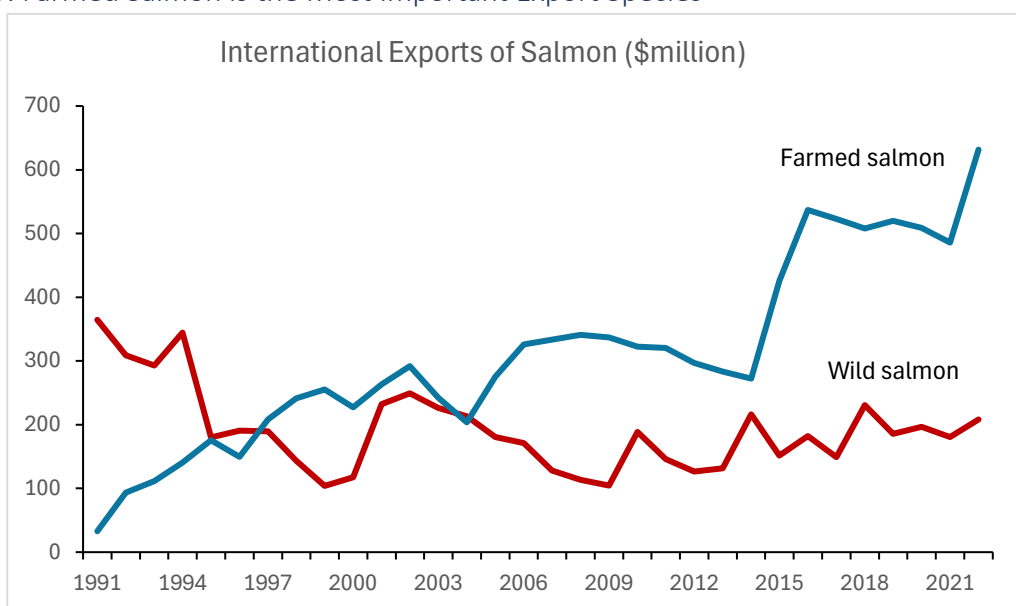
Data Sources: Lillian Hallin Consulting, derived using data from Statistics Canada, Canadian International Merchandise Trade Database

Exports of farmed finfish and shellfish products increased 29.2%, to \$634.7 million, in 2022, while wild finfish exports were up 10.0%, rising to \$495.2 million. However, international sales of wild shellfish products fell 4.9%, to \$423.7 million.

In 1991, wild finfish products were the most important export product, accounting for 86.6% of the total value of exports. Wild shellfish products (8.7%) and farmed finfish & shellfish (4.7%) made up substantially smaller shares of total exports.

During the last three decades, the distribution of exports by species has changed as the value of wild finfish and shellfish exports has declined 17.8%, while wild shellfish exports have increased by a factor of seven (+595.7%). The value of farmed finfish and shellfish exports in 2022 was more than 19 times the 1991 value.

Chart 45: Farmed Salmon is the Most Important Export Species

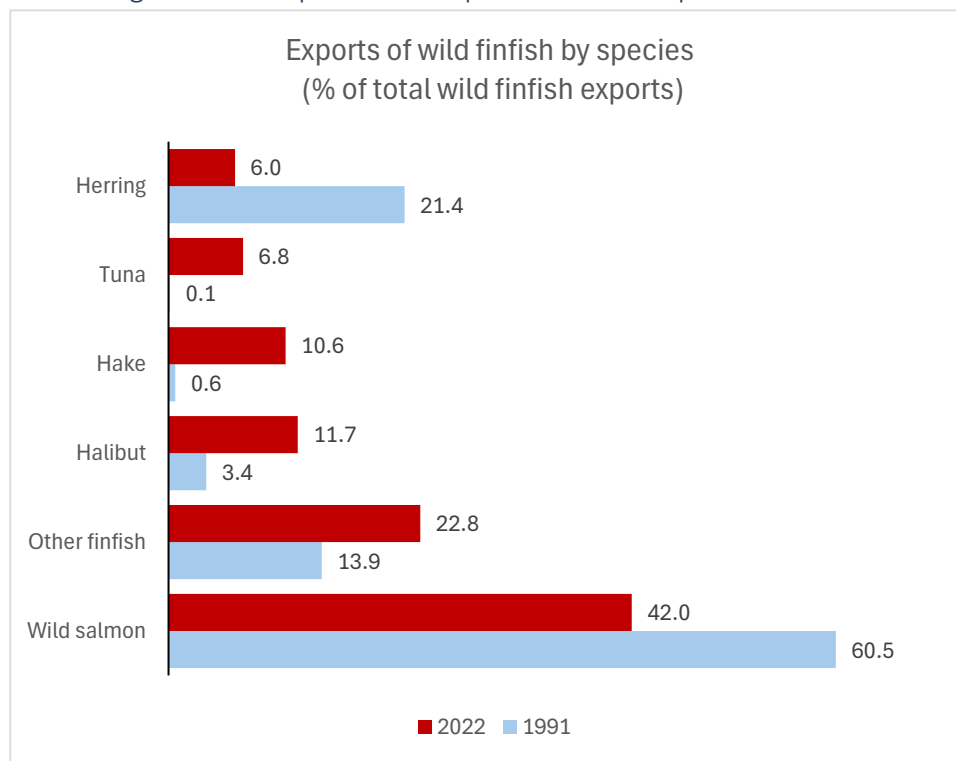


Data Sources: Lillian Hallin Consulting, derived using data from Statistics Canada, Canadian International Merchandise Trade Database

Farmed and wild salmon are the most important export species. Together, farmed and wild salmon accounted for \$839.4 million (54.0%) of the \$1.6 billion in total fish and seafood exports in 2022. Virtually all (\$631.4 million, or 99.5%) of the \$634.7 million in farmed finfish and shellfish products exported from the province in that year was farmed salmon. Wild salmon exports were valued at \$208.0 million, or 42.0% of the value of wild finfish exports from the province.

Other wild finfish products that are exported in significant amounts include halibut (11.7% of wild finfish exports), hake (10.6%), tuna (6.8%) and herring (6.0%). The relative importance of wild salmon and herring in the export mix has declined since 1991, when these two species together made up more 81.9% of the total value of wild finfish exports.

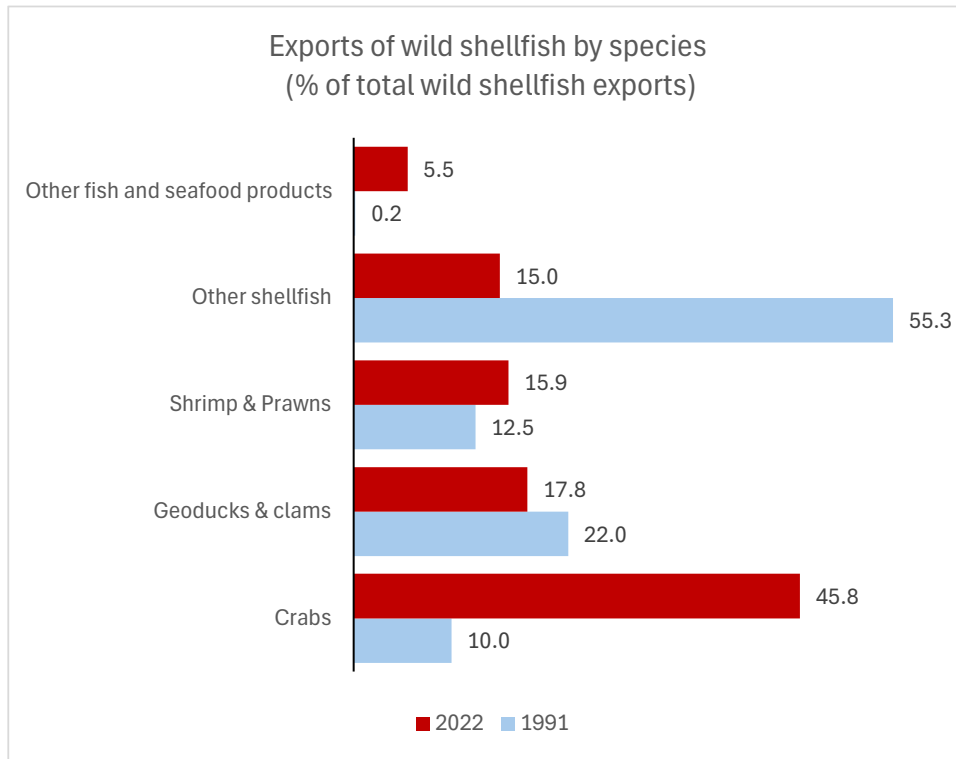
Chart 46: A wide range of finfish species are exported from the province



Data Sources: Lillian Hallin Consulting, derived using data from Statistics Canada, Canadian International Merchandise Trade Database

In 2022, crab (45.8%) accounted for the largest share of the total value of wild shellfish exports, significantly more than its share of the total in 1991 (10.0%). The share of shrimps and prawns (15.9%) has also increased (from 12.5% in 1991) but geoducks and clams accounted for a smaller share of wild shellfish exports (17.8%) in 2022, down from 22.0% in 1991.

Chart 47: Shellfish exports include crabs, geoducks, clams, shrimps, prawns and other species



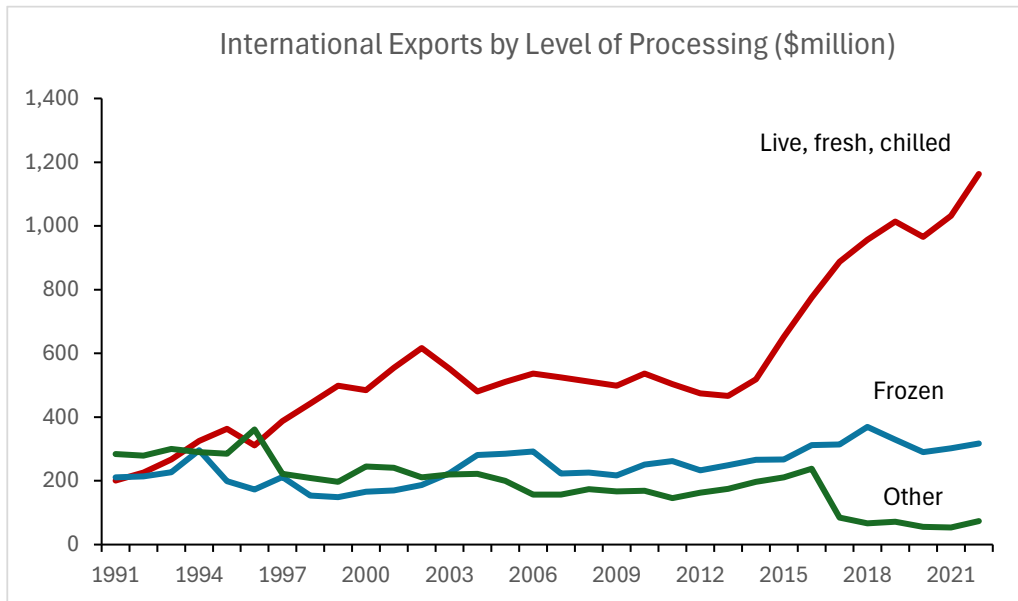
Data Sources: Lillian Hallin Consulting, derived using data from Statistics Canada, Canadian International Merchandise Trade Database

### Exports by level of processing

In 2022, the value of live, fresh and chilled fish and seafood products exported to other countries reached \$1.2 billion, an increase of 12.7% over the 2021 level, and accounting for three-quarters (74.8%) of the total value of fish and seafood exports in that year.

Exports of frozen products were up 4.9%, to \$317.5 million, while international sales of other processed products (e.g., smoked, canned or in brine) rose 39.7% to \$73.8 million.

