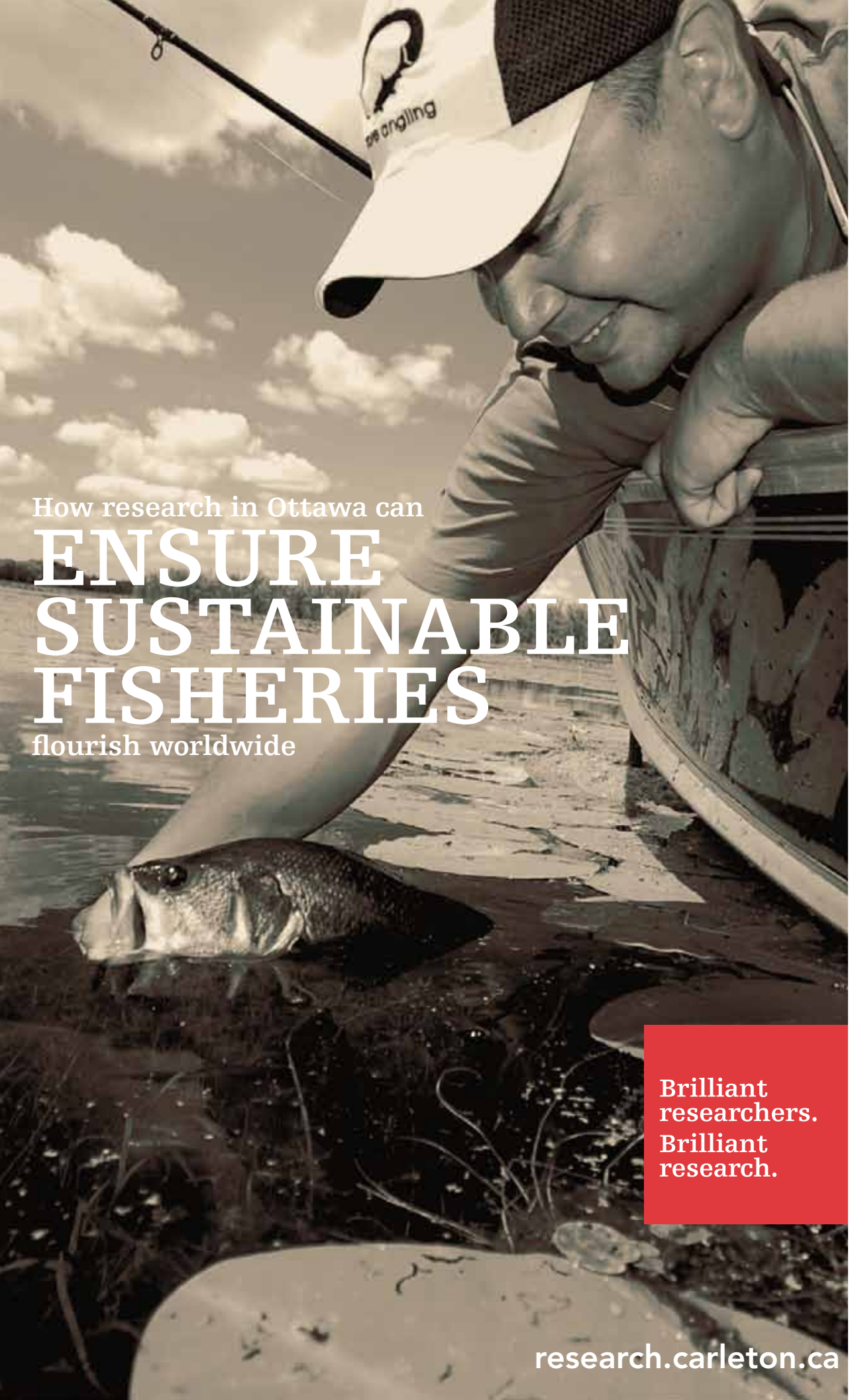

Carleton UNIVERSITY
Canada's Capital University

How research in Ottawa can

ENSURE SUSTAINABLE FISHERIES

flourish worldwide

Brilliant researchers.
Brilliant research.

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

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Brilliant researchers.
Brilliant research.

Research snapshot

Purpose
To develop novel and effective science-based fisheries guidelines, policy and management strategies.

