St. Marys River Area of Concern:

Bar River Habitat Project – 2013 Follow-up

November 2013

Environment Canada
Canadian Wildlife Service

Environnement Canada
Service canadien de la faune

Introduction

The St. Marys River was identified as an Area of Concern (AOC) in 1985 by the International Joint Commission. As a designated AOC, the St. Marys River requires remedial actions to address beneficial use impairments and to work toward delisting the St. Marys River as an AOC (Environment Canada et al. 2002). The Bar River is a tributary to the St. Marys River (via Lake George), located east of Sault Ste. Marie (Figure 1). The Bar River is an important stream for spawning walleye, and is affected by agricultural and land use practices that degraded its habitat quality. As such, the Bar River Habitat Project was initiated circa 1998 to address these concerns. Specifically, rehabilitation efforts were focused on improving stream bank and riparian zone conditions in the 6.9 km of stream bank that lacked riparian vegetation other than grass (Geiling 1998).

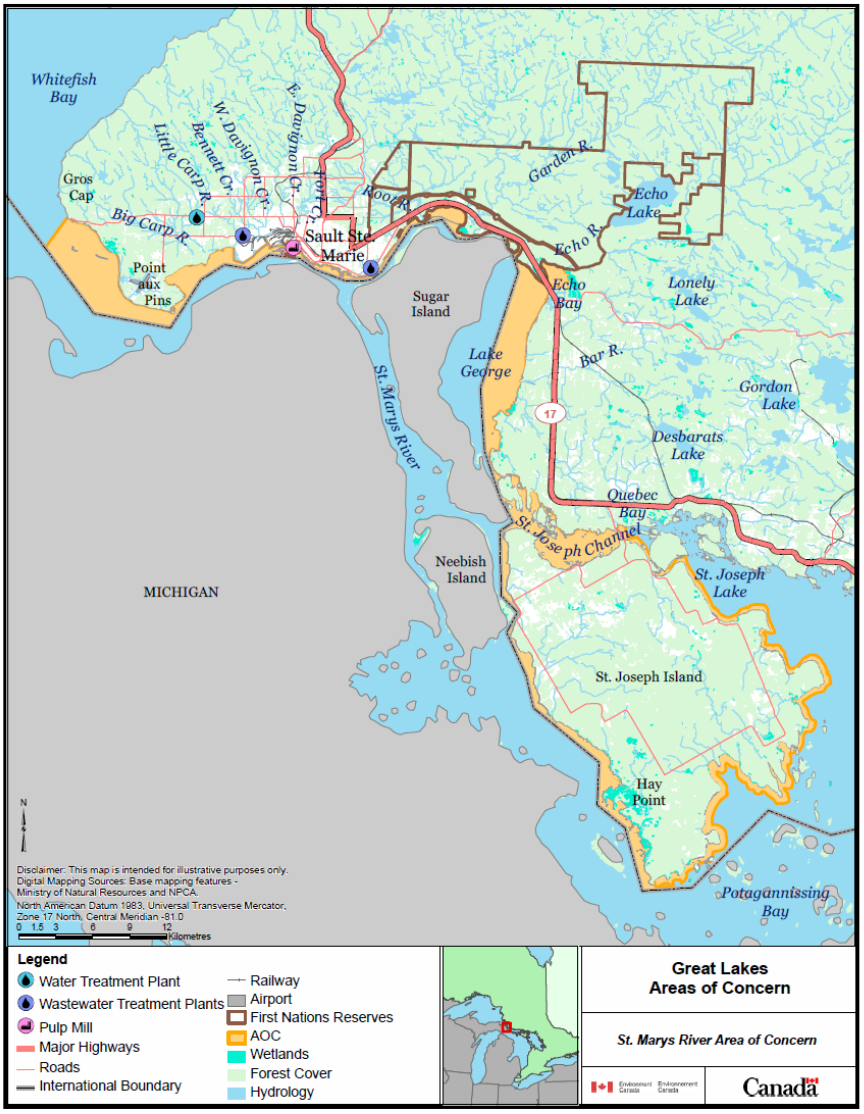

Figure 1: Boundary of the Canadian side of the St. Marys River Area of Concern. The Bar River is located east of Lake George.

The Bar River Habitat Project was implemented by the following organizations: Environment Canada, the Ontario Ministry of the Environment, the Ontario Ministry of Natural Resources, the Ontario Ministry of Agriculture, Food and Rural Affairs, and Agriculture and Agri-Food Canada (Environment Canada et al. 2002).

