



Ecological Risk of Bighead & Silver Carps

PROBABILITY OF
INTRODUCTION



MAGNITUDE OF
CONSEQUENCES

LIKELIHOODS OF

ARRIVAL

SURVIVAL

ESTABLISHMENT

SPREAD

ECOLOGICAL

OVERALL RISK



ARRIVAL

► The most likely entry point to the Great Lakes is via an existing physical connection with an already invaded waterbody nearby, specifically the **Chicago Area Waterway System (CAWS)**, into Lake Michigan.

► Other physical connections exist and were assessed, but are lower risk.

► Movement through commercial trade for food or bait was assessed, but this pathway has greater uncertainty.



Ontario MNR photo

PHYSICAL CONNECTIONS



LIBBY BRANCH
MINNESOTA

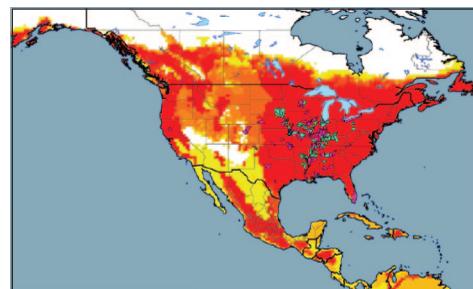


SURVIVAL

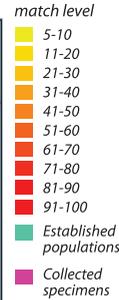
► Enough food and habitat exists throughout all five of the Great Lakes, especially Lake Erie, for these fishes to survive and overwinter.

► These species will consume bottom debris to survive, and will not compete with Zebra Mussels.

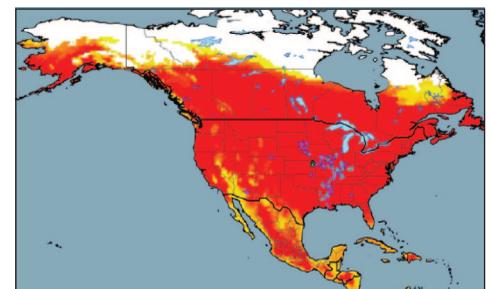
BIGHEAD CARP



Habitat match level



SILVER CARP



RED AREAS INDICATE A GREATER HABITAT MATCH LEVEL

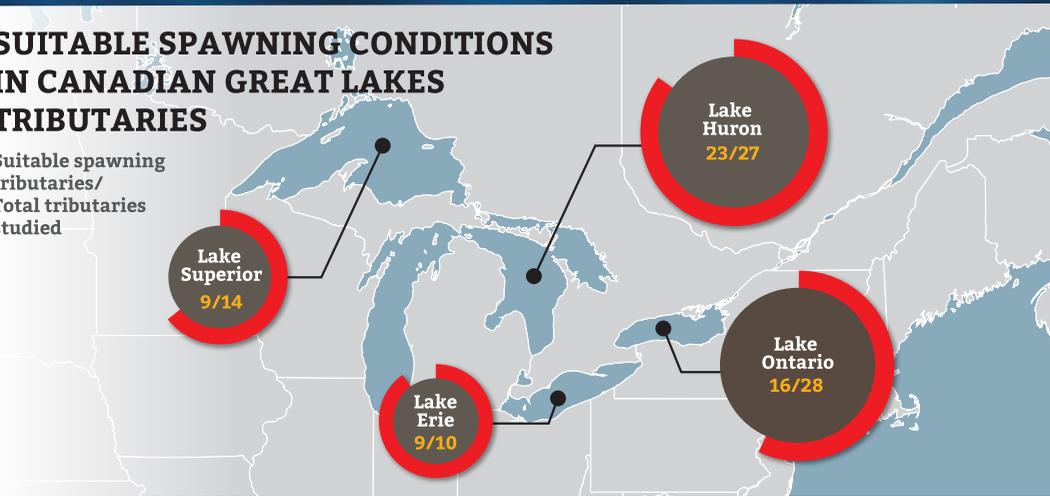


ESTABLISHMENT

- ▶ Suitable spawning conditions exist in up to 57 Canadian rivers.
- ▶ Extensive wetlands available for nursery habitat.
- ▶ Requires as few as ten adult females and a similar number of males for a >50% chance of annual successful spawning – likelihood of establishment is therefore approximately 100%.