Scope
Interdisciplinary research on the effects of multi-sector, multi-species fisheries on the condition/survival of released fish in freshwater and marine environments.

Thesis
Fishing impacts can be reduced by understanding fishing practices' influence on physiology, behaviour and fitness of wild fish.

Outcome
Ensure sustainable and environmentally responsible fisheries in Canada and beyond

Selected publications
- Cooke, S.J., and D.P. Philipp. Centrarchid Fishes: Biology, Diversity and Conservation. Blackwell-Wiley, UK, 2009.
- Cooke, S.J., and I.G. Cowx. Contrasting recreational and commercial fishing: searching for common issues to promote unified conservation of fisheries resources and aquatic environments. Biological Conservation. 128:93-108, 2006.

Grad student projects
Connie O'Connor,
third-year PhD student
The relationship between stress and fitness in wild fish.

Alison Colotelo,
second-year MSc student
Increasing the sustainability of inland commercial fisheries

Honours
- 2008 Medal from the Fisheries Society of the British Isles
- 2007 Early Researcher Award from the Ontario Ministry of Research and Innovation
- 2005 Award of Excellence in Fisheries Management from the American Fisheries Society

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Taking the lab to the field: an innovative approach

Steven Cooke's interest in fish began with a tackle box he inherited from his grandfather. As a child, the Canada Research Chair in Fish Ecology and Conservation Physiology dreamt of becoming a professional angler on TV. His excitement for fish and aquatic biology grew exponentially over the years and led to a career where he uses his knowledge and passion to solve conservation problems and train a new generation of scientists.

In his role as a Canada Research Chair, Cooke is currently leading a team of students and post-doctoral fellows on many groundbreaking projects related to the sustainability of fisheries. A variety of marine and freshwater fish are being studied including sharks, barracuda, muskellunge, sunfish and salmon. The research extends from the midwestern United States and eastern Canada, to the Bahamas and British Columbia.

AN UNCERTAIN FATE

Most fisheries are multi-sector and include recreational, commercial and aboriginal components. They provide immense socio-economic benefits, including the generation of wealth and provision of protein for consumption. However, some of the fish captured are released and their fate is uncertain. Although some fish survive, those that die can create serious conservation problems. In addition, even fish that survive could experience sublethal impairments related to health, immune function, growth, fitness and behaviour.

Cooke and his team intend to identify the different factors that contribute to fish mortality, but with a particular focus on solutions to this problem.

"Our work is based on the premise that there is an immediate and pressing need to ensure that multi-sector fishing activities in Canada and elsewhere are sustainable," says Cooke. "Often times there are small changes in fishing gear or fisher behaviour that can change the outcome of the fishing experience for the fish."

Cooke's team uses physiological tools to understand how wild fish respond to different stressors. Conservation physiology—the idea that physiological tools can help solve conservation problems—is relatively novel and represents a nascent discipline that Cooke has helped to define. He hopes to extend his work to understand the role of stress on individual fish at the population level. The team tries to determine the influence of different fishing gear types and fisher behaviours on fish condition and survival, and find ways of facilitating recovery of fish that are exhausted.

A SOLUTION-BASED APPROACH

The research must be conducted in the field in order to be relevant to the stakeholders. Cooke and his team use various biotelemetry techniques, where they attach transmitters to the fish. These devices send out signals, enable tracking fish in their natural environment, and determine their behaviour and survival after release from different fishing gears.

An important component of the program is dissemination of findings to various stakeholder groups through peer-reviewed scientific outlets, magazines, newsletters, and presentations to fishing clubs and organizations.

Cooke says he is extremely pleased with the quality of graduate students recruited at Carleton and the real-world experience the various projects provide.

"It is amazing to watch students interact with the government, the NGOs and the fishers themselves. When working with people whose livelihood depends on your research, it makes one understand the relevance and the importance of these issues."

"Our research is based on the premise that fisheries must be sustainable."

Canada Research Chairs
The Canada Research Chairs Program is designed to attract the best talent from Canada and around the world, helping universities achieve research excellence in natural sciences and engineering, health sciences, and social sciences and humanities.

Chairholders improve Canadians' depth of knowledge and quality of life, strengthen the country's international competitiveness, and help train the next generation of highly skilled people. When fully implemented, the program will support 2,000 research professorships across the country.

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