

Oyster mortality and performance: determining causes



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Oyster mortality: why?

- Causes of mortality in farmed animals:

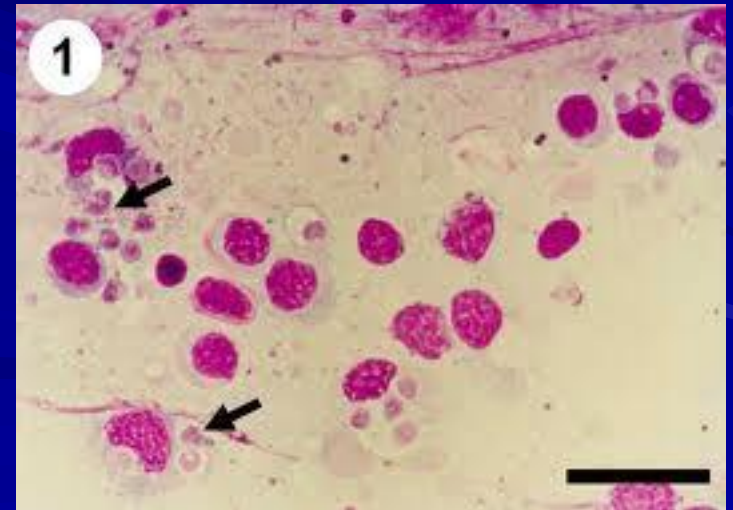
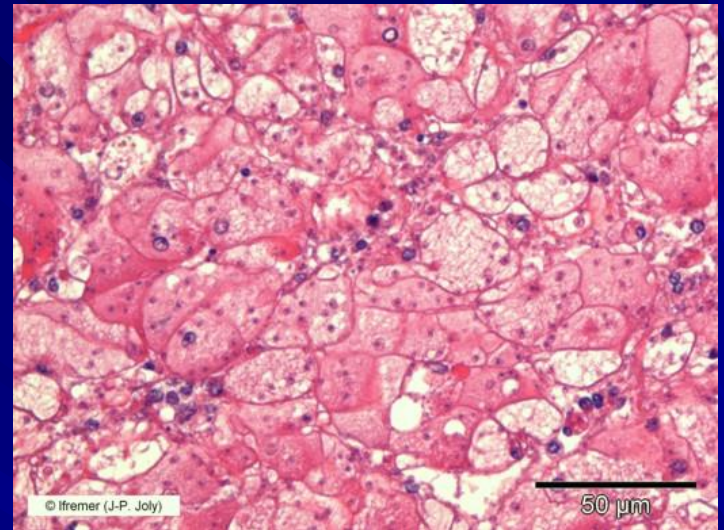
- Stock
- Disease
- Environmental causes
- Husbandry

- Tools for determining causes of mortality in invertebrates are blunt

- Expertise is thin

Problem

- Lost productivity
- Problems with reporting
- Lack of ability to differentiate 'unknown' mortality from an emerging or serious disease, e.g. POMS
- Scientifically interesting and challenging



Multi-factor approach

■ Monitor:

- Diseases / health status of stock
- Environment and productivity
- Husbandry

■ Analyse

- All factors against performance and mortality
- Account for differences in husbandry

- Even without definitive 'cause' differences in mortality can be identified and ways to minimise can be determined

