

## Chinook Salmon Catch and Escapement

Randall Brown and Sheila Greene, DWR

Chinook salmon abundance in any given year is a complex and largely unquantified function of hatchery practices and in-river, bay/delta, and ocean environmental conditions. Adult return to the river, called "escapement", is affected by environmental conditions, as well as ocean recreational and commercial catches and recreational angling in the estuary and the streams themselves. An additional complication is that catch and escapement can consist of the progeny from more than one year class. Typically, adults mature at age 3, but they may spawn (and be harvested) as 2-, 4-, and even 5- and 6-year-old fish. With all these variables, it is difficult to determine why the harvest and escapement in a given year is high or low. Please keep that in mind when looking at figures portraying the status and trends data for Central Valley chinook salmon.

We thank DFG biologists Frank Fisher, Alan Baracco, and Bill Loudermilk for the 1995 salmon data. The data are preliminary — with all the associated caveats — but do provide a good sense of last year's catch and escapement for selected runs. (Late-fall run is not included, because new operational schedules for the Red Bluff

Diversion Dam and ladders have prevented DFG staff from obtaining spawning estimates the last few years.) The historical data were obtained from a 1995 publication of the Pacific Fisheries Management Council entitled "Review of the 1994 Ocean Salmon Fisheries". Copies can be obtained by calling 503/326-6352.

For purposes of this presentation, graphs showing natural and hatchery contribution for individual streams represent fish that entered the hatchery (hatchery) or spawned in the streams (natural). In many cases, fish spawned in the river, only because the hatchery closed the gates. For example, a preliminary analysis of fall-run spawning in Battle Creek indicated that the tagged fish ratio was about the same as that of the smolts released from Coleman National Fish Hatchery 2-1/2 years earlier (Frank Fisher, DFG, personal communication). This finding supports the conclusion that most of the more than 50,000 adults spawning in Battle Creek were the direct result of hatchery plants. One would probably reach similar conclusions for the Feather and American rivers, although there would likely be a higher contribution from natural spawners.

Figure 1 — Ocean recreational and commercial catch.

- The ocean catch was one of the highest in recent history.
- Allocation of the catch was different in 1995 than in previous years, with a higher proportion going to recreational party boats and private small-boat anglers. The change may have been partly due to restrictions on the commercial ocean troll fishery to protect weak stocks, such as the winter run, and partly due to temporary curtailment of fishing caused by low dockside prices.

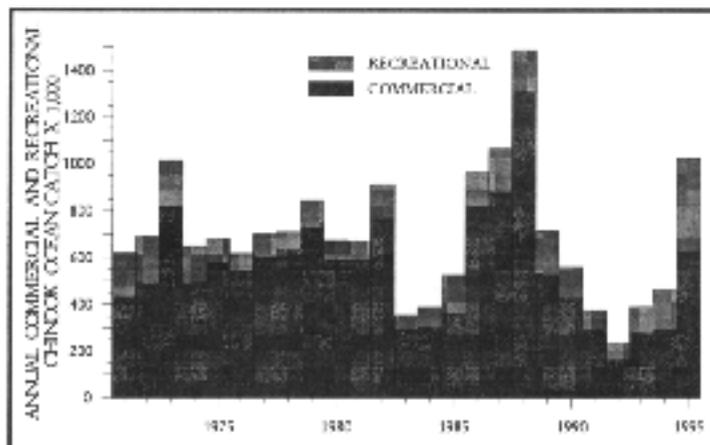


Figure 1  
Annual California Commercial and Recreational  
Chinook Ocean Catch  
Preliminary DFG Data