Using Recovery Science and Recovery Action in Mutual Support: a Case Study of Habitat Restoration for the Salish Sucker

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Abstract: One of the largest impediments to designing effective recovery actions for many listed species is a lack of detailed life history knowledge. Using experimental recovery actions and ecological research together within an adaptive management framework is an effective way of quickly increasing knowledge while working directly on recovery. In this paper, I offer the example of experimental habitat restoration work for the Salish sucker (*Catostomus* sp.), an endangered freshwater fish found in British Columbia's Fraser Valley. Basic research on habitat use provided hypotheses regarding effective project design. Post-construction monitoring of the project, in turn, is providing an excellent test of habitat requirement hypotheses.

Life history research has demonstrated that the Salish sucker is small bodied relative to other closely related Catostomids, has prolonged spawning periods (Pearson and Healey 2003), matures early (1–2 years), and has a short life span (5–6 years) (McPhail 1987). These life history traits combine to produce a capacity for rapid population increase (Winemiller and Rose 1992), and should enable the species to quickly establish populations in suitably restored habitat.

Home range size of 15 radio-tagged adult Salish suckers averaged 270 m of channel (range 42–307) (Pearson and Healey 2003), suggesting that restored sites should be at least several hundred meters in length to produce population level effects. Adult fish are usually found in water depths exceeding 70 cm, and the total amount of deep pool habitat in a reach is the single best predictor of the species' presence (Pearson 2004). Spawning occurs in riffles, and juveniles are most commonly found in shallow pools or glides with abundant vegetation (Pearson 2004). Together, these data suggest that an effective restoration site should consist of several hundred meters of deep pool habitat (for adults) fringed by shallow, well-vegetated pool habitat for rearing, and contain some riffle habitat for spawning.

I designed and constructed such a site for Gordon's Brook, a tributary to a Salish sucker stream (Pepin Brook) flowing through Aldergrove Lake Regional Park in southeast Langley. It consists of a series of deep pools and ponds and an off-channel marsh connected by a meandering

[1]The BC Species and Ecosystems Explorer (September 2004) and NatureServe Explorer (version 4.0, July 2004) list the Salish sucker as *Catostomus* sp. 4.

channel, and totals approximately 500 m in length. Four riffles with substrate suitable for spawning were also included. Site construction was undertaken during the summers of 2001 and 2002 through a partnership between the Pepin Brook Streamkeepers, Greater Vancouver Regional District Parks, and the University of British Columbia. The fish community was monitored by periodic trapping and a mark-recapture study in 2002 and 2003. The site was colonized by Pepin Brook cutthroat trout (*Oncorhynchus clarki clarki*), coho salmon (*Oncorhynchus kisutch*), and Salish sucker within two months of construction. Population density of adult Salish sucker was estimated to be 0.05 fish/m^2 in August 2003, a value greater than 84% of the 62 reaches that were found to contain Salish suckers in a distribution study (Pearson 2004). Adult suckers captured in the restoration site were also in significantly better condition than those of the mainstem of Pepin Brook. Together, the results suggest that the Gordon's Brook restoration project has produced high quality Salish sucker habitat.

References

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