



# Genetic stock structure of Pacific herring (*Clupea pallasii*) in the eastern Gulf of Alaska

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NMFS-NOAA

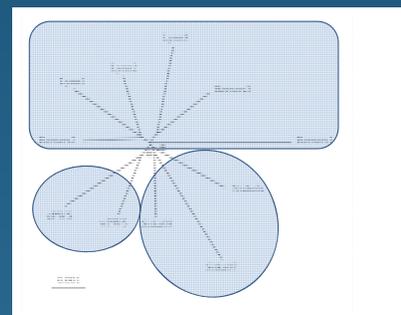
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The Lynn Canal herring fisheries in southeast Alaska closed in 1981 due to a decrease in fish biomass. A petition was filed in 2006 to consider the stock as endangered or threatened under the endangered species act. This study uses 14 microsatellite DNA loci to address the question of population discreteness of Pacific herring in the Gulf of Alaska.



J.J. Vollenweider



Neighbor-joining tree  
Pacific herring  
Gulf of Alaska  
2007-2009  
Based on CSE genetic distance.  
\* = Significant values ( $P < 0.0002$ )  
from pseudo-exact homogeneity tests of allele frequencies among branches

Collection	n	Date	Status
Lynn Canal	300	2007-2008	overwinter
Berners Bay	325	2007-2009	spawners
Sitka	185	2007-2008	spawners
Nichols	100	2007	immature
Prince W. S.	100	2007	overwinter

Lynn Canal herring average spawn  
Then (1953-1981):  
12 linear nautical miles  
Now (1982-2007):  
3.7 linear nautical miles

	Interior waters Berners Bay	Outer coast Southeast AK	Prince William Sound
Interior Waters Berners Bay		0.0007*	0.0004*
Outer coast Southeast AK	<0.0001*		0.001*
Prince William Sound	0.0002*	<0.0001*	

Above diagonal:  $F_{st}$  values for pairwise tests between regions. Significant permutation tests using a 0.95 confidence interval are designated with \*.

Below diagonal:  $P$ -values from pseudo-exact homogeneity tests between regions. Significant tests after correction for multiple testing ( $\alpha 0.05/3 = 0.016$ )



AFSC

Global AMOVA-14 loci  
99.9% variation within collections  
0.039% temporal variation within a location  
0.054% among locations

Our data suggests that interior fjord Berners Bay herring may be genetically divergent from herring along the outer coast of the eastern Gulf of Alaska. Additional collections of herring are being examined in order to better understand the slow recovery of the Berners Bay stock.