

RECOMMENDATIONS FOR DEVELOPING FMP CONSERVATION OBJECTIVES FOR SACRAMENTO RIVER WINTER CHINOOK AND SACRAMENTO RIVER SPRING CHINOOK

Sacramento River Winter and Spring Chinook Workgroup

In November 2001, the National Marine Fisheries Service proposed that the Pacific Fishery Management Council (Council) amend the Pacific Coast Salmon Plan (FMP) to specify recovery and long term conservation objectives for Sacramento River winter chinook and Central Valley spring chinook. A workgroup of representatives from National Marine Fisheries Service, the California Department of Fish and Game, the U.S. Fish and Wildlife Service, and the Pacific Fisheries Management Council was formed to assess the potential of the available information to support harvest management measures, and develop recommendations to the Council regarding FMP conservation objectives for the two stocks.

The Workgroup assembled and analyzed the ocean and river recoveries of coded wire tagged Sacramento River winter chinook and Butte Creek spring chinook. Winter chinook are artificially propagated at Livingston Stone National Fish Hatchery. Naturally produced spring chinook are captured and tagged with coded wire as part of CDFG's Butte Creek spring chinook life history investigation.

A cohort analysis of the 1998 brood year of hatchery-produced winter chinook provided an estimate of the fishery impact (landed catch + incidental mortality) rate for ocean and river fisheries. Estimates of the replacement rates of female spawners are available from winter chinook carcass surveys that have been conducted since 1996.

A carcass survey to estimate the size of the Butte Creek spring chinook spawning population and recover tagged fish was conducted in Butte Creek for the first time in 2001. Previous estimates of spawner abundance have been based on snorkel surveys. A cohort analysis of the 1998 brood year will be possible when the 2002 spawning survey recoveries are complete and become available.

Sacramento River Winter Chinook

Cohort analysis of the 1998 brood year hatchery stock yields a preliminary ocean fishery impact rate estimate of 0.21 for age-3 winter chinook in year 2000. The estimate is preliminary because the expansion factors associated with 2001 and 2002 carcass surveys have not been finalized. This amount of take may be consistent with an acceptable rate of recovery of the population; the number of females returning to spawn in 2001 increased by 60% over the number that returned in 1998 (winter chinook carcass survey data).

A conservation objective for winter chinook, expressed as an age-3 ocean fishery impact rate,

should be considered. In the near term, the choice of an appropriate rate could be based on observed spawner replacement rates and associated age-3 ocean impact rates. Implementation of the objective could be accomplished by compounding the expected time-area-specific impact rates over the course of the season, if the relationship between fishing effort and fishery contact (legal + sublegal size encounter) rates can be adequately characterized.

At the present time, however, sufficient data are not available to either 1) observe a correlation between ocean impact rates and spawner replacement rates; or 2) characterize the relationship between time-area specific fishery contact rates and associated effort. If management considerations were limited to the ocean sport fishery south of Point Arena, cohort analysis of brood years 1998 through 2001 may provide sufficient data to characterize the contact rate-effort relationship. Impacts in areas and sectors other than the sport fishery south of Arena could not be ignored and procedures for evaluating them would need to be developed.

Sacramento River Spring Chinook

Substantially more information on the magnitude and distribution of ocean fishery impacts on naturally spawning spring chinook populations will be required for the development of FMP conservation objectives. Reliable estimates of ocean escapement are a critical component for post-season evaluation of ocean fishery impact rates. In principle, a conservation objective for Butte Creek spring chinook, expressed as an age-specific ocean impact rate, is possible and should be considered. Implementation would require continuing and expanding the Butte Creek spring chinook life history investigation. This project is scheduled to terminate at the end of 2004. Continuation of the carcass survey, begun in 2001, will be important both for assessing harvest impacts and the status of the population. Increasing the numbers of tagged fry will also improve the precision of the cohort analysis. Currently, relatively few coded wire tags are recovered in ocean fisheries and spawning surveys from the current releases of less than 200,000 fry. The Workgroup expresses concern regarding the use of Feather River Hatchery spring chinook as a surrogate for naturally spawning spring chinook populations. Use of the Feather River hatchery stock should be conditioned on demonstrating similar ocean distribution and run timing with respect to naturally spawning populations.

Recommendations to the Pacific Fisheries Management Council

1. The Council should delay consideration of FMP conservation objectives for winter chinook and spring chinook for a two year period.
2. The Council should urge the California Department of Fish and Game to continue and expand the program for tagging and recovery of Butte Creek spring chinook. The development of FMP conservation objectives for spring chinook will require considerably more data than are currently available.
3. The Council should urge the U.S. Fish and Wildlife Service and the California Department of Fish and Game to continue and expand programs for recovering tagged fish and assessing the size of the spawning populations of Sacramento River winter chinook and spring chinook.

Future Workgroup Activity

During the next two years, the Workgroup will continue meeting to assess the feasibility of implementing ocean fishery impact rate-based conservation objectives, and develop procedures for evaluating fishery impacts on Sacramento River winter and spring chinook. At the March 2003 Council meeting, the Workgroup will provide a written report summarizing its work completed to date. The Workgroup will also make recommendations, for consideration by the Council and the National Marine Fisheries Service, regarding ocean harvest management measures intended to improve the likelihood of recovery of the two listed stocks of Sacramento River chinook.