

Fraser Salmon & Watersheds Program



Fraser Basin Council



2009/10 FINAL REPORT

FSWP File Number* FSWP 09 D HWRS 84

* Please use the FSWP File Number provided in previous FSWP project correspondence.

1. Project Information

1.1. Project Title

Control and inventory of invasive smallmouth bass

1.2. Proponent's Legal Name

Ministry of Environment

1.3. Project Location

Williams Lake/ Quesnel

1.4. Contact for this report

Name: Tom Wilkinson

Phone: 250 398-4696

Email: tom.wilkinson@gov.bc.ca

1.5 Funding Amount

Original Approved Grant Amount:	Total FSWP Expenditures:	Final Invoice Amount:	Final Non-FSWP leveraging, including cash and in-kind:
\$ 25,000	\$ 22,805.91	\$ 2,805.91	\$81,018.58

2. Project Summary

Please provide a single paragraph describing your project, its objectives, and the results. As this summary may be used in program communications, clearly state the issue(s) that were addressed and avoid overly technical descriptions. Maximum 300 words.

Smallmouth bass were illegally introduced to the Beaver Creek system and currently occupy 55 km of the system, from its confluence with the Quesnel River upstream through a chain of 6 lakes. Bass are an efficient predator of other fish and can cause severe impacts on native salmon runs. MOE and the Northern Shuswap Tribal Council have worked with other partners (DFO, local residents, etc.) to control the number of bass until such time as a long term solution can be determined.

In the summer of 2009, the NSTC fisheries crew carried out field work to control the recruitment of bass fry to the system as well as reduce the number of adult bass. In addition, the range and number of bass were evaluated. The primary project involved locating bass nests by viewing nests in the near shore areas from a boat or by using snorkel surveys. Once a nest was located it was marked with flagging tape, noted as to whether eggs/larva were present and measured (depth, distance from shore, adult present, UTM). If viable, the nest was treated with low doses of pool-grade chlorine to immediately kill any bass present. Approximately 140 viable nests were treated in June 2009, potentially killing 150,000

-200,000 bass fry.

NSTC crews also carried out gill and trap netting to determine if the bass range had increased and participated in snorkel surveys to determine if bass were present in the upper reaches of the watershed. Bass captured during the netting process were killed and retained. NSTC members obtained biological information from each of the retained bass and removed otoliths for age evaluation. Information was entered into databases by crew members to be incorporated into a final report.

OPTIONAL Please give a short statement (up to 100 words) of the most compelling activity or outcome from your project.

3. Final Project Results and Effectiveness

3.1 Copy EXPECTED OUTCOMES from your detailed proposal and insert into this section. Add additional rows as needed. Then please list the FINAL OUTCOMES (the tangible end products resulting from this work) associated with expected outcome.

If FINAL OUTCOMES differ from the original EXPECTED OUTCOMES please describe why, and the implications for the project.

EXPECTED OUTCOMES	FINAL OUTCOMES
1. <i>Early detection of invasive fish in tributaries to Beaver Creek, Quesnel River and other waterbodies in the region.</i> The earlier that an invasive fish population is detected, the better the odds of feasibly eradicating the population before it becomes established.	The bass crews sampled a number of the outlying areas of the Beaver Creek watershed by stream surveys and netting. Special emphasis was placed on upstream areas so that barriers could be installed to prevent further movement. The Quesnel R/Beaver Creek confluence area was netted periodically to determine outward migration.
2. <i>Minimized risk of bass spreading to other watersheds.</i> Preventing invasive species from spreading and becoming established is the most cost-effective option for dealing with this issue, and reducing bass numbers will minimize direct impacts on salmonids.	Several other waterbodies were evaluated to determine if invasive aquatic species had been moved into them. Lakes were netted. More work had been planned but the issue of dealing with bass in Beaver creek was determine to be more critical
3. <i>Minimized recruitment of smallmouth bass in the Beaver Creek source population.</i> Reducing recruitment (eggs, larva) and young age-classes appears to be the most effective way of controlling population growth.	140 bass nests were detected by bass crews and treated to with chlorine to kill eggs/larva. The reduction meant that 150,000+ fry did not recruit to the system
4. <i>Increase in training and experience of staff for dealing with invasive species.</i> Dealing with invasive species in the Cariboo will be a long-term program and will require trained staff.	NSTC fisheries crew members have learned the specialized skills of locating and controlling the numbers of bass in the Beaver Creek system.

