



# Economic Impacts of the BC Farm-Raised Salmon Industry – 2017 Update

PREPARED FOR THE BC SALMON  
FARMERS ASSOCIATION

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Prepared by:

**MNP**  
LLP

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# 1. EXECUTIVE SUMMARY

## BACKGROUND AND STUDY PURPOSE

The BC Salmon Farmers Association (BCSFA) is a forum for communication and cooperation within the salmon farming sector, and the focal point for liaison between the industry and government. The BCSFA was established in 1984 and is based in Campbell River, BC.<sup>1</sup>

In 2015, MNP LLP (MNP) was commissioned by the BCSFA to conduct an economic impact study of the BC farm-raised salmon industry (the industry). That study was based on 2013 financial data, which was the most recent data available at the time for the industry. This report is an update to the 2015 study, and is based on 2016 industry data.

The scope of the current study included:

- Updating key statistics for the BC farm-raised salmon industry.
- Updating economic impact estimates for the BC farm-raised salmon industry.

## OVERVIEW OF THE BC FARM-RAISED SALMON INDUSTRY

Table A summarizes the key statistics for the aquaculture and farm-raised salmon industries in BC in 2016.<sup>2</sup>

**Table A: Key Statistics for the BC Aquaculture and Farm-Raised Salmon Industries, 2016**

	BC Aquaculture	BC Farm-Raised Salmon	Farm-Raised Salmon as a Percentage of Total
Production (Metric Tonnes)	103,600	92,800	90%
Wholesale Value (Millions)	\$881.2	\$796.6	90%
Landed Value (Millions)	\$776.8	\$743.3	96%

## ECONOMIC IMPACTS OF THE FARM-RAISED SALMON INDUSTRY IN BC

Table B summarizes the estimated economic impacts generated by the BC farm-raised salmon industry based on the 2016 wholesale value of farm-raised salmon in BC.

**Table B: Economic Impacts of the Farm-Raised Salmon Industry, 2016**

	Output (millions)	GDP (millions)	Employment (FTEs)	Federal Tax (millions)	Provincial Tax (millions)	Municipal Tax (millions)
Direct	\$796.6	\$248.0	2,966	\$26.2	\$14.3	\$1.0
Indirect	\$622.4	\$218.8	2,716	\$19.6	\$14.7	\$0.8
Induced	\$142.9	\$91.0	928	\$4.2	\$4.5	\$0.8
<b>Total</b>	<b>\$1,561.9</b>	<b>\$557.8</b>	<b>6,610</b>	<b>\$50.0</b>	<b>\$33.5</b>	<b>\$2.6</b>

<sup>1</sup> BC Salmon Farmers Association, "About the BC Salmon Farmers Association". Available here: <http://bcsalmonfarmers.ca/about/>

<sup>2</sup> BC Ministry of Agriculture, "Aquaculture Production Quantities and Values" 2016. Values provided by the BC Ministry of Agriculture through a special data request.

## CHANGES IN ECONOMIC IMPACTS BETWEEN 2013 AND 2016

As shown in Table C, between 2013 and 2016, the BC farm-raised salmon industry has experienced significant growth in terms of output, GDP, employment, and government taxes.

**Table C: Total Economic Impacts of the BC Farm-Raised Salmon Industry in 2013 and 2016**

	2013	2016	Change From 2013-2016
Total Output (Millions)	\$1,144.0	\$1,561.9	37%
Total GDP (Millions)	\$411.5	\$557.8	36%
Total Employment (FTEs)	4,977	6,610	33%
Total Government Taxes (Millions)	\$62.0	\$86.1	39%

## 2. INTRODUCTION

### 2.1 BACKGROUND AND STUDY PURPOSE

The BC Salmon Farmers Association (BCSFA) is a forum for communication and cooperation within the salmon farming sector, and the focal point for liaison between the industry and government. The BCSFA was established in 1984 and is based in Campbell River, BC.<sup>3</sup>

In 2015, MNP LLP (MNP) was commissioned by the BCSFA to conduct an economic impact study of the BC farm-raised salmon industry (the industry). That study was based on 2013 financial data, which was the most recent data available at the time for the industry. This report is an update to the 2015 study, and is based on 2016 industry data.

