Winter mortality of Sydney rock oysters

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Winter mortality

Case definition

Mortalities in adult *Saccostrea glomerata*
July to November
Port Stephens South
High salinity water
Gross focal lesions

Cause?

Microcells (*Bonamia roughleyi*?)
Bacteria
### Cases during CRC-P

#### Cases
Few (7) submissions
2 meet case definition

#### Investigations
**Histology**
Microcells (*Bonamia, Mikrocytos, Perkinsus*)

**Bacteria** – culture, PCR, microbiomics

<table>
<thead>
<tr>
<th>Submission</th>
<th>% mortality</th>
<th>Age</th>
<th>Submitter Comments</th>
<th>Gross lesions present?</th>
<th>Key histological findings</th>
<th>Meets case definition?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Crookhaven River</td>
<td>80%</td>
<td>&lt;1.5 yr</td>
<td>Cool and dry conditions</td>
<td>No</td>
<td>No focal lesions.</td>
<td>Wrong age. No lesions.</td>
</tr>
<tr>
<td>2 Georges River</td>
<td>10-15%</td>
<td>2 yr</td>
<td>Routine submission</td>
<td>No</td>
<td>Not examined</td>
<td>No. No gross lesions observed.</td>
</tr>
<tr>
<td>3 Crookhaven River</td>
<td>80%</td>
<td>&lt;1.5 yr</td>
<td>Cool and dry conditions</td>
<td>No</td>
<td>Not examined</td>
<td>Wrong age. No lesions.</td>
</tr>
<tr>
<td>4 Nelsons Lagoon</td>
<td>50%</td>
<td>(Spat) 0.5 yr</td>
<td></td>
<td>No</td>
<td>Alimentary duct hyperplasia. Nonspecific infiltration.</td>
<td>Wrong age. No lesions.</td>
</tr>
<tr>
<td>5 Clyde River</td>
<td>15-20%</td>
<td>2 yr</td>
<td>No deaths in juvenile oysters on same lease</td>
<td>Yes</td>
<td>Focal lesions.</td>
<td>Yes.</td>
</tr>
<tr>
<td>6 Berrys Bay, Shoalhaven River</td>
<td>20%</td>
<td>1.5 yr</td>
<td>Recent frost High salinity</td>
<td>Yes</td>
<td>Focal lesions.</td>
<td>Yes</td>
</tr>
<tr>
<td>7 Shoalhaven River</td>
<td>5%</td>
<td>1-2 yr</td>
<td>Routine submission</td>
<td>No</td>
<td>Minimal pathology.</td>
<td>No lesions.</td>
</tr>
</tbody>
</table>
Microcells

Inconsistent occurrence
PCR negative:

*Bonamia* assay: Marty et al. 2006

*Mikrocytos* assay: Garcia et al. 2018

*Perkinsus* assay: Gauthier et al. 2006
Bacteriology

Species
Vibrio splendidus

Characteristics
Known pathogen
Toxin-producing genes
Inconsistent presence
Vibrio splendidus

NGS

Toxin genes

Different to reference strain
Microbiomics

Community diversity loss

Characteristics
Similar communities in WM cases
Bacterial community shifts

Taxa
Bradyrhizobium, Mesorhizobium and Arcobacter increased

Helicobacter, Synechococcus, Mycoplasma, Propionibacterium, Illumatobacter, Vibrio and unidentified uncultured bacteria decreased
Conclusions

Developed case definition

Investigated 7 events

2 met case definition

Microcells not causative

Definite shifts in bacterial communities

Cause unclear but multifactorial
Acknowledgements

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Jessica Buss

When biosecurity works nothing happens