



# Eastern Georgian Bay Stewardship Council

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## **Assessment of in-situ Walleye Culture in a Tadenac Bay Embayment of Eastern Georgian Bay**

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Eric McIntyre, Coordinator  
Eastern Georgian Bay Stewardship Council

Cordon net extending across Tadenac Bay embayment used for in-situ walleye culture in 2009



Karl Schiefer Photo

## **Executive Summary**

During the summer of 2009, an experimental in-situ, walleye culture project was conducted at Tadenac Bay of eastern Georgian Bay. Near-hatching, walleye eggs were placed in a cordoned-off embayment deemed to have preferable features to raise walleye to the summer fingerling stage. No further or artificial enhancement to the embayment was made. Walleye y-o-y abundance in the embayment was conducted by visual observations from snorkelling on two occasions. Only two y-o-y walleye were observed, strongly suggesting walleye abundance was very low.

## **Introduction:**

The Eastern Georgian Bay Stewardship Council (EGBSC) and numerous supporting partners are engaged in rehabilitating walleye populations at the Moon River, Tadenac Bay and Go Home Bay of Eastern Georgian Bay. An integral component of these efforts is rehabilitative plantings of walleye to bolster spawning populations to increase reproduction and recruitment with the ultimate goal of providing a healthy, natural, self-sustaining population.

The Ministry of Natural Resources prohibits eggs collected from waters infested with VHS (Viral Hemorrhagic Septicemia) from entering the Provincial Fish Culture system. Consequently, walleye are not available from the MNR to assist with rehabilitative stocking at the aforementioned locations. As a consequence, the EGBSC has had to seek alternate means of securing walleye for rehabilitative plantings.

On an experimental basis, the EGBSC has partnered with the Tadenac Fishing Club to cordon off an embayment within their property boundary for the purpose of raising walleye. These walleye are subsequently released into Tadenac Bay by removing the cordon wall that consists of a fine mesh seine net.

Raising walleye in-situ, poses a number of significant problems. Due to concerns related to eutrophication, raised by the Ministry of Natural Resources, we were unable to provide nutrient enrichment to the embayment, thereby considerably reducing its productive capability. Also, the dense emergent and submergent vegetation in the embayment makes it difficult to assess walleye abundance as conditions are unsuitable for seine netting. In this inaugural year, we attempted assessment by snorkelling and visual observation.

Tadenac Bay offers a unique and fortuitous opportunity to conduct this experimental management project for the following reasons:

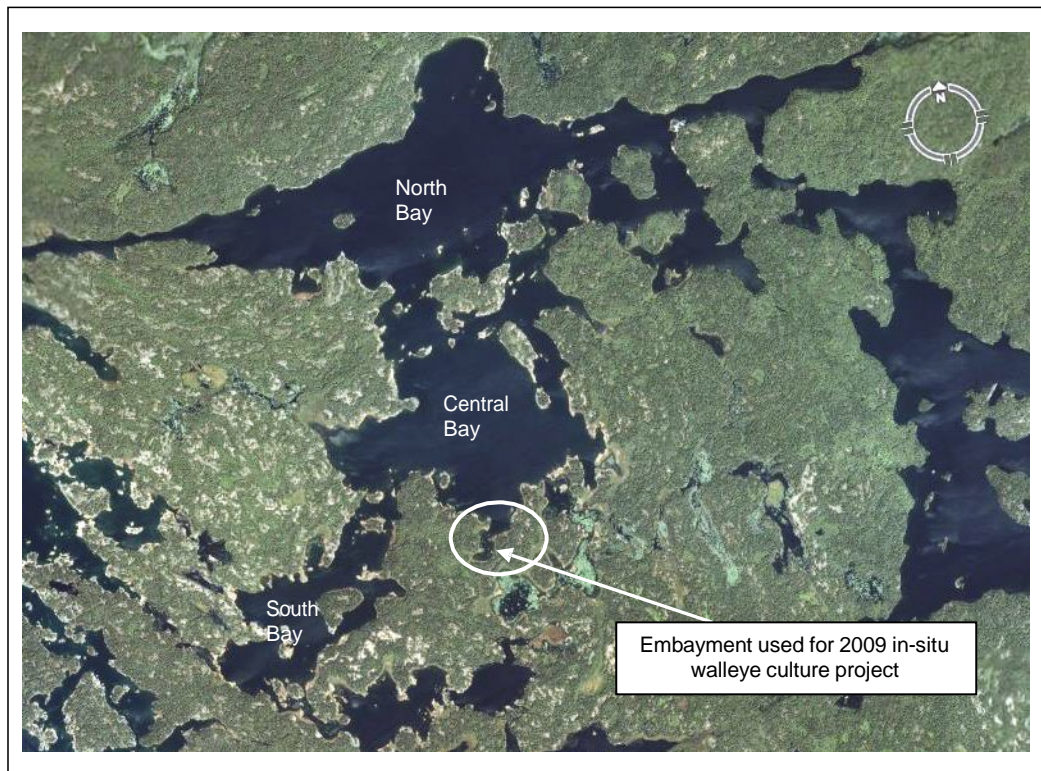
1. Historical anecdotal reports indicate that walleye were once present in Tadenac Bay. An informal management plan consisting of spawning habitat rehabilitation (conducted in 2007), walleye fry plantings (2006 and 2007) and walleye harvest restrictions are in place by the Tadenac Fishing Club. Hence, using embayments in Tadenac Bay as an experimental culture technique will contribute towards the walleye re-introduction plans of the Tadenac Club.
2. Potential embayment sites have been previously assessed for suitability of raising walleye and were deemed to have high potential (McIntyre, 2008).
3. Notwithstanding a direct and navigable connection to Georgian Bay, the waters of Tadenac Bay are private and public angling is excluded. Club members assiduously abide by self-imposed fishing regulations. Hence, the opportunity exists for no walleye being harvested in Tadenac Bay while rehabilitation efforts are underway. (Walleye that exit Tadenac Bay to the open waters of Georgian Bay are subject to harvest in accordance with Fisheries Management Zone 14 fishing regulations.)
4. Tadenac club members are subject to 100% reporting of angling activities. Hence, a unique opportunity exists for intensive and accurate creel monitoring of rehabilitation progress. (Admittedly, this monitoring is somewhat delayed as walleye have to enter the sport fishery before being subject to monitoring activities.)

