



Fishing Through a Lens: Using underwater cameras to detect freshwater fishes

THE PROBLEM

Freshwater fish play important roles in aquatic ecosystems by maintaining food web structure, cycling nutrients, engineering habitats, and serving as biological indicators. In Canada, however, many species are at risk: over 75 are registered under the Species at Risk Act (SARA). Declines in their populations can result in negative impacts for the species, their ecosystem, and even for humans so their conservation and recovery is a priority focus. To do so, it is vital to understand their distribution and abundance and monitor any changes to them. Conventional fish sampling consists of electrofishing, seining, and trapping which create risks of increased stress and potential mortality for these already threatened fish.

A SOLUTION: UNDERWATER CAMERAS

A recent study used underwater cameras to evaluate redbreast dace populations, one of the species at risk listed under SARA, and compare its effectiveness to conventional sampling methods. They found that it is as effective as conventional methods, and can be used in standardized monitoring programs as long as you take into account the different environmental variables that affect the detection of the cameras (ex: water clarity >40cm visibility). They found that they save time in the field (less fieldwork preparation, more sites sampled, no restraints), however, can be time consuming after the fact (watching videos, identifying fish).

HOW DOES IT COMPARE TO OTHER NON-HARMFUL METHODS?

Method	Pros	Cons
Underwater cameras	<ul style="list-style-type: none">• Capture behaviour & habitat use of fishes• Store information & verifiable	<ul style="list-style-type: none">• Equipment costly• More time consuming• No spatial reference
Snorkel surveys	<ul style="list-style-type: none">• Abundance estimates• Immediate results	<ul style="list-style-type: none">• Non-verifiable• May disturb fish behaviour
eDNA	<ul style="list-style-type: none">• Less sites sampled• Community data	<ul style="list-style-type: none">• Susceptible to contamination• No abundance• Costly

RESOURCES

- Dr. Rowshyra's papers: [Detecting Native Freshwater Fishes Using Novel Non-invasive Methods & Using occupancy models to assess the effectiveness of underwater cameras to detect rare stream fishes](#)