

# Aquastats

## 1997

Ontario Aquacultural Production in 1997 and Situation Outlook

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## SUMMARY

In 1997, the Ontario aquaculture industry produced approximately 3,725 tonnes (8.21 million pounds) of rainbow trout for human consumption, with a farm-gate value of nearly \$15.9 million. Limited quantities of tilapia, Arctic charr, Atlantic salmon, and cyprinid baitfish were also produced. The industry generated approximately 225 person-years of direct employment, plus an additional 250 person-years of indirect employment. Total economic contribution of the

industry to Ontario's private sector is estimated to be between \$58 and 65 million. Our predictions are that annual production of farmed-fish, primarily rainbow trout, will exceed 4,500 tonnes in 1998, and should reach 7,000 tonnes within the next five years.

Tilapia production is also expected to rise moderately from current levels, however, there is little evidence that increased production of any other fish species grown for human food, will occur in the foreseeable future.

### INDUSTRY SNAPSHOT 1997

**Major Species Produced** - rainbow trout

**Minor Species Produced** - tilapia, brook trout, Arctic charr, smallmouth and largemouth bass, Atlantic salmon, cyprinid baitfish

**Total Production** - 3,725 tonnes

**Farm-gate Value** - \$15.9 million

**Economic Contribution** - \$58-65 million

**Job Creation** - 475 person years direct and indirect employment

**1998 Prediction** - 4,500 tonnes



## INTRODUCTION

This factsheet summarizes data collected through ongoing annual surveys since 1988, conducted by the Aquaculture Extension Centre, University of Guelph, in consultation with federal and provincial government agencies as well as representatives of the private sector aquaculture industry in Ontario<sup>1</sup>. The information documented here, compliments our earlier reports on production statistics for Ontario<sup>2</sup>. We present data to quantify the production output, economic value, and employment characteristics of the food-fish sector of the Ontario aquaculture industry. No attempt has been made to analyse the other important sub-sectors of the industry such as the bait-fish production, pond-stocking, recreational fee-fishing, ornamental fish production, or

the goods and service sectors. While these sectors are no doubt significant, we have been unable to properly identify and survey the various participants involved.

In this factsheet, we also make predictions concerning the medium-term growth potential for Ontario aquaculture, including the current and future trends in both fish species and technology diversification. As in our previous factsheets, we also attempt to identify the key social and economic factors that in our opinion, significantly impact the industry's growth, and define the limits of its sustainability. Thus, this factsheet describes primarily the current status and future trends in food-fish production by the aquaculture industry in Ontario.



## ANNUAL PRODUCTION ESTIMATES

A total of 198 private-sector, fish production facilities were identified from Ontario Ministry of Natural Resources licence records, as well as in-house data files continuously updated since 1988. Responses to our survey questionnaire were combined with information gathered from farm owners and service providers to arrive at the final production estimates reported here. Rainbow trout continues to dominate food-fish production in Ontario, although other species, including tilapia, brook trout, largemouth and smallmouth bass, Arctic charr, Atlantic salmon, and cyprinid baitfish, are grown in very limited quantities.

We estimate that in 1997, Ontario fish farms produced approximately 3,725 tonnes (8.21 million pounds) of rainbow trout, mostly for human consumption, representing a decrease of 12.1 % over 1996 production estimates (Table 1, Figure 1). This value was determined from a survey of the 74 larger farms in the province, conducted between January and July, 1998. The farms surveyed were either those facilities that produced over 5 tonnes (11,000 pounds) in 1996<sup>2</sup>, or, new facilities that were expected to produce more than 5 tonnes in 1997. This group of 74 farms accounted for 93% of the entire provincial production of food-fish. In addition, a secondary survey of farms was also conducted, and included only those farms producing less than 5 tonnes per year. Although the total production from these farms is relatively small, their activity provides some diversification and stabilisation of production, and gives insight into the hobby sector of the industry.