3.2 Please evaluate the EFFECTIVENESS of your project in achieving Project Objectives. Please identify the indicators you have used to measure the effectiveness of your project. Please include any notable successes or challenges.

Objective 1 and 2 involved assessing the bass population and undertaking measures to reduce or control their numbers as much as possible. The crew carried out their daily activities enthusiastically. It was important to them to not miss any bass nest during the various observation techniques. Approximately 140 bass nests were located in 5 lakes during June. All these nests were treated with chlorine to kill either the eggs or larva. Follow-up work in August and September by MOE biologists found very low numbers of bass fry, indicating that not many nests went undetected or untreated. Potentially that meant a reduction in bass fry numbers by 150,000+, which is very significant in terms of controlling the bass population.

A major component of Objective 3 was not met since funding from other partners was not obtained to purchase/lease an electrofisher boat. Stream observations and netting were performed in the lower Beaver Creek to determine the number of out-migrants. No bass were captured in 2009 indicating that the population size has not yet reached a point where large numbers are leaving the Beaver Creek watershed.

Objective 4 involved sampling other areas of the watershed to determine if bass had moved further up Beaver Creek or into side tributaries. The NSTC crew worked extensively on Robert and McCauley Lakes, which are believed to not be presently invaded. No bass were detected during inventories by any of the crews or by MOE biologists. As a result of the work, a bass barrier, funded by HCTF was installed just downstream of McCauley Lake.

In addition to the control assessment work, the NSTC/FSWP were involved in the bass barrier project (HCTF). The wooden structure was installed in Beaver Creek to provide a leaping obstacle to prevent bass from moving into the upper third of the watershed. Follow-up work will be undertaken to determine the effectiveness of the barrier.

3.3 REQUIRED: attach all DOCUMENTATION of Final Outcomes, and LIST attachments here. These may include technical reports, maps, photos, evidence of communications, lists of meeting participants, etc.

Assessment & Control of Invasive Smallmouth Bass in the Beaver Creek System, 2009, in prep
- Report on the 2009 activities; will be ready by mid-April and will be forwarded to FSWP

3.4 Please describe how the benefits of this project will be sustained and/or be built upon into the future. What are the planned next steps, or recommendations for further work, if applicable?

This project provided a wide range of benefits to the local community in terms of continued understanding of the effects that invasive aquatic species will have on native fish species and therefore the humans that depend on them for food and recreation. In addition, the efforts of fisheries workers in keeping the population numbers in check were immense. New techniques were developed to reduce recruitment of bass fry to the system. An upstream barrier, funded mostly by HCTF, and supported by a wide range of both cash and in-kind contributions, will prevent bass from reaching into the upper parts of the Beaver watershed.

Funding requests to continue the invasive bass assessment/control project have been sent to a wide range of groups including HCTF, FSWP, DFO and MOE. To date no funding has been secured. As a result, no control program will occur in 2010.

It is expected that, bass spawning will increase slightly in 2010 and substantially in 2011. Without

measures to control recruitment, it is anticipated that the bass population will expand exponentially and migrate in larger numbers out of the system. Within 5 years bass will move into the Quesnel and Fraser River systems. Once they have established their population in these systems there will be no opportunity to control their numbers and range.

3.5 What are the top three lessons learned from this project that could be useful to communicate to others doing similar work in the Basin?

1. Invasive aquatic species, in this cases smallmouth bass, have the ability to out-compete native species and cause immense damage to important aboriginal, recreation and commercial fisheries.
2. First nations crews have developed the knowledge and skills to reduce the impact of invasive aquatic species on native wild stocks such as trout and salmon
3. Continued funding is needed from government and other funding sources to be able to deal with aquatic invasives. Without the continued funding, smallmouth bass will quickly increase in numbers and spread throughout the Fraser River system. This will result in serious impact to salmon and other native species.