Chart 48: Exports of live, fresh and chilled fish and seafood products have increased significantly since 1991

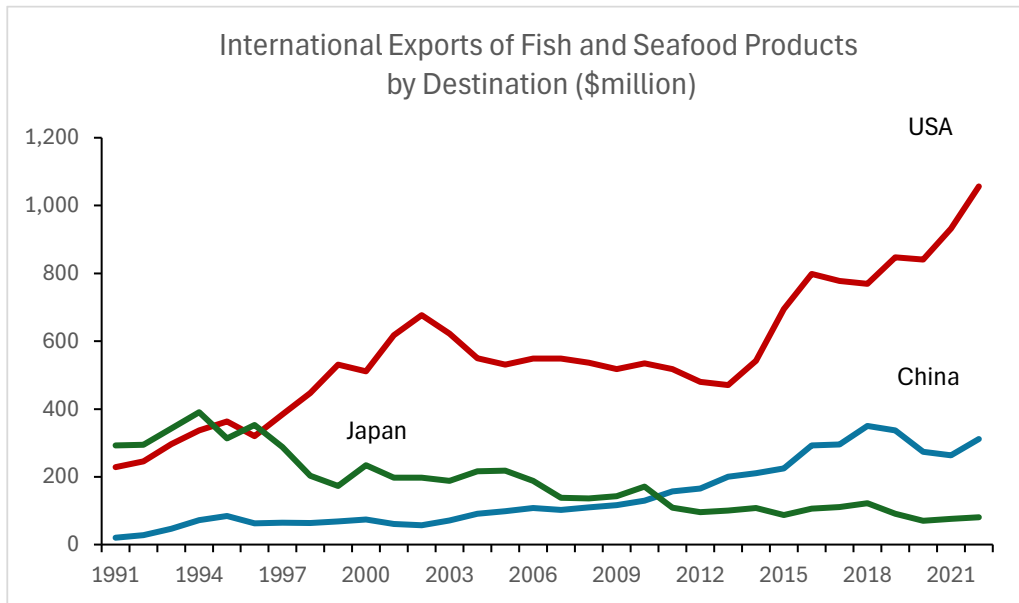


Data Sources: Lillian Hallin Consulting, derived using data from Statistics Canada, Canadian International Merchandise Trade Database

### Exports by Destination

The United States is by far the largest market for B.C. fish and seafood products, with 68.0% of the total value of fish and seafood product exports destined for the U.S. Historically, Japan was another key market for British Columbia's fish and seafood products, but the value of exports to that country have been declining. In 2022, exports to Japan accounted for just 5.2% of the total, down from a share of 20.5% in 1991. Over the same period, China has become the second-largest market for B.C. fish and seafood products, with 20.1% of the province's exports destined for that country (up from just 3.0% in 1991).

Chart 49: The US, China and Japan are major markets for British Columbia fish and seafood products



Data Source: Statistics Canada, Canadian International Merchandise Trade Database

# International Imports of Fish and Seafood Products Consumed in British Columbia

Text Table 21: International Imports of Fish and Seafood Products

International Imports of fish and seafood products consumed in British Columbia	1991	2001	2011	2021	2022	% of total in 1991	% of total in 2001	% of total in 2011	% of total in 2021	% of total in 2022
<b>International Imports (\$million)</b>	<b>165.2</b>	<b>460.2</b>	<b>535.4</b>	<b>948.4</b>	<b>1,048.3</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
<b>Imports by species (\$million)</b>										
Wild finfish products (includes freshwater)	83.0	208.9	282.5	522.4	616.3	50.2	45.4	52.8	55.1	58.8
Wild shellfish products	80.1	227.9	238.1	393.8	385.7	48.5	49.5	44.5	41.5	36.8
Farmed finfish & shellfish products	0.0	15.3	7.4	25.2	38.5	0.0	3.3	1.4	2.7	3.7
Other	1.9	8.2	7.2	7.0	7.7	1.2	1.8	1.3	0.7	0.7
<b>Imports by level of processing (\$million)</b>										
Live, Fresh, Chilled	34.3	137.9	144.8	316.2	275.9	20.8	30.0	27.0	33.3	26.3
Frozen	78.2	211.7	211.7	393.1	484.7	47.3	46.0	39.5	41.4	46.2
Other types of processing	52.4	110.8	179.0	239.2	287.8	31.7	24.1	33.4	25.2	27.5
Total imports	164.9	460.4	535.5	948.5	1,048.4	99.8	100.0	100.0	100.0	100.0
<b>Imports by origin (\$million)</b>										
USA	87.3	221.6	204.9	359.7	304.3	52.8	48.2	38.3	37.9	29.0
EU nations (current list)	8.0	21.7	12.6	43.6	52.6	4.8	4.7	2.4	4.6	5.0
China (includes Hong Kong and Macau)	10.1	27.1	81.9	103.7	138.9	6.1	5.9	15.3	10.9	13.3
Japan	2.5	2.9	4.1	6.5	9.5	1.5	0.6	0.8	0.7	0.9
All other regions	57.3	186.9	231.9	434.9	543.0	34.7	40.6	43.3	45.9	51.8

Data Sources: Lillian Hallin Consulting, derived using data from Statistics Canada, Canadian International Merchandise Trade Database and Supply Use Tables

## A note about import estimates

Statistics Canada customs data on imports to British Columbia include the value of all imports entering the country through customs ports in the province. The data do not indicate the ultimate destination of imported goods, but merely the first point of entry into the country. However, the value of goods that cross the border into the province is not a good indicator of the extent to which imported goods are consumed in British Columbia. The province is a key point of entry for many goods shipped to Canada across the Pacific Ocean, including goods imported from the Asia Pacific region, a major Canadian trading partner. Many of the goods imported into Canada via British Columbia are ultimately destined for use in other provinces. Similarly, some imported goods from other countries, for example those in Europe, may be more likely to enter the country at one of the ports in eastern Canada, and are then trans-shipped to the rest of Canada, including British Columbia.

Estimates of international imports of fish and seafood products presented in this section were derived using data from the System of National Accounts, which are intended to capture the value of imported goods consumed in the province<sup>21</sup>. British Columbia's share of total Canadian consumption of fish and

<sup>21</sup> These estimates are derived by looking at the supply of, and demand for, each commodity by businesses, households, governments and non-residents. The consumption of commodities by businesses, households, governments and non-residents (the latter in the form of exports) is compared to total production of those commodities by industries in the province. To the extent that current consumption cannot be satisfied by domestic production of commodities, it must be satisfied by imports. The SNA data are modelled estimates that are consistent with other economic indicators such as industry production and household consumption. They provide a better indicator of the value of imports consumed in the province than do the customs-based data.

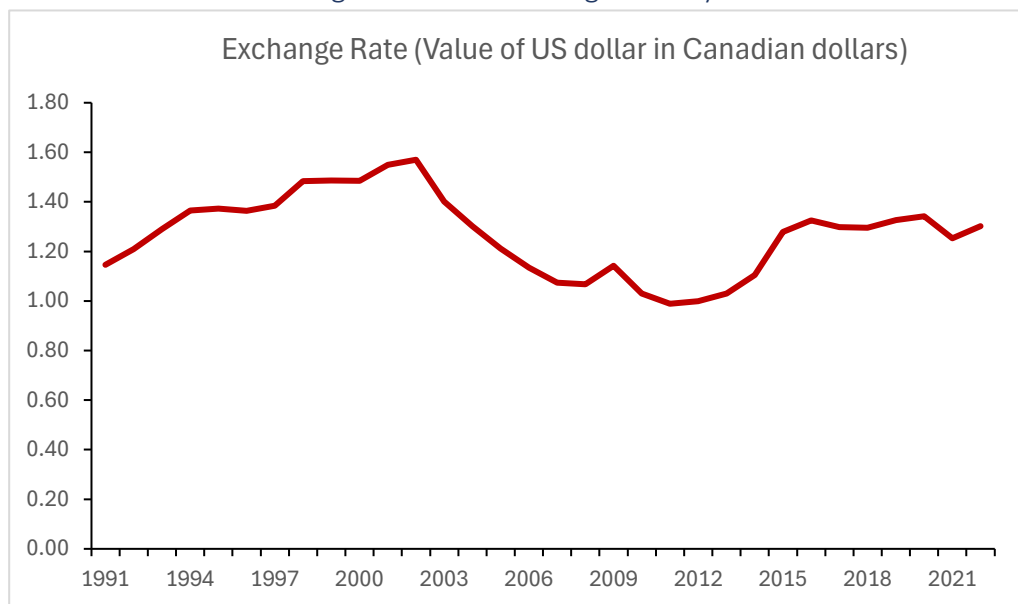
seafood products (as indicated in the Supply Use Tables) was used to estimate the percentage of all Canadian imports of each of these products that would be consumed in B.C. This is not an exact method of estimating import values, since the level of detail available in the customs-based data is much greater than that in the SUT. However, it should be a better indicator of actual consumption than the unadjusted customs data, for the reasons noted above.

## The Valuation of Imports

The import data reported in this section are in current dollars, meaning that they have not been adjusted to remove the effects of inflation. When comparing values (or shares) over time, it is important to remember that growth (or decline) can be due to changes in the volume of fish and seafood products imported as well as changes in the prices (and relative prices by species or level of processing) of these products.

It should also be noted that with import values in particular exchange rate fluctuations also play a role. For example, when the U.S. dollar rises relative to the Canadian dollar, the cost of goods imported from the U.S., which are denominated in American dollars, rises. Similarly, when the Canadian dollar rises relative to the U.S. currency, the cost of goods imported from south of the border falls. It is important to keep this in mind when looking at trends in the value of imports over time as they reflect changes in exchange rates, as well as changes in the Canadian dollar price of goods and in the volume of goods exported.

Chart 50: The Canada-U.S. exchange rate has varied significantly over the last three decades



Data Sources: Statistics Canada and Bank of Canada

Relative to the Canadian dollar, the U.S. currency increased in value during most of the 1990s, fell during the period from 2002 to 2012, then recovered and has remained relatively stable since 2015.

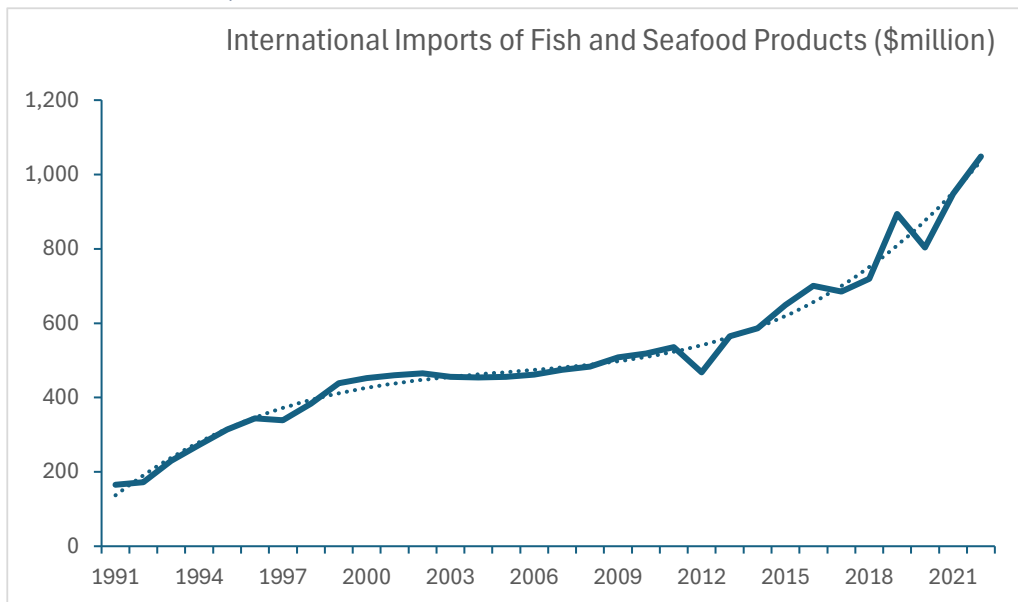
While these effects should be kept in mind when looking at trends over time, changes in the current dollar data reveal shifts in the composition and relative importance of different countries of origin and types of products.



## International Imports of Fish and Seafood Products

In 2022, the value of international imports of fish and seafood products consumed in the province was \$1.0 billion, an increase of 10.5% over the previous year.