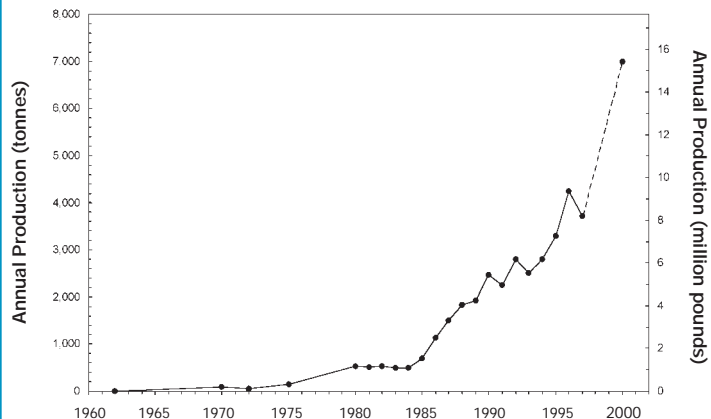
Table 1. Historical trends in Ontario trout production by private sector aquaculture.

Ontario Aquacultural Trout Production		
Year	Production (tonnes)	Production (million lbs)
1962	0	00.00
1970	90	0.20
1972	50	0.11
1975	140	0.31
1980	530	1.17
1981	520	1.15
1982	540	1.19
1983	500	1.10
1984	500	1.10
1985	700	1.54
1986	1,130	2.49
1987	1,500	3.31
1988	1,830	4.03
1989	1,925	4.24
1990	2,470	5.45
1991	2,255	4.97
1992	2,800	6.17
1993	2,500	5.51
1994	2,800	6.17
1995	3,300	7.28
1996	4,240	9.35
1997	3,725	8.21

In the primary survey of the 74 larger farms, production data was reported by 22 facilities, accounting for 1,287 tonnes (2.84 million pounds).



Figure 1. Ontario trout production from 1962 until present, with projections to the year 2000



Fifty-two facilities either did not respond or were not willing to disclose current production information because they wished data to remain proprietary. Estimates of production were made for all non-reporting facilities, and were based upon review of previous data, as well as other information gathered through other personal communications. This estimated production accounts for 2,170 tonnes (4.78 million pounds). All individual farm data which was either reported or estimated, is maintained in confidential files, and only combined information is reported here.

In the secondary survey of 124 smaller farms, production data was reported by 24 facilities, accounting for 52 tonnes. Estimates were made for all of the remaining facilities. In total, these smaller facilities are estimated to have produced 268 tonnes (0.59 million pounds) during 1997.

Structurally, the Ontario industry is a composite of farms encompassing numerous, small-scale, part-time farms, with significantly fewer intermediate-scale facilities, and even fewer still, large-scale operations (Figure 2). In fact, 74 % of the production total for the entire province comes from 8 farms, and of these, five facilities account for 62 % of the total provincial production. The projected increase in Ontario's fish production over the next five years will come primarily from the development and expansion of these larger types of facilities.

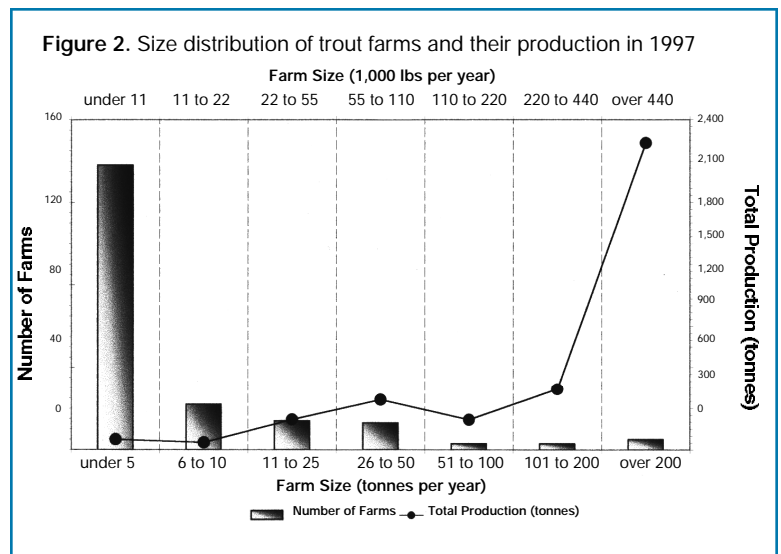
## PRODUCT TRENDS AND ECONOMIC VALUE


The previous trend towards producing rainbow trout around 1 kilogram (2 - 2½ pounds) live weight, developed mostly for the boneless fillet market, appears to have continued in 1997. Twenty farms reported production by fish size, accounting for 1,287 tonnes (34.6 %) of the total production. Trout less than 450 grams (10 to 16 ounces) live-weight, accounted for 9.1 %; trout between 450 and 1,000 grams (1 - 2½ pounds) accounted for 70.6 % and fish over 1,000 grams (2½ pounds) accounted for the remaining 20.3 % of total annual production. The farms in the northern region of Georgian Bay, Lake Huron, continue to make a major impact upon the province's total production, both in quantity and type of

product. Typically, these farms are cage-culture facilities producing trout in the 1 kg or larger category.