Geiling (1998) estimated that approximately 6900 white cedar trees would need to be planted at the river bank, with one tree planted every two metres at two rows deep. White cedar was chosen as it is native to the area and it can survive in wet conditions. Exclusionary fencing was also recommended to exclude livestock where they had access to the river bank. Re-profiling previously straightened channels and stabilization with riprap and tree planting was also identified as potential additional restoration work (Geiling 1998).

Livestock fencing and riparian plantings were undertaken circa 2000 (Neave). In 2010, habitat protection and restoration work in the Bar River was listed as completed, although without a specific completion date (Environment Canada and the Ontario Ministry of the Environment 2011). Bar River Road (Figure 2, location 1), Watson Road (Figure 2, location 2), and Mill Creek (Figure 2, location 3) are identified planting sites (Neave). It should be noted that these three planting locations serve as only a sample of the restoration activities undertaken and should not be considered as encompassing the entirety of the Bar River Habitat Project.

Figure 2: Locations of Bar River Road (1), Watson Road (2), and Mill Creek (3) restoration sites.

Site Visit

Canadian Wildlife Service – Ontario (CWS-ON) conducted a follow-up site visit on July 10th, 2013 to perform an informal assessment of the Bar River Habitat Project. The sites of Bar River Road, Watson

Road, and Mill Creek were visited via canoe and on foot to document livestock fencing and riparian planting success.

