

---

# Updating knowledge on salmonids fertility using ultrasound imaging technology

Guillaume Forget<sup>\*†1</sup>, Dominique Huteau , and Marie Nevoux<sup>2</sup>

<sup>1</sup>INRA (INRA) – Institut National de la Recherche Agronomique - INRA – UMR ESE, 65 rue de Saint-Brieuc Bât. 33, CS 84215, 35042 Rennes Cedex, France, France

<sup>2</sup>Écologie et santé des écosystèmes (ESE) – Institut national de la recherche agronomique (INRA) : UMR985, Agrocampus Ouest – AGROCAMPUS OUEST Centre de Rennes 65 rue de Saint-Brieuc 35042 Rennes cedex, France

## Abstract

Lotic ecosystems are strongly affected by global changes through modifications on water temperature, hydro sedimentary flows, water quality or ecological continuity. All these changes have effects on fish populations and particularly on salmonids reproduction potential. In France, the management of salmon populations is based on leviabile fish quotas (TAC) which are set for each river to limit fishing impacts to sustainable levels. The definition of these river specific TACs is based on fieldwork monitoring and on female fertility estimates, derived from a relationship between the size and age of females. However, it has been shown that this relationship varies from one year to another and from one river to another. Therefore, there is a need to develop non-destructive tool to measure fertility and strengthen the relationship with female's age and size. Medical imaging technology meets these requirements. Indeed it allows to manipulate all fish caught by electrofishing and to get gonad images without disturbing their development. Then, it is possible to determine the volume of the gonads and eggs to accurately determine the number of eggs produced by female. This work enables to update knowledge on salmonids fertility and provides an update of TACs on relevant rivers for a sustainable management of this endangered species.

**Keywords:** Fertility, Ultrasound imaging, Global change

---

\*Speaker

†Corresponding author: [guillaume.forget@rennes.inra.fr](mailto:guillaume.forget@rennes.inra.fr)