White River Fisheries UPDATE

Lake Sturgeon of the White River **February 2013**

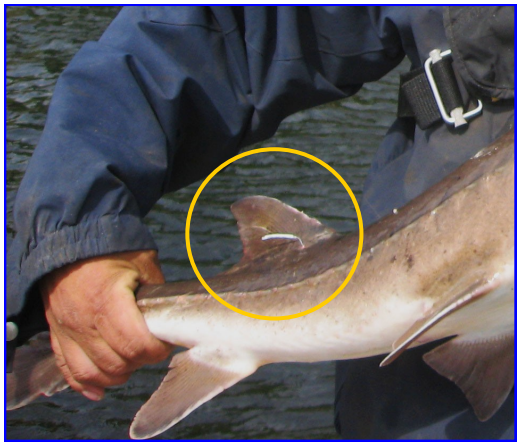
INTRODUCTION

The Lake Sturgeon rehabilitation plan for Lake Superior identifies the following assessment and research priorities for Lake Superior:

- develop an index of abundance for spawning tributaries,
- estimate historic and present status of Lake Sturgeon populations and,
- determine habitat requirements and movement patterns for all life stages.

The White River represents one of eleven tributaries in Lake Superior that continue to support Lake Sturgeon reproduction, however little is known about the status and movements of this population. The purpose of this study was to evaluate the population status and identify the movement patterns of the White River Lake Sturgeon.

This was the second consecutive year of spawning assessments at the White River, which have been funded by the province's Species at Risk Stewardship Funding. Partners for this project include; Pic River First Nation, Pic Mobert First Nation, Ontario Ministry of Natural Resources, Fisheries and Oceans Canada, and Parks Canada.



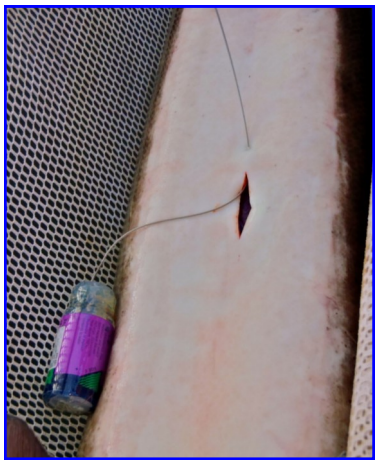
A Floy tag inserted to the side of the Lake Sturgeon's dorsal fin. These tags, along with the PIT tags, are used to identify and track future recaptures.

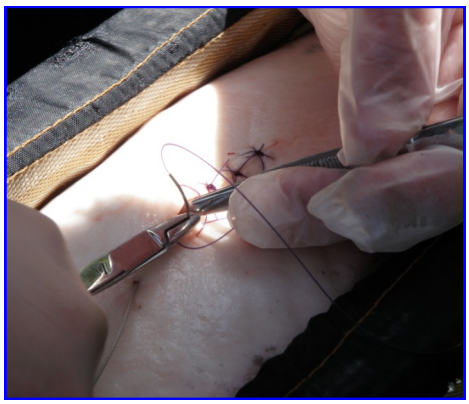
METHODS

Lake Sturgeon were captured using nylon gill nets that were set throughout the White River. Mesh sizes ranged from 8" to 12" and net lengths ranged from 100' to 300'. Captured Lake Sturgeon attributes were recorded, including; fork length, total length, round weight, girth, and the presence of sea lamprey wounds. If distinguishable, the sex and maturity were also recorded. The first fin ray from the left pectoral fin was removed for aging and a small tissue sample from this location was taken for future genetic analysis. Lake Sturgeon were tagged with a passive integrated transponder (PIT) tag under their third dorsal scute, a PIT tag in their stomach, and a Floy tag to the side of their dorsal fin to identify and track future recaptures.

Internal radio tags were surgically implanted into the abdominal cavity of Lake Sturgeon exceeding 5000 g, provided that individuals showed no symptoms of stress from gill netting.

A Hummingbird Side Imaging Sonar unit was used to record raw substrate images and depths throughout the lower 4.5 km of White River. All data was then compiled to generate a detailed substrate and water depth map.





Internal radio tags were surgically implanted into the abdominal cavity of Lake Sturgeon exceeding 5000 g.