Survey data on price structure was reported by twenty farms, accounting for 1,287 tonnes (34.6 % of the total). The reported, average farm-gate price of trout less than one pound was \$2.63 per pound (range \$1.50 to \$5.50 per pound), while trout in the 1 to 2½ pound size-range averaged \$1.91 per pound (range \$1.65 to \$5.00). Keep in mind that there may be limited markets available for some of the size ranges, especially for the smaller, and higher-valued items. Consequently, large-volume, wholesale prices should not be expected to be higher than the floor prices (ie. low end of the range) reported here. Nine farms reported sales of trout greater than 2½ pounds, averaging \$1.70 per pound (range \$1.65 to \$7.00).

In 1997, the Ontario industry is estimated to have generated a total of 225 person-years of direct, on-farm employment. This consisted of 185 person-years of full-time employment (defined as a minimum of a 40 hour work week for 12 months of the year) and 40 person-years of additional employment as part-time labour (defined as all other work schedules).



Indirect employment generated off-farm is conservatively estimated at 250 person-years. 

## SITUATION OUTLOOK

The Ontario aquaculture industry exists in a somewhat precarious state of flux during the later half of the 90's decade. Although forecasting the future each year is an increasingly difficult task, it seems certain that the provincial industry will experience more volatility than ever before its 35 year history. Long-term sustainability requires a profitable industry that can co-exist in reasonable harmony within the broader social, environmental and economic communities in the province, and therein lies the greatest challenge for Ontario aquaculture<sup>3</sup>. We have written before about the short-lived 'window of opportunity' for our industry, and it is closing fast as we approach the new millennium. Let's take a look at some of the recent trends and factors which are affecting the growth of the aqua-farming business.

As always, trout production is the mainstay of the Ontario industry, and accounts for well over 90 % of all food-fish grown here. Expansion of cage farms, as well as land-based, pump-shore facilities will continue, and both of these systems will be much larger production units than ever built before in an attempt to achieve economies of scale. This fact will create a paradox of sorts, because while 'larger scale' can often reduce the unit cost of production, it can also exacerbate financial and technical problems, and confound issues related to regulatory and environmental compliance. As a consequence, these larger farms will encounter more stringent regulatory controls, and will evoke an increasingly hostile response from those other user-groups who claim their sole rights to the provincial water resources. The more extreme experiences of the British Columbia salmon farming industry with the anti-fish farming lobbyists are simply a prelude to a culture shift which is now happening in Ontario. Emerging conflicts in the North Channel region of Lake Huron between cage-fish farms and environmental groups are a testament to this fact. Trout prices show no sign of going up significantly, but the market-demand is still strong and could expand

with enhanced promotion and development of more novel product forms in an effort to encourage increased consumption. At least a few large companies are doing this, and their expansion plans for the next few years, coupled with a few other high probability farm starts, are the main reason for our 7,000 tonne growth prediction by the turn of the century.

There has been some moderate increase in production of Tilapia species, and this should help stabilize the industry somewhat, because diversification helps modulate the variations of a trout-only production system. As well, the costs and efficiencies of the various components used in recirculation technology are steadily improving, and this expands the possibilities for more semiclosed-system production of warm-water fish in Ontario. Indeed, there are at least 6 Tilapia farms either under construction, or already up and running, and they are exploiting the fresh, or live-fish, domestic market. Ontario still imports a considerable quantity of farm-raised Tilapia-as well as numerous other farmed-fish species-from the United States, so there is good import displacement potential as well. Although the economics of Tilapia production in recirculation systems here in Ontario are still being worked out, the technology is at least reasonably dependable, and commercial-duty components are now readily available. However, the wholesale price of Tilapia will likely fall below \$2.00 per pound (or lower) before the end of 1999, so the profitability of growing this species here is still questionable. Our advice to growers is to be cautiously optimistic about the long-term potential for the Tilapia farming sector in Ontario.

Some potential does exist for pilot-scale production of species like the Yellow perch and Yellow Walleye, but many technical and biological problems with broodstock development, early rearing, feeds and feeding systems, to name just a few, will prevent any significant growth in these areas — at least for the next five years.

