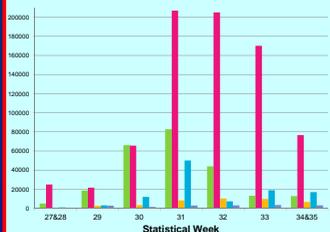


Sockeye Salmon Genetic Stock Identification using Single Nucleotide Polymorphisms (SNPs) for the Southeast Alaska 2006-10 District 101 Gillnet and District 104 Purse Seine Fisheries.

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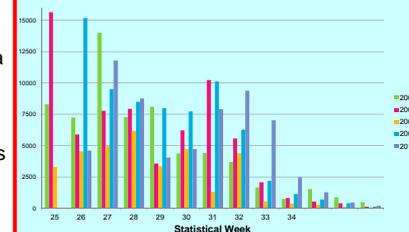
District 104 Purse Seine Catch



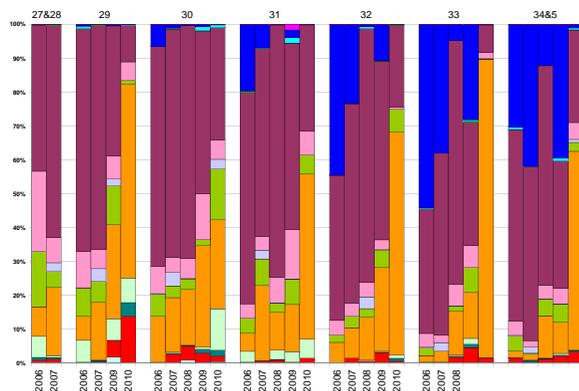
Objective

The purpose of this study was to genetically analyze sockeye salmon harvested in the 2006-2010 Districts 101 gillnet and 104 purse seine fisheries. The Pacific Salmon Treaty specifies harvest sharing arrangements of Nass and Skeena River sockeye salmon returns between the U. S. and Canada, which allows the U. S. to harvest a fixed percentage, averaged over ten years, of Nass sockeye in the Alaskan District 101 gillnet fishery and of Nass and Skeena sockeye in the District 104 purse seine fishery prior to Statistical Week 31. A genetic baseline of 45 SNPs (41 markers, as 3 groups of SNPs are linked) assayed in 84 sockeye populations from Southeast Alaska and British Columbia which was developed by the Alaska Department of Fish and Game (ADF&G). The 84 populations were grouped into 13 regions. Genetic samples of up to 380 fish were collected each Statistical Week of the Districts 101 and 104 fisheries in 2006-2010. Stock proportions were estimated by using a Bayesian mixture analysis.

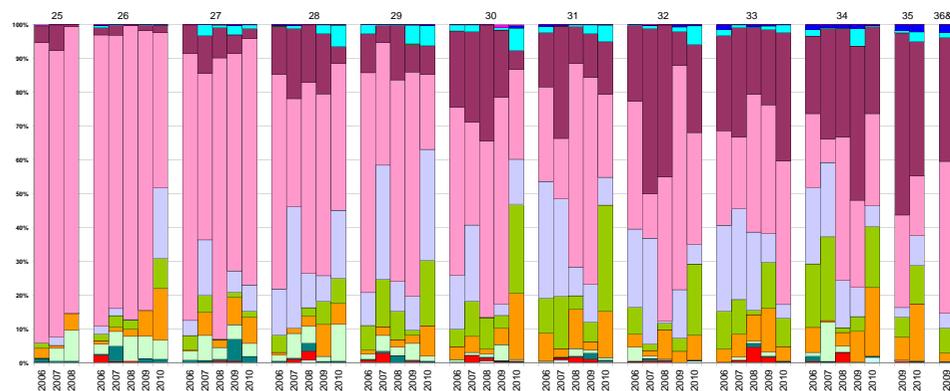
District 101 Gillnet Catch



District 104 Purse Seine



District 101 Gillnet



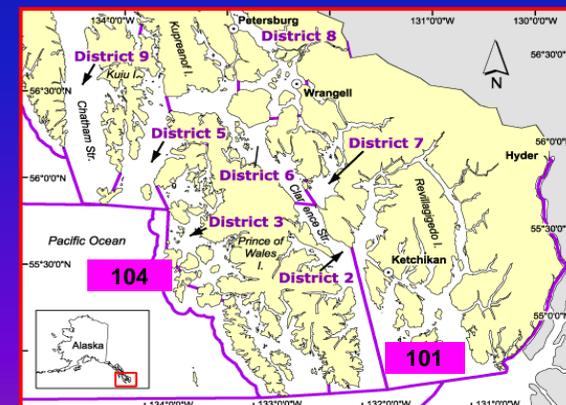
2006 -2010 sockeye stock group proportions from the ADFG District 104 purse seine fisheries. Stock proportions (y-axis) are shown as a function of statistical week by year (x-axis).

2006-2010 sockeye stock group proportions from the ADFG District 101 gillnet fisheries. Stock proportions (y-axis) are shown as a function of statistical week by year (x-axis).

Discussion

Analysis of the stock proportions of sockeye caught in Districts 101 and 104 over time shows interesting trends. The gillnet fishery in District 101 harvested predominantly Nass River fish early in the season, but over time, this stock estimate decreased and was replaced with Skeena, Hugh Smith, and McDonald fish. In 2007 and 2010 there were spikes of Alaskan stocks in weeks 28 through 31. Harvest levels varied throughout the years, but most of the fish were caught before statistical week 34. The District 101 week 34 stock composition estimate represents pooled results for weeks 34 and 35 in 2006, and weeks 34-37 in 2007 due to the low number of total genetic samples available.

The 2006-2009 purse seine fishery in District 104 harvested predominately Skeena River fish, with the proportion of Fraser River fish increasing in later weeks. Southern Southeast (SSE) Alaska and McDonald were the predominate U. S. stocks. Lower estimates of Nass River fish were present throughout the season. The District 104 stock composition was quite different in 2010. Alaskan fish comprised at least 60% of the catch for every statistical week. However, this does not indicate an increased abundance of Alaskan fish, but rather the absence of Skeena River and other Canadian stocks in the fishery, because the 2010 catch was the lowest of the five years analyzed. We speculate that the Skeena River fish were in low abundance or used a different migration pattern in 2010.



Location of ADF&G commercial fishing districts.

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