Sensitivity of mortality reporting by the French oyster farmers

C. Lupo1, A. Osta Amigo1, Y.-V. Mandard2, C. Peroz3, I. Arzul1, C. François1, C. Garcia1 & T. Renault1

Background and Objectives

• As diseased shellfish seldom show symptoms, a mortality event represents the only sign leading to disease suspicion. Disease surveillance in shellfish is notably based on passive mortality event reporting by shellfish farmers to the local competent authority. The key quality indicators for passive surveillance are reactivity (i.e. timeliness of reporting) and sensitivity (i.e. completeness of reporting).

• Since 2008, increased mortality outbreaks occur in France in spat of Pacific oyster *Crassostrea gigas*, leading to economic losses. As indicated on Figure 1, the number of reported mortality events varies from one year to another.

Methods...

Capture-recapture analysis

• Estimated total number of oyster farmers concerned with mortality cases, *C* = *N* + *a* + *b* + *c* + *d*.
• Chapman’s estimate:
  
  \[ N = \frac{a + b + c + d}{b + c} \]
• Estimated sensitivity, *Se*, of source 1
  
  \[ Se = \frac{a + b}{N} \]
• No heterogeneity of catchability among individuals
  
  \[ No but stratification : OK \]
• Sources are independent
  
  \[ ... \]
• Underlying assumptions
  
  • Population is closed: OK
  • Only true cases: OK
  • No heterogeneity of catchability among individuals: No but stratification: OK

... and Material

Case definition: Oyster farmer concerned with mortality case

Place: Charente-Maritime, France (1/3 of French oyster farmers)

Time period: 2007-2010

Source 1: Annual database of mandatory mortality reporting

Source 2: Questionnaire-based retrospective survey conducted in 2010 as a part of larger study of oyster mortalities*

Results

Figure 1: Number of farmers reporting mortality events, Charente-Maritime bay

Figure 2: Representation of a two sources capture-recapture analysis

Figure 3: Estimation of the sensitivity *Se* of mortality reporting

Discussion

• Mortality reporting is potentially a good source of surveillance information but not consistent over time.

• Bottlenecks for reporting and solutions to facilitate reporting have to be identified to improve sensitivity of the reporting system, whatever the epidemiological situation is on a long-term period.