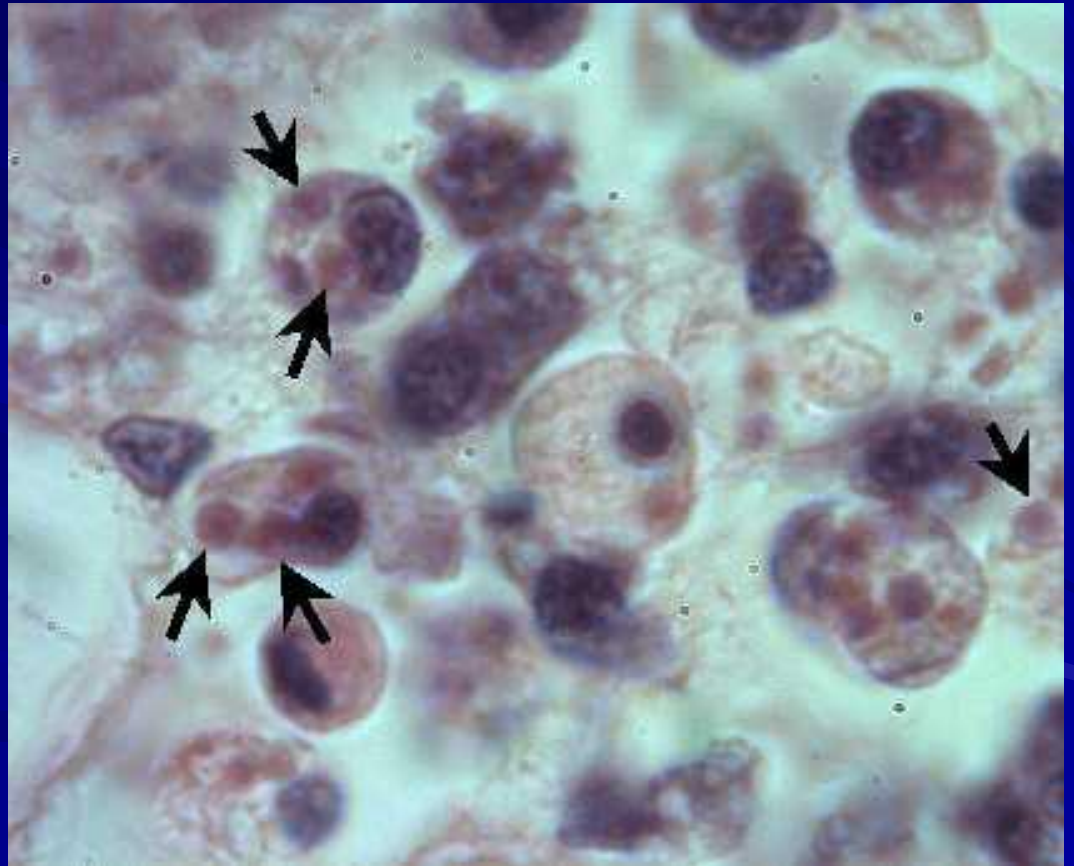


How does it work?

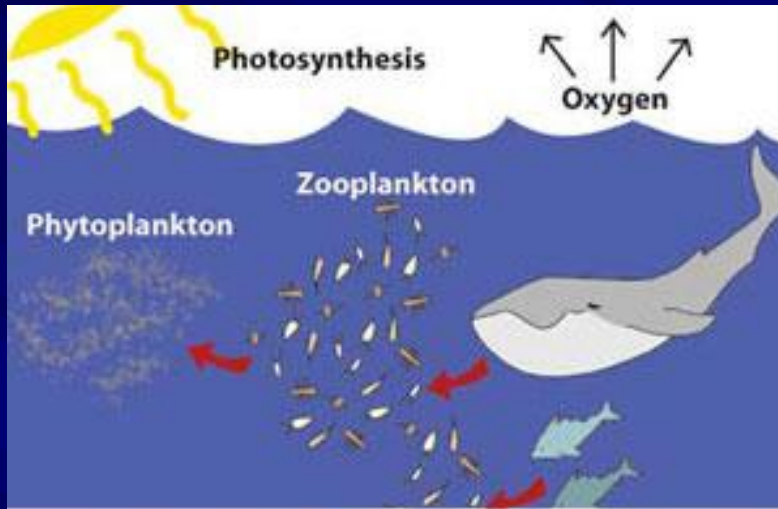
- Sample oysters during mortalities:
 - Test for OsHV-1 (dependant on results of survey and mortality pattern)
 - Histology for general assessment
- Monitor the environment and productivity
- Record husbandry
 - Mortality %
 - Growth
 - Farm practices
- Analyse all factors to develop an understanding of risk
- Use records with information on family lines to provide