1. Bar River Road

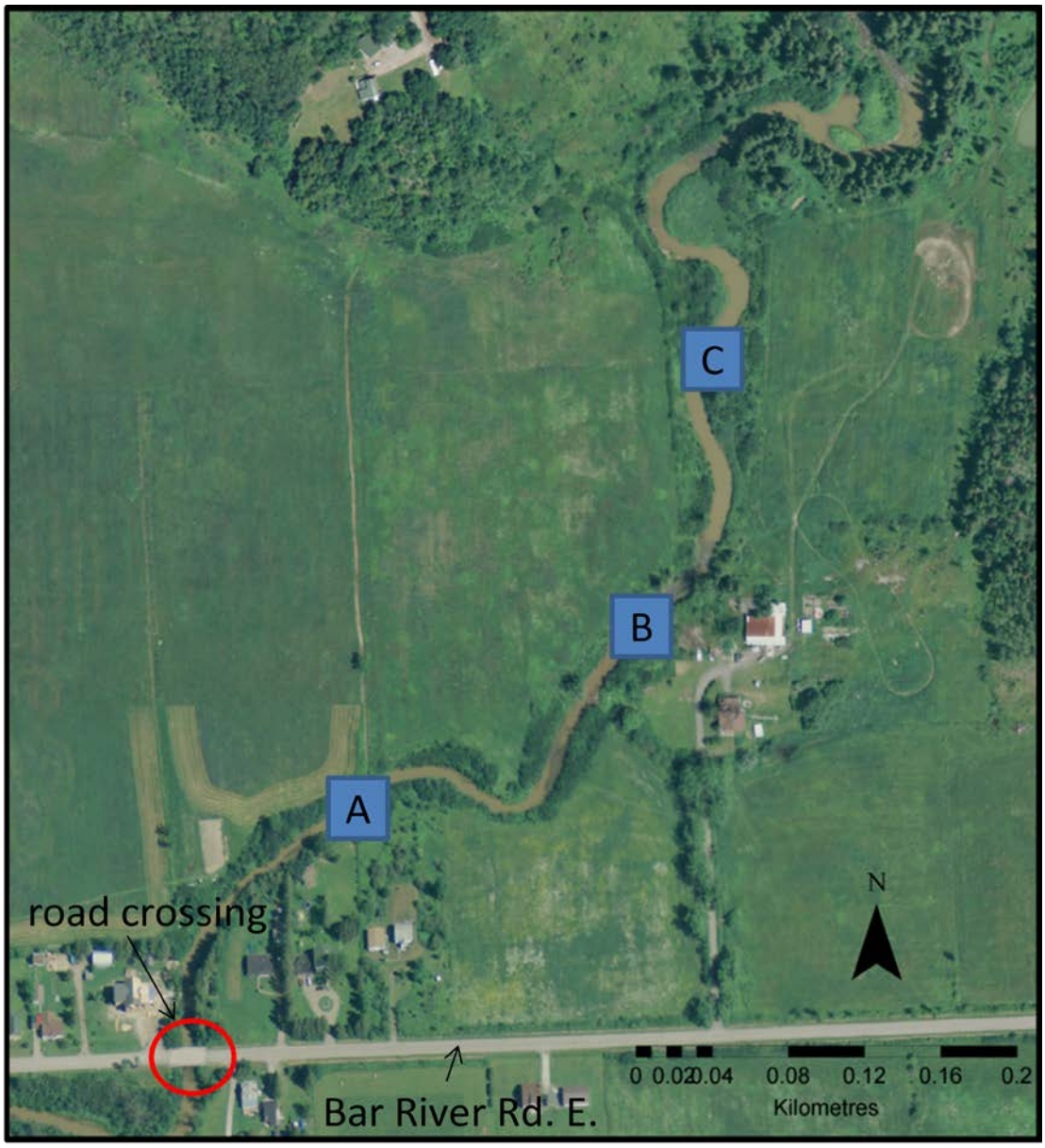

Figure 3: Bar River Road site. Sub-locations along the Bar River located at A, B, and C.

The Bar River Road site plantings were 400-600 metres upstream of the road crossing (Neave; Figure 3). During the site visit on July 10th, 2013, the water at the Bar River Road site was assessed visually; turbidity was significantly high at sub-location A, but was clearer at sub-locations B and C. Emergent and submerged plant species included *Equisetum fluviatile* (water horsetail), *Potamogeton gramineus* (variableleaf pondweed), *Sagittaria latifolia* (broadleaf arrowhead), *Iris versicolor* (harlequin blueflag),

Phalaris arundinacea (reed canarygrass), *Typha* sp. (cattail), and *Sparganium fluctuans* (floating burreed). Restoration activities here consisted of bank stabilization by means of riparian plantings. Some banks in this stretch of the river were observed to be exposed and susceptible to erosion (Figure 4, approximate sub-location A), but the overall area of the river surveyed remained well-vegetated (Figure 5).

Figure 4 (left) demonstrating certain areas prone to erosion. Figure 5 (right) shows the highly vegetated areas of the river overall.

Areas were observed where fencing was installed to restrict livestock from accessing the river (Figure 6, approximate sub-location B). However, it is not known if this fencing was part of the Bar River Habitat Project or independently installed by the landowners.

Figure 6: Livestock restriction fencing along riverbank.

Past riparian plantings were observed at the riverbank near sub-location C. The bank appeared to be well-vegetated with high plant survival rates. Plantings appeared to be in layers to accommodate the

steep bank, with white cedar trees also observed in this area (Figures 7, 8).

Figure 7: Layered riparian planting at riverbank with tree planting observed farther upland.

Figure 8: Layered riparian planting observed at riverbank.