The scope of the current study included:

- Updating key statistics for the BC farm-raised salmon industry.
- Updating economic impact estimates for the BC farm-raised salmon industry.

### 2.2 APPROACH

In preparing the report, MNP carried out the following activities:

- Conducted research through publicly available statistics, articles, and reports.
- Conducted telephone interviews with the members of the BCSFA to gather financial and operating information required for the study.
- Collected existing industry data from the BC Ministry of Agriculture, Fisheries and Oceans Canada, Statistics Canada, BC Stats, and Innovation, Science and Economic Development Canada.
- Developed an economic impact model using the data collected through primary and secondary research to estimate the economic impacts generated by the members of the BCSFA.

### 2.3 LEGAL MATTERS

This report is provided for information purposes and is intended for general guidance only. It should not be regarded as comprehensive or a substitute for personalized, professional, investment, or business advice.

MNP has relied upon the completeness, accuracy and fair presentation of all information and data obtained from the BCSFA, telephone interview with individual members of the BCSFA, and public sources believed to be reliable. The accuracy and reliability of the findings and opinions expressed in the presentation are conditional upon the completeness, accuracy and fair presentation of the information underlying them. As a result, MNP cautions readers not to rely upon any findings or opinions expressed as accurate or complete, and disclaim any liability to any party who relies upon them for business or investment purposes.

Additionally, the findings and opinions expressed in the presentation constitute judgments as of the date of the presentation, and are subject to change without notice. MNP is under no obligation to advise of any change brought to its attention which would alter those findings or opinions.

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<sup>3</sup> BC Salmon Farmers Association, "About the BC Salmon Farmers Association". Available here: <http://bcsalmonfarmers.ca/about/>

### 3. ABOUT THE BCSFA

The BCSFA is the industry association that represents the farm-raised salmon industry in BC. The BCSFA's purpose and activities include:<sup>4</sup>

- Providing a forum for communication and cooperation within the farm-raised salmon industry.
- Acting as the focal point for liaison between the industry and government.
- Providing information to the public and stakeholders about salmon farming.
- Coordinating industry-wide activities, research, and community events.

The members of the BCSFA include both farm-raised salmon producers and many of the organizations that provide services and supplies to them. The BCSFA currently comprises 52 members in BC, encompassing three categories of membership:<sup>5</sup>

- Production Members, which are individuals producing at least 1,000 metric tons of finfish per year, individuals producing fish feed as primary business activity, and individuals whose primary business is processing harvested fish for market. BCSFA's production members which are involved in the production of finfish, operated an estimated 108 of the 117 licensed marine finfish aquaculture facilities across the coastal regions of BC in 2016.<sup>6</sup>
- Associate Members, which are individuals and organizations that derive a substantial portion of their income from the aquaculture industry, including salmon farming.
- Sustaining Members, which are individuals and organizations that derive a portion of their income from, or focus an element of their activities on, the aquaculture industry, including salmon farming.

The distribution of member by category is shown in Table 1.

**Table 1: BCSFA Membership by Type**

Category	Number of Members
Production Members	8
Associate Members	16
Sustaining Members	28
<b>Total</b>	<b>52</b>

Source: BCSFA

<sup>4</sup> BC Salmon Farmers Association, "About the BC Salmon Farmers Association". Available here: <http://bcsalmonfarmers.ca/about/>

<sup>5</sup> BC Salmon Farmers Association, "Our Members". Available here: <http://bcsalmonfarmers.ca/members/>

<sup>6</sup> Fisheries and Oceans Canada, "2016 Marine Finfish Aquaculture in British Columbia" November 15, 2016. Available here: <http://www.pac.dfo-mpo.gc.ca/aquaculture/docs/maps-cartes/mar-eng.pdf>

## 4. INDUSTRY OVERVIEW

### 4.1 INDUSTRY DEFINITION

For the purpose of this report, the BC farm-raised salmon industry is defined to include establishments involved with the production and initial processing (e.g. dressing) of farm-raised salmon in BC.