Chart 51: International Imports of Fish and Seafood Products reached \$1.0 billion in 2022



*Data Sources: Lillian Hallin Consulting, derived using data from Statistics Canada, Canadian International Merchandise Trade Database and Supply Use Tables*

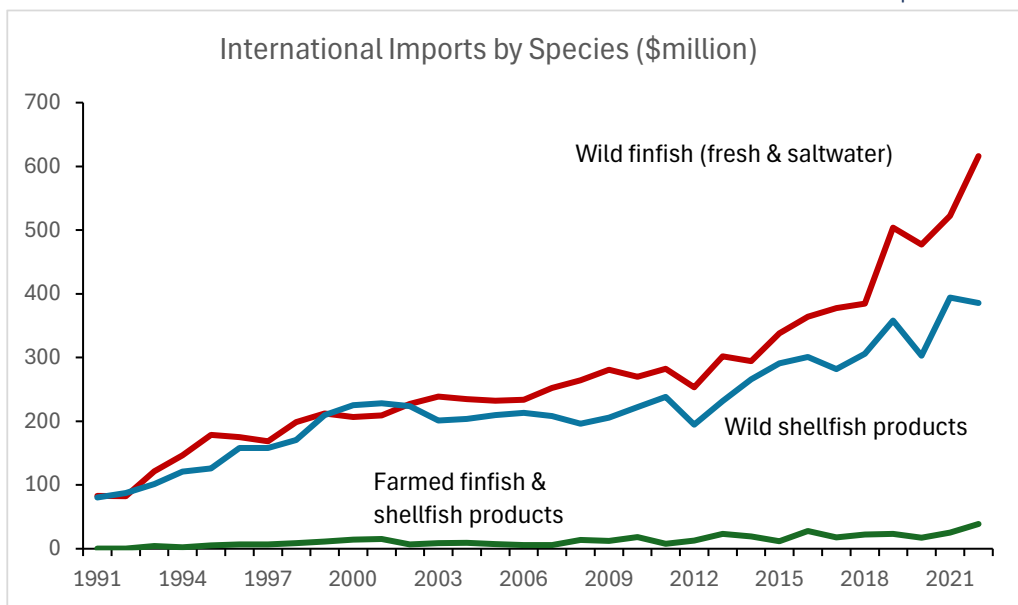
## Imports by Species

In 2022, more than half (58.8%, or \$616.3 million) of the total value of fish and seafood product imports consumed in British Columbia were wild finfish products. This includes wild salmon, tuna, cod and other groundfish, halibut and a variety of other finfish.

Wild shellfish imports were valued at \$385.7 million, accounting for 36.8% of the value of international fish and seafood product imports. Shrimp and prawns (\$175.1 million) accounted for 45.4% of the total value of wild shellfish imports consumed in the province. Imports of farmed finfish and shellfish species were valued at \$38.5 million in 2022.

Wild (\$173.3 million) and farmed (\$37.5 million) salmon made up the largest share of wild and farmed finfish imports.

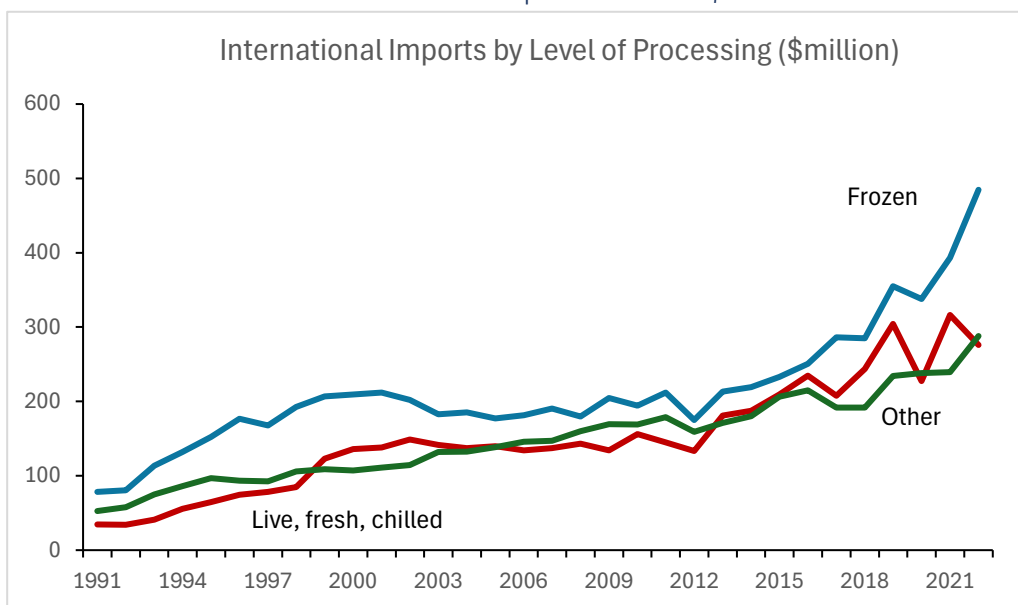
Chart 52: Wild finfish accounted for more than half the total value of finfish imports in 2022



Data Sources: Lillian Hallin Consulting, derived using data from Statistics Canada, Canadian International Merchandise Trade Database and Supply Use Tables

## Imports by Level of Processing

Chart 53: The value of frozen fish and seafood imports reached \$484.7 million in 2022

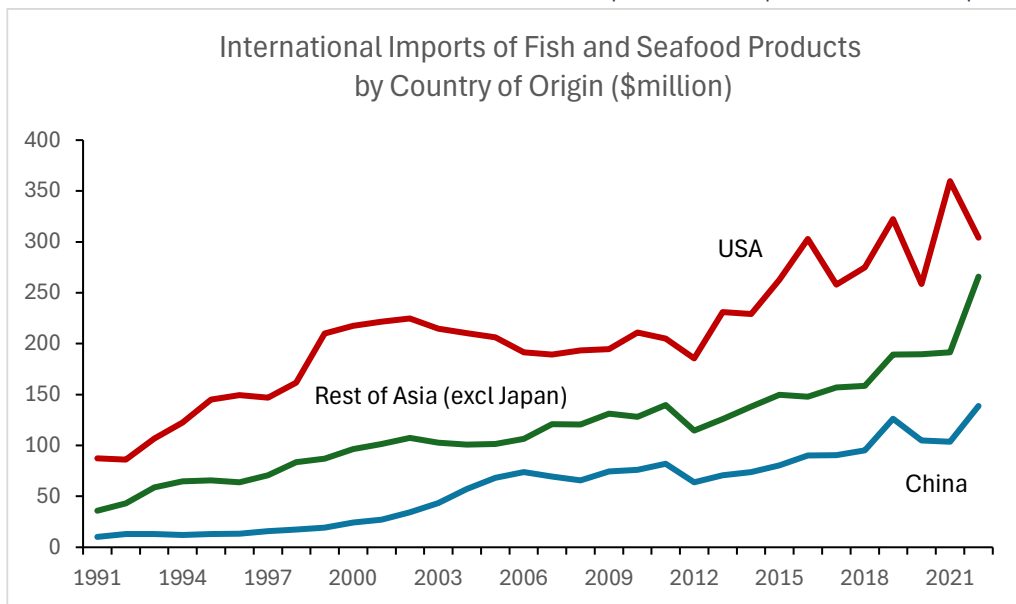


Data Sources: Lillian Hallin Consulting, derived using data from Statistics Canada, Canadian International Merchandise Trade Database and Supply Use Tables

Imports of fish and seafood are increasingly frozen products. In 2022, the value of imported frozen fish and seafood products consumed in British Columbia was estimated at \$484.7 million. This compares to \$275.9 million of live, fresh and chilled products and \$287.8 million of other products (e.g., canned, salted, brined and smoked).

## Imports by Country of Origin

Chart 54: The US is the main source of fish and seafood products imported into the province



*Data Sources: Lillian Hallin Consulting, derived using data from Statistics Canada, Canadian International Merchandise Trade Database and Supply Use Tables*

Imports of fish and seafood products consumed in B.C. are predominantly sourced in the United States. In 2022, the value of imports from the U.S. was \$304.3 million, more than from any other region. Asian sources (other than Japan and China) provided imported products valued at \$266.0 million in that year, while the value of imports from China was \$138.9 million. Together, these three regions accounted for just over two-thirds (67.7%) of the total value of imported fish and seafood products consumed in British Columbia in that year. North and South America (excluding the U.S.) is becoming an increasingly important source of imported fish and seafood products, with imports estimated at \$164.7 million (15.7% of the total) in 2022.

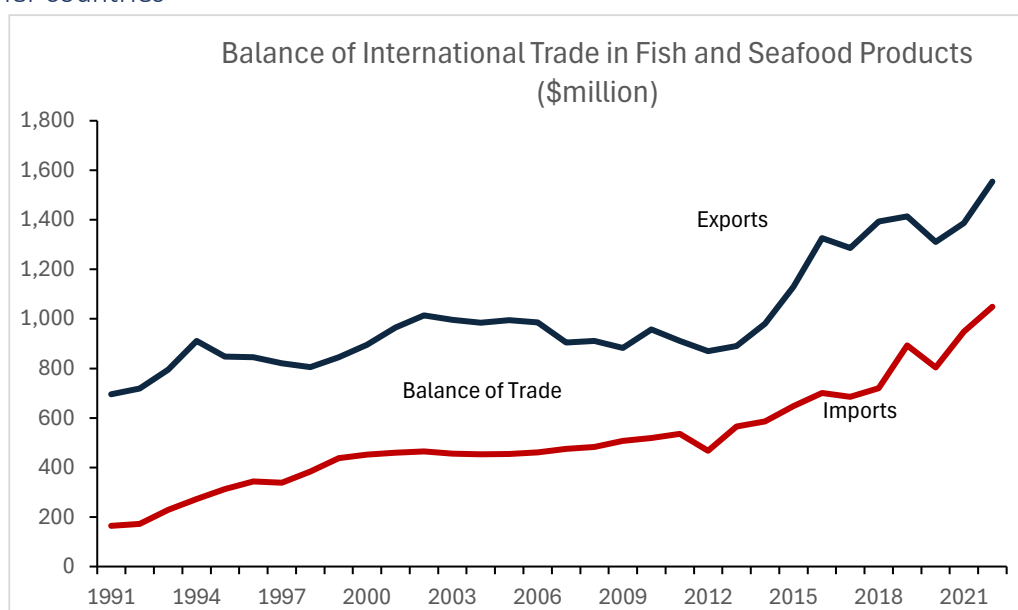
## Balance of International Trade in Fish and Seafood Products

Text Table 22: Balance of Trade, Fish and Seafood Products

Balance of Trade, Fish and Seafood Products	1991	2001	2011	2021	2022	% change since 1991	% change since 2001	% change since 2011	% change since 2021
International Exports	696.2	965.6	911.4	1,386.9	1,554.0	123.2	60.9	70.5	12.0
International Imports	165.2	460.2	535.4	948.4	1,048.3	534.6	127.8	95.8	10.5
Balance of Trade	531.0	505.4	376.0	438.5	505.7	-4.8	0.1	34.5	15.3

*Data Sources: Lillian Hallin Consulting, derived using data from Statistics Canada, Canadian International Merchandise Trade Database and Supply Use Tables*

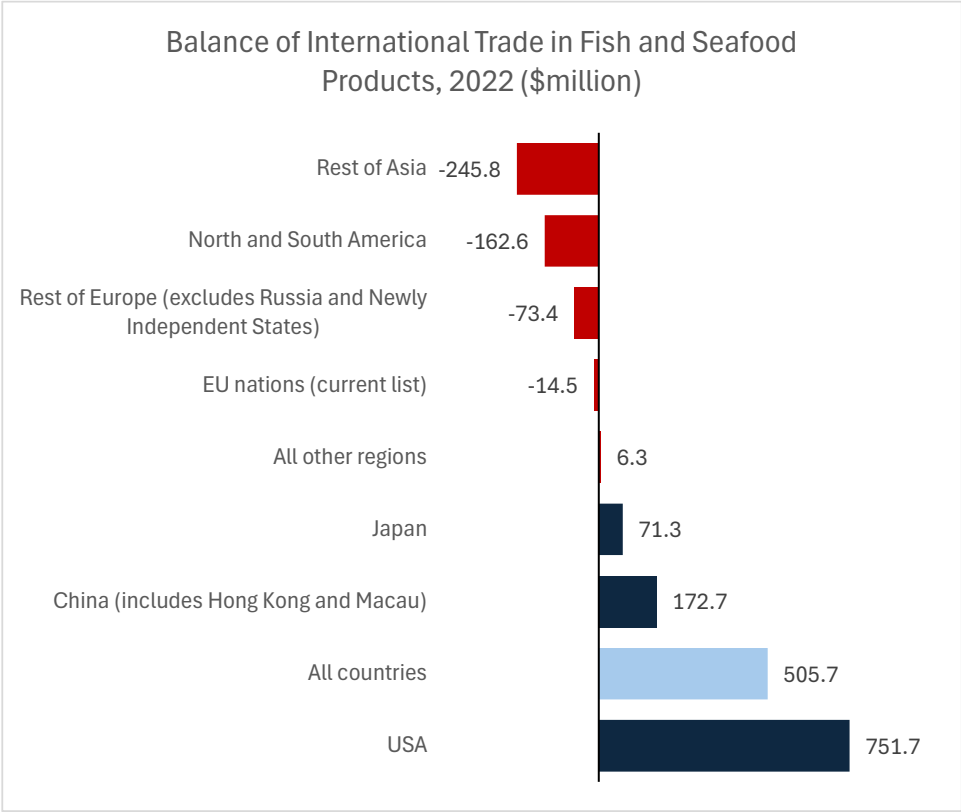
Chart 55: British Columbia consistently exports more fish and seafood products than it imports from other countries



*Data Sources: Lillian Hallin Consulting, derived using data from Statistics Canada, Canadian International Merchandise Trade Database and Supply Use Tables*

British Columbia's balance of trade (the value of exports minus the value of imports) in fish and seafood products was +\$505.7 million in 2022. This was slightly less than the balance of trade in 1991 (+\$531.0 million). Over the last three decades, the value of British Columbia's fish and seafood product imports has increased significantly more (+534.6%) than the value of its exports (+123.2%).