2. Watson Road

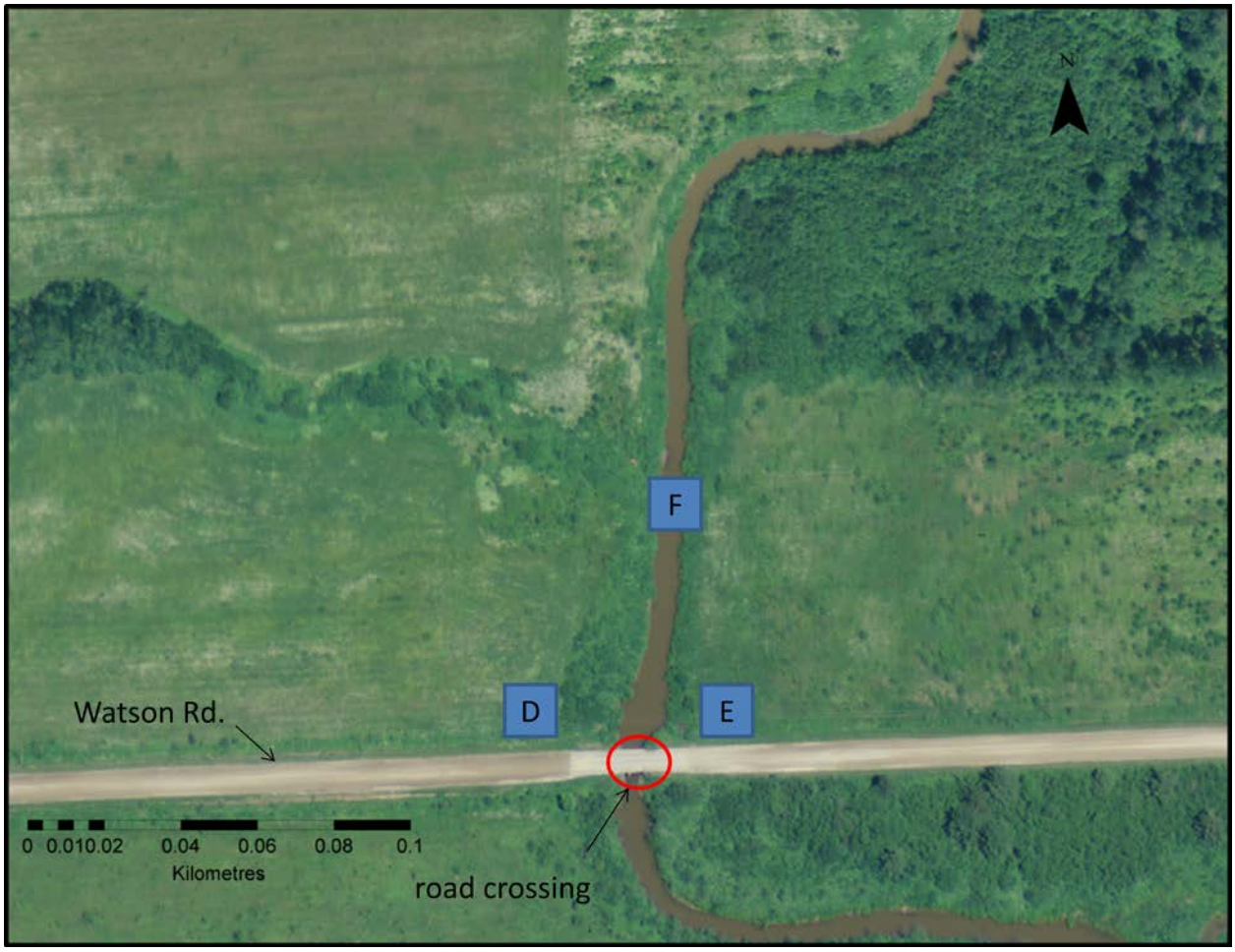

Figure 9: Sub-locations D, E, F at the Watson Road restoration site

The Watson Road site plantings started from the road crossing and continued to approximately 150 m upstream of the road crossing on the Bar River (Neave; Figure 9). The site assessment was conducted on foot. A herd of cattle was observed to the west of the Bar River at the Watson Road location (sub-location D, Figure 10). Fencing was observed on both sides of the river (sub-locations D and E; Figure 11).

Figure 10 (left): cattle herd observed at sub-location D. Figure 11 (right): livestock fencing observed on both sides of the river.

At sub-location F, the livestock restriction fencing failed in certain areas. Evidence of cattle disturbance along the riverbank and subsequent access to the watercourse were observed on both sides of the river (Figures 12, 13, and 14).

Figure 12 (upper left) and Figure 13 (upper right): Cattle disturbance of the bank on the west side of the Watson Road location. Figure 14 (bottom): Cattle disturbance of the bank on the east side.

Riparian plantings observed above the riverbank appeared to be in good condition (Figures 15, 16).

Figure 15 (left): Riparian plantings facing south of the Watson Road restoration site. Figure 16 (right): Riparian plantings facing north.

3. Mill Creek

The Mill Creek site was explored via canoe and on foot. Riparian planting was conducted approximately 300 meters upstream of the road crossing at Watson Road (Neave; Figure 17).