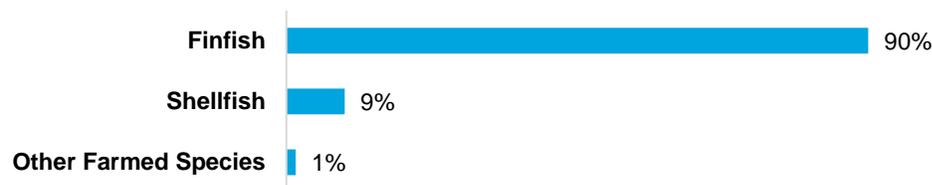
### 4.2 BC AQUACULTURE INDUSTRY

The BC aquaculture industry is defined to include establishments primarily engaged in farm-raising aquatic animals. According to Fisheries and Oceans Canada (DFO),<sup>7</sup> the aquaculture industry is split into three distinct areas:

- Marine finfish, which includes fish and other non-shellfish raised in a saltwater environment. In BC, nearly all marine finfish farms are salmon farms.
- Freshwater finfish, which includes fish and other non-shellfish raised in a freshwater environment. Freshwater finfish largely includes steelhead salmon and trout.
- Shellfish, which includes non-fish, such as clams, oysters, mussels and scallops.

The 2016 distribution of aquaculture production in BC by weight is presented in Figure 1.<sup>8,9</sup>

**Figure 1: BC Aquaculture Production by Weight in 2016**



Source: BC Ministry of Agriculture

DFO is the lead government agency in ensuring that aquaculture is managed sustainably in BC.<sup>10</sup> DFO licenses aquaculture facilities as well as invests in research and supports industry innovation and development.<sup>11</sup> In 2016, there were 117 valid marine finfish aquaculture facilities in BC registered with DFO.<sup>12</sup>

In 2016, total aquaculture production in BC was estimated at 103,600 metric tonnes, which represented a wholesale value of over \$881.2 million.<sup>13</sup> Out of the total aquaculture production in 2016, 90 percent, or about 92,800 tonnes, was farm-raised salmon.<sup>14</sup>

<sup>7</sup> Fisheries and Oceans Canada, "Aquaculture in British Columbia" 2011. Available here: [http://www.pac.dfo-mpo.gc.ca/publications/pdfs/aqua\\_mgmt-gest\\_aqua-eng.pdf](http://www.pac.dfo-mpo.gc.ca/publications/pdfs/aqua_mgmt-gest_aqua-eng.pdf)

<sup>8</sup> BC Ministry of Agriculture, "Aquaculture Production Quantities and Values" 2016. Values provided by the BC Ministry of Agriculture through a special data request.

<sup>9</sup> Finfish includes Atlantic farmed salmon and Pacific farmed salmon including chinook, coho, sockeye, and steelhead. Shellfish include mussels, geoduck, oysters and other clams and shellfish such as scallops and crayfish. Other farmed species include freshwater trout, tilapia, sturgeon, sablefish, arctic char, and marine plants.

<sup>10</sup> Fisheries and Oceans Canada, "Aquaculture in British Columbia" 2017. Available here: <http://www.pac.dfo-mpo.gc.ca/aquaculture/index-eng.html>

<sup>11</sup> Ibid.

<sup>12</sup> Fisheries and Oceans Canada, "2016 Marine Finfish Aquaculture in British Columbia" November 15, 2016. Available here: <http://www.pac.dfo-mpo.gc.ca/aquaculture/docs/maps-cartes/mar-eng.pdf>

<sup>13</sup> BC Ministry of Agriculture, "Aquaculture Production Quantities and Values" 2016. Values provided by the BC Ministry of Agriculture through a special data request.

