

'AQUASTATS'

Ontario Aquacultural Production in 2018

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INDUSTRY SNAPSHOT 2018

Major Species Produced	Rainbow trout
Minor Species Produced	Brook trout, brown trout, Arctic charr, tilapia, Pacific white shrimp, barramundi, lake whitefish, baitfish species
Other Species Produced (for stocking, fee-fishing, stock rehabilitation and aquaponics)	salmon (Atlantic, coho and chinook), bass (smallmouth and largemouth), sunfish (bluegill and pumpkinseed), muskellunge, lake sturgeon, walleye, koi
Total Rainbow Trout Production	5,416 tonnes
Farm-gate Value of Rainbow Trout	\$29.0 million
Total Other Fish Production	371 tonnes
Farm-gate Value of Other Fish	\$3.4 million
Value of Eggs, Fry and Fingerlings	\$5.3 million
Total Value of Farmed Species	\$37.7 million
Economic Contribution	\$122 million
Job Creation	222 person-years direct, 150 person-years indirect employment
Projected Production of Rainbow Trout	Approximately 6,499 tonnes in 2019

OVERVIEW

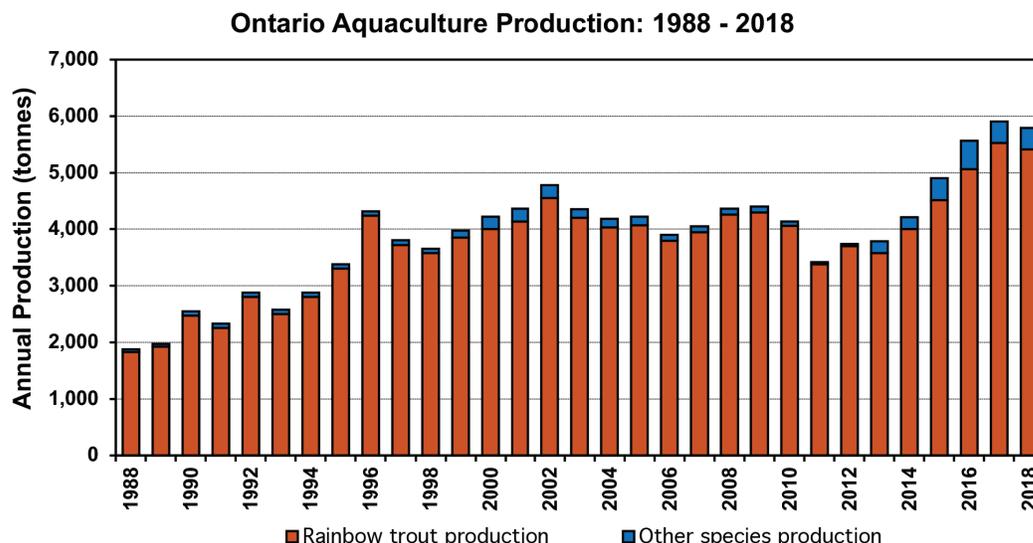
We estimate that in 2018, Ontario aquaculture facilities produced 5,787 tonnes in total, of fish and shrimp, primarily for human consumption (Figure 1). This is a modest 2% decrease over the 5,900 tonnes produced in 2017. The majority of the production was rainbow trout @ 5,416 tonnes, (12.8 million pounds), which was a 2% decrease over the 5,530 tonnes produced in 2017. Lake-based, net-pen production of rainbow trout in Georgian Bay and Lake Huron continues to dominate all other land-based production systems, accounting for 90% of the total production. This production was approximately 114 tonnes less than we projected in our 2017 factsheet, due in part, to operational interruptions resulting from reorganization and consolidation of the larger net-pen facilities in Lake Huron, as well as unexpected losses incurred in 2018 due to weather, including extended periods of high lake water temperatures. In Ontario, land-based production of tilapia, barramundi, Arctic charr, and shrimp is limited to a few facilities in southern Ontario, with tilapia production currently dominating. Our records indicate that 8 facilities culture one or more of those species, with an estimated total production of at least 371 tonnes in 2018. More than 113 smaller-scale facilities produce brook and brown trout, Atlantic and Pacific salmon, bass, walleye, muskellunge and other fish species primarily geared towards pond stocking, sports-fishing and restoration/rehabilitation purposes. These operations provide an important diversity to the Ontario aquaculture industry, although quantifiable information to measure production and economic value has been limited, and difficult to collect. Having said that, this year's response rate to our survey was the highest ever.

