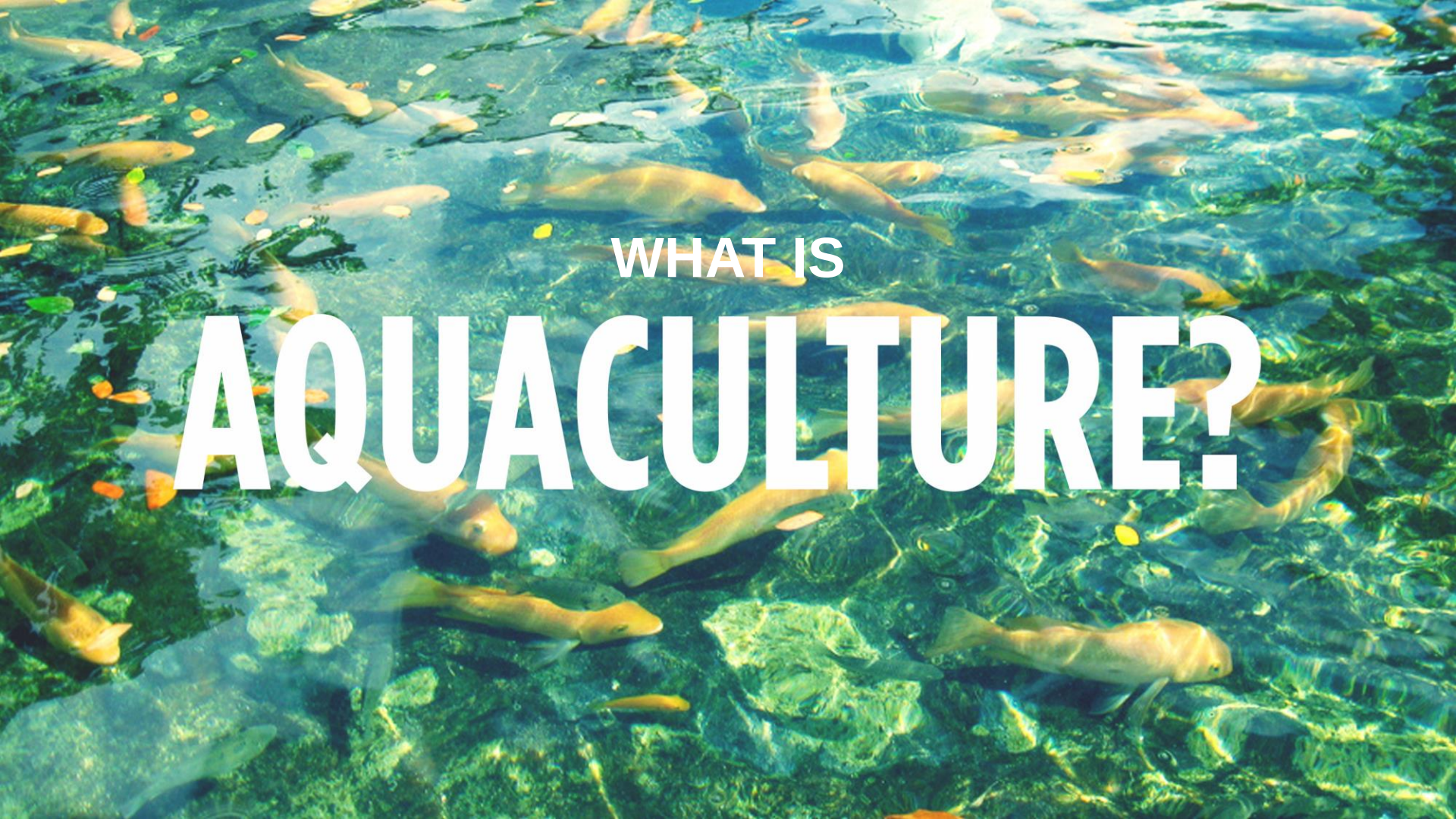

WHAT IS
AQUACULTURE?

AQUACULTURE

: is the **breeding**, **rearing** and **harvesting** of aquatic organisms including fish, shellfish, plants, algae, and other organisms in all types of water environments.

Aquaculture is used to:

1. Produce food & commercial products

2. Protect current wild stocks

IT'S FARMING IN WATER.

POTENTIAL OPPORTUNITY

The Aquaculture Industry continues to grow.

50% of seafood consumed worldwide is derived from aquaculture.

ECONOMIC & SOCIAL IMPACTS

SAFE, HEALTHY and **SUSTAINABLE** seafood products to **DOMESTIC** and **INTERNATIONAL** markets.

- **Economic and social impacts for residents, businesses, and communities.**

- **Increased population**
- **Increased housing starts**
- **New business activity**
- **New jobs**

AQUACULTURE IN CANADA

Employs

25,000

full time workers

$5.16 Billion

in economic activity

*Source: Canadian Aquaculture Industry Alliance

AQUACULTURE IN CANADA

191,416 tonnes
in production volume

Canada's largest aquaculture sectors:

- **Atlantic Salmon**
- **Mussels**
- **Trout**
- **Oysters**
- **Clams**

AQUACULTURE IN ONTARIO

- Increasingly popular.
- Under provincial legislation, more than 40 species of fish are now eligible to be raised.
- **Includes:** tilapia, four species of trout, arctic char, yellow perch and walleye.
- Spinoff activity includes: Processing, transportation, service & supply.