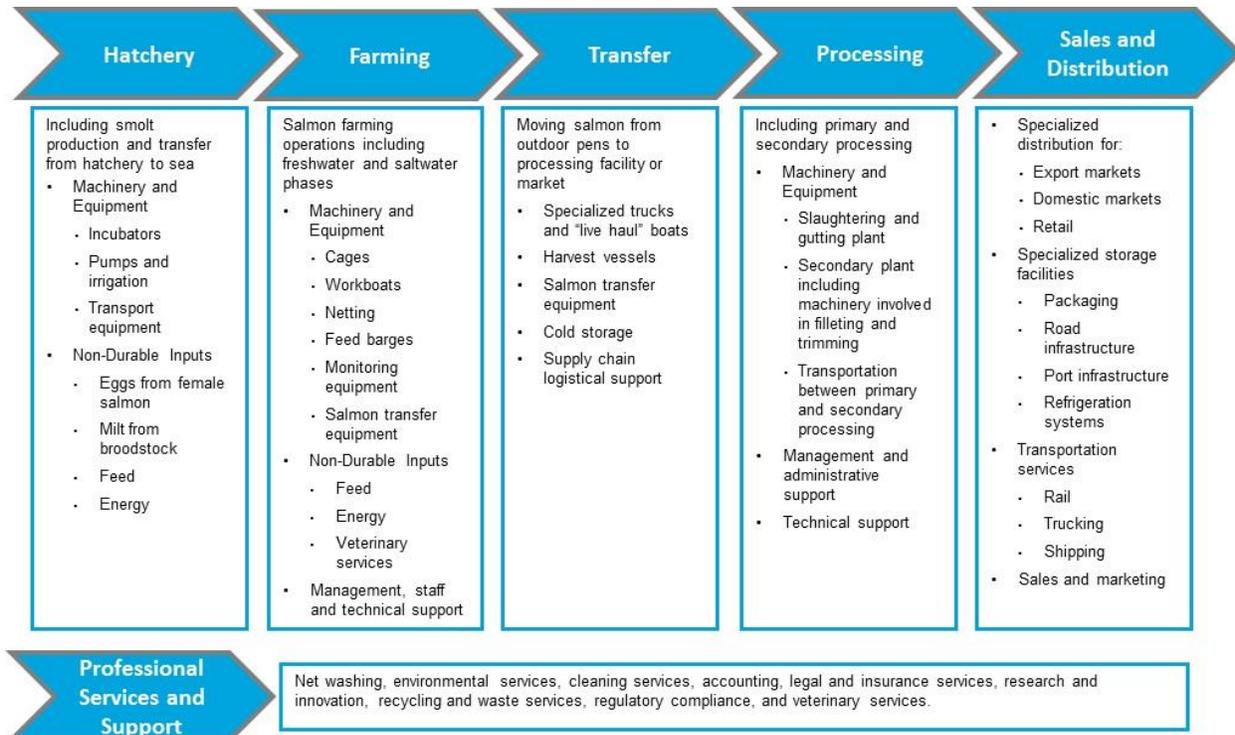
<sup>14</sup> Ibid.

### 4.3 LINKAGES WITH OTHER BUSINESSES

The economic activity created by the farm-raised salmon industry can be described in terms of the industry “value chain”. A value chain illustrates the cycle of activities for an organization and/or a specific industry.

The value chain in Figure 2 illustrates how other businesses are impacted by the purchases of goods and services by salmon farmers. It illustrates that while economic activity is created from the operations of the salmon farmers, indirect and induced impacts arise from the linkages that exist with suppliers and other sectors.