Of the 215 recorded cultured fish licence holders in Ontario, surveys were sent to the 144 facilities that were estimated to have the most significant production. A response rate of 78% of the larger producers, and 36% of the smaller operations was achieved and captures farm data representing approximately 98% of Ontario's total production.

The total farm-gate value of the 5,416 tonnes of rainbow trout produced is estimated to be \$29.0 million, with an average price of \$2.48/lb (\$5.47/kg). Other fish and crustaceans are estimated to add an additional \$3.4 million in farm-gate revenues. More than 100 private sector facilities are also involved with pond stocking, stock rehabilitation and fee fishing, typically with rainbow trout, brook trout and/or bass species. The value of this aquaculture sector is conservatively estimated to be at least \$1.5 million annually in farm-gate revenues.

The Ontario aquaculture industry is estimated to have generated a total of 222 person-years of direct, on-farm employment, consisting of 140 person-years of full-time employment (40 hours/week for 12 months) and 82 person years of part-time employment. Indirect employment is conservatively calculated at an additional 150 person-years. In total, the annual contribution that aquaculture makes to the Ontario economy is estimated to exceed \$122 million, with additional and significant economic value realized via the recreational and aquaria trade.

Figure 1. Ontario aquaculture production between 1988 and 2018.



SITUATION OUTLOOK

It was an interesting year for the provincial aquaculture sector in 2018. Somewhat atypical weather conditions, marked by extended, high water temperature periods requiring cessation of feeding, caused a significant reduction in growth rates of near market-ready fish. Storm events led to other unexpected mortalities. Combined, these variables resulted in a modest decline in farmed trout production.

There was significant consolidation of the industry in 2018. Several acquisitions and mergers have created fewer, but larger corporate entities. Expansion plans continue within First Nations communities led by indigenous entrepreneurs. In addition, there has been renewed interest by the investment community in building 1 or 2 new large net pen facilities in the Great Lakes, which potentially could bring an additional 3,000-5,000 MT of fish into the marketplace in the next 2-3 years. Expansion into Lake Superior also has potential, with new projects currently in various stages of planning and development. If successful, these could generate a two- to three-fold increase in farmed trout output over the coming decade. This will necessitate a significant expansion in fingerling production and processing capacity to support these facilities. Even without these new farm starts, we are projecting 10-15% year-over-year growth in production output, coming primarily from within-farm expansion and productivity improvements. Ten of our largest farms obtained third-party, BAP (Best Aquaculture Practices) certification in 2018, which elevates both production standards and performance. Farming of new, alternate species is likely to remain modest, with small-scale production of lake whitefish potentially coming online in 2019-20.

Ontario now has four commercial shrimp farms. This freshman sector shows promise to supply fresh shrimp into local high-demand and high-value markets. However, the sector struggles due to lack of availability of domestic brood stock and a reliable supply of post-larvae for grow-out. Looking ahead, shrimp has the potential

to emerge as the next, high-value farmed species and become a bonafide subsector of the aquaculture industry. In the meantime, tilapia and barramundi production are holding steady, and continue to be the two main alternate species grown.

As in 2017, there continues to be modest growth in the aquaponics sub-sector, fueled in part by an enthusiastic entrepreneurial sector, but also because improvements in systems design has enabled the coupling of production of fish production with edible plant crops like tomatoes, kale, basil, zucchini, lettuce and others. These systems are large, capital intensive and complex to run, requiring skilled personnel and solid business plans to ensure success.

One positive driver for provincial aquaculture is that consumer demand for Ontario's superior quality, farmed-fish products continues to be very high, creating the ever-challenging problem of managing the supply-side barriers to farm expansion, as well as new farm starts. These barriers continue to be the complex and cumbersome regulatory framework which is a disincentive to some investors. The regulatory confusion in the requirements for wastewater management in recirculation aquaculture systems (RAS) presents a barrier to more rapid uptake of these land-based technologies which conserve water. In addition, limited access to working capital, and new net-pen sites, are long-standing barriers which persist. Altogether, this results in a supply-limited marketplace, which has the upside of contributing to some stability in wholesale pricing.

Overall, the industry is poised for substantial expansion by 2025, fuelled primarily by growth in rainbow trout production, which continues to be the backbone of Ontario's aquaculture sector. In summary, we remain very optimistic about the growth potential and success of Ontario's aquaculture industry, and encourage the private and public sectors to continue supporting this emerging form of livestock production throughout the province.