

Environmental Factors Affecting Oyster Health

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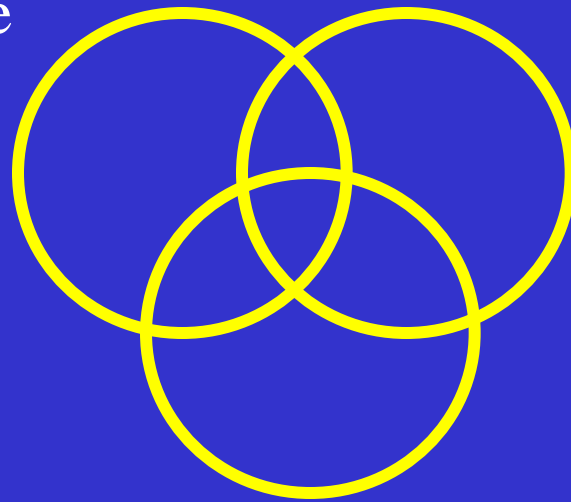
Risk Factors in Mortality

- Pathogens are ultimately the cause of infectious disease.
- Presence of pathogen \neq disease
- Risk factors that contribute to its cause and distribution are often more important as a foundation for the formulation and application of control measures.
- What factors leads to mortality if there is no pathogen present?

Mortality Triad

Infectious
Disease

Environment



Oyster

Oyster Factors

- Why do some oysters survive and others don't ?
 - species
 - genotype/ haplotype/ physiologic fitness
 - nutritional and immune status
 - age at infection
- How can the oysters be better suited to survival?
 - Increasing the fitness of the seed for the growing conditions
 - Breeding programs to produce more adaptable seed – Hatcheries
 - Selecting spat from collectors



Environmental Factors

- Benthic soil type - siltation
- Water supply - salinity, temperature
- Weather and Climate - winter rainfall
- Food sources - phytoplankton blooms
- Oxygen source and hypoxia/anoxia
- Economic health of the farm – management practices