**Figure 2: Value Chain of the Farm-Raised Salmon Industry**



Source: BCSFA

## 5. ECONOMIC IMPACT ANALYSIS

### 5.1 ECONOMIC IMPACT ANALYSIS METHODOLOGY

In general, economic impacts are viewed as being restricted to quantitative, well-established measures of economic activity. The most commonly used of these measures are output, GDP, employment and government tax revenue:

- **Output** is the total gross value of goods and services produced by a given company or industry measured by the price paid to the producer. This is the broadest measure of economic activity.
- **Gross Domestic Product (GDP)**, or value added, refers to the additional value of a good or service over the cost of inputs used to produce it from the previous stage of production. Thus, GDP is the incremental value created through labour or mechanical processing. GDP is a more meaningful measure of economic impact, as it avoids double counting during each round of impacts.
- **Employment** is the number of additional jobs created. Employment is measured in terms of full-time equivalents (FTEs).
- **Government Tax Revenues** arise from personal income taxes, indirect taxes less subsidies, corporate income taxes and some natural resource royalties. Note that government tax revenue would not include revenue from site tenure rentals.

Data for the economic impact modelling was obtained from Statistics Canada, BC Ministry of Agriculture, DFO, and BC Stats. MNP based its economic impact methodology on BC Stats' recommended approach to modelling the economic impacts of the aquaculture industry in BC,<sup>15</sup> as well as the approach used in a report for DFO.<sup>16</sup>

The approach followed by MNP employs an input-output model using economic impact multipliers. Input-output modelling is a widely used and widely-accepted approach, making it recognizable by many different stakeholders and audiences. For consistency, we have followed the same approach as was used in the 2015 economic impact study report. Additional details on the approach can be found in that report.

A description of MNP's economic impact methodology and assumptions is provided in Appendix A.

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<sup>15</sup> BC Stats, "British Columbia's Fishers and Aquaculture Sector, 2012 Edition" 2013. Available here:

[http://www.salmonfarmers.org/sites/default/files/british\\_columbias\\_fisheries\\_and\\_aquaculture\\_sector\\_2012\\_edition.pdf](http://www.salmonfarmers.org/sites/default/files/british_columbias_fisheries_and_aquaculture_sector_2012_edition.pdf)

<sup>16</sup> Gardiner Pinfold, "Socio-Economic Impacts of Aquaculture in Canada: 2013 Edition" prepared for Fisheries and Oceans Canada Aquaculture Management Directorate, February 2013.

