**Using Nearest Neighbors and Recruit-Per-Spawner Analysis to Forecast Salmon Returns**

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**Abstract**

Accurate forecasts of age-specific salmon returns are crucial for effective fisheries management. We applied a nearest-neighbors methodology combined with recruit-per-spawner analysis to predict 2025 sockeye salmon returns for 14 stocks from Bristol Bay, Fraser River and Columbia. Historical escapement data were used to identify two years with escapement values most similar to the target brood year. The average recruit-per-spawner rates from these years were applied to the target year’s escapement to forecast age-specific returns. Initial results indicate that this method provides comparable and interpretable forecasts across multiple stocks. Its simplicity and reliance on historical data make it a practical tool for resource managers. Future validation across diverse stocks and conditions will assess its broader applicability.