For more information on this or other fisheries projects please contact the A/OFRC:
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RESULTS

The spawning assessment was undertaken from May 14th to July 3rd 2012 when water temperatures ranged from 10°C to 21°C. Michael Twance of Pic River First Nation worked alongside A/OFRC technicians and biologist for the 2011 and 2012 seasons.

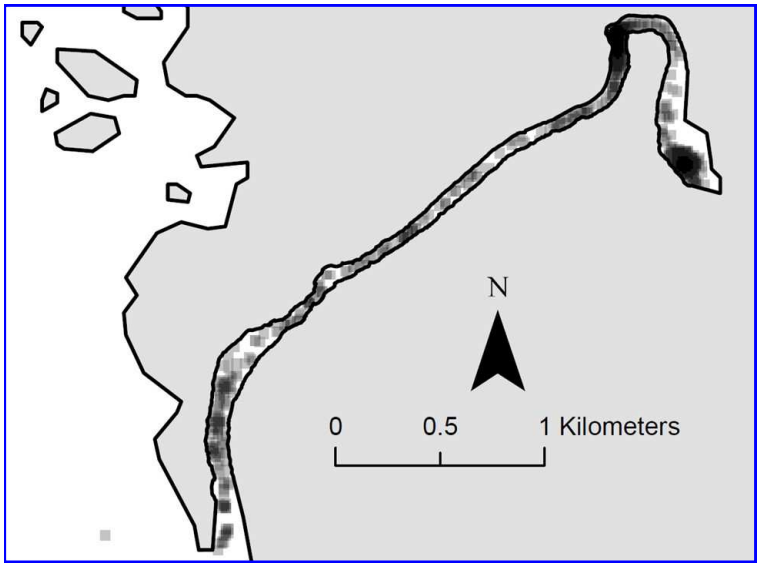
Throughout the study period (2011 to 2012), a total of 144 Lake Sturgeon were captured and 24 of those individuals were recaptures.

The mean total length and weight, with all years pooled, was 1253 mm (4.1 ft) and 10,098 g (22.3 lb).

A total of 45 Lake sturgeon were radio tagged throughout the study, 40 individuals in 2011 and 5 individuals in 2012.

Aging samples were collected from 111 individuals and ages ranged from 6 years to 41 years (mean = 18.9 years). A total of 27 year classes were captured throughout the study, with the most common year classes being 12 years and 22 years.

A total of 55 manual telemetry sweeps were performed in the White River from May until August. Radio tagged Lake Sturgeon were detected 909 individual times from 2011 to 2012. Of the 51 radio frequencies that were detected in the White River, 6 of these radio frequencies were initially applied to Lake Sturgeon in the Pic River during a previous study by the A/OFRC.



Point density analysis using ArcGIS to identify the distribution of Lake Sturgeon in the White River. Dark patches represent areas where radio tagged Lake Sturgeon were most frequently detected.

A base station picks up frequencies of radio tagged Lake Sturgeon, indicating which tagged fish was in the area.

The base station at Chigamiwinigum Falls collected information from 56 radio tag frequencies, while the base station at the mouth of the White River collected information from 66 radio tag frequencies.

Analysis indicated that radio tagged Lake Sturgeon were heavily concentrated below Chigamiwinigum Falls and Stan's Honey Hole, while locations outside of these areas were used less frequently (i.e. mouth of White River, the S-bend, and areas in between—see figure above).

Habitat mapping identified that the majority of substrate in the White River was comprised of sand (62.8%) and small localized areas of cobble (14.7%), bedrock (8.0%), and boulder (1.8%). The maximum depth of the White River was 20.9 m, however the majority of the river ranged from 0 m – 5 m (63.5%) and 5 m – 10 m (30.7%).

Results indicated that Lake Sturgeon were selecting specific habitat conditions in the White River, whereby they preferred deeper depth (>15 m) and substrates that were comprised of either bedrock or sand.

Base stations continue to collect movement data from 93 radio tagged Lake Sturgeon at the White River (2 base stations) and Pic River (2 base stations).

CONCLUSION

Throughout the fall/winter of 2012/13, the base stations were dispersed along the northeastern shoreline of Lake Superior to detect overwintering movements of Lake Sturgeon.

Results from this study have been presented at the Great Lakes Lake Sturgeon Coordination Meeting (Sault Ste. Marie, MI), local stakeholder meetings and the International Association for Great Lakes Research Annual Conference (Cornwall, ON May 2012).

A full report is currently in progress and will be available in early 2013.

A/OFRC

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