OPPORTUNITIES FOR ONTARIO

Many assets for aquaculture development:

- Availability of water resources
- Access to large domestic markets
- Established industry infrastructure
- Equipment, services, supplies and technical expertise

> *Ontarians have been farming sustainable seafood for more than 60 years.*
>
> *- Ontario Aquaculture Association*

ONTARIO STATISTICS

135%

Increase in annual seafood production since 2011 (2017)

$110M+

Economic contribution to Ontario's economy (Aquastats 2017)

ONTARIO STATISTICS

106 million+

Meals of farmed seafood grown in Ontario every year (8,000 tonnes)

*Source: Ontario Aquaculture Association

550+

Direct and indirect jobs in Ontario's aquaculture industry (2017)

SPECIES SELECTION

Trout
(Rainbow, Brook/Speckled, etc.)

Salmon
(Atlantic)

Lake Whitefish

Yellow Perch

Bass
(Largemouth, Smallmouth)

Walleye

Tilapia

Arctic Char

CONSIDERATIONS:

- **Rainbow trout** is the most commonly grown fish species in Ontario
- It has the most variety of fish feed readily available
- Each fish species needs a **specific fish feed** geared towards their own nutritional requirements
- Fish feed is the largest re-occurring expense

SEASONS

- Some species - if raised in ideal conditions - can grow to be marketable size **within one season**
- **Other species CANNOT**
- For Northwestern Ontario, single season is ideal to avoid maintaining operations throughout the winter.

PRODUCTION SYSTEMS

WATER-BASED
systems

LAND-BASED
systems

WATER-BASED (cages)

PROS:

- Less specialized equipment for water conditions (ex: temperature, oxygen, pH, particulates)
- Less effort for filtering and sediment removal (lake and water currents take care of it)
- Lower start-up costs
- Lower operational costs

WATER-BASED (cages)

CONS

- Limited to ice-free periods of year
- Limited to fish species present within existing lake to avoid introduction of new species.
- Potential to incur damages due to weather (wind, ice), human poachers and wildlife (bears / birds)
- Likelihood of an accidental release of fish is high
- Causes potential impacts to native waterbody (increase in sediments / nutrients)
- Large volume of water needed so moderate sized, deep lake required.
- Fish growth limited by natural water temperatures
- Government approvals and permitting can be difficult to obtain for natural lakes.
- Diseases and pests can spread rapidly due to close quarters and could carry over to native fish populations
- Operations are dependent on location of suitable lakes

PRODUCTION SYSTEMS

LAND-BASED (tanks & runs)

PROS

- Can be in operation year-round
- More species options (including exotic / not locally present)
- No accidental release expected
- Less likely prone to vandalism and damages due to weather
- Little to no damage to water bodies
- Little water needed and can reuse water when filtered
- Fish growth increased if water parameters are ideal for species
- Depending on type of system used, less permitting to start-up
- Has the ability to merge into with aquaponics (integrating aquaculture [raising fish] with hydroponics [growing plants])
- Can be set-up anywhere

PRODUCTION SYSTEMS

LAND-BASED (tanks & runs)

CONS

- Higher initial start-up costs
- Higher operational costs
- Specialized equipment for ideal water conditions (ex: temperature, oxygen, pH, particulates, circulation)
- Intense effort needed for filtering and sediment removal
- Diseases and pests can spread rapidly due to close quarters

POTENTIAL WATER SITES

WATER-BASED systems

*(of the lakes, this is the best option due to depth and size)

- **Barehead Lake**
Average Depth 5.3 m; Maximum Depth 18.1 m

- **Morley Lake**
Average Depth 2.6 m; Maximum Depth 4.9 m

- **Little Mose Lake**
Average Depth 1.2 m; Maximum Depth 2.3 m

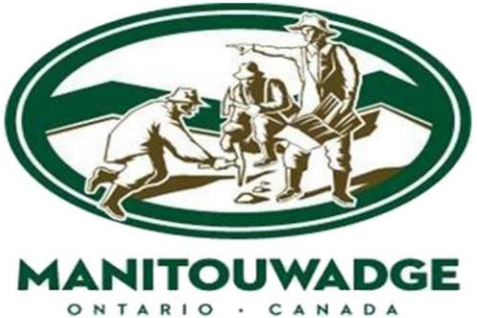
- **Kaginu Lake**
Average Depth 2.8 m; Maximum Depth 5.8 m

- **Black River**
Depths unknown presently

POTENTIAL LAND SITES

LAND-BASED systems

- **Vacant industrial/commercial land (new build)**
- **Existing industrial/commercial properties (retrofit)**


MANITOUWADGE
ONTARIO • CANADA


Manitouwadge
play in the extreme