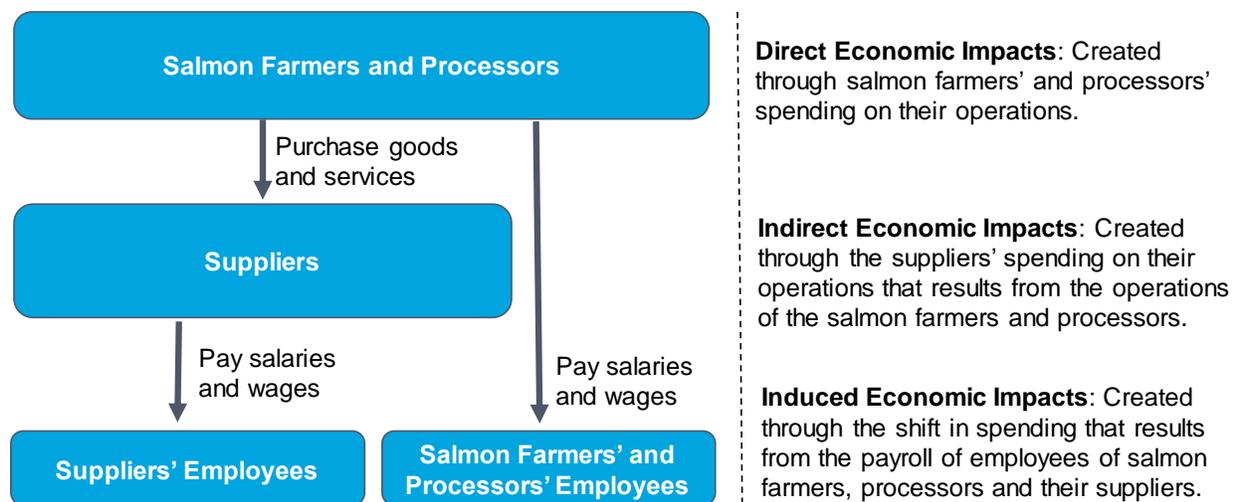
## 5.2 SOURCES OF ECONOMIC IMPACT

Economic impacts may be estimated at the direct, indirect, and induced levels:

- **Direct impacts** are changes that occur in front-end businesses that would receive revenue and incur expenditures as a direct consequence of the production and processing of farm-raised salmon.
- **Indirect impacts** arise from changes in activity for suppliers of the front-end businesses.
- **Induced impacts** arise from the shifts in spending on goods and services as a consequence of the payroll of the directly and indirectly affected businesses.

Figure 3 summarizes the relationship between the levels of economic impacts created by the farm-raised salmon industry.

**Figure 3: Relationship Between Economic Impacts Created by the Farm-Raised Salmon Industry**



### 5.3 ECONOMIC IMPACTS ARISING FROM THE FARM-RAISED SALMON INDUSTRY IN BC

In 2016, the total wholesale value of farm-raised salmon in BC was estimated at \$796.6 million.<sup>17</sup> The wholesale value represents the production value of the product (also known as the landed value), as well as the initial processing value-add that prepares the product for market. The total landed value of farmed-raised salmon in BC in 2016 was estimated at \$743.3 million.<sup>18</sup> As such, the processing output for farm-raised salmon in 2016 was estimated at \$53.3 million. This is summarized in Table 2.

**Table 2: BC Farm-Raised Salmon Output, 2016**

Category of Output	Value (millions)
Production Value	\$743.3
Processing Value-Add	\$53.3
<b>Total Wholesale Value</b>	<b>\$ 796.6</b>

Source: BC Ministry of Agriculture

Table 3 summarizes the estimated economic impacts generated by the BC farm-raised salmon industry based on 2016 wholesale value of farm-raised salmon in BC. In 2016, the industry is estimated to have generated the following economic impacts in BC:

- Approximately \$1,561.9 million in total output, including direct output of \$796.6 million, indirect output of \$622.4 million, and induced output of \$142.9 million.
- Approximately \$557.8 million in total GDP, including direct GDP of \$248.0 million, indirect GDP of \$218.8 million, and induced GDP of \$91.0 million.
- Approximately 6,610 total full-time equivalent (FTE) positions, including direct employment of 2,966 FTEs, indirect employment of 2,716 FTEs, and induced employment of 928 FTEs.
- Approximately \$86.1 million in total federal, provincial and municipal tax revenues, including direct tax revenues of \$41.5 million, indirect tax revenues of \$35.1 million, and induced tax revenues of \$9.5 million to all three levels of government.<sup>19</sup>

**Table 3: Economic Impacts of the Farm-Raised Salmon Industry, 2016**

	Output (millions)	GDP (millions)	Employment (FTEs)	Federal Tax (millions)	Provincial Tax (millions)	Municipal Tax (millions)
Direct	\$796.6	\$248.0	2,966	\$26.2	\$14.3	\$1.0
Indirect	\$622.4	\$218.8	2,716	\$19.6	\$14.7	\$0.8
Induced	\$142.9	\$91.0	928	\$4.2	\$4.5	\$0.8
<b>Total</b>	<b>\$1,561.9</b>	<b>\$557.8</b>	<b>6,610</b>	<b>\$50.0</b>	<b>\$33.5</b>	<b>\$2.6</b>

<sup>17</sup> BC Ministry of Agriculture, "Aquaculture Production Quantities and Values" 2016. Values provided by the BC Ministry of Agriculture through a special data request.

<sup>18</sup> Ibid.

