



Conference Abstract

An eDNA-based method for monitoring a salmonid infectious disease: Development and application

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Received: 22 Feb 2021 | Published: 04 Mar 2021

Citation: Duval E, Blanchet S, Quéméré E, Jacquin L, Veyssièr C, Lautraite A, Garmendia L, Yotte A, Parthuisot N, Côte J, Loot G (2021) An eDNA-based method for monitoring a salmonid infectious disease: Development and application. ARPHA Conference Abstracts 4: e64797. <https://doi.org/10.3897/aca.4.e64797>

Abstract

In the current context of global change, freshwater species are increasingly exposed to emerging infectious diseases (Okamura and Feist 2011). As an example, the Proliferative Kidney Disease (PKD) has emerged in salmonid fish during the last two decades, both in Europe and North America, causing important losses in aquaculture and worrying declines of several wild salmonid populations (Sudhagar et al. 2019). It is caused by *Tetracapsuloides bryosalmonae*, a myxozoan parasite with a complex life cycle involving two hosts: salmonids (intermediate host) and bryozoans (primary host). As PKD development strongly depends upon water temperature and quality, it is expected that global change could lead to more outbreaks (Okamura et al. 2011). Current monitoring of fish parasite load and infection status relies on histological observation or *T. bryosalmonae* DNA amplification out of kidney samples, involving fish euthanasia, and thus relatively small sample sizes when inferring infection prevalence. As large-scale screening of this parasite infections are required to better understand PKD dynamics, we have developed a non-lethal method for *T. bryosalmonae* detection in fish host based on the biological fact that *T. bryosalmonae* spores can be excreted from infected fish into the water through urine (Hedrick et al. 2004). This novel approach based on the detection of *T. bryosalmonae*

DNA in fish urine was developed on wild brown trout (*Salmo trutta*), a species known to be an intermediate host of *T. bryosalmonae* and for releasing infective spores (only towards bryozoan host) through urine (Okamura et al. 2011). Applying this method, we have been able to map wild brown trout infection prevalence across 50 sites at the foothill of French Pyrenees and to identify the main environmental drivers of this disease.

Keywords

parasitology, proliferative kidney disease, non-lethal sampling, wildlife, fresh water

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Presented at

1st DNAQUA International Conference (March 9-11, 2021)

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