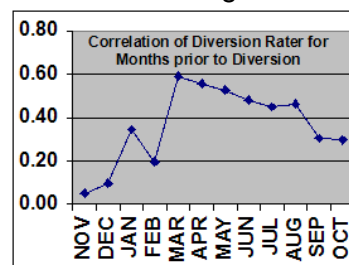


# FRASER RIVER SOCKEYE SALMON MIGRATION THROUGH JOHNSTONE STRAIT AS OPPOSED TO THE STRAIT OF JUAN DE FUCA

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Sockeye Salmon of the Fraser River generally are on a four year cycle, leaving their home stream/river, heading out to the ocean in the greater Gulf of Alaska, and then head back home. After 2-3 years at sea, on their return home, as they approach Vancouver Island (most July/August), they are diverted either down Johnstone Strait (Northern approach) or to the Strait of Juan de Fuca (Southern approach). The proportion of this diversion changes through the years. The US catch of Sockeye (below Point Roberts) is predominately determined by the flow of sockeye through the Strait of Juan de Fuca.

This study shows a very high correlation in which route is taken compared to spring temperature. The correlation of  $r=.69$  (where 1.0 is identical) for the period 1953 to 2014 is a very high indicator that Sockeye are very much influenced by ocean water temperatures. In the spring, sockeye are about 800-1500 miles West/NW of us. During cool years, sockeye will tend to migrate east-southeast (and if the water is not warmed near the coast in summer), make landfall around the middle of Vancouver Island, and migrate south and through the Strait of Juan de Fuca. The evidence supports the theory that during warm springs, Sockeye will avoid the warm ocean, and school several hundreds of miles north of cooler springs. During their migration to the Fraser they tend to make landfall near the north end of Vancouver Island or the British Columbia mainland, and migrate south through the inside passage of Johnstone Strait.



The diversion rate of Sockeye on the Northern end of Vancouver Island was obtained from the International Pacific Salmon Fisheries Commission Annual Reports (1953-1985), and the Pacific Salmon Commission Annual Reports (1986-2008). The diversion rate was created from catch records on both sides of Vancouver Island, and the number is an indicator of proportion of the sockeye run migrating west or east of the island.

Average annual temperature variation for Western Washington is very similar to Southeast Alaska ( $r=.75$ ), as well as monthly variation (spring  $r=.66$ ), indicating a general eastern north Pacific wide scale trend. The similarity of average air temperature variation over such a large area would indicate a similarity in ocean surface temperature also. In this regard, Western and NW Washington monthly temperature data was used as a basis for comparison.