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Arctic charr still holds great promise for the Ontario aquaculture industry in our opinion. The species is relatively easy to culture, performs well on salmonid-formula diets which are readily available, is compatible with our cool climate and water temperature regimens, has excellent market opportunities, and can be sold pigmented or non-pigmented. In spite of this, only a handful of farmers are growing charr, however, there are plans by a few larger operations to expand production. Certainly, other fish-farming sectors in Europe, Iceland, Eastern Canada and the Yukon are aggressively promoting charr, and the timing is right to further exploit the species here in Ontario.

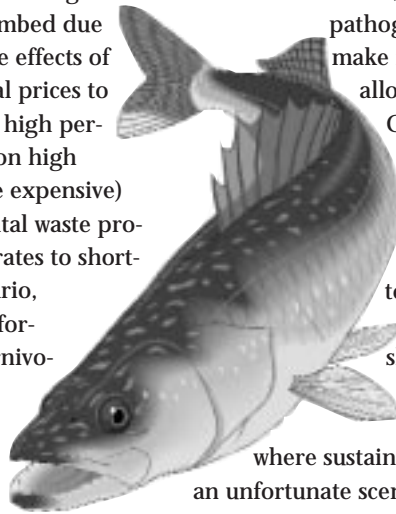
The variable costs for fish production remain elevated in Ontario, largely due to high feed, electricity and financing charges. In particular, feed prices have steadily climbed due to a variety of factors. Most notable of these are the effects of the recent El Nino weather system causing fish meal prices to rise sharply, as well as the demand for increasingly high performance fish diets. These diets are based mainly on high digestibility and high fat constituents (thus they are expensive) which are deemed necessary to reduce environmental waste production, while at the same time increasing growth rates to shorten production-cycle times. This is a catch-22 scenario, because these demands for unrealistically high-performance diets may soon put the per tonne cost of carnivorous fish feeds out of reach. At that point, it won't matter what the growth rates and waste production characteristics are!

Not surprisingly, marketplace challenges continue for Ontario producers. Imported products from the United States, Chile, and Atlantic Canada in particular, create stiff competition for prices in the North-eastern seaboard geographical region, especially for trout sales. Eastern Canada is poised to be a significant producer of trout in the near future, and will directly compete with Ontario in the well-established markets of Toronto, Montreal and Quebec City. Unless per capita consumption patterns increase, the wholesale price of trout can only be expected to decline slightly in the next couple of years. At

best, trout prices will stay the same.

Of all the challenges facing aquaculture, most frustrating for Ontario farms is the constantly shifting regulatory and legislative framework which governs our industry. In spite of years of promises by government to simplify, centralize and harmonize regulatory requirements across the province, farmers continue to struggle with an overwhelming burden of an often illogical, outdated, and constantly shifting set of compliance requirements that test the outer limits of even the most skillful, discipline experts among us. As an example, Ontario's own regulatory system prevents the domestic production of many species of freshwater fish which are freely imported live, in huge quantities, from fish farms in the United States. If we were really concerned about habitat destruction, escapement of exotics, or transfer of unique pathogens to our provincial watershed, it would make far more sense to simply ban the imports, and allow the controlled culture of these species in Ontario under license. Instead, we ban their culture here in Ontario, and then allow unfettered imports of live fish with no knowledge of the genetics, health status or final destination of these species, many of which are exotic to Ontario. Although more specific details are not really the purview of this particular fact-sheet, few would disagree that the regulatory situation in Ontario is out of control, and is not conducive to creating an environment where sustainable business development can occur. This is an unfortunate scenario for a province in need of economic development opportunities.

In conclusion, the immediate forecast is somewhat bleak for Ontario aquaculture, in spite of the fact that the province possesses many of the essential assets for sustainable industry growth. There is abundant availability of high quality water resources, easy and cheap access to large domestic and foreign markets, an exceptionally well developed industrial and research infrastructure, and a healthy, albeit wary, venture capital sector—all the prerequisites for a potentially vibrant aquaculture industry.



## References

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- 3 Moccia, R.D. and J. Hynes. 1998. Sustainability of Ontario's Aquaculture Industry: 1998 and Beyond. Canadian Aquaculture Directory, Contact Canada. Fred Haynes Publ., Georgetown, Ontario, Canada. p.29-31.



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