SUITABLE SPAWNING CONDITIONS IN CANADIAN GREAT LAKES TRIBUTARIES

Suitable spawning tributaries/
Total tributaries studied



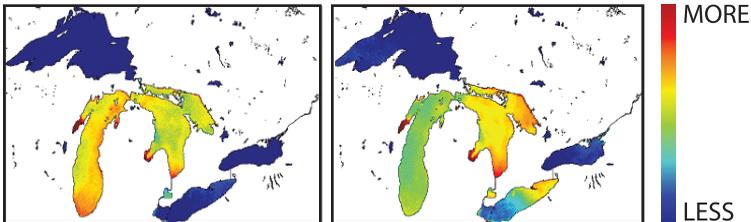
SPREAD

Following the introduction into a single lake, these species would be expected to spread to other lakes within 20 years. Spread will be more rapid for lakes Michigan, Huron, and Erie, and potentially Lake Superior; longer for Lake Ontario.

SPREAD IF INTRODUCED TO LAKE MICHIGAN:

5 YEARS

20 YEARS



ECOLOGICAL CONSEQUENCES

▶ Most of Canada's fishes rely on plankton at some point during their lifecycle. All of these species, such as Bigmouth Buffalo, would be forced to compete with Bighead and Silver carps for their primary food source. Bighead and Silver carps are extremely effective at consuming plankton and have a voracious appetite. This will significantly reduce the number of these native fishes in the Great Lakes region and will negatively impact the delicate food web.

Bigmouth Buffalo



© Joseph R. Tomelleri

▶ In turn, the reduction of these native fishes would reduce the number of predatory fishes (such as Yellow Perch and Walleye).

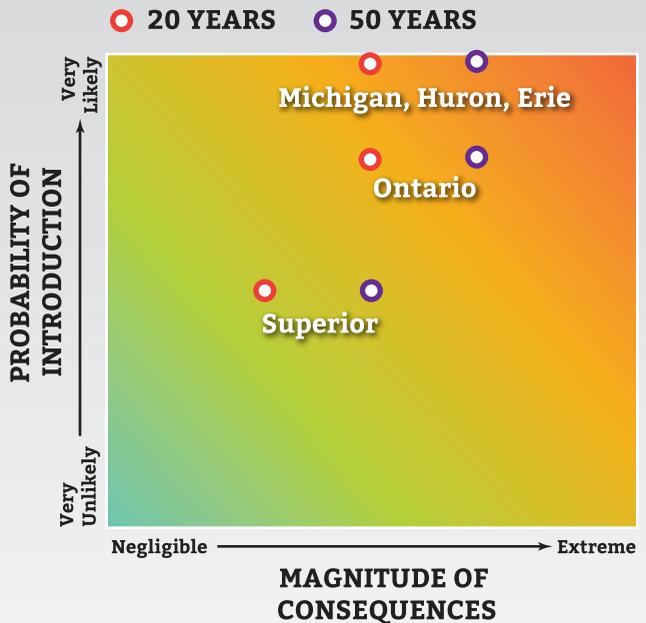
Walleye



Bonnie Ross, Ross Illustrations

OVERALL RISK

If no additional actions are taken, the overall ecological risk of Bighead and Silver carps to the Great Lakes is generally high, especially to the central lakes, with impacts increasing over time.



The impact of these species on the Great Lakes is directly related to establishment. Therefore, preventing establishment is critical. In Canada, we need to focus on preventing the introduction of these species into Canadian waters.

Cette publication est également disponible en français.

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