

# NFS

NATIVE FISH SOCIETY

---

Conserving biological diversity of native fish and protecting their habitats

January 14, 2009

TO: Rob Walton, Lance Kruzic  
FR: Bill Bakke

RE: Comments on upper Willamette ESU chinook and steelhead recovery.

After reviewing several documents related to the upper Willamette ESU for spring chinook and winter steelhead I would like to provide some comments. These documents are a NMFS paper called "Case Study 2 Upper Willamette River Chinook" and an ODFW paper called "Hatchery Impacts on the Upper Willamette River Chinook Salmon and Steelhead ESUs."

The purpose of my comments is to point out issues that may affect recovery of ESA-listed winter steelhead and spring chinook. Since these documents are a few years old there may have been changes that fully address these issues, however, I am not aware of any subsequent modifications in the evaluations provided in these documents

## Upper Willamette River Chinook Case Study 2 (NMFS)

This document deals with harvest and hatchery impacts. The purpose of the case study is to describe the potential harvest impact on wild spring chinook in the upper Willamette ESU. Even though NMFS is comfortable with and approved the ODFW fishery management plan affecting wild ESA-listed spring chinook, there are a few problems that should be addressed in further assessments of harvest impacts.

The case study is based on an estimate of carrying capacity for upper Willamette spring chinook. This carrying capacity estimate is used to establish spawner abundance goals, but not all spring chinook populations have these goals in place. There is no spawner abundance goal for the Santiam. There is no abundance or carrying capacity estimate for the McKenzie. In constructing a recovery plan these problems should be resolved. Until this is done it will remain difficult to evaluate harvest impact on those wild populations. A purpose of harvest management is to ensure that spawner goals are achieved so that the fish can fully utilize the habitat. When harvest management is not accountable for delivering spawner abundance objectives the recovery plan is affected and may be jeopardized.

Carrying capacity for chinook in the Willamette may be underestimated in this Case Study for it does not include 0-age smolts and mainstem rearing including the Portland harbor. Lichatowich identified this life history as once abundant in the Columbia and the Willamette. An estimate of wild spring chinook carrying capacity and management impacts that may affect it are not confined to Willamette River tributaries and should include the mainstem as well. Research by the City of Portland found juvenile chinook rearing along beach habitat in the urban portion of the river during the summer.

By expanding the carrying capacity estimate for the Willamette basin to include the mainstem, there may need to be revision of the fishery management plan to increase the number of spawners.

The Case Study did not provide an estimate of historical run size prior to the dams. Wild chinook were trapped for an egg supply prior to the dams being built in the basin, so the mitigation agreement for chinook is likely an underestimate of the actual carrying capacity of the basin. This would affect the size of the mitigation hatchery program. ODFW evaluated this issue in the 1980s but the report was never published. The carrying capacity of watersheds still available to chinook may be greater than the present estimate given the historical record.

The harvest rate impact on wild spring chinook is estimated at 8.3% for in-river fisheries and 9% for ocean fisheries for a total harvest impact of 17%. The Case Study only uses the in-river harvest rate in evaluation of impacts on wild spring chinook. A 17% harvest rate is higher than the 15% harvest cap ODFW adopted. The Case Study states that the in-river harvest impact is lower than it was historically, and based on this reduction, assumes harvest management supports recovery. The harvest impact on spawner abundance should be the measure used in building a recovery plan and it appears that some populations have very few spawners. A mortality profile for spring chinook from all sources would help define the impact on wild spring chinook. For example, ODFW found that 58% of the wild chinook suffered pre-spawning mortality. An unknown number of wild chinook are taken by marine mammals. Taken together, these mortality factors should be included in development of a recovery plan for setting spawner abundance objectives. A more comprehensive accounting of mortality may mean fishery impacts would have to be further reduced in order to compensate for factors not more easily controlled.

Other recognized problems are stray hatchery chinook spawners, predation on chinook juveniles by hatchery steelhead and trout, interbreeding between hatchery and wild fish affecting the survival and fitness of the wild run, and ecological impacts between hatchery chinook, non-native coho and summer steelhead on wild chinook. These impacts affect the productivity of the wild chinook in the basin. From my reading of these two papers, these problems are acknowledged but are not quantified in terms of their impact on wild chinook recovery. By adding the potential effects of higher mortality rates on adult spawners and the effect of the existing hatchery program on chinook reproductive success and survival, the wild chinook population in the Willamette may be at greater risk than these assessments indicate.

A more comprehensive treatment would include:

- Spawner abundance objectives by population and watershed to fully utilize the habitat.
- Manage fisheries to achieve spawner abundance objectives.
- Terminate hatchery trout and steelhead releases that may affect wild spring chinook.
- Complete a mortality profile from all sources for wild chinook to guide development of spawner abundance objectives.
- Control stray hatchery chinook so they do not spawn with wild chinook.
- Manage for life history diversity within and among populations.

#### Hatchery Impacts on the Upper Willamette River Chinook Salmon and Steelhead ESUs

The release of non-native hatchery summer steelhead in the Upper Willamette ESU has a detrimental effect on native wild winter steelhead. The hatchery summer steelhead are not native

to this ESU and therefore should not be released. Their breeding time overlaps with winter steelhead so there is likely a genetic impact on wild steelhead. Non-native summer steelhead successfully spawn and produce juveniles that have been shown through scientific studies by ODFW scientists to have an ecological impact on winter steelhead, reducing their productivity and abundance. These impacts are inconsistent with recovery policy adopted by NMFS and with ODFW's Native Fish Conservation Policy. ODFW is unwilling to terminate the hatchery summer steelhead program in the upper Willamette ESU, so it is up to NMFS to so.