Oyster investigation

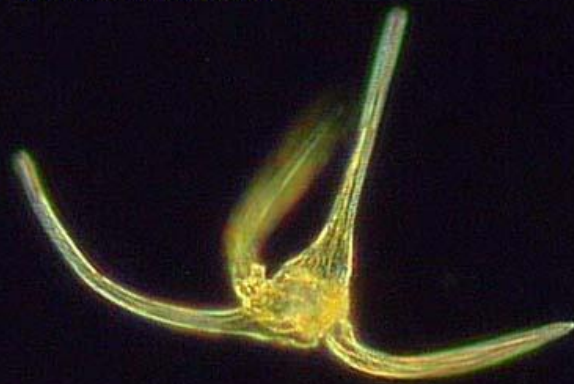
- Examine oysters from areas with mortality
- OsHV-1 tests
- Look for signs of disease or environmental stress
- Use experts
- Train local pathologists



Environment

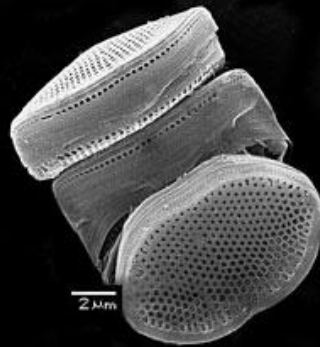
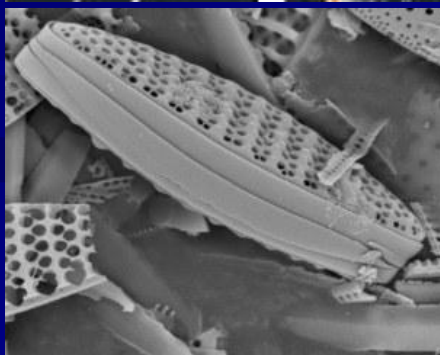
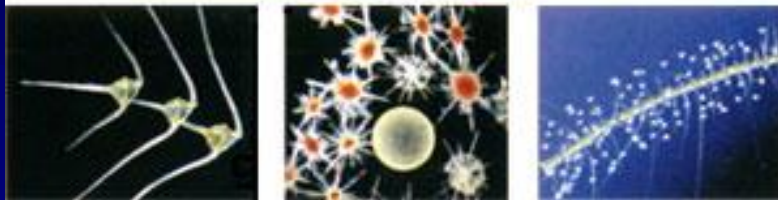


