**Steelhead Section: Audrey**

The Lapwai Creek watershed is home to an historic steelhead trout (*Oncorhynchus mykiss*) population that has important cultural significance to the Nez Perce Tribe and is also federally listed as part of the Snake River Basin Steelhead distinct population segment (DPS) with Lapwai Creek designated as critical habitat (Richardson and Rasumussen p.iii, p.17, 2007). The management and protection of *O. mykiss* in the Lapwai basin cannot be based solely on the identification and fulfillment of the specific biological requirements of the fish as there is a complex legal, jurisdictional and social background that also affects decision-making within the watershed. The legal and jurisdictional complexities within the Lapwai Creek Watershed have direct impacts on the habitat provided within the stream network thus affecting the viability of the local *O. mykiss* population. As mentioned above, the overlapping jurisdiction between Nez Perce Tribe and Nez Perce County requires integrated management of the watershed and the fishery through adaptive governance (Cosens and Williams p.6, 2011). To further complicate management, as an anadromous fish, the National Marine Fisheries Service is the agency that oversees the steelhead fishery rather than the US Fish and Wildlife Service. These human-based complexities need to be overcome in order to properly protect the steelhead population in Lapwai Creek.

In 2007, a significant effort was made toward inter-agency collaboration through the joint writing of the Lapwai Creek Watershed Ecological Restoration Study (LCWERS) by the Nez Perce Tribe Department of Fisheries Resources Management, Watershed Division and the Nez Perce Soil and Water Conservation District. This is an important step towards adaptive governance that could lead to better protection of *O. mykiss*. Five primary factors that affect the ability to maintain a viable population of *O. mykiss* in the Lapwai watershed were identified in this document: “high summer instream temperatures, excessive sedimentation, loss or disturbance of riparian habitats, changes in vegetative structure, and alteration of environmental processes” (Richardson and Rasumussen p.6, 2007). These factors are intertwined and linked to habitat alteration through land use changes and other human-induced modifications that affect streams. Through reversing the social and management actions that have caused those habitat alterations, there is the potential for restoration within the watershed with respect to each of the factors outlined above. The LCWERS recommends that restoration activities primarily focus on (i) watersheds of high fish density and (ii) the reconnection of presently disconnected high quality fish habitat to habitat where fish are currently present (p. 45).

Reducing the amount of withdrawals from the stream will increase flow and have a positive effect on temperature regime, depth of the stream, and creation of areas of refuge such as pools and riffles because the added water will create a wider, more diverse stream profile (Prof. Brian Kennedy, lecture Oct. 13, 2011). Decreasing the sediment load in the stream will create better habitat for *O. mykiss* through reducing turbidity, increasing dissolved oxygen levels, and enhancing macroinvertebrate production (Bjornn and Reisner p. 85, 1991; Richardson and Rasumussen p.21, 2007). Decreased sediment load can be achieved through implementing best management practices in agricultural fields as well as through restoring vegetation to the riparian zones to reduce erosion. Vegetated riparian zones will also aid in lowering water temperatures and in providing a source of large woody debris to the stream which will add to habitat diversity. All of these restoration options will also provide better spawning habitat.

GOOD PLACE FOR FLOODPLAINS, LEADING OFF OF PREVIOUS HABITAT RESTORATION EXAMPLES

🡪p. 20 of Richardson and Rasumussen: watershed managers communicating with Idaho DOT to limit further expansion into floodplain

🡪 At the end we could just recommend that the recommendations of this report are followed, especially since it is an interdisciplinary/interagency report. Mention that they have specific recommendations (starting on pg. 77) but we don’t have the space to address all of those.

If there’s space, one of us can address the potential for adaptation/resilience

* + Healey, 2009
    - Resilient salmon in British Columbia