

## Introducing largemouth bass to control goldfish at Sifton Bog ESA

Reviewers: Nati Bergman, Sandy Levin, Gabor Sass, Chris Smart, Natalie St. Amour, Nina Zitani

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History of communications between EEPAC and UTRCA on this matter.

1. On March 20, 2014, Jason Belfry of UTRCA made a verbal presentation to EEPAC about potential introduction of predator to control goldfish.
2. EEPAC working group consisting of Dr. Nina Zitani, Dr. Chris Smart, prepared document (attached as Appendix 1). April 7, 2014
3. Jason Belfry (responded to EEPAC's comments Appendix 2) April 14, 2014

EEPAC would like to thank UTRCA for including our committee in this important discussion. As we noted earlier introduction of new species is a tricky business and things can develop in unexpected ways. The correspondence clearly shows that UTRCA has done some good fact checking about the introduction of largemouth bass as a control of other populations of fish. What is clear about some of the reports and studies cited is that largemouth bass can be used as a control on other fish effectively BUT not in a small ombrotrophic bog. The big question is: What will the fish feed on when the goldfish have been all consumed? Or if a reproducing population is introduced what new ecological effect will the feeding of young fish have? This is where opportunistic feeding behavior enters the picture and using just the sources sent to us by UTRCA, the picture is not great.

[http://animaldiversity.ummz.umich.edu/accounts/Micropterus\\_salmoides/](http://animaldiversity.ummz.umich.edu/accounts/Micropterus_salmoides/)

“Immature *Micropterus salmoides* feed on zooplankton and aquatic insects. As they grow their diet shifts to crayfish and other fish species. Sunfish are the food of choice for most adult largemouth bass. (Olsen and Young, 2003)”

### “5.1.4 Wildlife

The reputation that largemouth bass consume very large prey may be exaggerated. The size of their gape limits the size of the prey they are able to consume (Hill and Cichra 2005). Largemouth bass have been reported to consume mussels, snails, frogs, small rodents such as mice, voles and rats, salamanders, small turtles, ducklings, snakes, and small muskrat (Hill and Cichra 2005). Many of these food items are mimicked with bass fishing lures. However, the ability of bass to influence wildlife communities is questionable, as most of this kind of feeding is highly opportunistic.”

EEPAC recommends to UTRCA and city staff:

**Recommendation 1:** EEPAC does not support the introduction of largemouth bass, *Micropterus salmoides*, a known invasive species, to Sifton Bog at this time because there is not enough evidence to show that largemouth bass will itself not cause significant damage on the ecology of the pond, especially considering opportunistic predation.

**Recommendation 2:** If UTRCA, still ends up switching to this type of invasive control, EEPAC recommends the introduction of only a non-reproducing population.

**Recommendation 3:** In order to select the best management strategy a well-referenced table of pros and cons should be compiled to select best method.

**Recommendation 4:** All residents living next to Sifton Bog ESA should receive the newly updated Living next to Natural Areas brochure.

**Recommendation 5:** This item on goldfish control should be referred to Sifton Bog Monitoring Committee.

#### **Appendix 1. EEPAC Recommendations to UTRCA 7 April 2014**

##### **RE: Introducing largemouth bass to control goldfish at Sifton Bog ESA**

###### **Background:**

At the March EEPAC meeting we were given a short verbal presentation by Jason Belfry of UTRCA on their proposal to control goldfish in Sifton Bog ESA. Currently UTRCA engages in electrofishing several times a year to reduce the numbers of breeding adult goldfish. Their new proposal consists of releasing 2-3 adult largemouth bass into the pond in an attempt to reduce the population of goldfish via predation by largemouth bass. We were informed that there is no scientific precedent to this method of goldfish control, and UTRCA has no scientific literature to support the efficacy of this method.

###### **EEPAC Comments:**

Although largemouth bass, *Micropterus salmoides*, is native to the Great Lakes region, EEPAC assumes this species is not native/naturally occurring in Sifton Bog.

A quick online literature search on *Micropterus salmoides* reveals that this species is listed on the Global Invasive Species Database (<http://www.issg.org/database/species/ecology.asp?si=94&fr=1&sts=&lang=EN>), a database managed by the Invasive Species Specialist Group of the International Union for the Conservation of Nature (IUCN). *Micropterus salmoides* has been nominated as among 100 of the “World’s Worst” invaders. According to this database, “Introduced bass usually affect populations of small native fishes through predation, sometimes resulting in the decline or extinction of such species; studies have shown that largemouth bass are capable of displacing

native species, even predatory species such as northern pike (Minckley 1973 in Fuller 1999; USGS-CERC 2004; see webpage for full citations).

Additionally it states, "Largemouth bass are highly adaptable fish..." and "Food habits of *Micropterus salmoides* are very diverse..."

