

MODELING TRADE-OFFS AMONG CULTURAL, ECONOMIC, AND ECOLOGICAL OUTCOMES OF FISHERIES MANAGEMENT

THE “TRIPLE BOTTOM LINE”

Standard fisheries management approaches focus on economic and ecological impacts of fisheries. However, because people and communities are tightly connected to marine species, the triple bottom line - economic, social/cultural, and ecological outcomes - must be all considered.

Models can be used to evaluate trade-offs among these multiple measures under different management rules, using information from anthropological research, including traditional knowledge, as well as standard scientific data.

WIN-WIN-WIN OUTCOMES FOR THE TRIPLE BOTTOM LINE IN BRITISH COLUMBIA'S HERRING FISHERIES

The **Ocean Modeling Forum** examined the trade-offs among triple-bottom-line metrics of different potential herring management rules: harvest rates, limit thresholds for fisheries closures, and spatial closure scenarios.

As expected, many management options result in sharp trade-offs in the triple bottom line. Higher commercial catches reduce ecological and social benefits. Lowering closure thresholds have negative economic impacts without providing significant ecological or cultural benefits. Spatial closures, in contrast, allow commercial harvest while also protecting cultural benefits and reducing the risk of collapse at open locations. Importantly, where closures occur matters: the productivity of the closed site impacts both economic and cultural outcomes.



RECOMMENDATIONS

Models that allow evaluation at a scale that is culturally relevant are important tools for Pacific herring management. Such models can be used to evaluate alternative management strategies and support a careful examination of trade-offs among economic, ecological, and social/cultural outcomes. For species like Pacific herring, spatial closures can be effective at balancing economic, ecological, and social/sociocultural objectives.