Aquaculture Centre

University of Guelph

Improve Life.

'AQUASTATS'

Ontario Aquacultural Production in 2022

By: Richard Moccia and Michael Burke

November 2023

INDUSTRY SNAPSHOT 2022	
Major Species Produced	rainbow trout
Minor Species Produced	Arctic charr, tilapia, barramundi, coho salmon
Other Species Produced (for stocking, fee-fishing, stock rehabilitation, aquaponics and eduction and research)	salmon (Atlantic and chinook), brook trout, brown trout, lake trout, bass (smallmouth and largemouth), lake whitefish, sunfish (bluegill and pumpkinseed), cyprinid baitfish, lake sturgeon, walleye
Total Rainbow Trout Production	3,790 tonnes
Farm-gate Value of Rainbow Trout	$23.5 million
Total Other Fish Production	268 tonnes
Farm-gate Value of Other Fish	$2.1 million
Value of Eggs, Fry and Fingerlings	$4.3 million
Total Value of Farmed Species	**$29.9 million**
Economic Contribution	$98 million
Job Creation	117 person-years direct 125 person-years indirect employment
Projected Production of Rainbow Trout	Approximately 4,000 tonnes in 2023

OVERVIEW

We estimate that in 2022, Ontario aquaculture facilities produced 4,057 tonnes of fish in total, primarily intended for human consumption (Figure 1). This is a 33.7% decrease over the 6,115 tonnes produced in 2021. The majority of the production was in rainbow trout @ 3,790 tonnes, (8.4 million pounds), which was a 29.7% decrease over the 5,873 tonnes produced in 2021. 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 95.8% of the total production (Figure 2). This production was generated from 10 net pen operations. In Ontario, land-based production of Arctic charr, tilapia, barramundi and coho salmon is now limited to a few facilities in southern Ontario. Our records indicate that only five facilities cultured one or more of those species, with an estimated total production of 268 tonnes in 2022. Furthermore, rainbow trout, coho and Atlantic salmon, lake sturgeon, lake whitefish, tilapia, and Arctic charr are currently being cultured for educational and/or research purposes at the Ontario Aquaculture Research Centre (formerly the Alma Aquaculture Research Station, University of Guelph) and/or Sir Sandford Fleming College. More than 119 small-scale facilities produce trout (rainbow, brook, lake and brown trout), Atlantic and coho salmon, bass, walleye, pumpkinseed and bluegill sunfish, baitfish and other fish species primarily allocated towards pond stocking, sports-fishing and restoration or rehabilitation efforts. These operations provide an important diversity to the Ontario aquaculture industry, although quantifiable information to measure production and economic value has been limited, and is difficult to collect. Surveys were sent to these 119 smaller-scale farms, as well as an additional 27 larger-scale facilities that were known to have the most significant aquaculture production. We had a survey response rate of 44% of the larger facilities which captured production data representing approximately 98% of Ontario's total, food fish output.

The total farm-gate value of the 3,790 tonnes of rainbow trout produced is estimated to be $23.5 million, with an average price of $2.90/lb ($6.39/kg). This is a notable increase over the 2021 average price of $2.75/lb ($6.06/kg). The sale of eggs, fry and fingerlings that support rainbow trout production is valued at an additional $4.3 million. Other fish, primarily Arctic charr, tilapia and barramundi, are estimated to add an additional $2.1 million in farm-gate revenues. Many small scale private sector facilities were also involved with pond stocking, stock rehabilitation and fee fishing, typically with walleye, rainbow trout, brook trout and/or bass species. The value of this aquaculture sector is conservatively estimated to be at least $1.5-2.0 million annually in farm-gate revenues.

The Ontario aquaculture industry is estimated to have generated a total of 117 person-years of direct, on-farm employment, consisting of 87 person-years of full-time employment (40 hours/week for 12 months) and 30 person years of part-time employment. Indirect employment is conservatively calculated at an additional 125 person-years. In total, the annual contribution that aquaculture makes to the Ontario economy is estimated to exceed $98 million, with additional and significant economic value realized via the recreational and aquaria trade.

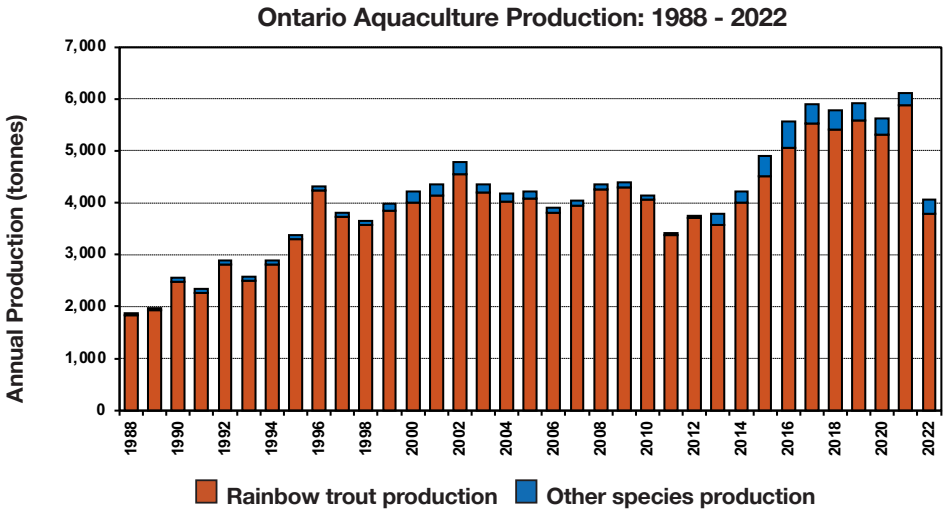

Figure 1. Ontario aquaculture production between 1988 and 2022.

