Keeyask Generation Project

Pipestone Lake Juvenile Inventory: Preliminary Results

Memorandum

Subject: Pipestone Lake 2013 Juvenile Inventory: Preliminary Results

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Introduction

The Sea Falls – Sugar Falls reach of the upper Nelson River is located near the community of Norway House, Manitoba, just downstream of the eastern outlet of Playgreen Lake. The Nelson River Sturgeon Board has stocked Lake Sturgeon in this area since the mid 1990s, in response to the assumed extirpation of sturgeon from this reach of the river. Between 1994 and 2011, 20,885 fingerlings (age 0) and 1,107 yearlings (age 1) were stocked into the Sea Falls to Sugar Falls reach. In fall 2012, the first study aimed at evaluating stocking success was undertaken (McDougall and Pisiak 2012).

Results of the 2012 study led to the conclusion that age 1 stocked fish contributed much more to the overall juvenile population within the study area than fingerlings. However, the mechanism (i.e. relatively poor survival of age 0 fish or disproportionate downstream dispersal out of the Sea Falls area) could not be determined; given implications for future stocking efforts, a follow-up study was conducted in 2013 to identify whether stocked age 0 fish had dispersed downstream out of the Sea Falls area. A survey was conducted in Pipestone Lake, which is the first true lacustrine habitat downstream of the Sea Falls release location and as such is the logical location to assess if stocked fingerlings might have dispersed and subsequently survived further downstream. Sturgeon are assumed to have been extirpated from Pipestone Lake in the early 1990s. In addition, 6,000 fingerlings were stocked into Pipestone Lake in October 2012. Additional background information, including a more detailed history of stocking in the area (pre-2012) is provided in McDougall and Pisiak (2012).

Methods

From September 16 to 26, 2013, juvenile Lake Sturgeon sampling was conducted at the inlets and outlets of Pipestone Lake. The field crew consisted of Jonathon Peake (NSC), Pierre Wilson (Norway House), and Langford MacKay (Cross Lake). Methodologies employed were consistent with those used in 2012 (McDougall and Pisiak 2012); juvenile gill net gangs (1, 2, 3, 5 and 6" meshes) were set overnight in deep-water habitats. Lake Sturgeon were measured for fork length, total length, and weight. Each fish captured was scanned for previously applied PIT tags using a Biomark 601 reader. Floy tag numbers for previously tagged fish were also recorded. Fish lacking either PIT or Floy tags were marked with one or both (if size permitted). Field PIT tag data were compared with Grand Rapids hatchery PIT tag records to confirm particulars (cohort, stocking year, stage, etc.).

Preliminary Results

Data analysis (particularly the ageing component) is ongoing, but preliminary results are as follows. A total of 55 individual juvenile Lake Sturgeon were captured. Of these, 41 (75%) possessed PIT tags linking them back to Sea Falls age 1 stockings. This ratio is highly consistent with the ratio of PIT tagged fish captured between Sea Falls and Sugar Falls during 2012 (74%; McDougall and Pisiak 2013), and the ratio of those >350 mm captured between Sea Falls and Sugar Falls during 2013 (73%; C. McDougall unpublished data). While growth chronology interpretation has yet to be conducted, it is expected that its incorporation will ultimately yield an even higher contribution of known age 1 stocked fish in this area. None of the PIT tagged fish captured and released alive (n = 65) during the 2012 Sea Falls study (McDougall and Pisiak 2012) were recaptured at Pipestone Lake in 2013.

Preliminary Conclusions

These results are important for a number of reasons. First, it provides evidence of dispersal and subsequent survival of yearlings stocked at Sea Falls in areas further downstream. Therefore estimates of "survival" generated for Sea Falls should be re-qualified as "survival/retention"; total survival of PIT tagged stocked yearlings appears to be very high. Certainly many more stocked juveniles than were captured in the 2012 Pipestone survey inhabit the inlets and outlets, and there is ~20 km of riverine habitat located between Sugar Falls and Pipestone Lake (assumed to be highly similar to the Sea Falls – Sugar Falls reach) that likely also contains aggregations of stocked Lake Sturgeon. Second, these data suggest that age specific dispersal is likely not the driving factor of high contribution of age 1 stocked fish between Sea Falls and Sugar Falls. Rather, it seems that the age 0 stocked fish have survived relatively poorly, while post-stocking "survival" of age 1 stocked fish appears to be very high. Lastly, the lack of recaptures of fish with PIT tags captured near Sea Falls during the 2012 study (McDougall and

Pisiak 2012) provides some evidence of limited movement following post-stocking establishment, the inference being that downstream dispersal of age 1 fish stocked at Sea Falls to Pipestone Lake predominantly occurred shortly after stocking. It should be noted that wild Lake Sturgeon occurring in large riverine systems tend to exhibit restricted movement patterns at the juvenile life stage (Barth et al. 2011; McDougall et al. 2013), so this pattern is not unexpected.

References:

Barth, C.C., W.G. Anderson, L.M. Henderson, and S. J. Peake. 2011. Home range size and seasonal movement of juvenile lake sturgeon in a large river in the Hudson Bay drainage basin. Transactions of the American Fisheries Society 140: 1629-1641.

McDougall, C.A. and D.J. Pisiak. 2012. Results of a Lake Sturgeon inventory conducted in the Sea Falls to Sugar Falls reach of the Nelson River – Fall, 2012. A Lake Sturgeon Stewardship and Enhancement Program report prepared for Manitoba Hydro by North/South Consultants Inc., Winnipeg, Manitoba. 47 p.

McDougall, C. A., P. J. Blanchfield, S. J. Peake, and W. G. Anderson. 2013. Movement patterns and size-class influence entrainment susceptibility of Lake Sturgeon in a small hydroelectric reservoir. Transactions of the American Fisheries Society 142: 1508-1521.