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Modeling Change in the Transboundary Salish Sea

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<u>Modeling Change in the Transboundary Salish Sea</u>

This session explored how models are being used to identify management and recovery options in the Salish Sea. The latest results and development activities were presented for models across a gradient of structural complexity and encompassing the full range of ecosystem components, from nutrients to sharks, and into the surrounding watersheds.

Elise Olsen presented advances in the use of the Salish Sea Model Ecosystem – Lower Tropic (SMELT) in the Strait of Georgia to capture complex dynamics of nitrate supply to surface waters.

Philip Murphy described potential impacts of alternative transportation project designs for Chinook salmon habitat, based on linking indicators from the Ecosystem Diagnosis and Treatment (EDT) habitat model for Chinook to the Ecosystem Management Decision Support (EMDS) decision support framework as part of the Tulalip Tribes Harmonization Initiative in Snohomish County, WA.

Andrew Spanjer proposed a hierarchical modeling approach for evaluating the potential impacts of stream restoration on Chinook salmon growth, by first conducting broad predictions of stream temperature and growth using existing regional datasets; and by secondly predicting reach-specific impacts by incorporating stream segment data on stream morphology and prey availability.

Tessa Francis presented a qualitative modeling approach to evaluating the factors causing change in abundance and distribution of Pacific herring in the Salish Sea.

Alli Cramer described the prediction of sixgill shark habitat use in the Puget Sound based on combining data from passive acoustic tracking and direct environmental measurements with Salish Sea Model predictions of environmental conditions.

Bob McKane described ongoing collaborative efforts to evaluate the impacts of watershed development on marine ecosystem function by linking a terrestrial ecohydrology model (VELMA), a marine biogeochemistry and circulation model (SSM), and a marine food web model (Atlantis).