Should assessment of this experimental management technique indicate it is a viable rehabilitation tool, it may have application to other areas of eastern Georgian Bay requiring walleye rehabilitation.

## Methods:

The cordoned off bay utilized for this experimental in-situ walleye culture project was located at the southern extremity of the central bay of Tadenac Bay (Figure 1)

**Figure 1. Embayment location in Central Bay of Tadenac Bay**



Two assessment methods are contemplated for evaluating success of this experimental rehabilitation technique:

1. Immediate, short-term assessment of young-of-the-year (y-o-y) survival success. In 2009 this was determined by snorkelling and visual observation of walleye in the embayment area.
2. Long-term assessment using creel data generated by Tadenac Club members.

This report is concerned only with the 2009 short-term assessment of walleye y-o-y survival.

On May 12, 2009 approximately 150,000 walleye eggs (48 ounces) were stocked into the cordoned off embayment in Tadenac Bay (Figure 1). Survival assessment was conducted by snorkelling within the embayment area on two occasions: July 1 and August 27, 2009. On each occasion, snorkelling was conducted for 20 – 30 minutes.

On July 1 snorkelling was conducted by Eric McIntyre and on August 27 by Karl Schiefer and Eric McIntyre.

## Results:

On July 1, 2009, during a 20 – 30 minute search the following fish were observed in the embayment area:

- Yellow Perch – 4 or 5
- Pumpkinseed – 4 or 5
- Largemouth bass – 3 – 4 (y-o-y)
- Shiners (Notropis sp.) – 6 – 10
- No walleye were sighted.

Conditions for observations at the time were poor. The water was murky with only about 5-6 feet of visibility.

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On August 27, a similar 20 – 30 minute search was conducted, but this time by two observers. Their observations:

1 <sup>st</sup> observer (Karl Schiefer): <ul style="list-style-type: none"><li>• Yellow perch – ‘common’</li><li>• Pumpkinseed – ‘abundant’</li><li>• Largemouth bass – 2 y-o-y broods</li><li>• 2-3 cyprinids; one a dace</li><li>• Walleye – 2 (y-o-y)</li></ul>	2 <sup>nd</sup> observer (Eric McIntyre) <ul style="list-style-type: none"><li>• Approx. 25 yellow perch (most small y-o-y)</li><li>• Pumpkinseed – approx. 15 – 20</li><li>• Largemouth bass – 2 (y-o-y)</li><li>• No walleye</li></ul>
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Visibility was surprisingly much better on August 27 making it easier to observe fish present.

Aquatic vegetation present in the embayment area included: pond-lily (*Nymphaea odorata*), fern pondweed (*Potamogeton robbinsii*), common waterweed (*Elodea Canadensis*), coontail (*Ceratophyllum demersum*), wild celery (*Vallisneria americana*) and pipewort (*Eriocaulon septangulare*). Numerous other aquatic plants were present, but the foregoing were most abundant.

## Discussion:

We concede that visual observation is a rather subjective method of assessing y-o-y walleye abundance. However, the fact that only two y-o-y walleye were sighted in approximately 1.5 man-hours of snorkelling strongly suggests walleye abundance in the embayment was quite low.

This seemingly low abundance of in-situ raised walleye suggests this experimental project has not made a significant contribution to the walleye rehabilitation effort in Tadenac Bay. Nonetheless, we think it would be premature to abandon this experimental rehabilitation technique and believe several improvements can be made for next year. These include:

- Stock walleye as fry as opposed to eyed-eggs believed to be near the emergent fry stage. (I.e. – we are unsure how many eggs we stocked actually hatched.)
- Seek approval to do some nutrient enrichment of embayments to ensure adequate zooplankton food availability for stocked fry.
- During the early stages post fry hatch, use a more effective method to cordon off the embayment such as silt screen. Larger mesh seine nets would be satisfactory after walleye have grown to a size where seine nets adequately contain them.
- Utilize alternate embayments that have deeper water preferred by walleye.
- Consider using fyke nets as an objective method to assess walleye y-o-y abundance.

## Acknowledgements:

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- Bill McRobb for the walleye egg collection used for this project
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- Gary Patineau for installation of the cordon nets and stocking of walleye eggs
- Karl Schiefer and Eric McIntyre for walleye y-o-y assessment efforts
- Tadenac Fishing Club for making their waters available to conduct this experimental management project.

## Literature Cited:

McIntyre, E. 2009. An assessment of the use of Tadenac Bay of Eastern Georgian Bay for raising walleye fingerlings. Unpublished EGBSC report. 5 p.