New Zealand is well known for numerous examples of disastrous introductions of vertebrate biocontrol agents, and there is a wealth of relevant information available easily online, e.g., <http://www.doc.govt.nz/conservation/threats-and-impacts/animal-pests/animal-pests-a-z/> (see "Rabbits" and "Fish" in particular).

#### **EEPAC Recommendations:**

1. EEPAC does not support the introduction of largemouth bass, *Micropterus salmoides*, a known invasive species, to Sifton Bog at this time.
2. EEPAC strongly encourages the continued use of current control measures (electrofishing) until further study determines the next steps (see #3).
3. It does not appear that UTRCA has done their homework on the topic, and EEPAC strongly encourages a detailed study to determine the scope and extent of the problem, including a literature review, and consideration of all options including more frequent electrofishing and other known goldfish control measures e.g., rotenone (<http://www.fisheriessociety.org/rotenone/>; [http://www.dfw.state.or.us/fish/local\\_fisheries/diamond\\_lake/FAQs.asp](http://www.dfw.state.or.us/fish/local_fisheries/diamond_lake/FAQs.asp)).
4. UTRCA is encouraged to contact experts for advice, e.g., Steve Sammons, Auburn University: (<http://www.issg.org/database/species/contacts.asp?si=94&fr=1&sts=&lang=EN>), and Bryan Neff, University of Western Ontario: <http://www.uwo.ca/biology/directory/faculty/neff.html>.
5. With the upcoming outdoor season upon us, EEPAC strongly recommends UTRCA engage in activities that educate the public about the topic of invasive goldfish and the harm these exotic fish are causing in Sifton Bog.

/End

#### **Appendix 2 UTRCA Response to EEPAC's Recommendations to UTRCA 7, April 2014 (April 15, 2014)**

RE: Introducing largemouth bass to control goldfish at Sifton Bog ESA

John and I have had a chance to review EEPAC's response to the proposed largemouth bass introduction. Comments have been made and are in the attached PDF. Below are some links that may be useful for more understanding about the biology and use of bass to eliminate goldfish.

*Population size, growth and control of exotic goldfish in a small impoundment: Remediation Effort*

<http://www.d.umn.edu/~wint0190/comp%20page/Gold%20Paper/goldpaper2.2%20FD%20web.htm>

*Removal of undesirable fish species in warm water ponds-* see page pg 2

<http://ces3.ca.uky.edu/westkentuckyaquaculture/info/removal%20of%20undesirable.pdf>

*Biological Synopsis of Largemouth Bass*

<http://www.dfo-mpo.gc.ca/Library/337843.pdf>

Jason

**Responses by UTRCA to Comments from EEPAC**

1. 2-3 DOZEN representing several year classes.
2. Goldfish are being controlled by this method unintentionally where the two species coexist. Example: Westminster Ponds.
3. Although largemouth bass introduction might harm sensitive fish communities, fish samples have yielded no other fish species from Sifton Bog. Unfortunately we have no fish data from Sifton prior to goldfish introduction. We do not know if there was no fish community present or a native fish community that was decimated by the goldfish introduction, a phenomena observed elsewhere (J. Schwindt, UTRCA, personal communication).
4. This is the result we are after. No native fish are present. The bass introduction will result in a decline or elimination of the only species present; goldfish. This comment supports the rationale to introduce largemouth bass.
5. There are also many cases of successful biocontrol introductions. The bog is a closed water system, there is no issue of the bass spreading anywhere else. The bass may suffer from winter mortality and this would be an ongoing project with bass introductions and electrofishing in future years until some level of goldfish population control is achieved, It is hoped that with goldfish control, a number of other native fish species could be introduced to develop a native fish community found to be self-sustaining in other similar habitats. EX central mudminnow brook stickleback, cyprinids - northern redbelly dace, golden shiner, fathead minnow centrarchids - pumpkinseed, longear sunfish.
6. Largemouth bass are an invasive species to sensitive native fish communities. The bog does not have a fish community. Only goldfish are present. Therefore they would only be invasive on the goldfish population. Which is the objective.
7. Electrofishing is to be used in conjunction with the introduction.
8. This option has already been researched. Too harmful to the other biotic communities in the bog.
9. UTRCA has corresponded with experts internal and external, that have local knowledge of the bog and the biological interactions between these fish species. The MNR has been supportive with the process to initiate this project.
10. The UTRCA educates the public about the invasive goldfish at Sifton Bog and the other ESA's regularly.
11. This project has been thoroughly researched by the UTRCA. These comments lead me to believe that the objectives, parameters and biological interactions in regards to this project and the Sifton Bog are not fully understood.

Jason Belfry

Land Management Technician 1424 Clarke Road London, Ontario, N5V 5B9 519.451.2800 Ext.

280 Cell: 519.521.2651 | Fax: 519.451.1188 belfryj@thamesriver.on.ca | www.thamesriver.on.ca