Chart 56: British Columbia has a large trade surplus in fish and seafood products with the United States, China and Japan, but imports more than it exports to most other regions



*Data Sources: Lillian Hallin Consulting, derived using data from Statistics Canada, Canadian International Merchandise Trade Database and Supply Use Tables*

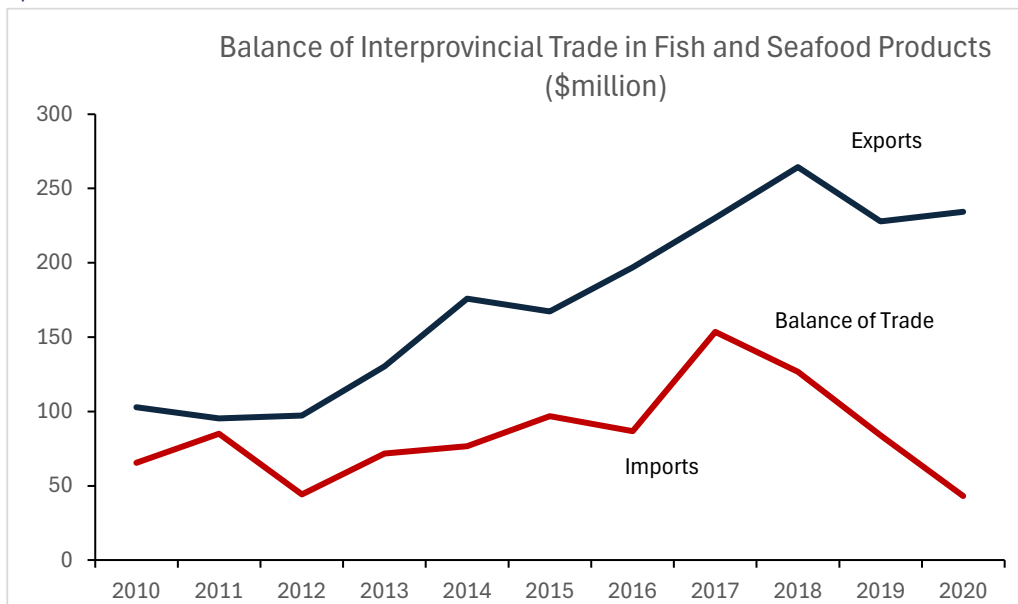
The province’s trade balance with the United States was +\$751.7 million in 2022, and B.C. shipped more fish and seafood products to both China (+\$172.7 million) and Japan (+\$71.3 million) than it imported from these countries. However, the trade balance with most other regions was negative. The trade deficit for Asia (excluding Japan and China) was -\$245.8 million, and there were also significant trade deficits with North and South America (excluding the US, -\$162.6 million), and Europe (-\$87.9 million for all European nations combined).

## Interprovincial Trade in Fish and Seafood Products

In addition to its international trading partners, the province also trades goods and services with the rest of Canada. Information on the value of interprovincial trade is not available for the entire period from 1991, but annual data from the Supply Use Tables show recent trends.

The total value of B.C.'s trade in fish and seafood products is just a fraction of the value of its trade with other countries. Data from the SUT for 2020 (the last year for which this information is available) show that interprovincial exports of these products reached \$234.2 million in 2020, while the value of interprovincial imports was \$43.2 million. By comparison, the value of international exports was \$1.3 billion in 2020, while international imports of fish and seafood products were valued at \$803.7 million.

Chart 57: The province consistently exports more fish and seafood products to other provinces than it imports from them



Data Source: Statistics Canada, Supply Use Tables

## Input-Output Multipliers

Input-Output Multipliers can be used to trace the total impact that an industry has on the economy. They show how an initial change in industry output translates into subsequent changes in the output of industries that supply goods and services used in production (the supplier industry, or indirect impact). As well, they can be used to estimate the change in economic output that is due to increased spending by workers who are employed either directly, or indirectly, by the industry in question. Multipliers for the industries in the fisheries and aquaculture sector are presented in Text Tables 23 and 24<sup>22</sup>.

The direct, indirect (supplier industry) and induced effects associated with the activities of the four industries within the fisheries and aquaculture sector were calculated using the Hallin Input-Output Model of the British Columbia economy. The model results are primarily based on the structure of the economy as articulated in the 2019 Supply Use Tables for British Columbia, with updates to reflect 2023 tax and wage rates.

Although 2020 SUT data are available, the 2019 tables were used because 2020 was a year in which many industries were affected by restrictions imposed during the COVID pandemic. As such, the interactions among industries in that year would not be representative of current economic interactions. For example, some types of service industries were not able to operate as usual during the pandemic, and business and other travel was greatly reduced. Since the 2020 SUT show the relationships that existed in 2020, and it is known that these relationships were not normal, the multipliers are based on the 2019 Supply Use Tables. This is consistent with the advice given by Statistics Canada regarding the use of SUT tables for COVID years.

### How to use multipliers: an example for the capture fishery

Multipliers can be used to estimate how GDP, income, employment and tax revenues will change in response to a given change in an industry's output. The multipliers show the cumulative effect of all the inter-relationships that exist in the economy. The multipliers are presented as ratios, all relative to an initial change in industry output.

For example, to calculate the change in GDP associated with a \$2 million change in industry output in the capture fishery, you would multiply the industry GDP multiplier for the capture fishery (0.5334) by \$2 million. The multipliers show that a \$2 million change in industry output would result in a \$1.1 million change in the capture fishery industry's GDP. Another \$270,800 (0.1354 times \$2million) increase in GDP would be attributable to the activities of supplier industries that provide goods and services used by the capture fishery (those directly providing goods and services to the capture fishery, as well as those further back in the supply chain). Finally, the effect of spending by workers employed in the capture fishery or supplier industries would change total GDP in the province by \$111,300 (0.0557 times \$2 million).

The same process would be followed for determining changes in output, household income and government revenue.

The employment multipliers are expressed per million dollars of output, so in this case direct employment in the capture fishery would be expected to change by 5.5 jobs (2.7299 times 2), while

---

<sup>22</sup> An explanation of input-output terminology is included in the Technical Notes

employment in supplier industries would change by 2.3 jobs (1.1493 times 2) and just under one job (0.3565 times 2) would be affected in industries benefitting from spending by workers.

Text Table 23: Multipliers for the capture fishery, aquaculture and fish and seafood processing industries

<b>Capture Fishery</b>	<b>Industry Impact</b>	<b>Total impact, all BC supplier industries</b>	<b>Total Induced impact</b>	<b>Total impact in all of BC</b>
Total output	1.0000	0.2629	0.0839	1.3468
Total GDP	0.5334	0.1354	0.0557	0.7245
Total household income	0.3477	0.0869	0.0407	0.4753
Total government revenue	0.1179	0.0227	0.0077	0.1483
Total employment (jobs per \$M)	2.7299	1.1493	0.3565	4.2357

<b>Aquaculture Industry</b>	<b>Industry Impact</b>	<b>Total impact, all BC supplier industries</b>	<b>Total Induced impact</b>	<b>Total impact in all of BC</b>
Total output	1.0000	0.6462	0.0724	1.7186
Total GDP	0.3856	0.2573	0.0480	0.6909
Total household income	0.1181	0.1668	0.0351	0.3200
Total government revenue	0.0946	0.0427	0.0067	0.1440
Total employment (jobs per \$M)	2.0391	2.3264	0.3076	4.6731

<b>Fish and Seafood Processing Industry</b>	<b>Industry Impact</b>	<b>Total impact, all BC supplier industries</b>	<b>Total Induced impact</b>	<b>Total impact in all of BC</b>
Total output	1.0000	0.5424	0.0764	1.6188
Total GDP	0.2135	0.2490	0.0506	0.5131
Total household income	0.1474	0.1487	0.0370	0.3331
Total government revenue	0.0348	0.0414	0.0070	0.0832
Total employment (jobs per \$M)	3.2650	1.9098	0.3243	5.4991

<b>Aquaculture, Capture Fishery, Fish &amp; Seafood Processing Combined, Adjusted for Vertical Integration</b>	<b>Industry Impact</b>	<b>Total impact, all BC supplier industries</b>	<b>Total Induced impact</b>	<b>Total impact in all of BC</b>
Total output	1.0000	0.3943	0.0663	1.4606
Total GDP	0.3477	0.1757	0.0440	0.5673
Total household income	0.1768	0.1149	0.0321	0.3238
Total government revenue	0.0769	0.0299	0.0061	0.1129
Total employment (jobs per \$M)	2.3048	1.5701	0.2815	4.1564

Data Source: Lillian Hallin Consulting, Hallin Input-Output Model for British Columbia, 2019 SUT

It should be noted that when industries are vertically integrated, multipliers should not be added together. The reason for this is that some of the output of the capture fishery would show up as an indirect (supplier industry) impact associated with activities in the fish and seafood processing industry. A special multiplier was constructed using adjustments to correct for this, and is presented in the last section of Text Table 23. When looking at the sector as whole, the combined multiplier should be used.



## Multipliers for the sport fishing industry

Text Table 24: Multipliers for the Sport Fishing Industry

Sport fishing impacts (per \$1 of expenditure by sport fishers)	Direct Expenditure by Sport Fishers	Industries directly providing goods and services used by sport fishers	Other supplier industries	Total impact, all BC supplier industries	Total Induced impact	Total impact in all of BC
Total spending by sport fishers	1.0000	0.6380	0.2428	<b>0.8808</b>	0.1028	<b>1.9836</b>
Total GDP	0.0000	0.3510	0.1350	<b>0.4860</b>	0.0682	<b>0.5542</b>
Total household income	0.0000	0.2332	0.0888	<b>0.3220</b>	0.0498	<b>0.3718</b>
Total government revenue	0.0327	0.0428	0.0233	<b>0.0662</b>	0.0094	<b>0.1084</b>
Total employment (jobs per \$M)	0.0000	4.0774	1.1140	<b>5.1914</b>	0.4366	<b>5.6281</b>

*Data Source: Lillian Hallin Consulting, Hallin Input-Output Model for British Columbia, 2019 SUT*

As has been noted elsewhere in this document, the sport fishing industry is not a standard industry for which data is published by Statistics Canada. The sport fishing industry includes the angler-related activities of many different industries. The multipliers for the sport fishing industry presented in Text Table 24 are final demand multipliers, based on sport fishing expenditures rather than industry output, and must be interpreted differently than the standard industry multipliers presented in Text Table 23.

For the sport fishing industry, the multipliers show how much B.C. industry activity changes in response to every dollar spent by sport fishers. Some of the expenditures made by sport fishers are on goods that are not necessarily produced in British Columbia (e.g., some vehicles, or fishing gear that is imported). This is the reason why the direct output impact associated with a \$1 million expenditure by sport fishers would be just \$638,000 (0.638 times 1 million) on goods or services produced in B.C.

Industries directly providing goods and services used by sport fishers would include those selling products (e.g., fishing gear) or services (e.g., guiding or accommodation) to sport fishers. They may also include some services embedded in the cost of the product. For example, when a sport fisher purchases fishing gear from a retailer, the purchase price includes some retailing services, as well as wholesaling and transportation services associated with moving those goods from the manufacturer to the retailer. If the goods are made in B.C., there may also be some impact on the manufacturing industry. In the multipliers, all of these impacts are identified as being associated with industries directly providing goods and services used by sport fishers.

