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NSERC Canadian Integrated Multi-Trophic Aquaculture Network (2009-2014)

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Challenge

Aquaculture currently supplies almost half of the world's seafood. Production has increased rapidly over the last few decades, making this the fastest growing global food production sector. However, there are concerns about environmental, economic and social impacts associated with aquaculture. Integrated Multi-Trophic Aquaculture (IMTA) offers an innovative solution for the environmental sustainability, economic stability and societal acceptability of aquaculture. IMTA combines the cultivation of fed aquaculture species (e.g., finfish) with inorganic extractive aquaculture species (e.g., seaweeds) and organic extractive aquaculture species (e.g., suspension and deposit feeders) for a balanced ecosystem management approach that takes into consideration site characteristics, operational limits, and food safety guidelines and regulations.

Network Structure

The NSERC Canadian Integrated Multi-Trophic Aquaculture Network (CIMTAN) is developing a key network of researchers with complementary expertise from across Canada: 26 scientists from eight universities, six federal laboratories (Fisheries and Oceans Canada) and one provincial laboratory (New Brunswick Research and Productivity Council), spread over six provinces. The industrial partners are Cooke Aquaculture Inc. on the east coast, and Marine Harvest Canada Ltd. and Kyuquot Seafoods Ltd. on the west coast.

Research Objectives

The network's objectives are to further develop IMTA approaches to strategically enhance economically sustainable seafood production systems. The ultimate goal is to develop aquaculture systems which can be adopted by the industrial partners to efficiently mitigate organic and inorganic enrichment of the surrounding ecosystem that can result from fed aquaculture operations. The approach works by actively recapturing this material for use in the production of commercially valuable extractive crops. The network will specifically address the following areas of IMTA:

- Environmental System Performance and Species Interactions
- System Design and Engineering
- Economic Analysis and Social Implications

Outcomes

CIMTAN is taking a multi- and inter-disciplinary approach, including a strong highly qualified personnel (HQP) training component, to generate new knowledge on alternative aquacultured species based on their biomitigative functions and economic value. This will allow aquaculture operations to move toward a balanced ecosystem approach and diversify their products. New cultivation techniques, along with technological and engineering advancements/designs, will strengthen Canada's position as a responsible aquaculture production nation. In addition to answering questions related to the natural sciences and engineering, CIMTAN will address socio-economic and regulatory governance issues which are required for the full development of the sector.

CIMTAN will create the conditions for increased economic opportunities in rural/coastal regions, including First Nation communities, providing sustainable, quality seafood to Canadians, and generating increased societal acceptance of the aquaculture sector and public policy development for improved government decision-making.

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