Assessment of small-scale data-limited Arctic Charr fisheries using productivity-susceptability, and landscape models coupled with local community monitoring.

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The Arctic Charr (*Salvelinus alpinus*) is an abundant and predictable food source in Canada's Arctic region and retains a high value as food security currency in rapidly changing Arctic communities. The development of commercial fisheries for Arctic Charr plays an important role in the subsistence and market economies of Nunavut and is considered key to poverty reduction and economic growth in many communities. Arctic Charr fisheries are developed on relatively small scales to minimize problems of cost, transportation and infrastructure that usually impede remote, northern enterprises. The conservation and optimization of Arctic Charr resources in Nunavut remain complicated by data paucity; by the widespread distribution and biological complexity of Arctic Charr stocks; by growing uncertainties related to climate change impacts on Arctic freshwater fish and ecosystems; and by the lack of adapted stock assessment tools and co-management framework linking Inuit traditional knowledge with scientific expertise. We briefly review the current state of Arctic Charr fisheries in Nunavut and present science alternatives for the evaluation of Arctic Charr stocks using intra-specific life history diversity and landscape models as a basis for risk and quantitative assessments. The implementation of a community-based fishery monitoring program to test management options, refine stock assessment tools and foster knowledge co-production on the species and its habitat is also discussed. Small-scale Arctic Charr fisheries underline the importance of alternative, flexible and integrated co-management strategies to ensure conservation and sustainable use of fishery resources in Arctic regions.