Ceratium longipes

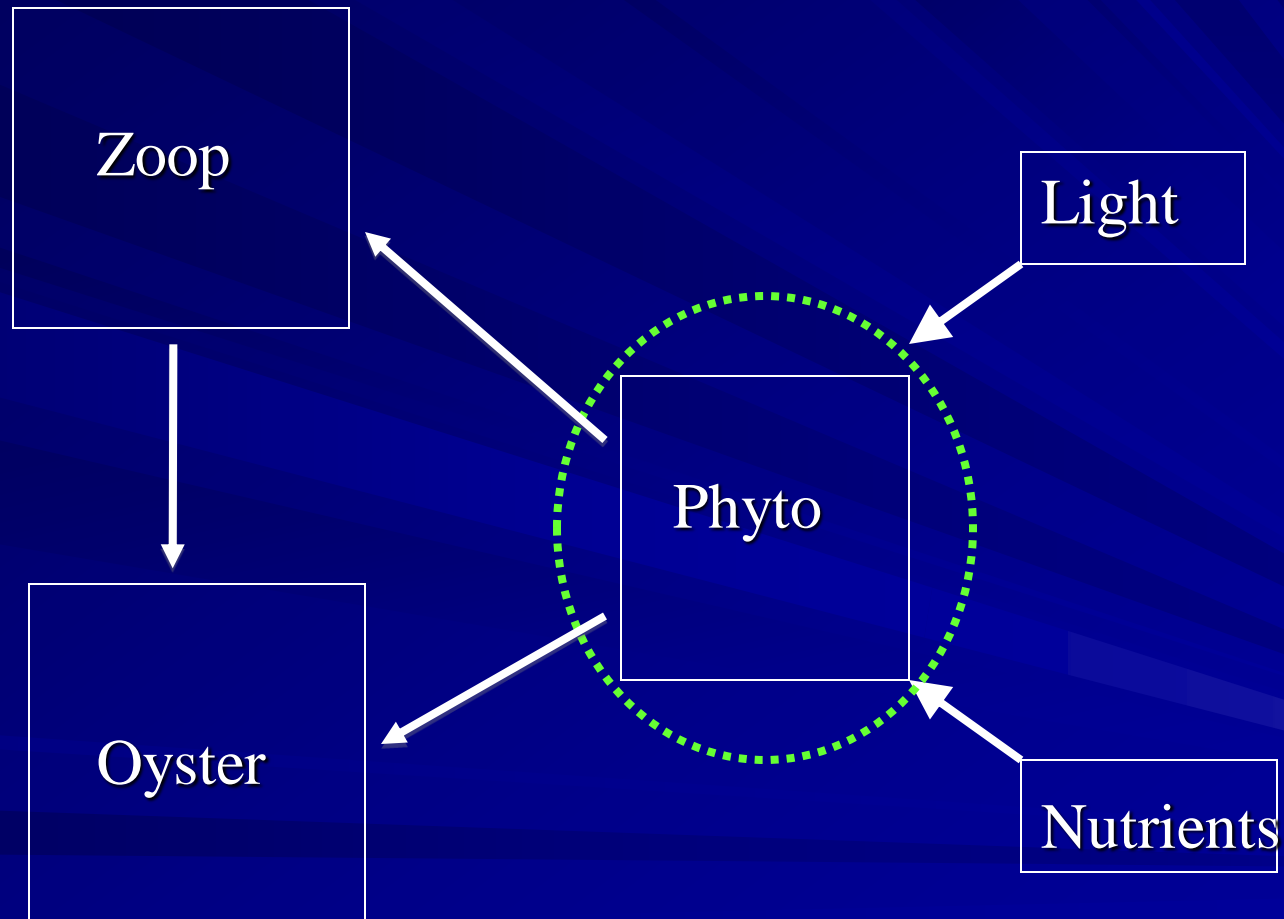


100 μm

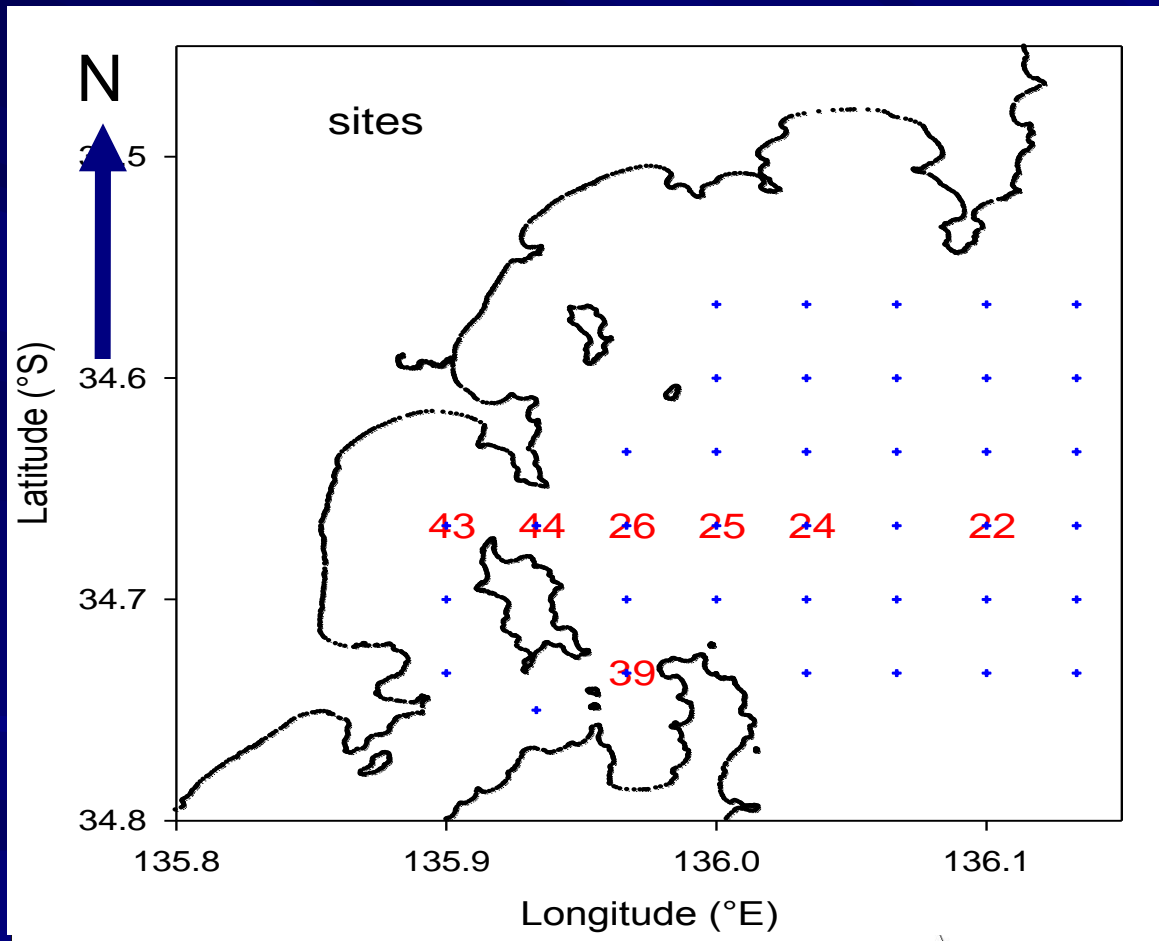
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The marine food chain

