Stability of Infection Patterns with Time, the Case of Infectious Pancreatic Necrosis Virus in Scottish Farmed Salmon

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Is IPNV Persistent or Transient?

- Infectious pancreatic necrosis virus is widespread and increasing in Scottish salmon farms (90% marine sites)
- Is a sample taken 1 or 2 years ago a good indicator of a site’s current infection status? Is infection persistent (or repeated) or transient?

If transient then:
- The high prevalence indicates very high transmission rates
- Samples rapidly lose their information value for infection control
- Controls should be targeted above site level

Method

- Sort sample from each site into pairs (e.g. 1&2, 1&3 and 2&3)
- Divide pairs into two sets: I. earlier sample +ve or II. earlier sample –ve
- Sort lists by time T between earlier and later sample
- Find probability of +ve versus T for list I
- Multilevel logistic regression model used to account for inter-regional (i) and inter-annual (j) variation
- Repeat for list II

\[ P(I_T) = \text{Logit}(a_{ij} + b_{ij} \ln(T+1)) \]

Conclusion

IPNV infection does not persist on marine sites for periods of >2 years: Infection is transient. This may reflect harvesting and fallowing cycle after 18 months. Some freshwater sites show response to infection history several years later: Infection is persistent