
MEMORANDUM

To: Cory Williamson, Ministry of Environment
Justus Benckhuysen, Rio Tinto Alcan

From: Ryan Liebe

Date: August 27, 2008

Re: Juvenile Sturgeon Pole Seining – August Summary

Following is an update for the juvenile sturgeon pole seining project that was completed last week.

Study Area:

The study area for the project included the braided section of river in the bird sanctuary upstream of the Burrard Bridge, old back channels south of the bird sanctuary, the lower (approximately 500 m) of Stoney and Murray creeks, and several kilometres downstream of the bridge. Sites were located at all available habitats (*e.g.* side and back-channels, gravel bars) and substrates types (*e.g.* gravel, fines).

Methods:

Four different types of habitat were present within the study area: (i) bare, regular gravel bars; (ii) bare, irregular shorelines with scallops and velocity shears; (iii) flooded vegetation; and (iv) side- and back-channels. As a result of the high STMP flows (300 m³/sec) at the start of the field program, there was an abundance of flooded vegetation and side- and back-channel habitats and very limited amount of bare, regular gravel bars that could be effectively sampled.

A 3 m-wide pole seine with a 1.5 m draft was used to capture fish. Site boundaries (25 m in length) were measured with a fiberglass tape measure. Fish caught in the seine were identified to species and counted. The exception to this was suckers and sculpins less than approximately 20 mm which could not be reliably identified to species in the field. A maximum of ten of each fish species captured were measured to the nearest mm, and weighed with an electronic scale.

Other data that was recorded at each site included, near-bottom water velocity and depth (at 0, 1.5, and 3 m from shore at the downstream and upstream end of each site), water temperature and clarity, a description of the dominant and subdominant substrates in the sampled area, and site vegetation characteristics. Percent cover (*e.g.* submerged vegetation, cobble, undercut

banks, woody debris) was visually estimated. The field UTM coordinates at the downstream end of the site was recorded, and a representative photo of each site was taken looking upstream from the bottom of the site.

Results:

The field program consisted of a five-day field trip between August 19 and 23, 2008. Flows ranged from approximately 300 m³/sec at the start of the trip, and steadily decreased to 200 m³/sec throughout the week (an elevation difference of 0.60 m at the Burrard Street bridge). Water turbidity was 7 NTU, which corresponded to a visibility of approximately 1 m.

A total of 65 pole seine sites were completed including:

- 4 sites on Stoney Creek.
- 4 sites on Murray Creek.
- 3 sites in the vicinity of the 124 km hole.
- 12 sites from the Burrard Street Bridge downstream for several kilometres.
- 42 sites within the braided bird sanctuary upstream of the Burrard Street Bridge.

The side-channels south of the bird sanctuary were surveyed, but there was no flow or connection to the mainstem of the river during the flows observed at the time of sampling. The 10 sites planned for this section were relocated to the braided section of river upstream of the Burrard Street Bridge.

A total of 5,205 fish were captured, none of which were white sturgeon. The majority of the captured fish were comprised of juvenile sucker and redbreast shiners which were typically abundant in the flooded vegetation sites. A summary of captured fish is provided in the following table.

Table 1. Total number of fish captured.

WSG	MW	NPM	CH	RSC	LSU	PMC	CAS	SU ¹	LNC	LPD	CSU	COTT ¹
0	3	33	6	2,940	1	41	3	1,908	234	15	7	14

¹ Captured fish were too small to identify to species in the field.

A snorkel survey was also completed on one of the days. Shallow riffle habitat in the braided islands near the mouth of Stoney Cree was surveyed (maximum depth of approximately 1 m could be observed). As well, the right margin of the mainstem was surveyed from the observation tower downstream to the boat launch. Visibility was poor, and the method was determined to be not very effective at the flows and water clarity observed during the week.

Discussion:

High flows encountered during the field sampling resulted in abundant flooded vegetation habitats, especially within the braided section upstream of the Burrard Street Bridge. It was only

at the end of the field trip when flows had subsided to approximately 200 m³/sec that shallow gravel riffles could be effectively sampled with the pole seine.

The pole seine was effective at sampling flooded vegetation habitats. Based on the number of sites completed within the braided river section upstream of the Burrard Street Bridge, it is my opinion that several white sturgeon juveniles would have been captured if they were keying into that habitat and present in sufficient numbers.

Shallow gravel riffles were under-sampled as a result of the high flows (they could only be effectively sampled during the last couple of days of the field program). Deep mainstem habitats were not sampled, as they could not be sampled by the pole seine. An alternate sampling technique (*e.g.* minnow traps, gill nets) would have to be employed to sample these habitats.

Recommendations:

- Sufficient effort and effective sampling in flooded vegetation habitat was completed during the August field trip. These habitats will no longer be available for sampling as flows have dropped in the river.
- Additional sampling could be completed in shallow gravel riffles in the bird sanctuary (these habitats were under-sampled during the August trip).
- Mainstem habitats will require alternate sampling techniques such as small mesh gill nets, modified minnow traps, or beach seines (which would require a revision to the SARA permit).

The second pole seining sampling trip should only be completed if Recovery Team members think that juvenile sturgeon are utilizing shallow riffle habitat in the vicinity of the bird sanctuary. This type of habitat will be abundant and could be effectively sampled as flows continue to drop. Otherwise the remaining funds would be better utilized elsewhere (*e.g.* sampling in conjunction with the October hatchery release).

If you require any additional information at this time, please contact me by phone (250-562-9155) or email (rliebe@triton-env.com).