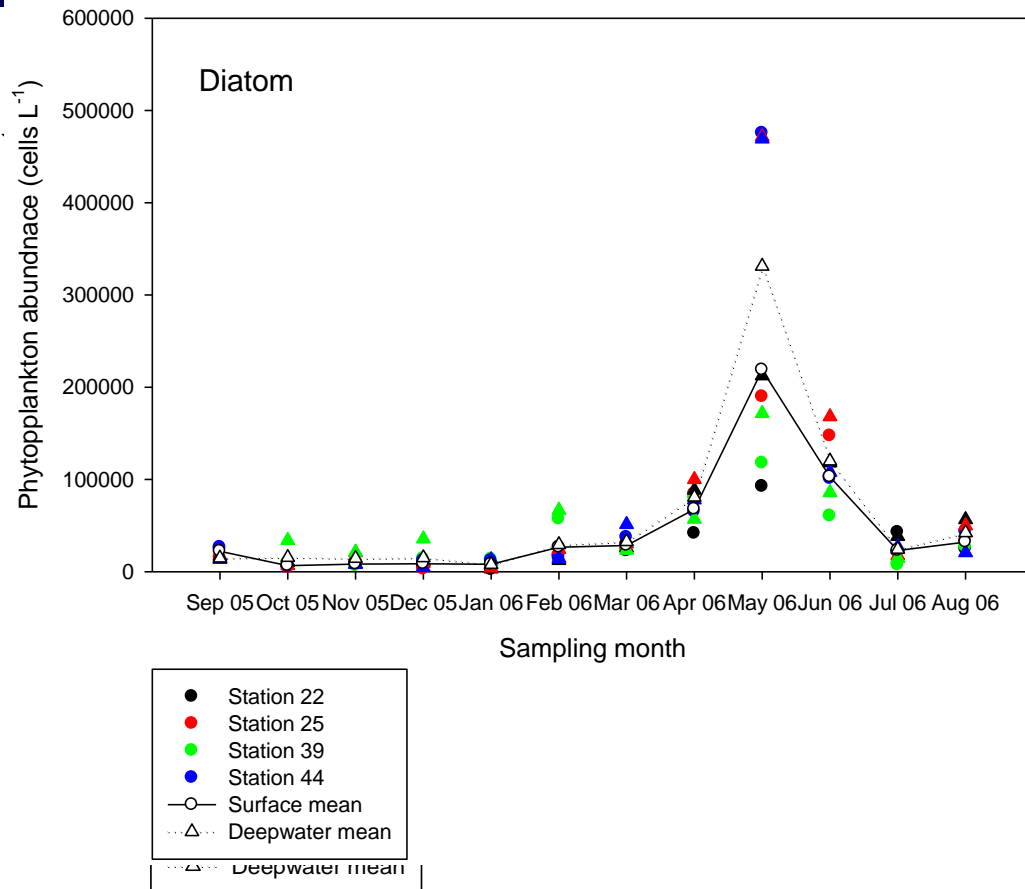


Sampling regime



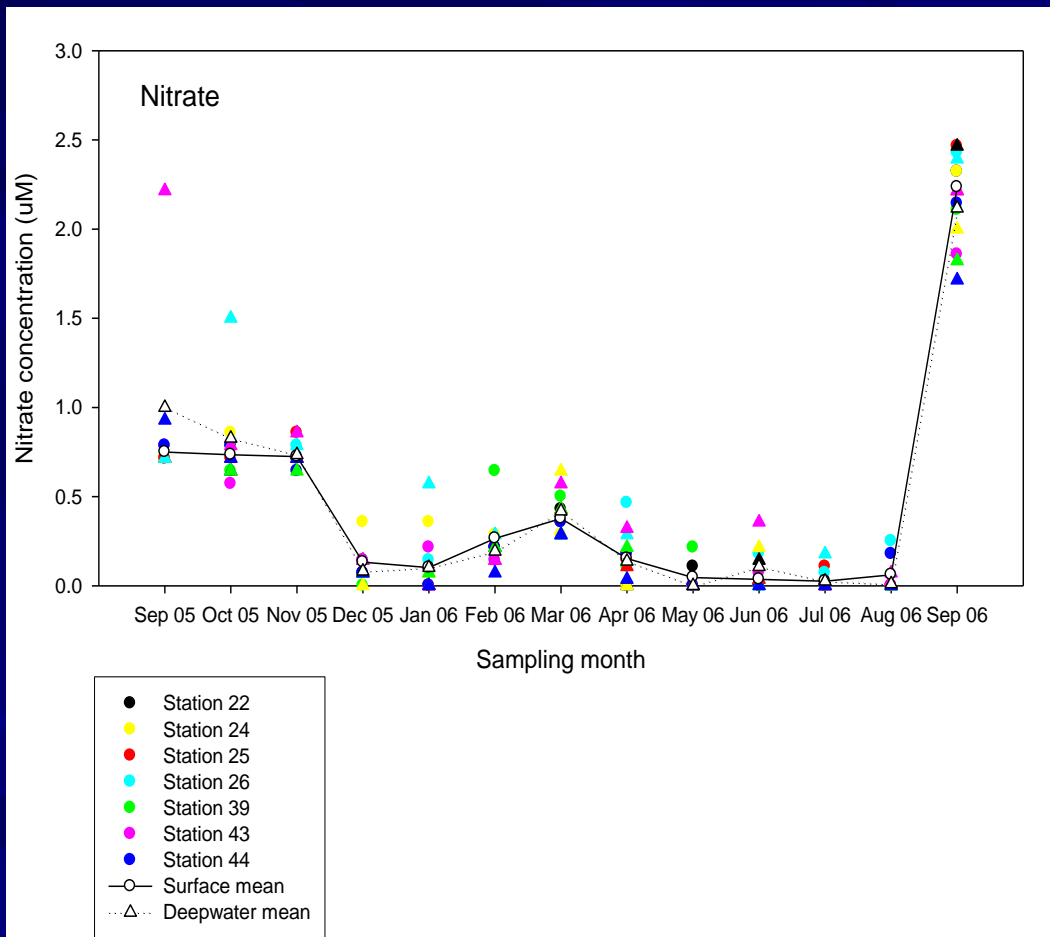
- Previous work done in tuna zone
- SASQAP data will be useful but additional are needed
- Examine
 - Light
 - Nutrients
 - Plankton samples
 - pH
 - Process for productivity studies

