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Developing Partnerships to Protect and Manage Canada's Fisheries Resources

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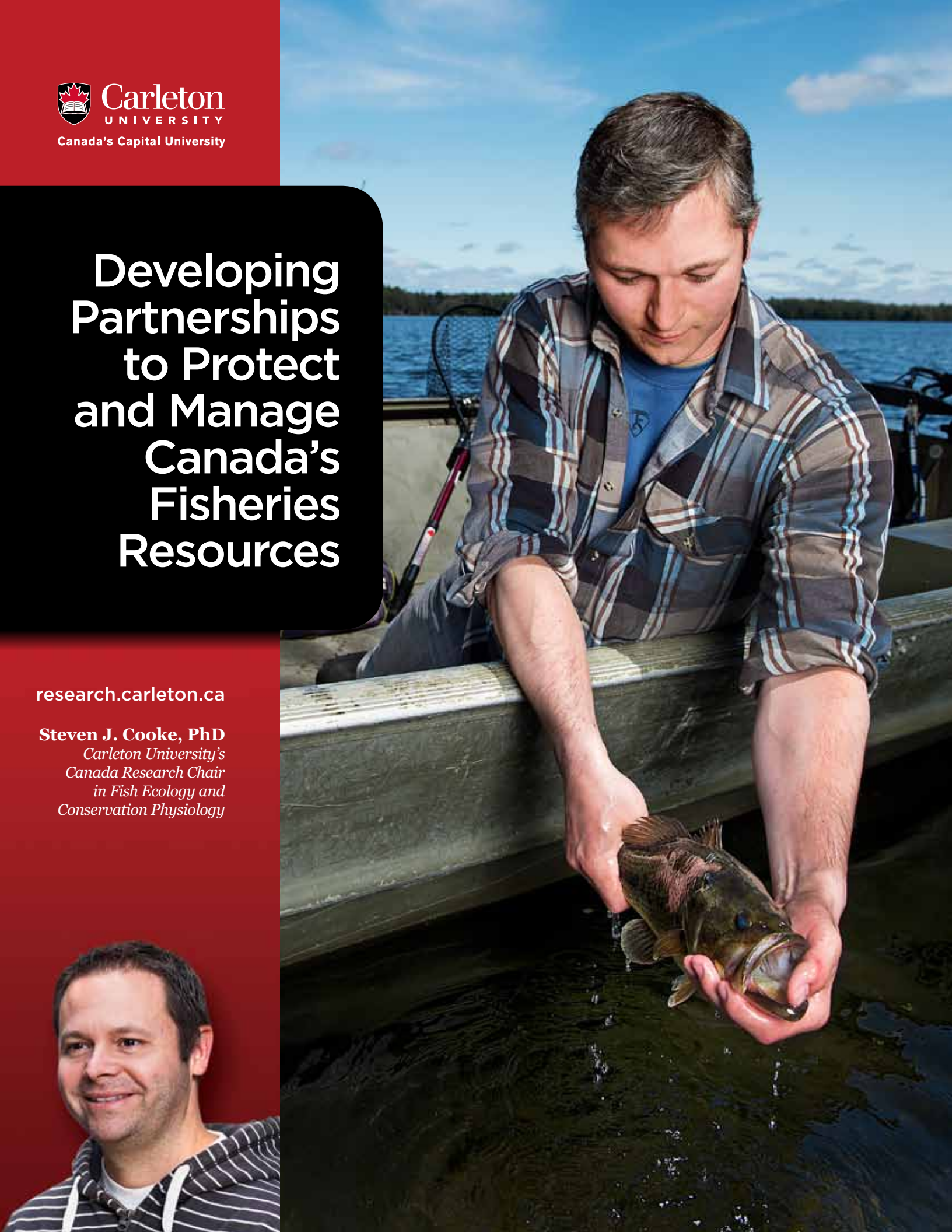
Steven J. Cooke, PhD
Carleton University's Canada Research Chair in Fish Ecology and Conservation Physiology



Steven Cooke's Team Helps Protect and Manage Canada's Fisheries

The economic value of the Canadian fishery exceeds $10 billion annually but their ecological and cultural worth to Canada are priceless. Yet fish stocks are declining in unprecedented numbers; a situation that may be irreversible in many cases.

