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### Geoduck clam aquaculture as press and pulse perturbations to eelgrass



Jennifer L. Ruesink  
Biology, University of Washington

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### ~~did~~ What would you measure?




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	Physical properties	Individual – level response	Population – level response
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Geoducks may be ecosystem engineers/ form biogenic structure

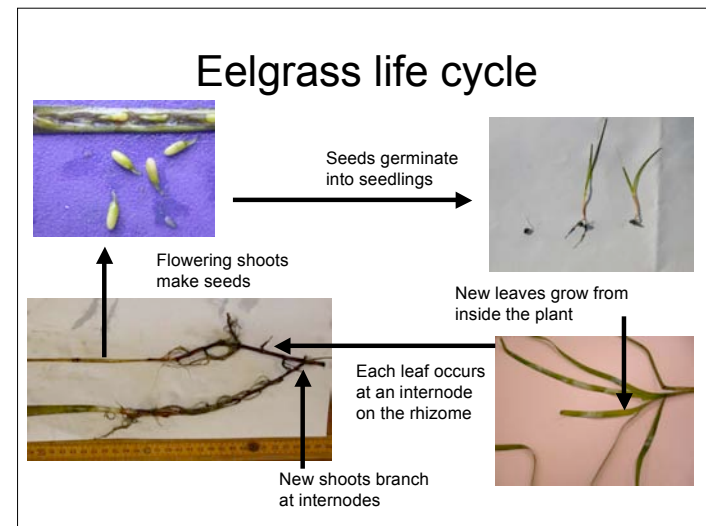
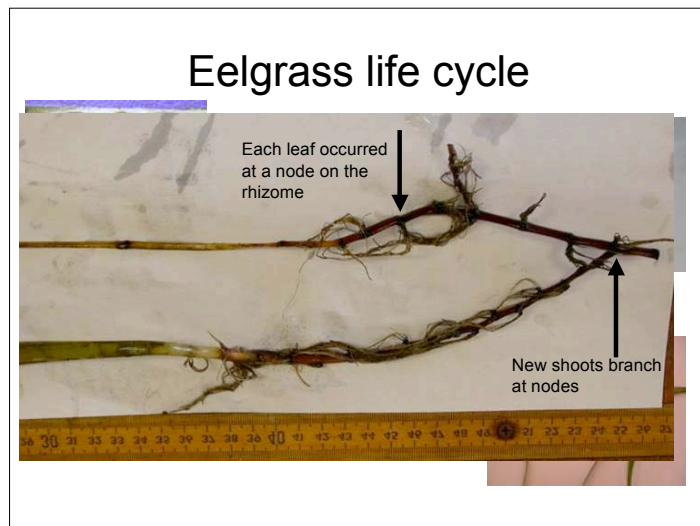
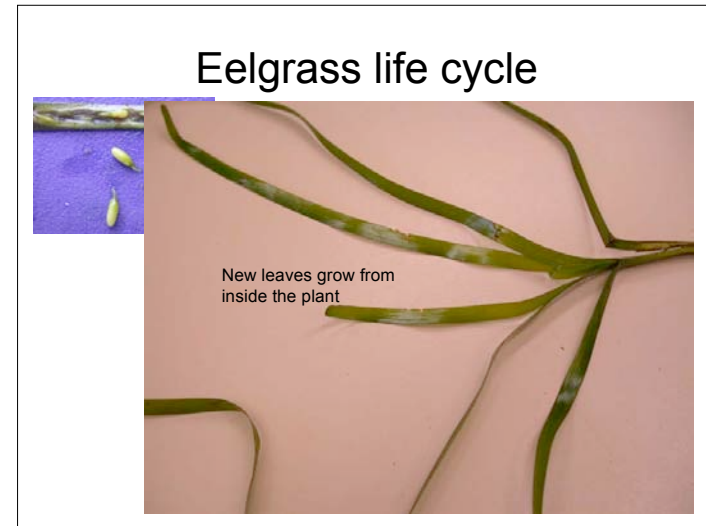
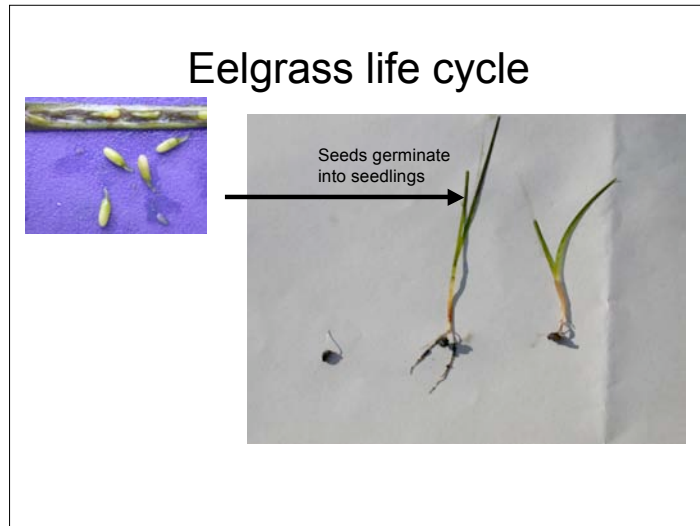
Of eelgrass



### Eelgrass life cycle



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~~did~~  
What would you measure?