<sup>19</sup> Tax revenues include taxes on products (e.g. GST), taxes on production (e.g. license fees, capital taxes, or property taxes), and income taxes. Please note that because tax revenues can regularly change due to modifications in tax policy, the tax revenue impacts in this report are estimates only and are subject to change. They should be viewed as approximate in nature.

## 5.4 CHANGES IN ECONOMIC IMPACTS BETWEEN 2013 AND 2016

Between 2013 and 2016, the BC farm-raised salmon industry has experienced significant growth in terms of output, GDP, employment, and government taxes.

- The total output generated by the BC farm-raised salmon industry increased 37 percent from \$1,144.0 million to \$1,561.9 million.
- The total GDP generated by the BC farm-raised salmon industry increased 36 percent from \$411.5 million to \$557.8 million.
- The total employment generated by the BC farm-raised salmon industry increased 33 percent from 4,977 to 6,610 full-time equivalents.
- The government taxes generated by the BC farm-raised salmon industry increased 39 percent from \$62.0 to \$86.1 million.

Table 4 summarizes the changes in economic impacts for the BC farm-raised salmon industry between 2013 and 2016.

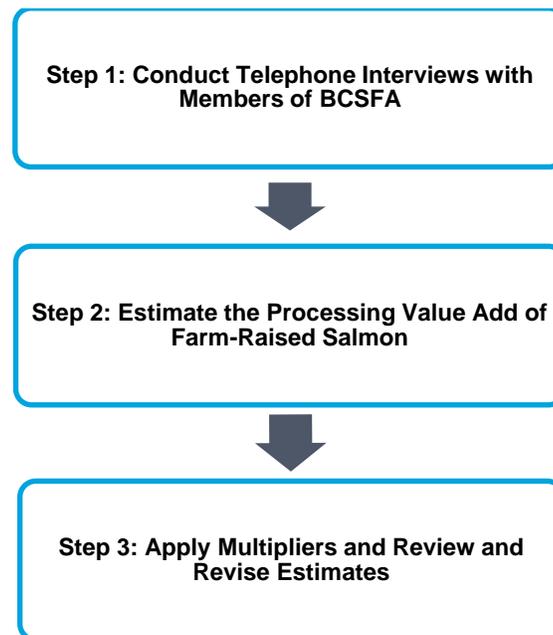
**Table 4: Total Economic Impacts of the BC Farm-Raised Salmon Industry in 2013 and 2016**

	2013	2016	Change from 2013-2016
Total Output (Millions)	\$1,144.0	\$1,561.9	37%
Total GDP (Millions)	\$411.5	\$557.8	36%
Total Employment (FTEs)	4,977	6,610	33%
Total Government Taxes (Millions)	\$62.0	\$86.1	39%

## APPENDIX A – ECONOMIC IMPACT METHODOLOGY

MNP's estimates of the economic impacts of the BC farm-raised salmon industry have been developed using a BC Stats input-output model and related economic multipliers. A detailed, step-by-step overview of MNP's approach is provided below. For consistency, we have followed the same approach as was used in the 2015 economic impact study report. Additional details on the approach can be found in that report.

**Figure 4: Steps to Estimating the Economic Impact of the BC Farm-Raised Salmon Industry**



### Step 1: Conduct Telephone Interviews with Members of the BCSFA

The first step to estimate the economic impacts of the farm-raised salmon industry in BC was to conduct telephone interviews with a select number of BCSFA members. Telephone interviews were conducted with five farmed salmon producers and two feed manufacturers.

Through the telephone interviews, MNP collected information such as:

- The size, location, and number of facilities.
- Financial data.
- Employment information.
- Production statistics.

### Step 2: Estimate the Processing Value Add of Farm-Raised Salmon

The next step to estimate the economic impacts of the farm-raised salmon industry in BC was to estimate the wholesale value of farm-raised salmon production in 2016. The wholesale value includes both the production of farm-raised salmon as well as the initial processing (e.g. dressing) to prepare the salmon for market.