Steven J. Cooke's research on the survival, protection and management of Canada's fisheries forms the foundation of science-based guidelines, policy and sustainability strategies in both marine and freshwater systems in Canada and abroad.

Cooke has built a substantial network of research collaborators and partnerships stretching from coast to coast to coast in Canada and covering recreational, commercial and Aboriginal sectors. Cooke partners with a wide range of scientists, fishing communities, and international interests around the globe.

A key focus of Cooke's current research involves understanding the fate of fish released from fishing gear, especially Pacific salmon in British Columbia, which encompasses all three sectors (recreational, commercial and Aboriginal fisheries). All fisheries release a portion of their catch – anglers typically throw back more than half of what they pull out of the water. Cooke and his team have examined how fish capture can cause injury, stress and even death among released fish. Their research has yielded novel strategies to reduce the harmful effects and improve the welfare of released fish as well as the so-called by-catch, in which another species such as turtles, is captured by accident.

Cooke's findings have generated some of the first reliable measures of post-release mortality for sockeye and coho salmon in the Pacific region. His work on bluefin tuna has supported development of a multi-million dollar charter boat recreational fishery in the Gulf of St. Lawrence.

Other research focuses on the ecology of fish in Toronto Harbour to evaluate the success of habitat restoration. In particular, Cooke's team has expertise studying fish habitat and migration patterns through electronic tagging (telemetry). Further studies extend into Ontario involving largemouth bass and bluegill, and into Norway with Atlantic salmon.

"Our research program is dedicated to the issue of release mortality and sub-lethal effects of fisheries interactions in relation to recreational, commercial and Aboriginal fisheries. Our goal is to provide leadership and innovative and applied science on the impacts of fisheries in Canada."

All research incorporates Cooke's 'toolbox' of conservation physiology – which his Carleton lab has been at the forefront of defining through substantial research initiatives. Essentially Cooke applies a broad approach encompassing several disciplines from molecular physiology to population biology in a new emerging discipline. Conservation physiology, says Cooke, studies the physiological responses of organisms to environmental changes, as a result of human alterations, that might cause or contribute to the decline of their population.

In 2012, he co-authored the UN Food and Agriculture Organization's first ever international Technical Guidelines on Responsible Recreational Fisheries – a 200-page document to help policymakers around the globe protect an important world resource.

THE RESEARCH

What I do
Determine the consequences of fishing by various sectors on released fish and fish populations, and develop strategies to protect and manage Canada's fishery.

Why it matters
Canada's fisheries are valued at more than $10 billion annually. Fish stocks are declining due to environmental changes and tied to human interaction.

What it will change
Science-based fisheries guidelines, policies and management strategies are important to protect marine and freshwater systems.

THE RESEARCHER

2014, Chair, Science Advisor Committee for Ocean Tracking Network Canada.

2014, Chair, Sea Lamprey Research Board, Great Lakes Fishery Commission.

2014, Editor-in-chief, Conservation Physiology (Oxford University Press).

2013, President, Canadian Aquatic Resources Section of the American Fisheries Society.

2012, co-author, UN Food and Agriculture Organization (FAO) Technical Guidelines on Responsible Recreational Fisheries.

PARTNERS

Collaborations and affiliations include Department of Fisheries and Oceans; Ontario Ministry of Natural Resources; Great Lakes Fishery Commission; National Oceanic and Atmospheric Administration (NOAA); Cape Eleuthera Institute; Pacific Salmon Commission; Chehalis First Nation; U.S. Fish & Wildlife Service; U.S. Geological Survey; Parks Canada; Bonefish and Tarpon Trust, and Muskies Canada.

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"Although fisheries activities have the potential to negatively affect fish species, fisheries and aquatic environments, we have the opportunity to develop effective management strategies that conserve aquatic systems and generate sustainable fisheries."

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