Phytoplankton



■ Understand annual patterns of productivity

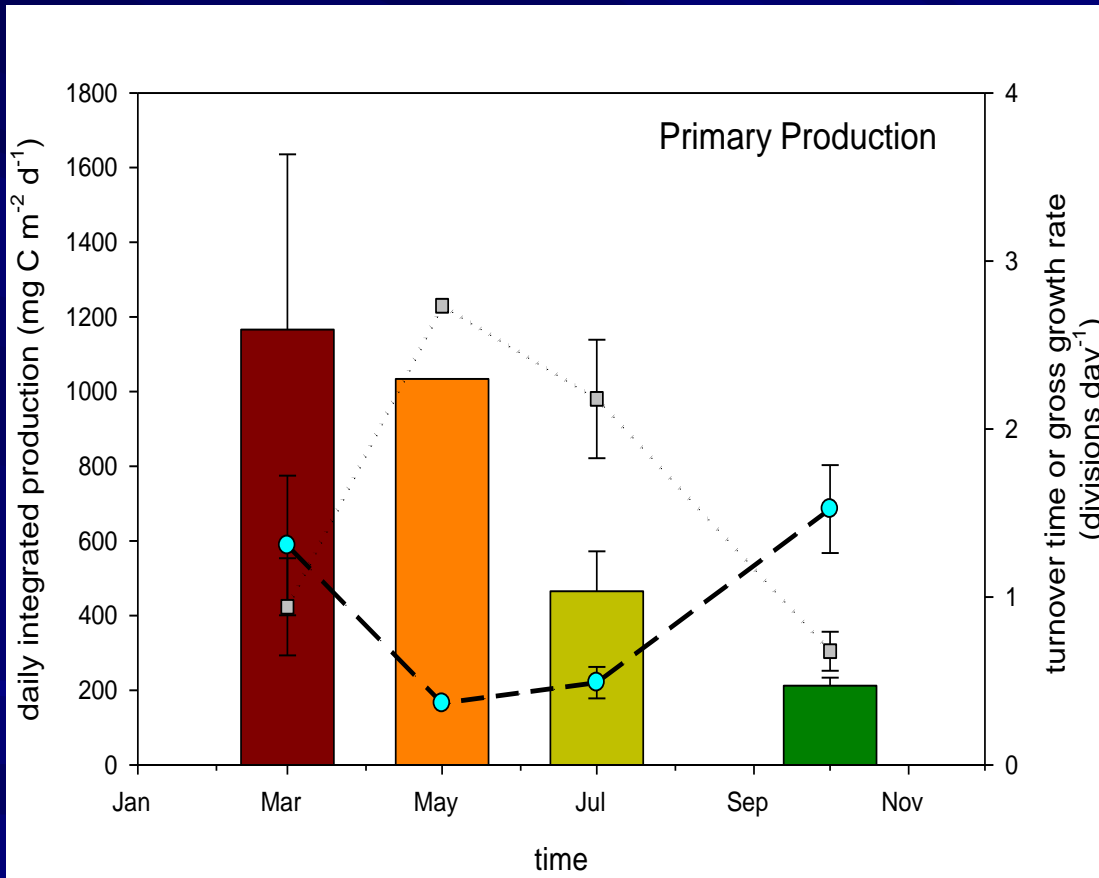
Nutrients



Understand drivers of productivity

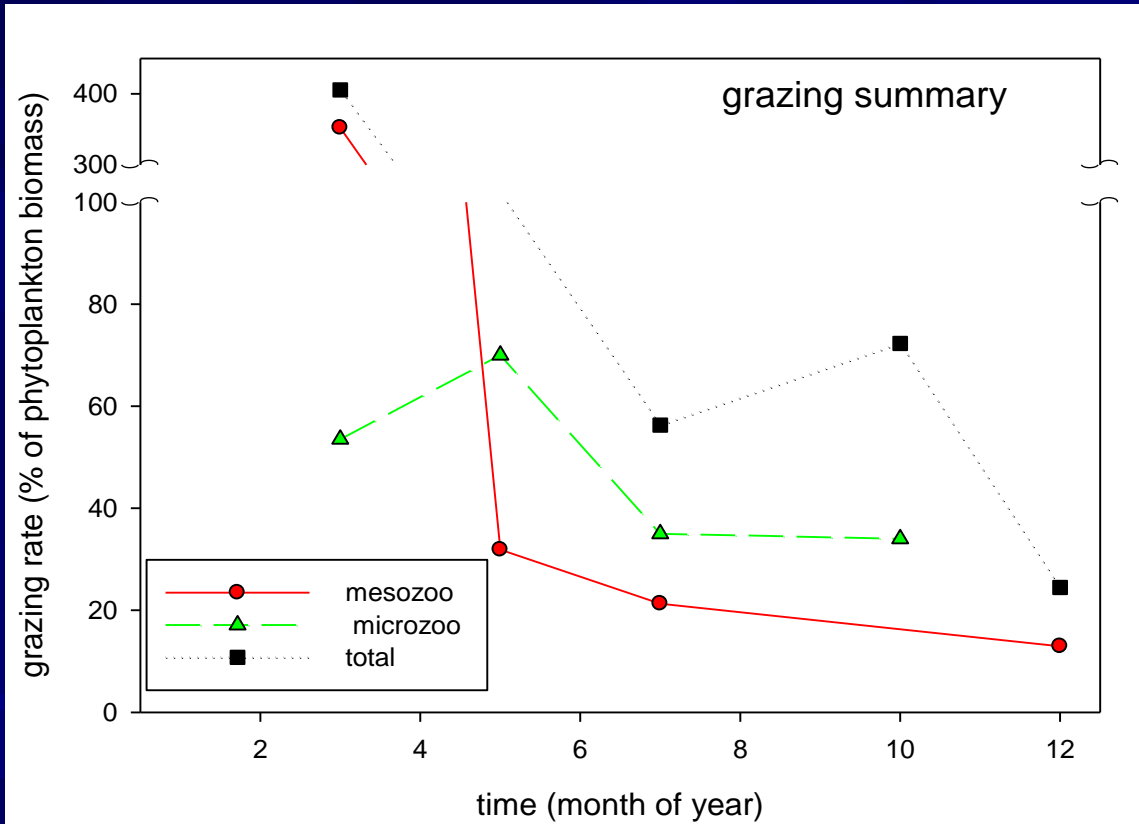
Understand lags, gaps and pauses

Primary Productivity



- Integrate understanding of productivity with all observations

Zooplankton grazing



- Small zooplankton are a component of oyster food
- Meso- and zoop are grazers and compete with oysters

Husbandry

- Record husbandry in areas of interest
- Record consistently
- On-line tool?



Analyse

- Look at patterns of mortality vs
 - Oyster family / genetics
 - Husbandry
 - Weather
 - Environmental factors
- Develop an understanding of why oysters die
- Recommend best family lines and practices for each growing area

