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Modelling Aquatic Viral Dynamics

Viral haemorrhagic septicaemia (VHS) and infectious haematopoietic necrosis (IHN) are two important viruses of rainbow trout (*Oncorhynchus mykiss*). Both viruses have a significant impact on the trout industry worldwide, with VHS costing an estimated £10.3-31 million per year in Europe [1] and IHN costing the US economy £22.2 million per year (data up to 2005) [2]. Currently the UK is free of both of viruses, but should one or the other enter the UK, knowledge of how they may spread is vital to reducing the overall impact. Methods of introduction are limited to either importation of infected livestock or wild fish movements. Using deterministic models, we can investigate how the viruses would spread geographically over time and predict the effects of different control measures to aid in minimising the overall impact an outbreak of either virus would cause.

This poster will present some initial findings regarding stocking density and an outline of a preliminary first model, looking at viral movements within a single tank of fish.

References

[1] Gregory, A., Murray, A.G., Raynard, R.S. and Snow, M., *A Risk Analysis Approach to Aquatic Disease Management* [Poster] (2010)

[2] Lorenzen, N. and LaPatra, S.E., *DNA vaccines for aquacultured fish Characteristics of the DNA vaccines against fish* Revue Scientifique et Technique (International Office of Epizootics) **24** 201–213