Other supplier industries would include those further back in the supply chain. Finally, the induced impact, as was the case for the other industries in the fisheries and aquaculture sector, includes the impact associated with spending by workers who are employed as a result of sport fishing activities.

It should be noted that in the first column of this table, the tax revenue impacts are estimates of the value of taxes embedded in the price of goods and services purchased by sport fishers. For example, this would include an estimate of excise taxes included in the price of alcohol, fuel and other goods sold by retailers, and profits of liquor authorities that are remitted to the government. Value added taxes (PST and GST) are not included in the government revenue multiplier (0.0327) associated with direct expenditures by sport fishers. However, these taxes are included in the government revenue multipliers for industries directly supplying goods and services to anglers, other supplier industries, and in the induced impact.

## Technical Notes

### 1. What is GDP and How is it Measured?

#### Output

Output is the starting point for calculating an industry's GDP. An industry's output is the total value of all goods and services produced in a specific time period. Goods may either be sold to other industries (and used as inputs), sold to final consumers, or added to stocks of inventories held by producers. Services are usually consumed when they are produced.

Although industry revenues are sometimes used as a proxy for output, they are not necessarily synonymous with output. Revenues can include sales of goods produced in the current period, as well as those produced in previous periods (held in inventories). For service industries, there are no inventories, so revenues and output are the same.

For some industries, such as wholesale and retail trade, the value of output is quite different from revenues. Total revenues of these industries would include the retailing and wholesaling services provided by these industries (their margins, or output) as well as the value of sales of goods purchased for resale. For these industries, revenues are considerably higher than the industry's actual output.

#### Gross Domestic Product (GDP)

GDP is a measure of the value added to the economy by labour and capital used in current productive activities. It is the main indicator used to measure economic growth or decline. For industries, GDP is calculated by subtracting the costs of all goods and services consumed in production from the total value of output produced at a specific point in time.

#### *GDP is not the same as an operating profit or loss*

GDP should not be confused with operating profits (or losses). Some of the components of GDP are viewed as costs by businesses, but are part of the value added to the economy by each industry. For example, the payment to labour (wages, salaries and benefits) is a cost to the producer, but in terms of GDP, labour income measures the value of labour added to the materials and services used in production. Similarly, the return to capital, or operating surplus, measures the value of the services provided by the capital (buildings, intellectual property and machinery and equipment) used in production. Some of the costs associated with the use of capital (e.g., depreciation) would be subtracted from revenues when calculating operating profits or losses, but are included in the operating surplus component of GDP.

#### *What is included in GDP?*

Essentially, GDP measures the value added to materials and services used in production. It includes:

- Wages, salaries and benefits paid to workers;
- Mixed income (which includes a return to both the labour and capital of unincorporated business operators); and
- Operating surplus (profits, investment income, depreciation and changes in the value of inventories or stocks held by producers).

GDP by industry is measured at basic prices, which means that it also includes payments to government in the form of taxes (e.g., property taxes, payroll taxes, licences, permits and fees) net of subsidies on

factors of production (land, labour and capital). The reason for netting out subsidies is that they represent a transfer from government to producers which effectively reduces the price of using these inputs<sup>23</sup>.

GDP is the best measure for comparing the size of industries

Revenues are a useful measure when looking at a single industry, but they are not a good indicator of the relative size of industries. For industries that are at the end of a long supply chain, revenues include the value of all the goods and services purchased from other industries and used in production.

*For example, in the case of wild salmon caught in British Columbia, sold to a processor, purchased by a wholesaler and then sold to a retailer and ultimately to its final consumer:*

- The landed value of the salmon (the revenue of the capture fishery) would cover the cost of fuel, materials, services, labour and capital used by the fishery in order to catch the salmon.
- The selling price of the salmon processed by the fish processing industry (the processing industry's revenue) would include the cost of fuel, materials (including the cost of purchasing the salmon from the capture fishery), services, labour and capital used by the fish processing industry to prepare the fish for final consumers.
- The selling price of the wholesaler (the wholesale industry's revenue) would include the cost of fuel, materials (including the cost of the processed salmon purchased from the fish processing industry), services, labour and capital used by the wholesaler.
- The revenue of the retail industry that sells the fish to a final consumer would include the cost of fuel, materials (including the salmon purchased from a wholesaler), services, labour and capital used by the retailer.

Note that each time the salmon moves up the supply chain, its value is included in the revenue of each industry that handles it. This is the reason why double-counting is an issue when using revenues to compare the size or economic contribution of individual industries. Revenues of industries at the end of the supply chain will, by definition, be larger than those at the beginning of the supply chain simply because a product has changed hands many times.

*Double-counting is not an issue with GDP measures*

GDP measures, in contrast, do not have this problem of double counting. Instead, each industry's GDP only includes the value added to the economy by that industry, as measured by the labour and capital used in production. The value added to the economy by industries at the beginning of the supply chain (i.e., their GDP) is not necessarily lower than the value added by those at the end of the supply chain. For this reason, GDP is a better measure to use when making inter-industry comparisons. With GDP, it is possible to identify the economic activity generated by each industry on a consistent basis that does not include any double-counting of the value of inputs used in production.

---

<sup>23</sup> When GDP is reported at market prices (e.g., in the income and expenditure accounts), the value is based on the price paid by the final consumer, rather than the producer. This measure of GDP includes taxes (e.g., PST, GST and so on) net of subsidies on products.

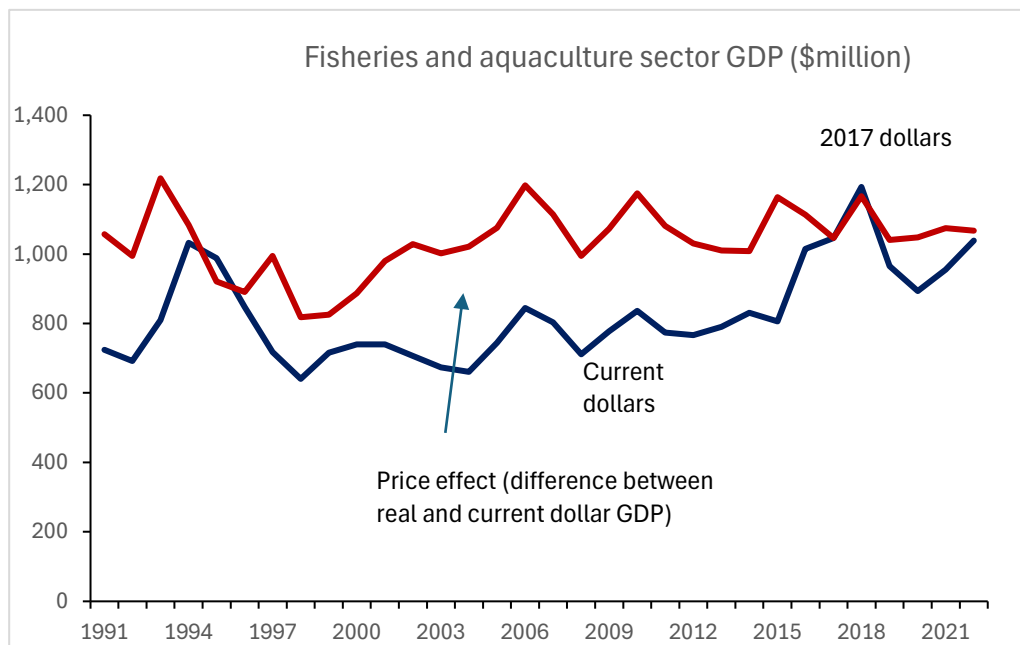
## 2. What is Real GDP?

GDP estimates are reported in both current and real (chained 2017) dollars. Year to year comparisons of current dollar GDP estimates are influenced by changes in both the volume of activity in an industry, and the prices of outputs and inputs used in production. For this reason, current dollar GDP figures do not give a good indication of relative growth in an industry over time; their usefulness is primarily for looking at economic impacts at a single point in time.

When looking at trends over time, it is more meaningful to compare values which are not influenced by price changes. Real dollar estimates have been adjusted to remove the effects of inflation, so they measure actual changes in the volume of goods or services produced by an industry or group of industries.

Real dollar figures are reported in 2017 dollars. They are calculated using a “double deflation” method, in which the value of the goods or services produced by an industry is first adjusted to remove inflationary effects. Then, the cost of inputs used in production (energy, materials and services) is adjusted to remove the effect of price changes over time. The real dollar value of inputs consumed in production is then subtracted from the real dollar value of output to get an estimate of GDP.

Chart 58: Real GDP is a volume measure which removes the effect of changes in the price of inputs and outputs over time. It is a measure of how the volume of activity in an industry has changed over time.



Data Sources: Lillian Hallin Consulting, derived using data from Statistics Canada

### A note about chained GDP

Statistics Canada's real GDP estimates are calculated using a Fisher chain formula, which is essentially a weighted average of values calculated using both a Laspeyres (fixed weight, current prices) and a

Paasche (fixed price, current weights) index<sup>24</sup>). These indices, while easy to calculate, do not fully account for the possibility of substitution effects when relative prices change over time.

The Fisher chain formula corrects for this by using a weighted average of Laspeyres and Paasche indices, and then chaining the estimates (effectively changing the base year each period, and linking the numbers together to create a single index, which is set to equal 100 in the base year). Because of the way chained GDP estimates are calculated, they are not additive other than in the base year.

#### Current versus Chained GDP Shares

The text tables in this report show GDP shares calculated using both current and real dollar estimates. The use of chained GDP to calculate shares of total GDP is, strictly speaking, not accurate because of the non-additivity of these estimates. In practice, however, the difference between the sum of chained industry estimates and total chained GDP for the province is usually very small (usually less than one percent in any given year).

Comparing current dollar GDP shares over time can be misleading in cases where price inflation varies significantly among industries. An industry which has seen output prices increase at above-average rates over time will appear to be growing faster than other industries even if the volume of its output has not changed more than that of other industries. Similarly, in industries where input prices (e.g., fuel prices) have increased more rapidly than the costs of other inputs, current dollar GDP growth may be slower than the actual change in the volume of output. For this reason, the current dollar shares are best viewed at a single point in time, and are not a good basis for comparing trends over time.

Shares of real GDP are likely a better indicator of changes in the relative size of an industry over time, despite the small distortion related to the non-additivity of the chained values.

---

<sup>24</sup> The Laspeyres index is a fixed weight index. It is calculated by valuing current volumes at base year prices, and comparing that to the value in the base year.

The Paasche index is a current weighted index. It compares current values to what the value would have been in the base year if current volumes were measured at base year prices.

### 3. Defining the Fisheries and Aquaculture Sector

The fisheries and aquaculture sector includes the following industries:

- Capture fishery (commercial fishing);
- Aquaculture (fish and shellfish farming);
- Fish and seafood processing; and
- Sport fishing (freshwater and saltwater).

North American Industrial Classification System (NAICS) Industries

The capture fishery, aquaculture and fish and seafood processing are standard goods-producing industries, defined in the North American Industrial Classification System. The provincial GDP by industry estimates published by Statistics Canada are currently based on the 2017 version of NAICS. The following is copied verbatim from the Statistics Canada website<sup>25</sup>:

*Capture fishery (Commercial Fishery, NAICS 1141)*

*This industry group comprises establishments primarily engaged in the commercial catching or taking of finfish, shellfish, and other marine animals from their natural habitats.*

*Aquaculture (NAICS 1125)*

*This industry group comprises establishments primarily engaged in farm-raising aquatic animals and plants. Establishments primarily engaged in raising both aquatic animals and plants in integrated growing operations, aquaponics, are also included. These activities can occur both in natural waters and in artificial aquatic impoundments and include the use of some form of intervention in the rearing or growing process to enhance production.*

*Fish and Seafood Processing (Seafood Product Preparation and Packaging, NAICS 3117)*

*This industry group comprises establishments primarily engaged in canning seafood, including soup; smoking, salting and drying seafood; preparing fresh fish by removing heads, fins, scales, bones and entrails; shucking and packing fresh shellfish; processing marine fats and oils; and freezing seafood. Establishments known as floating factory ships, that are engaged in shipboard processing of seafood, are included.*

*Classification of Establishments to Industries<sup>26</sup>*

It should be noted that some establishments engage in more than one activity. For example, a capture fishery or aquaculture operation may also do some fish processing. Statistics Canada follows specific guidelines when determining how each business location is classified.