	Sediments	Eelgrass shoots	Eelgrass density
Tubes			
Geoducks			
Harvest			

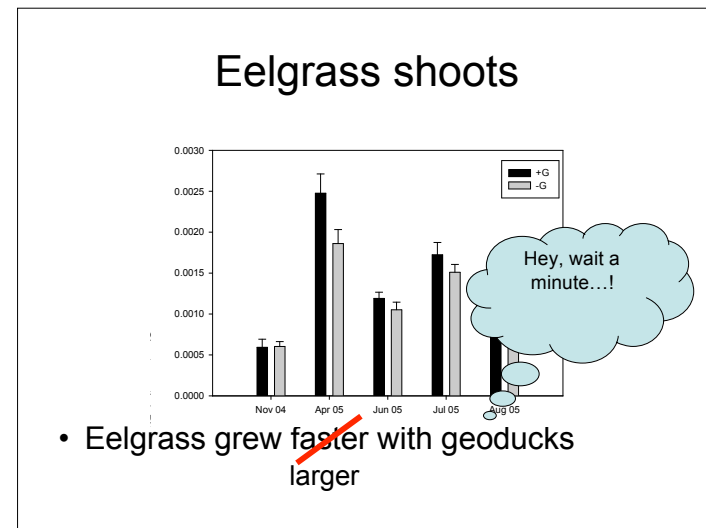
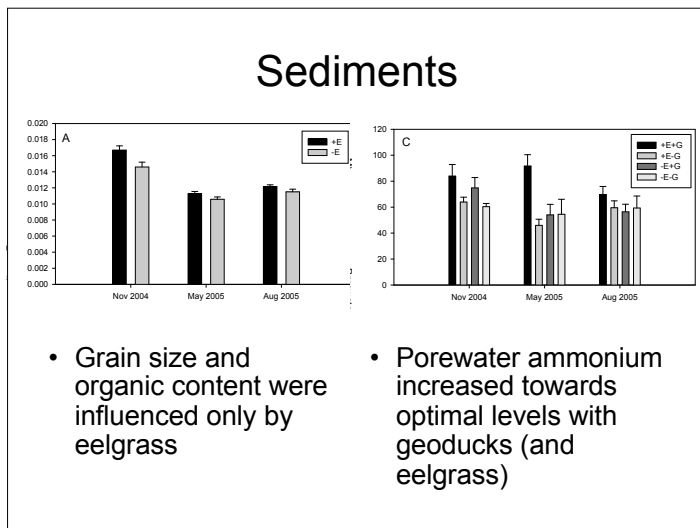
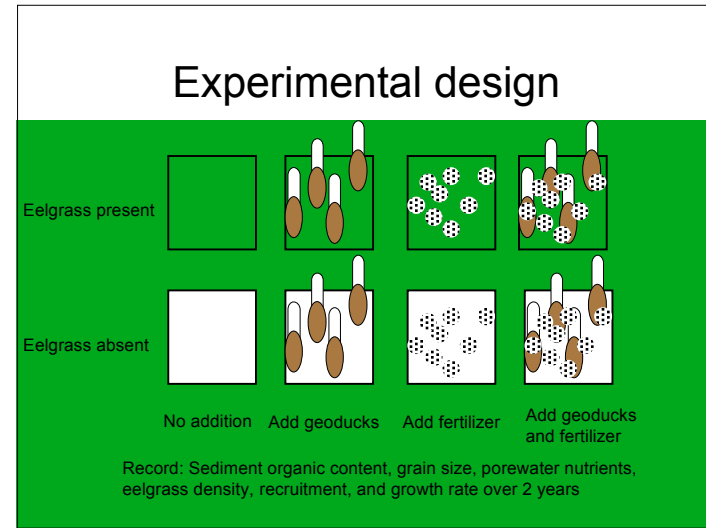
From ecological 1<sup>st</sup> principles (or from evidence in other areas/species), we can expect...?

	Sediments	Eelgrass shoots	Eelgrass density
Tubes	↕ fines		space comp'n but trap seeds
Geoducks	↑ biodeposits	↑ growth	↓ density from comp'n or sulfide
Harvest	↓ fines		↓ density