As summarized in Table 5 the total wholesale value of farm-raised salmon in BC in 2016 was estimated at \$796.6 million.<sup>20</sup> Of this, it is estimated that the production value (also known as the landed value) was \$743.3 million,<sup>21</sup> and \$53.3 million was the processing value add.

**Table 5: BC Farm-Raised Salmon Output, 2016**

Category of Output	Value (millions)
Production Value	\$743.3
Processing Value-Add	\$53.3
<b>Total Wholesale Value</b>	<b>\$ 796.6</b>

Source: BC Ministry of Agriculture

### Step 3: Apply Multipliers and Review and Revise Estimates

The last step to estimate the economic impacts of the farm-raised salmon industry in BC was to map the production value and processing value-add estimates to economic impact multipliers published by BC Stats.<sup>22</sup> The multipliers produced the estimates of direct and indirect economic impacts, including output, GDP, employment, and government revenue.

As part of the study, MNP compared the multipliers used by BC Stats<sup>23</sup> with those used by DFO (based on Statistics Canada multipliers).<sup>24</sup> While the multipliers are similar for direct and indirect impacts, substantial differences exist in the induced multipliers. Such a difference in economic data is not uncommon. For example, BC Stats notes in its 2012 report that there is a persistent gap in the GDP data sets between BC Stats and Statistics Canada.<sup>25</sup> As such, MNP used the mid-point between the two sets of multipliers for the induced impacts.

<sup>20</sup> BC Ministry of Agriculture, "Aquaculture Production Quantities and Values" 2016. Values provided by the BC Ministry of Agriculture through a special data request.

<sup>21</sup> Ibid.

<sup>22</sup> BC Stats, "British Columbia's Fisheries and Aquaculture Sector" prepared for Fisheries and Oceans Canada, 2012. Available here: [http://www.salmonfarmers.org/sites/default/files/british\\_columbias\\_fisheries\\_and\\_aquaculture\\_sector\\_2012\\_edition.pdf](http://www.salmonfarmers.org/sites/default/files/british_columbias_fisheries_and_aquaculture_sector_2012_edition.pdf)

<sup>23</sup> Ibid.

<sup>24</sup> Gardiner Pinfold, "Socio-Economic Impacts of Aquaculture in Canada: 2013 Edition" prepared for Fisheries and Oceans Canada Aquaculture Management Directorate, February 2013.

<sup>25</sup> BC Stats, "British Columbia's Fisheries and Aquaculture Sector" prepared for Fisheries and Oceans Canada, 2012, pg. 69, available here: [http://www.salmonfarmers.org/sites/default/files/british\\_columbias\\_fisheries\\_and\\_aquaculture\\_sector\\_2012\\_edition.pdf](http://www.salmonfarmers.org/sites/default/files/british_columbias_fisheries_and_aquaculture_sector_2012_edition.pdf)

## APPENDIX B – ABOUT MNP

MNP is the fastest growing chartered accountancy and business advisory firm in Canada. Founded in 1945, MNP has grown from a single office in Manitoba to more than 60 offices and 4,000 team members across Canada. MNP is a member of Praxity AISBL, a global alliance of independent firms, which enables us to access a broad range of sector specific expertise worldwide.

At MNP, our professionals are the driving force behind our success. They continue to demonstrate our culture and values which is integral to the way we conduct business, both internally and externally. As such, MNP is proud to be recognized as one of the *50 Best Employers in Canada* by *Maclean's* magazine.



### ABOUT MNP'S FOOD AND AG ECONOMICS TEAM

MNP's Food and Ag Economics Practice consists of a team of dedicated members that have a successful track record of conducting industry studies, market research studies, and economic impact engagements in the agriculture and food and beverage processing sector. Our team consults on a range of agri-food related topics and has carried out assignments across Canada for businesses, industry associations, and government.