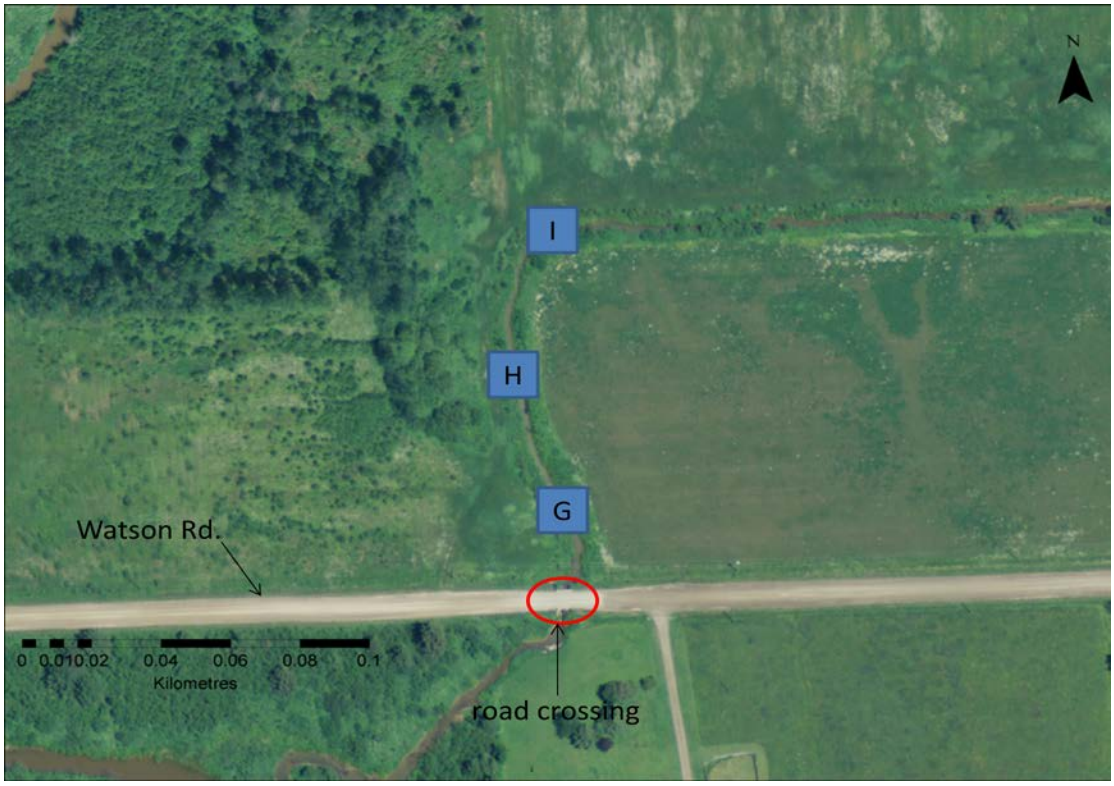

Figure 17: Mill Creek restoration site with sub-locations G, H, and I.

Riparian planting on both sides of the creek was evident along the creek and appeared to be in good condition (Figure 18, sub-location G).

Figure 18: Well-vegetated riparian zone facing north at Mill Creek.

Farther upstream (sub-location H), there were some areas of minor erosion noted (Figure 19), but the creek remained well-vegetated throughout (Figure 20).


Figure 19 (left): Areas of minor erosion at sub-location H. Figure 20 (right): Overall riverbank remains well-vegetated at sub-location H.

At sub-location I, various tree plantings were observed higher on the bank. Some of these upland trees appeared dead or in poor condition at the time of the site visit (Figure 21); nonetheless, the vegetation at the water's edge remained in good condition (Figure 22).


Figure 21 (left): Upland trees at sub-location I; some trees appeared brown during mid-summer. Figure 22 (right): Riparian vegetation at riverbank sub-location I remained in good condition.

Conclusions

This study was a reconnaissance of current conditions in the Bar River and not a comprehensive pre-, post-rehabilitation study. Overall, the Bar River Habitat Project appears to have been successful in improving stream bank and riparian zone conditions through plantings and livestock restriction to the St. Marys River. The site visit was conducted approximately 13 years after implementation, and although this was a qualitative assessment, the project's positive effects in the Bar River are evident years later. The stream bank remains well-vegetated and continues to stabilize the riverbank, and fencing appears successful in reducing the instances of livestock access to the river. Although areas of livestock restriction failure and riparian planting failure (e.g., tree death) were observed, these effects can be expected over the passage of time.

The Bar River Habitat Project was a successful, community-driven project. Observations suggest the project had a lasting, positive effect on the St. Marys River years after its implementation, and can be seen as a positive step in helping delist the St. Marys River as an AOC.

References:

Environment Canada and the Ontario Ministry of the Environment. St. Marys River Area of Concern, Canadian Section: Status of Beneficial Use Impairments, September 2010. 2011.

Environment Canada, United States Environmental Protection Agency, Ontario Ministry of the Environment, and the Michigan Department of Environmental Quality. St. Marys River Remedial Action Plan – Stage 2: Remedial Strategies for Ecosystem Restoration. December 2002.

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