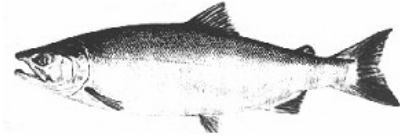


ALASKA DEPARTMENT OF FISH AND GAME
DIVISION OF COMMERCIAL FISHERIES
NEWS RELEASE



Denby S. Lloyd, Commissioner
John Hilsinger, Director



Contacts:
 Chuck Brazil & Fred West, Asst. Area Research Biologists
 Tim Baker, Area Research Biologist
 Phone: (907) 267-2355
 Fax: (907) 267-2442

Anchorage Office
 333 Raspberry Road
 Anchorage, AK 99518
 Date Issued: 11/9/2007
 Time: 1:00 p.m.

2008 NUSHAGAK RIVER CHINOOK SALMON FORECAST

The 2008 Nushagak River Chinook salmon forecast and harvest projection is provided below.

FORECAST AREA: Bristol Bay, Nushagak District

SPECIES: Chinook Salmon

FORECAST OF 2008 RUN

TOTAL PRODUCTION:	Forecast (thousands)	Forecast Range (thousands)
Total Run	160	87–233
Inriver Run Goal ^a	75	
Commercial Common Property Harvest	85	

^a The Nushagak inriver goal is 75,000 Chinook salmon based on 5 AAC 06.361Nushagak-Mulchatna King Salmon Management Plan.

A total of 160,000 Chinook salmon are forecast to return to the Nushagak River in 2008. This forecast is 1.1% less than the 10-year mean (162,000; range of 77,000 in 2000 to 245,000 in 2005). The 80% confidence bounds for the forecast ranged from 87,000 to 233,000. A run of 160,000 Chinook salmon can potentially produce a harvest of 85,000 fish. We anticipate an actual harvest closer to 56,000 based on the average exploitation rate of 36% during the previous 5 years (2003–2007).

A simple average of recent returns was used to forecast age-1.1 and age-1.2 Chinook salmon. A Ricker stock-recruitment model using spawning escapements and total returns was used to forecast age-1.3 abundance. The best age-1.4 model was based on the relationship between sibling returns in succeeding years (e.g., age-1.3 returns for 2007). The best age-1.5 model was based on the log normal relationship between adult returns (recruits) and spawners.

Age composition of the forecasted total run is <1% (<1,000) age-1.1, 33% (53,000) age-1.2, 45% (56,000) age-1.3, 32% (48,000) age-1.4, and 1% (2,000) age-1.5.

The 2008 Nushagak District Chinook salmon forecast is the sum of individual predictions of five age classes (age-1.1, -1.2, -1.3, -1.4, and -1.5). Data sets in the analyses included adult escapement and return data from brood years 1978–2005.

Predictions for each age class were calculated from models based on the relationship between adult returns and spawners or siblings from previous years. Tested models included simple linear regressions and averages. The models chosen were those with statistically significant parameters having the greatest past reliability (accuracy and precision) based on mean absolute deviation, mean absolute percent error, and mean percent error between forecasts and actual returns for the years 2005 through 2007.

The forecast range was the upper and lower values of the 80% confidence bounds for the total run forecast. The confidence bounds were calculated using deviations of actual runs from published run predictions for the 2001 through 2007 runs.

There is always uncertainty when forecasting returns of Chinook salmon to the Nushagak River. The 2008 forecast is no different than previous years. The greatest uncertainty in the 2008 forecast is predicting the return of age-1.3 and -1.4 Chinook salmon. The 2007 return of age 1.2 Chinook salmon was the largest in the last 20 years. We do not know what the effect of the large 2007 age-1.2 return will be on the return of age-1.3 fish in 2008. In addition, we over-forecast both age-1.3 (160% above) and age-1.4 (122% above) Chinook salmon in 2007. The actual returns of both age-1.3 and age-1.4 Chinook salmon were substantially lower than what we forecast to return in 2007. We have also had fairly large forecast differences for age-1.3 and age-1.4 Chinook salmon in the last 5 years. Forecast differences in the past 5-years (2003–2007) for Chinook salmon age-1.3 have ranged from 41% below in 2004 to 160% above in 2007 and age-1.4 have ranged from <1% above in 2003 to 122% above in 2007.

Similar methods have been used to produce the Nushagak Chinook salmon forecast since 2001. The forecasts have varied widely in the last 5 years (2003–2007). The forecast run differences have ranged from 59% below in 2004 to 41% above in 2007. Overall, there has been a tendency for the forecasts to be biased low and expected harvests to be high. The five previous total run forecasts (2003–2007) have averaged 3% below the total run. The expected harvests have averaged 75% above the actual harvest for the last 5 years. The expected harvest differences have ranged from 43% below in 2004 to 63% above in 2005 and 2007. There is greater uncertainty around the 2008 forecast because of total run being 41% below forecast in 2007. ADF&G does not know how this will impact the 2008 forecast.

Chuck Brazil, Fred West and Tim Baker
Bristol Bay Research Staff
Anchorage