Oyster Mortality in Bedeque Bay

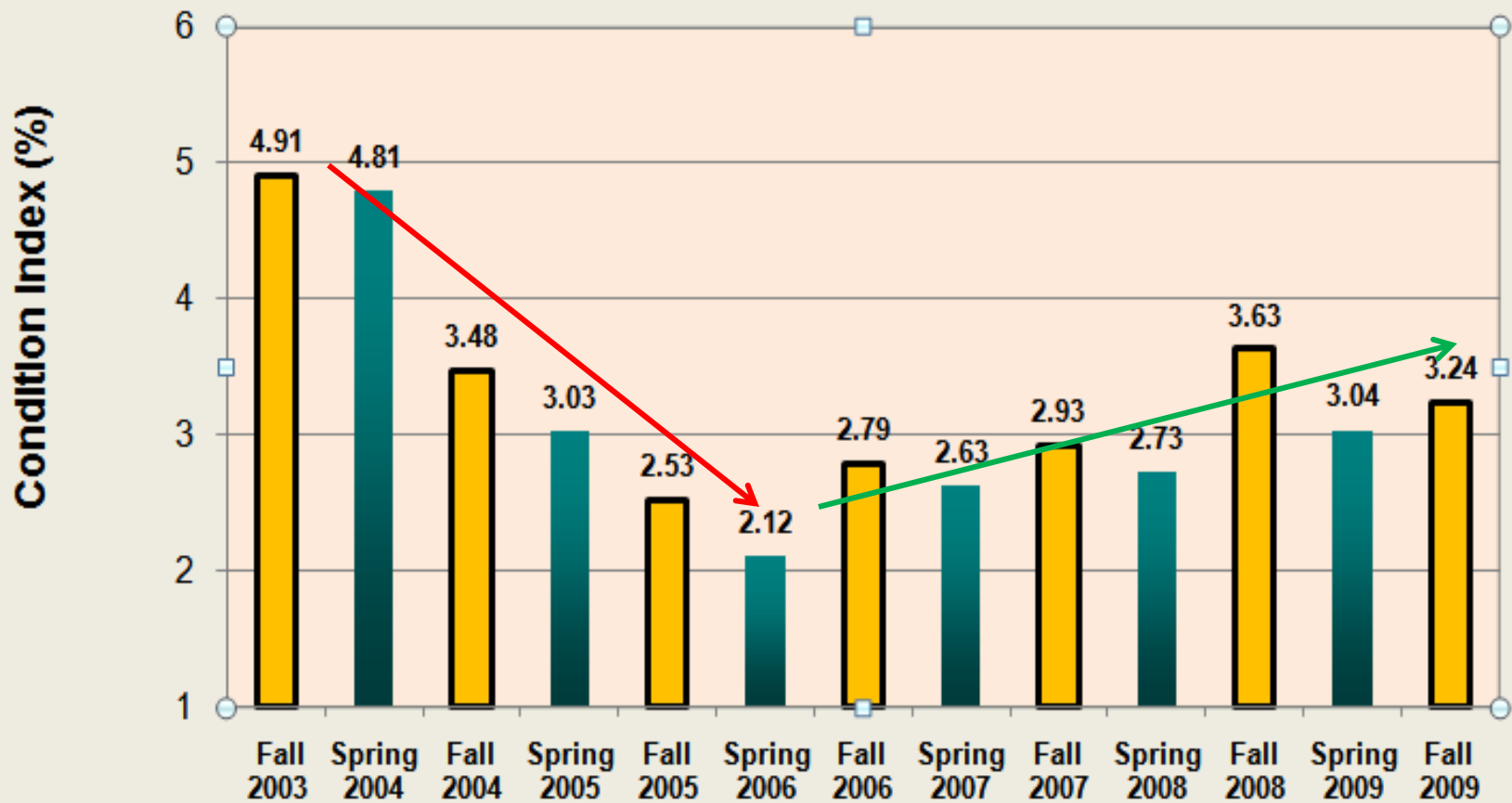


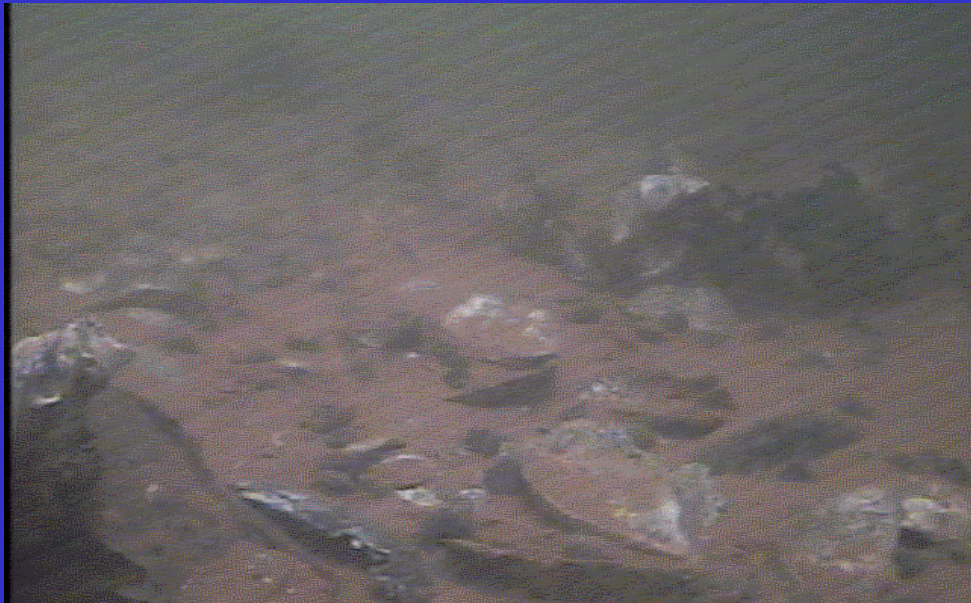
Mortality in Bedeque Bay

Speculated Causes

- Long cold winter with little thawing
- Increased turbidity in the water and siltation—runoff from agricultural land
- Disease caused by pathogen - MSX
- Pesticide poisoning due to agricultural runoff (similar to trout kills)
- Decreased oxygen in the water due to eutrophication
- Darned government!

Bedeque Bay Oyster Condition Index (2003 - 2009)





Wilmot River



Wilmot River



Conclusions

- **No pathogenic organisms were identified as the cause of the oyster mortality**
- **Water quality parameters were within normal ranges through the study (temperature, salinity & dissolved oxygen)**
- **Sea lettuce did not appear to play a role in covering oyster beds during the study**

Conclusions

- **Condition index of oysters gradually declined during the study**
- **Heavy siltation occurs during the spring**
- **Oyster mortality occurs in late-April / early-May and not during the winter**
- **The main areas of concern for oyster mortality in Bedeque Bay are decreased condition index and siltation**

Web of Causation Mortality in Bedeque