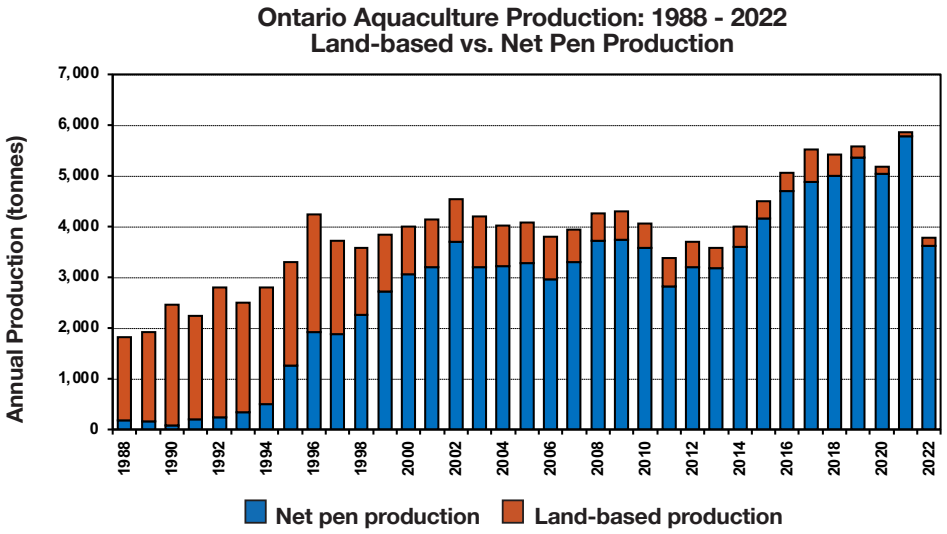

Figure 2. Land-based vs. net pen production in Ontario between 1988 and 2022.

SITUATION OUTLOOK

The year 2022 is to be remembered for experiencing one of the most significant declines in overall production output and economic value in the Ontario aquaculture sector in the last 35 years. A number of factors combined to contribute to the decline. There were lingering effects of the COVID pandemic from 2020 and 2021 that continued to affect the supply chain. In the early periods of COVID, the supply side was interrupted, while in late 2021 and into 2022, sales and market demand were strong. Unfortunately, production was severely impacted by the acute emergence of the Lactococcus fish pathogen which caused substantial, and widespread morbidity and mortality. However, the industry reacted quickly and efficiently and collaborated on a successful, industry-wide vaccination program. Consequently, there has not been any large-scale infection or mortality episodes since. Vigilance will be required to avert this problem in future, especially given the more dynamic changes in climate and water temperatures we are experiencing.

While in 2021 there was anticipation for significant volumes of trout being produced in new operations in Lake Superior, the start-up phase was delayed due to operational challenges and reconsideration of site locations. Having said that, Lake Superior production of trout continues to offer great promise, and there are new trials and technology initiatives already underway. So we are optimistic that 2023 and 2024 will be formative years for the advancement of large-scale trout farming in this northern Great Lake. Stay tuned for more on that in next year's Aquastats survey.

As well, there were 2 newer, smaller farms established in 2020 and 2021 that finally grew to commercial scale. This demonstrated ongoing optimism for continued investment by the private sector in expanding the scale of operations to meet the strong market demand. Trials are continuing to develop lake whitefish as a commercially viable species in Ontario through collaboration between the Indigenous, government, research and private sectors. Although significant production of whitefish is not likely for several years, it does hold high potential to be the next new species established at a commercially viable scale. And finally, the industry made great strides in implementing components of the new welfare code of practice established in 2021, especially in the area of humane slaughter techniques.

In summary, 2022 was a turbulent period of downward production, but with some positive initiatives by the Ontario aquaculture sector. Our surveillance to date suggests that 2023 will be a rebound year, as the larger farms have reported excellent water temperatures and feed uptakes, such that we anticipate surpassing industry records into 2023 and 2024. Hope always springs eternal in the aquaculture industry.

Funding and Historical Materials:
This work was supported in part by the Ontario Ministry of Natural Resources and Forestry through funding provided to R.D. Moccia. Earlier factsheets available at: http://www.aps.uoguelph.ca/aquacentre/information/publications.php

Address correspondence to:
Professor Richard Moccia
Department of Animal Biosciences
University of Guelph, Guelph, ON N1G 2W1
Tel. (519) 824-4120 ext. 56216
email: rmoccia@uoguelph.ca