The following is taken verbatim from the Statistics Canada website:

*An establishment is classified to an industry when its principal activity meets the definition for that industry. This is a straightforward determination for establishments engaged in a single activity, but where establishments are engaged in more than one activity, it is necessary to establish procedures for identifying its principal activity.*

---

<sup>25</sup> [North American Industry Classification System \(NAICS\) Canada 2017 Version 3.0 \(statcan.gc.ca\)](https://www25.statcan.gc.ca/n1/pub/92-625-x/2017001/article/00001-eng.htm)

<sup>26</sup> [Introduction to the North American Industry Classification System \(NAICS\) Canada 2017 Version 3.0 \(statcan.gc.ca\)](https://www25.statcan.gc.ca/n1/pub/92-625-x/2017001/article/00001-eng.htm)

*In cases where there is more than one activity, the industry code is assigned based on the relative share of value-added. The activity with the largest value-added is identified as the establishment's principal activity, and the establishment is classified to the industry corresponding to that activity. For example, if the value added within an establishment consists of 40% from manufacturing dishwashers, 30% from manufacturing airspeed instruments and 30% from assembling clocks, it will be classified to NAICS 335223, Major kitchen appliance manufacturing. The assignment of the industry code is performed at the 6-digit level of the classification.*

#### *Service Industries*

Retailing and wholesaling of fish and seafood products are not included in the fisheries and aquaculture sector. This is because there is not enough information to separate fish and seafood retailing or wholesaling from retailing or wholesaling of other commodities.

#### *Sport Fishing Industry*

This industry is not included in the NAICS definitions. It has been defined to include the sport-fishing-related activities of all establishments or business locations that sell directly to freshwater and saltwater anglers.

Some of the non-fishing activities of recreational anglers who are tourists are also attributed to the sport fishing industry. This is consistent with how the tourism sector has been defined, and assumes that these tourist activities are directly related to the sport fishing activity (i.e., that the tourists were primarily travelling to engage in sport fishing, but may also have participated in other activities on their trips).

A more complete definition of the sport fishing industry follows in the next section.

## 4. Defining the Sport Fishing Industry

### Sport fishing definition

Standard economic measures such as employment, wages, revenue and GDP are reported based on NAICS, which does not include sport fishing as a defined industry.

The definition of the sport fishing industry used in this study was originally developed in consultation with the then Ministry of Agriculture (including the working group for the Sport Fishing Regional Economic Impact Survey<sup>27</sup>) in 1999. The framework for the definition was based on the methods previously developed to derive estimates for sectors such as high technology and tourism.

The final definition, used in the current and previous issues of this report, specifies that all industries that provide services directly to freshwater and saltwater anglers should be included in the sport fishing industry whether these activities are part of the actual sport fishing experience, or engaged in by sport fishers who are tourists in the province. The definition thus includes establishments that sell directly to sport fishers, plus those in the tourism sector (e.g., souvenir stores, or museums) which may benefit from the presence of sport fishers in the province.

### Sport fishing and tourist activities

#### *Activities that are directly related to sport fishing*

Angler expenditures that may be made by both resident and non-resident (tourist) anglers include:

- Angling guides and charter operators (amusement and recreation industry);
- Boat rentals and marinas (rentals and amusement and recreation industry);
- Fish and tackle shops, sporting goods stores (retail industry);
- Purchases of boats, trailers, outboard motors and special vehicles that are **wholly attributable** to sport fishing (retail industry)<sup>28</sup>;
- Vehicle operating costs (gas, repairs and insurance) for these vehicles (retail trade, repair and maintenance and insurance industry);
- Vehicle rentals by sport fishers (rental industry);
- Air, rail, water and other transportation services to sport fishers travelling to and from British Columbia and within the province (transportation industry);
- Resorts and fish camps (accommodation industry);
- Hotels, motels, campgrounds and other accommodation providers (accommodation industry); and
- Restaurants, bars and other food and beverage establishments (food and beverage services industry).

---

<sup>27</sup> A pilot study undertaken by BC Stats and the Ministry of Fisheries in 1999, which was expanded to cover all regions of the province in 2000.

<sup>28</sup> The activity associated with the manufacture of boats or gear is not included in the value of the sport fishery. However, boat retailing activities are, because the retailer deals directly with the sport fisher.



*Tourist activities of sport fishers*

Spending by anglers on tourist activities other than sport fishing (e.g., visits to museums and heritage sites, recreational activities such as golfing, or other types of sightseeing and tourist activities) is also included in the industry definition.

In the case of anglers who are also tourists, the question of whether or not to include a portion of the tourism-related activities of industries that provide services that are not necessarily part of the angling experience was carefully considered. The framework that was already in place for deriving tourism indicators suggested that these types of incidental activities engaged in by tourists ought to be included in an estimate of the tourism sector. There are strong links between tourism and sport fishing activities, and to maintain consistency with the tourism methodology, the same approach was adopted for developing sport fishing estimates.

## 5. Commercial fishing boats versus those used in the sport fishing industry: why are they treated differently?

A major cost incurred by fish boat operators is for capital equipment: the boats and other gear that they need in order to harvest the fish. Similarly, a fish farmer uses pens, nets and other equipment. And a fish and seafood processing firm must also invest in capital equipment before it can begin operations. The initial capital outlay required to purchase this equipment is large, but because it usually has a long life span, the cost is amortized over several years. In other words, the cost of the equipment is treated as an annual expense over its expected lifetime rather than as a one-time purchase by the business.

The initial cost is incurred because the equipment is used to generate income. A producer who purchases a piece of equipment expects that the price received for his/her product will cover its amortized cost. In economic accounting, an estimate of the value of the income generated by the equipment is included in GDP, in the same way that the value of the work done by an employee is.

One way of looking at this is to say that the owner of the boat expects to earn enough income over time to pay for the boat. Presumably, the value of the boat represents the expected income stream arising from its use, and a portion of this value—the depreciation on the equipment—is included in the GDP figure for each year in the life of the equipment.

In the commercial fishing industry, the income accruing to capital is amortized over the life of the equipment. This is because the equipment is purchased—just as labour is—as one of the inputs needed to produce the product. In other words, the value of a boat purchased by a commercial fisher in the province shows up in the GDP of the fishery over the period of its expected life.

If an establishment that caters to sport fishers purchases a boat, it would be treated in a similar manner. It would be viewed as a capital purchase required for doing business whose cost is amortized over the life of the asset.

In the sport fishing industry, boats, gear and other equipment purchased by individual sport fishers are viewed somewhat differently. They are final products, not inputs into a production process. Owning and using them is part of the sport fishing experience, just as owning and using skis is part of the skiing experience. Boats and gear purchased by sport fishers represent a consumer purchase. Their value is reflected in the GDP of the industries that produce and market them in the year in which they are purchased.

## 6. Input-Output Terminology

### About input-output analyses

Input-output analyses highlight the relationships among producers and consumers (businesses as well as individuals) of goods and services. An input-output analysis is based on first identifying a basket of goods and services used by a specific industry and then tracing through all the steps involved in producing those goods and services to identify the total extent to which the economy will be affected by the activity in question.

### Three types of impacts

Three different types of impacts are reported in a typical input-output analysis:

The **direct industry impact** shows the change in GDP, employment, household income and government revenue directly associated with the industry's activities (i.e., the industry's GDP etc.)

The **indirect impact** measures the impact on BC industries that are in the supply chain. The indirect impact is cumulative, and includes transactions of all the industries providing goods and services that are ultimately used by the industry in question (or by its direct suppliers).

The **induced impact** measures the effect that spending by workers (those employed by the industry, or by direct and indirect supplier industries) has on the economy.

### How are economic impacts measured?

**Output** is simply a measure of the total value of production. In an **industry-based** analysis, output is equal to the value of goods and services produced by the industry or industries that are affected by a specific project. It should be noted that purchases of goods and services produced outside the province do not directly affect B.C. businesses, so these expenditures are explicitly excluded from the analysis.

**Gross Domestic Product (GDP)** is a measure of the value added (the unduplicated total value of goods and services) to the economy by current productive activities. It includes **household income** (wages, salaries and benefits, as well as income earned by proprietors of unincorporated businesses) from current productive activities as well as profits and other income earned by corporations. Only activities that occur within the province are included in GDP.

**Employment** estimates generated by the model are derived from estimated wage costs using information on average annual wages in an industry. They are not full-time equivalent (FTE) measures. Instead, they reflect the wages paid and hours spent on the job by a typical worker in an industry. For an industry where most employees work full time, the numbers will be very similar to FTE counts. However, in an industry where part-time work is more common, the job counts will be quite different from FTEs.

**Government tax revenue** estimates generated by the model include income taxes as well as commodity taxes. *Provincial and federal tax revenues include federal and provincial personal and corporation income taxes. Also included are* PST, GST and other *commodity* taxes such as gas taxes, liquor and lottery taxes and profits, air transportation taxes, duties and excise taxes. Property tax revenues are not included in the estimates. *Municipal tax revenues* are primarily related to accommodation taxes.

## Appendices

### 1: Methodologies for estimating GDP

#### Current dollar GDP estimates for 2021 and 2022

Statistics Canada publishes chained GDP estimates for the period up to 2023 (preliminary estimates for 2023 were released in May 2024), but current dollar estimates are only available for the years for which the Supply Use Tables (SUT) have been released (currently 2020).

The current dollar estimates for 2021 and 2022 reported in Table 2 were developed by Lillian Hallin Consulting. They are based on various indicators which are specific to each industry. Indicators used in the calculation include labour income (available to 2023), industry revenues (available to 2022 or 2023 in most cases), industry value added estimates (available to 2022 for selected industries such as manufacturing), and industry-specific price indices, which can be used to estimate current dollar values from published chained GDP data. The indicators were used to extrapolate the published GDP estimates for each industry.

Initial estimates were calculated for all industries, and the total was then compared to published totals for current dollar GDP at basic prices (from the income account). The final estimates were benchmarked to conform to the published total, except in cases where the methodology used was known to be exact.

#### Use of GDP to output ratios to estimate GDP

Normally, GDP is calculated by subtracting the cost of all the materials, energy and services used in production from the total value of an industry's output. However, this information is not always available, and it is necessary to use other methods to generate GDP estimates for a particular industry.

The ratio of GDP to output is normally quite stable, especially in the short term. The exception would be if there were changes in technology, or if an industry produced many different types of products, with different associated production costs. If the product mix happened to change, or if there were changes in technology or practices that significantly altered production methods or inputs, the GDP to output ratio would change.

For industries where GDP to output ratios are known for some, but not all years, this ratio can be used to fill in gaps in the series. For example, when estimating GDP for 2021 and 2022 (in cases where the indicator used was revenue or output), it was assumed that the GDP to output ratio had not changed significantly since 2020.

In cases where industry revenue (or output) is known, but detailed costs are not known (or are known only in certain years), it is often assumed that the GDP to output changes gradually during the intervals for which there is no data. When estimating GDP using various cost and returns studies, the estimates were linearly interpolated between study years. Different techniques of filling in the gaps were experimented with, but this method produced the most reasonable estimates for most fisheries.

#### A note about GDP and operating surplus

It should be noted that GDP is not equivalent to operating surplus, and that operating surplus in economic accounting is not the same as earnings before income tax (EBITDA) as reported in business accounting and in some of the cost and returns studies used to estimate GDP to output ratios for the

capture fishery. Wages paid to crew, the return to operators, and depreciation are all part of the value added, or GDP of the industry but depreciation costs are usually not included in EBITDA.

#### A note about real GDP for the fisheries and aquaculture sector

Users should note that in order to correctly calculate chained GDP totals for industry groups, it is necessary to use both Laspeyres and Paasche price indices for each industry. This information is not publicly available; only the implicit price indices that are calculated by comparing the chained GDP estimates to current dollar figures are available. For this reason, the industry totals for the fisheries and aquaculture sector (and component industries within this, such as the fisheries within the capture fishery) are calculated as simple sums of chained GDP values. They are referred to as real GDP rather than chained GDP for this reason, since they have not been aggregated using a proper chaining process.

## 2. Methodology, Capture Fishery Estimates

### Separating hunting and trapping from the capture fishery

Statistics Canada publishes economic indicators for the fishing, hunting and trapping industry (NAICS industry 114). The hunting and trapping industry is very small, but for this study, only the capture fishery component of the NAICS category is of interest, so it was necessary to develop estimates of the value of the hunting and trapping industry. These were then subtracted from the published data, leaving estimates for the capture fishery only.

