BB-RSDA proposal, December 2013

Title: **Salmon habitat and production potential throughout the Nushagak watershed**

Proposer: Daniel Schindler*, University of Washington, FRI; deschind@uw.edu; 206-616-6724 (* I have read BB-RSDA strategies and bylaws)

BB-RSDA Strategic Objective: *#4 Maintain sustainability of the fishery - Protect habitat needed for diverse and abundant salmon populations*

Project Description:

The Nushagak is one of the largest rivers draining to Bristol Bay and is arguably the most diverse in terms of the salmon species it supports at abundances sufficient to support commercial fisheries. Due to the remoteness and complexity of the watershed, it is the least understood in terms of its capacity for production of commercially important Chinook and sockeye salmon. The Nushagak system is distinct from other Bristol Bay rivers in that a large component of the fish harvested are characterized by "river-type" life-histories. While this is not surprising for Chinook salmon, it is somewhat unique for sockeye salmon, and reflects the distinct habitat features of the Nushagak drainage. The lack of information about the quantity, quality, and distribution of habitat for spawning and rearing is an impediment for developing strategies to protect the habitat and, therefore, the fisheries from watershed development that might erode the capacity and resilience of this ecosystem.

The primary goal of this project is to characterize and quantify Chinook and sockeye salmon habitat throughout the Nushagak and Mulchatna rivers with on-the-ground sampling of physical and biological conditions of spawning and juvenile nursery conditions throughout the basin. This work will build on a recent effort to characterize the physical features (from satellite data) of salmon habitat in the Mulchatna River drainage and Lower Nushagak (performed by the University of Montana and AK-TNC). Ongoing work by University of Montana and FRI is extending the satellite work to the Upper Nushagak and to the Wood River system. The existing satellite-based inventory will be invaluable for this proposed project for stratifying our sampling effort across the river basin. It will also provide a means for us to extrapolate habitat conditions from a few sample locations to throughout the entire watershed.

This work will enable us to identify and quantify critical habitat features in the Nushagak and Mulchatna systems, and determine how the current levels of salmon production and diversity compare to estimates of the potential for the system given the distribution and quality of habitat.

Estimated total cost of project: ~$500,000 (from a current project to Schindler and J. Stanford (U Montana) to characterize the geomorphic features of the Upper Nushagak ecosystem from satellite data, previous work by Stanford and AK-TNC for characterizing the Lower Nushagak and Mulchatna, + this request to BB-RSDA)

Amount requested from BB-RSDA: $214,000

Approximate date of project completion: June 2016