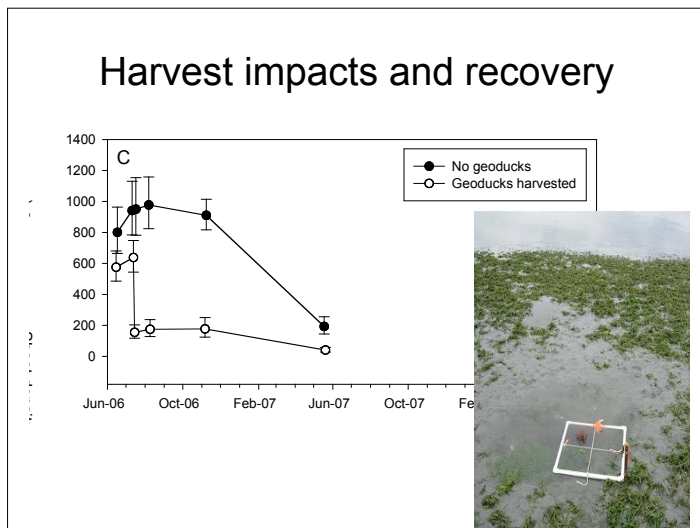
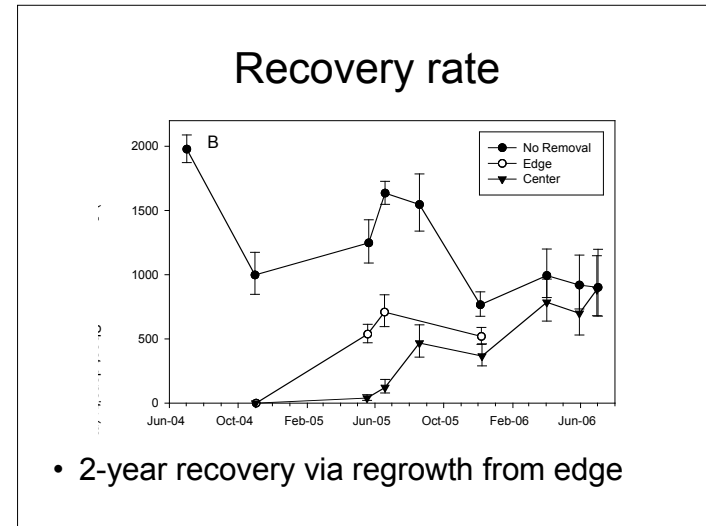
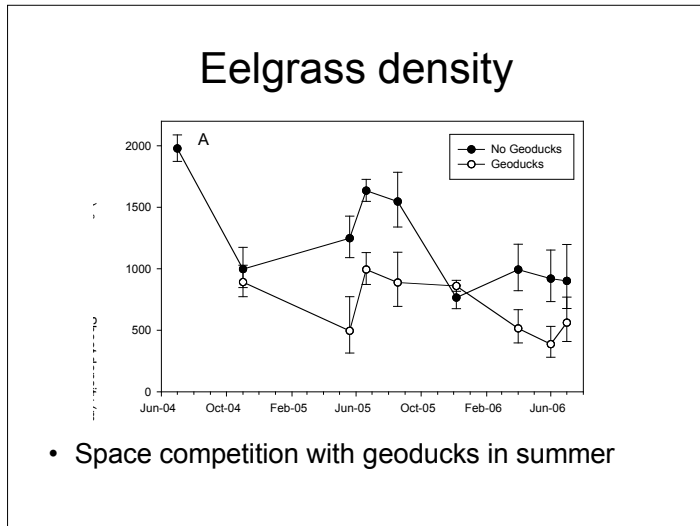
Pulse perturbation – so what is rate of recovery? Depends on sexual reproduction



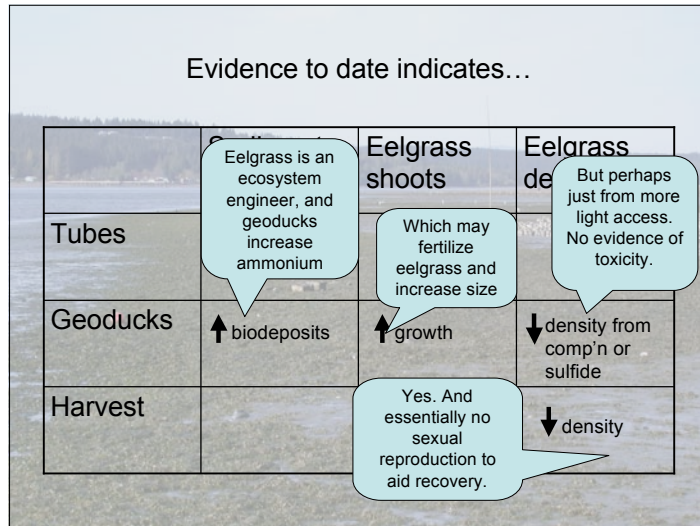
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### Conclusions

- South Puget Sound eelgrass experiences natural stress/ disturbance
- Geoduck harvest would be a large additional anthropogenic disturbance
- Sexual reproduction is rare (not resilient)
- Therefore, geoduck aquaculture in eelgrass is not advisable
- Happily – little space conflict between these two species in South Puget Sound

### Unknown

- Comparable data for northern Puget Sd.
- Adequate buffer widths
- Mechanism for increased plant size with geoducks
- Sediment response to tubes and harvest
- Recovery of larger bare patches
- Recovery of harvested vs. bare patches
- Effects at different geoduck densities