### Current dollar revenues, hunting and trapping

Historical data on the volume and value of wildlife pelts trapped in BC is available, but this information is no longer being published by Statistics Canada. However, the Supply Use Tables (SUT), which show the value of production of raw furskins and other animal products by the fishing, hunting and trapping (NAICS industry 114), can be used to extend the historical data on the value of wildlife pelt production to 2020. Estimates for 2021 and 2022 were derived using information on the value of BC exports of wild fur products.

### Current dollar GDP, hunting and trapping

There is no available information on production costs for the province's hunting and trapping industry, so the estimates were generated using GDP to output ratios obtained for hunting and trapping from other sources. Previously, a GDP to output of 70% was used to calculate GDP in the hunting and trapping industry. This ratio was used for the period from 1991 to 1999.

For the more recent period, it was assumed that the nature of hunting and trapping activities in the province would not be significantly different from those further north, in Yukon and Northwest Territories (NWT). Based on an analysis of data from the SUT for Yukon (where trapping accounts for a significant share of NAICS 114) and NWT (where trapping previously accounted for a significant share of industry activity), a time series of GDP to output ratios for the period from 2000 on was produced. For 2000 to 2009, the ratio used was the average of the ratios for Yukon and NWT, but starting in 2001 only the Yukon ratio was used, as the share of hunting and trapping products in the value of output of NAICS 114 for NWT has declined significantly.

The SUT data for the territories suggests that the GDP to output ratio for hunting and trapping has declined since the 1990s, and is currently around 45%.

### Real GDP, hunting and trapping

Historical data on the value and volumes of fur production, together with the raw materials price index for furskins and animal products not elsewhere classified and the implicit price index for NAICS 114, was used to estimate real GDP for the hunting and trapping industry in British Columbia.

### Employment and Labour income, hunting and trapping

Employment data from the Labour Force Survey (LFS) is available at the four-digit NAICS level (with suppressions), so there are some estimates of the number of people working in the hunting and trapping industry in British Columbia. Information from the Labour Force Survey (LFS), together with Census data, was used to extract employment and labour income in hunting and trapping from the industry total.

### Current and constant dollar revenues, capture fishery

Time series estimates of revenue by species for the capture fishery were obtained from the Ministry of Water, Lands and Resource Management and the federal Fisheries and Oceans Canada (DFO).

Current and constant dollar estimates of revenues were compiled using data on the volume and landed value of the catch for the following species:

- Salmon (seine, gillnet and troll)
- Herring
- Tuna
- Halibut
- Sablefish
- Rockfish
- Lingcod
- Hake
- Other groundfish
- Geoduck
- Crab
- Shrimp
- Prawn
- Red Sea Urchin
- Green Sea Urchin
- Sea Cucumber
- Other Invertebrates

It should be noted that the breakdown of the salmon catch by type of gear was derived from estimates published by DFO. There are some discrepancies between the Ministry and DFO estimates in recent years. Since the Ministry estimates were used for other species, the total for salmon was taken from the Ministry tables, and the estimates by gear do not sum to the published total in all years.

### Current dollar GDP, capture fishery

Total current dollar GDP for the capture fishery was calculated by subtracting the current dollar GDP estimate for hunting and trapping from the published GDP estimate for fishing, hunting and trapping.

Estimates of GDP for the species noted above were derived using data from various cost and returns studies for specific fisheries in selected years<sup>29</sup>. These were done by ARA Consulting, GS Gislason and Associates Inc, Nelson Fisheries and Counterpoint Consulting. As well, DFO has produced some more recent cost and returns estimates. The information is for specific points in time, includes different types of fisheries (which vary depending on the study year and the consultant producing the estimates) and different expenditure categories.

The data sets were compiled and compared, and then used to develop a time series of estimates of costs and returns for each fishery, using categorizations that were relatively consistent across the various

---

<sup>29</sup> Studies were available for the following years: 1991-1995, 2007, 2009, 2010, 2011, 2012, 2014, 2018, 2021.

studies. In some cases, there were relatively few estimates; for other fisheries, the information was available in most of the studies.

The cost and returns information was then compared to time series information (for the capture fishery as a whole) derived from various historical SUT for the capture fishery. Adjustments were made to some of the estimates to bring them into conformity with the information in the SUT, which is the basis for the GDP by industry estimates published by Statistics Canada. The adjusted numbers were then used to calculate GDP to output ratios for each of the subject capture fisheries, and these were combined with the landed value data to generate the GDP estimates for the different species. The total for the capture fishery conforms to the Statistics Canada estimates (excluding hunting and trapping). This methodology should give a reasonable indication of the relative contribution of each of the fisheries to total GDP in the capture fishery over time.

#### Real GDP, capture fishery

Real GDP estimates for the capture fishery (total) were calculated by subtracting the real GDP estimate for hunting and trapping from the published total for fishing, hunting and trapping.

Real GDP estimates for the individual fisheries were calculated using the current dollar estimates by species and the price indices constructed from value and volume data on fish landings by species, and then benchmarking the numbers to the published total.

#### Employment and Labour Income, capture fishery

Employment and labour income estimates for the capture fishery come from the SNA labour income statistics published by Statistics Canada. They exclude the estimated jobs and labour income in the hunting and trapping industry.



### 3. Methodology, Aquaculture Estimates

#### Current and constant dollar revenues, aquaculture

Statistics Canada publishes data on the value of aquaculture production by species, with some suppression. The gaps in the data were filled in using indicators or residual values. The Ministry of Water, Land and Resource Stewardship and DFO also provided information on the value and volume of aquaculture production, but the Statistics Canada data were used as the basis for the calculations because they are consistent with the GDP, employment and labour income estimates published by Statistics Canada.

Current and constant dollar estimates of revenues were compiled using data on the volume and value of production for the following species:

- Salmon
- Other farmed finfish (primarily trout)
- Geoducks and clams
- Oysters
- Mussels
- Scallops
- Other farmed invertebrates

#### Current dollar GDP, aquaculture

Total GDP in the aquaculture industry comes from data published by Statistics Canada.

Statistics Canada publishes value added estimates for the aquaculture sector as a whole, and various studies have been conducted over the years to identify costs and returns for different types of aquaculture production. An extensive review of online reporting from the US and Canada was made to determine what GDP to output ratios would be appropriate in each aquaculture sub-industry. Cost and returns data was available for selected years for salmon and trout farming, scallops, geoduck, clams, mussels and oysters. In general, a review of the studies suggested that there was some consistency in the ratios over time.

Ratios calculated using the information in the available cost and returns studies were used to estimate GDP by species for the aquaculture industry. The information was then compared to the published total for the industry and adjusted to conform to that.

#### Real GDP, aquaculture

The total for the aquaculture industry comes from data published by Statistics Canada. Real GDP estimates for the individual species were calculated using the current dollar GDP estimates by species and the price indices constructed from value and volume data, and then benchmarking the numbers to the published total.

#### Employment and Labour Income, aquaculture

Employment and labour income estimates for aquaculture come from the SNA labour income statistics published by Statistics Canada.

## 4. Methodology, Fish and Seafood Processing Estimates

### Current dollar revenues, fish and seafood processing

Current dollar revenue estimates for the fish and seafood processing industry are available from the annual survey of manufacturing and logging, with some suppression. Data gaps were filled in using information from other sources, including the monthly survey of manufacturing as well as time series data constructed from the SUT for various years.

### Current dollar GDP, fish and seafood processing

Current dollar GDP estimates for fish and seafood processing are published by Statistics Canada

### Real GDP, fish and seafood processing

Real GDP estimates for fish and seafood processing are published by Statistics Canada

### Employment and Labour Income, fish and seafood processing

Employment and labour income estimates for fish and seafood processing come from the SNA labour income statistics published by Statistics Canada.

## 5. Methodology, Sport Fishing Estimates

### A brief overview of the methodology

Many sport fishing activities are also tourist activities as anyone who travels 80 km or more from their home for business, pleasure or to visit friends and family is considered a tourist. For all affected industries, only the share of total output that was associated with producing a tourism or sport fishing product was included. So, for example, in the air transportation industry, the SUT data was used to determine the percentage of total industry output in each year that was tourism related (e.g., passenger transportation). The non-tourism component (e.g., freight transportation) was excluded.

For each of the NAICS industries that sell goods or services to tourists or sport fishers, an estimate of the tourism/sport-fishing-related portion of total industry activities was produced. These estimates were based on information from many sources, including surveys of recreational angling conducted by the Fisheries and Oceans Canada (DFO), data on personal expenditures by commodity from the Supply-Use Tables (SUT), and data on industry production of commodities from the SUT and GDP estimates from the economic accounts.

Next, the survey data from the DFO surveys (historically taken every five years, but more frequently in recent years) was first interpolated and then compared to personal expenditure data on goods and services identified in the survey. This comparison was used to identify a sport-fishing share of industry output in the affected industries. It should be noted that some sport-fishing activities are not tourist related. Spending by B.C. resident anglers, whether or not they make overnight trips, was included. As well, estimates of spending on boats and vehicles that was identified as being wholly attributable to sport fishing was also considered part of the industry's activities.

For industries where spending included both tourist and non-tourist components (e.g., purchases of fuel or vehicles from motor vehicle dealers), the sport fishing component was calculated as a share of total personal expenditures on these goods.

For industries where spending was specific to tourist anglers (e.g., accommodation and food) the sport fishing share was also based on estimated spending as a percent of total personal spending on these services.

For other industries, where it was deemed that tourist anglers would spend money on goods or services in a manner similar to other tourists, the angler participation rate (defined as the number of tourist anglers as a share of all tourists, calculated using estimates derived from Statistics Canada's traveller surveys) was applied to the tourism share of total output in each industry.

The same shares were used to adjust published industry totals for all indicators (GDP, employment, labour income and revenue).

In principle, this methodology is very similar to that used to generate the estimates of sport fishing activity in previous issues of this report. However, the tourism share is slightly lower than in the past because only those industry activities related to the production of tourist commodities are considered (this adaption of the previous approach is based on methods described in the documentation for Statistics Canada's Tourism Satellite Account estimates). As well, there have been significant revisions to some of the underlying data sets since the last issue of this report was released. Finally, the employment estimates were derived from the SNA labour statistics rather than the SEPH-based data used in the past.

Given the importance of self-employment in some tourism-related industries, the use of SEPH-based data likely understated total employment.

Because of the revisions to methodology and data sources, the information for the sport fishery in this report cannot be compared to that in previous editions.

A more detailed description of the methodology follows.

### Determining sport fishing shares

#### *Estimating the percentage of tourists who fish*

Statistics Canada surveys both domestic and international travellers<sup>30</sup>. Information collected includes data on the number and place of origin of travellers, traveller characteristics, traveller expenditures, and types of activities. The data includes information on same day and overnight intraprovincial and interprovincial travel. There have been numerous changes to the surveys over the years, and all of the information is not available in all years.

Information on the percentage of domestic travellers in British Columbia (both residents and non-residents) who participated in fishing is available from this survey for selected years<sup>31</sup>. This information, together with annual data on the number of licenced anglers and estimates of domestic travellers was used to construct a time series showing the percentage of tourists who fish. It was assumed that international travellers would be as likely to fish as domestic travellers are, so the same ratio would be appropriate for international travellers. The percentage of tourists who fish normally varies between three and four percent, but has increased in recent years.

#### Methodology for estimating angler expenditures

DFO surveys freshwater and saltwater sport fishers. Historically, these surveys were taken every five years<sup>32</sup>, but more recently the data has been collected on an annual basis. Data from the survey includes information on the number of licenced and active anglers, as well as their spending on a variety of sport-fishing related activities. The main expenditure categories are:

- Major purchases **fully attributable** to fishing<sup>33</sup>: fishing equipment, camping equipment, boat equipment, special vehicles and other purchases. The DFO data also reports spending on land and buildings, but these are not included in the sport fishing impacts as they do not represent purchases of goods or services produced in the current period<sup>34</sup>;
- Package deals (charter boat, fly-in lodge/resort, air transportation and other);
- Food and lodging (Accommodations, Campsite fees and Food);

---

<sup>30</sup> National Travel Survey (formerly Travel Survey of Residents of Canada and Canadian Travel Survey) and International Travel Survey.

<sup>31</sup> 1996, 1998-2004 and 2018 on. Note that the survey has changed over the years, and some of the variation in percentages may be due to differences in how the data is collected and reported.

<sup>32</sup> Survey data is available for 1990, 1995, 2000, 2005, 2010, 2015, 2020 (tidal water only), 2021 (tidal water only) and 2022.

<sup>33</sup> Purchases that were only partly attributable to angling were excluded from the estimated expenditures.

<sup>34</sup> GDP, output, employment and labour income measures include the value of all economic activity that occurs in a given period (a year in this case). The value of buildings is recorded in economic output in the year in which they are constructed. Any transfer of ownership of land or buildings does not create current employment or GDP, apart from the work associated with facilitating or recording the transfer (e.g., real estate or legal services).

- Transportation costs (car, ferry, airfare, other travel costs, household owned boat costs, shared boat costs); and
- Fishing services (rentals for fishing, guide services, licence and access fees)

In addition to the survey data, information on the number of licences sold for freshwater and saltwater angling is available on an annual basis.

For each category, it was assumed that changes in the average amount spent by each angler in the non-survey years would be due to price rather than behavioural changes. Average expenditures in non-survey years were estimated by extrapolating the survey data using price changes for comparable expenditures from the personal expenditures data<sup>35</sup>. Detailed data on personal spending on goods and services were aggregated into groups that corresponded to the categories used in the expenditure survey. For example, annual estimates of average expenditures on purchases of major capital equipment wholly attributable to sport fishing were constructed using price indices from personal expenditures on equipment for sport, camping and open-air recreation (fishing and camping equipment) and purchases of major durables for outdoor recreation (boat equipment, special vehicles and other major capital purchases).

The constructed annual estimates of average spending by category were then multiplied by data on the number of active fresh and tidal water anglers, yielding estimates of total spending by freshwater and saltwater fishers on each expenditure category.

The derived time series was then compared to total spending by individuals on the included goods and services in British Columbia (from the economic accounts) to determine a sport fishing share for each expenditure category.

This share was then applied to the output, GDP, employment or labour income of the industry producing the goods or services in question.

#### Industry-specific methodologies

Industries included in the sport fishing definition can be categorized into three groups:

- Industries that provide angling-related goods and services used by tourist and non-tourist anglers (e.g., fishing guides).
- Industries that provide angling-related services to tourist anglers (e.g., fly-in fishing lodges)
- Industries that provide other tourist services to tourist anglers (e.g., museums and attractions)

#### *Industries that provide angling-related goods and services used by tourist and non-tourist anglers*

Both tourist and non-tourist anglers purchase sporting goods such as rods or reels, boats, trailers, fuel and other fishing-related goods and services. Establishments in industries that provide angling-related goods and services used by tourist and non-tourist anglers would include fishing guides, marinas, and retailers of sporting goods, boating equipment, and fuel. For the affected industries, the sport fishing component was estimated using sport fishing ratios calculated as described above. For example, the percentage of fuel expenditures that was made by anglers was used to determine the sport fishing component of GDP, revenues, employment and labour income in the gasoline retailing industry.

---

<sup>35</sup> This information is available in the final demand section of the Supply Use Tables and in Table 36100432, which shows detailed annual final consumption expenditure for the household sector.

In most cases, the relationship between sport fishing expenditure estimates based on the DFO and personal expenditure data fell within the bounds of what might be expected. In some cases, however, the percentages based on this methodology were adjusted to bring the estimates into line with published data for the province. For example, the angler share of boat purchases was reduced by 50% from what the survey suggested, based on the information in the economic accounts.

#### *Industries that provide angling-related services to tourist anglers*

This would include air and water transportation (including boat chartering services), accommodation, food and beverage services, food and beverage purchases and other items purchased from stores by anglers on fishing trips, and services such as boat rentals. The sport fishing component of these activities was also estimated by comparing expenditure data from surveys of recreational anglers to total spending on the same types of goods and services by all consumers in the province.

#### *Industries that provide services not directly related to angling to tourist anglers*

The goal of developing estimates for the sport fishing industry that would be comparable with those for other industries, together with the relationship between sport fishing and tourism, made it necessary to develop a sport fishing proportion for every industry with a tourism component. This is because it did not make sense to allocate part of the activities of, say, a clothing retailer, to tourism and ignore the fact that some tourists are also sport fishers.

For all of the remaining industries in the tourism sector definition, it was assumed that tourist anglers would behave in the same way that other tourists do: that they would be as likely to purchase souvenirs, visit attractions, or go to a museum or on a sightseeing trip as any other tourist would. For all activities included in Tourism GDP but not mentioned in the previous section, the percentage of tourists who were also anglers was applied to the tourism data for the appropriate industries.

The overall estimates of GDP, revenue, employment or wages for this industry were calculated by summing up the sport fishing components for all industries.

#### *Changes to the tourism sector estimates used in the calculation of sport fishing data.*

The sport fishing and tourism sector<sup>36</sup> estimates are related. For the latest version of these estimates, a careful review of the methodology used by Statistics Canada in deriving the provincial Tourism Satellite Accounts was conducted. The information based on this review was used to adjust the methodology that was previously in place for measuring tourism sector data. Specifically, the tourism sector estimates produced by Statistics Canada (on an occasional basis) are based on a two-pronged approach.

To calculate tourism sector data, Statistics Canada estimates for each tourism-related industry were first adjusted so that they only included the portion of output that can be purchased by tourists (previously, the starting point for the tourism estimates was total industry output, GDP or employment). For example, many industries that have a tourism component earn rental income from space rentals. However, for most industries, this space would not be rented out to tourists so rental income was excluded from the output of the tourist-related industries.

A list of tourism-related commodities was used to determine the tourism-related share of total activities represented by production of these commodities. Making these adjustments reduced the starting point

---

<sup>36</sup> More information on the methodology previously used to measure the size of the tourism sector can be found at [Measuring the Size of British Columbia's Tourism Sector \(gov.bc.ca\)](http://www.gov.bc.ca)

for tourism-related activities in some industries that produce a wide range of products. Tourism shares were then applied to the adjusted estimates. For example, in the case of food and beverage services, the initial estimate was first adjusted to remove non-tourism commodities. Then a tourism share was applied to the adjusted estimates (recognizing that most food and beverage services are purchased by local residents rather than tourists).

Tourism ratios vary significantly, from nearly 99.5% in passenger air transport to zero in some industries that do not have a tourism component.

By allocating a percentage of tourism activities to sport fishing we are de facto overestimating the impact the sport fishery has, as some tourism activities are related to business, not recreational travel. At present it is not possible to estimate this separately.

## 6. Sources of Data

The estimates in this report either come directly from industry data published by various government entities or have been developed using methodologies that rely on standard economic accounting principles and data. They are derived using information from many sources, including:

- Fisheries and Oceans Canada (DFO);
- Ministry of Water, Land and Resource Stewardship (MWLRS);
- Ministry of Agriculture and Food (MAF);
- Statistics Canada; and
- Estimates derived specifically for this study using methodologies developed by Lillian Hallin Consulting (LHC). These methodologies are similar to those originally developed by Lillian Hallin when she produced the first and subsequent issues of the report during her tenure at BC Stats.

For example, total GDP for the capture fishery is published by Statistics Canada (for the period from 1997 to 2020 in current dollars and for 1997 to 2023 in chained dollars). However, the reported estimates of current dollar GDP in the early and most recent periods were developed by LHC. The detail by species was derived using indicators such as catch statistics and estimates from special studies of costs and returns in the capture fishery to allocate the Statistics Canada total for the capture fishery. The same is true for the aquaculture industry. Gaps in the published data for some industries (e.g. fish and seafood processing) were filled using estimated data. The sport fishing industry is not a standard industry for which estimates are published, so all of the estimates of the industry's size and economic impact were developed for this study.

A large number of data sources (primarily from Statistics Canada) were used to construct the estimates presented in this document. The sources listed below are the most important ones.

### GDP and Revenue

The data used to derive the GDP and revenue estimates in this report comes from Statistics Canada's Industry Accounts Division, specifically:

- Table 36100402 GDP at basic prices by industry, provinces and territories
- Table 36100438 Supply and use tables, summary level, provincial and territorial
- Table 36100488 Output by sector and industry, provincial and territorial

This information is supplemented by data from various other sources, including:

- Table 32100107 Aquaculture, production and value
- Table 32100108 Aquaculture economic statistics, value added account
- Table 16100117 Principal statistics for manufacturing industries, by NAICS
- Table 16100048 Manufacturing sales by industry and province, monthly
- The value and volume of the commercial catch, from the Ministry of Water, Land and Resource Stewardship, and Fisheries and Oceans Canada.

Cost and returns studies for the fishing fleet, from various reports for various years prepared by ARA Consulting, GS Gislason & Associates Inc., Neilson Brothers Fishing, Counterpoint Consulting and DFO.

Cost and return studies for finfish and shellfish farming, various Ministry of Environment reports, and online reports for selected species



Total angling licence sales, freshwater (Ministry of Water, Land and Resource Stewardship) and saltwater (Fisheries and Oceans Canada) anglers.

Spending estimates from the 1990, 1995, 2000, 2005, 2010, 2015, 2020, 2021 and 2022 surveys of recreational anglers, Fisheries and Oceans Canada.

Data on characteristics of tourists, from the National Travel Survey (Public Use Master Files for most recent period (2018 on); historical data from various archived tables)

Personal expenditure estimates (by type of expenditure) from the Income and Expenditure Accounts Division of Statistics Canada:

- Table 36100225 Annual final consumption expenditure for the household sector, in current and constant 2017 prices, by province and territory

Revenue data from various Statistics Canada surveys, including annual and monthly surveys of retail and wholesale trade, annual surveys of transportation (air, rail, bus, shipping) and communication industries, accommodation services, food and beverage services, leisure and personal services, and the business service industries.

Price data, various tables including Table 18100268 Raw materials price index for price of furskins

Employment and Labour Income:

Data on employment and labour income come from:

- Table 36100489 Labour statistics by job category, for Canada, the provinces and territories
- Table 36100480 Labour productivity and related measures by business sector industry and by non-commercial activity consistent with the industry accounts, provinces and territories
- Labour force survey data from a special tabulation purchased from Statistics Canada were used to extract hunting and trapping from the labour income and employment estimates

Tourism Sector Estimates Used to Calculate Sport Fishing Data

These estimates were derived by Lillian Hallin Consulting using a methodology similar to that described in [Measuring the Size of British Columbia's Tourism Sector \(gov.bc.ca\)](#).<sup>37</sup>

Exports and Imports

Data on exports of fish and seafood products are based on information from the Canadian International Merchandise Trade Database, provided by Statistics Canada to the Ministry of Agriculture. The information is compiled from export documents filed at Canadian customs ports or, in the case of exports to the US, from import data provided by American authorities.

Import estimates were calculated using the same data source, which includes data on imports clearing customs in B.C. and Canada. These estimates were adjusted using information from the Supply Use Tables to exclude imports entering the country through British Columbia, but destined for use elsewhere. The import figures are therefore intended to show the value of imported fish and seafood products consumed in B.C.

---

<sup>37</sup> More information about the methodology is available in Appendix 5

### Consumption of fish and seafood products

Retail spending estimates are from Statistics Canada's Retail Commodity Survey. Estimates of household food expenditure and consumption by product are based on information provided in Statistics Canada's Survey of Household Spending (Table 11100125).

### Location Counts

The location counts presented in this paper are derived from Statistics Canada's Business Register. They were tabulated from information in the following tables:

- Table 361-00568 Canadian Business Counts, with employees, June 2022
- Table 361-00569 Canadian Business Counts, without employees, June 2022
- Table 361-00570 Canadian Business Counts, with employees, Census Metropolitan Areas and Census Subdivisions, June 2022

## 7. Statistical Tables

Statistical tables showing data for the years from 1991 to 2022 are included in the attached excel spreadsheet:

Fisheries and Aquaculture Sector 2022 Edition Statistical Tables.xlsx

Table 1: Revenue by Industry and Species

Table 2: GDP by Industry and Species (current dollars)

Table 3: GDP by Industry and Species (2017 dollars)

Table 4: Labour Income by Industry

Table 5: Employment by Industry

Table 6: Exports of B.C. Fish and Seafood Products, by Species

Table 7: Exports of B.C. Fish and Seafood Products, by Level of Processing

Table 8: Exports of B.C. Fish and Seafood Products, by Region

Table 9: Imports of Fish and Seafood Products Consumed in B.C., by Species

Table 10: Imports of Fish and Seafood Products Consumed in B.C., by Level of Processing

Table 11: Imports of Fish and Seafood Products Consumed in B.C., by Region