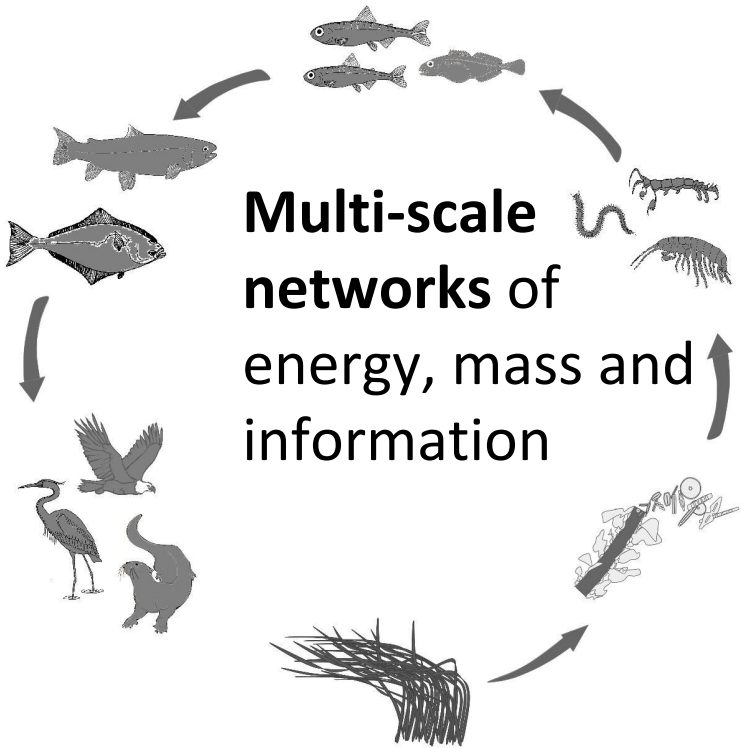
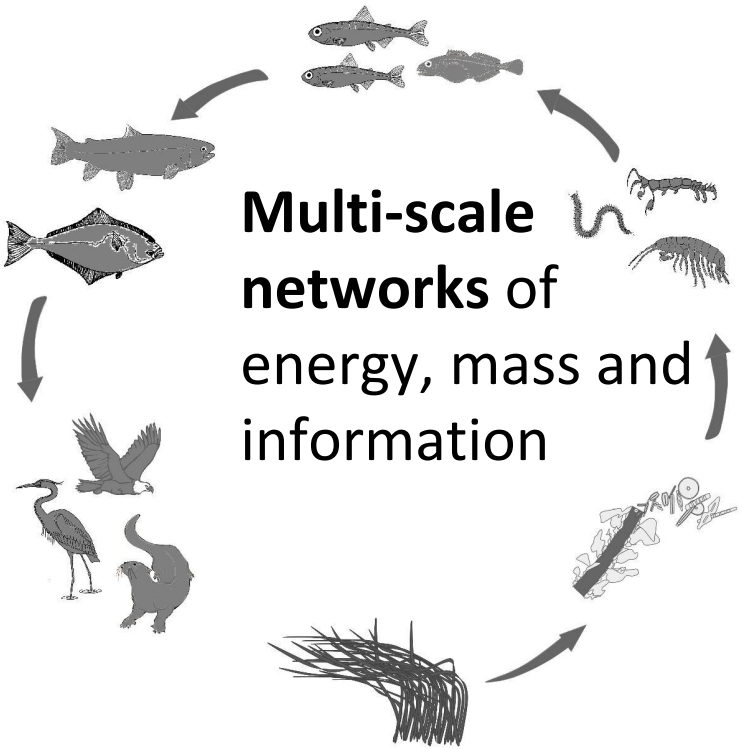
Biodiversity integrates local and regional processes



Multi-scale networks of energy, mass and information

Biodiversity integrates local and regional processes



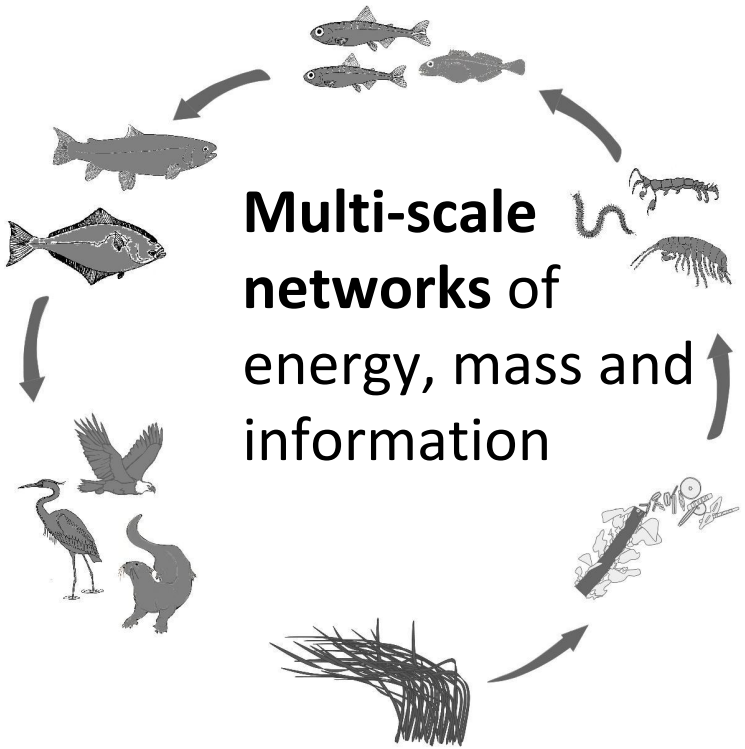
Our main questions:

1. **Are coastal seagrass systems operating as ecological metacommunities?**
   (Calvert Island could provide the first demonstration of metacommunity dynamics in a wild marine syst.)

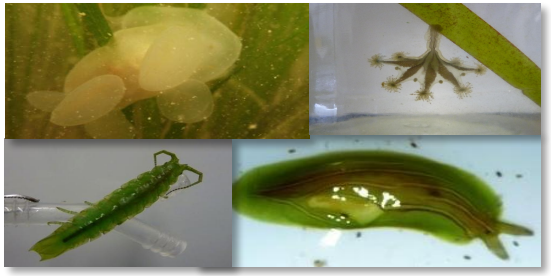
2. **What is the biodiversity and trophic role of mesograzers in our eelgrass meadows?**

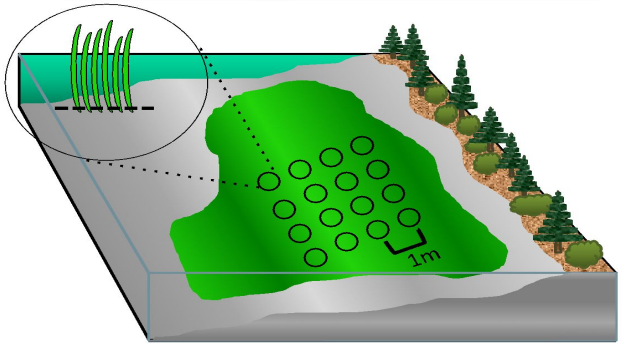
3. **What are the primary biotic and abiotic drivers of grazer biodiversity?**
   (unique opportunity working at Hakai to connect with other programs)

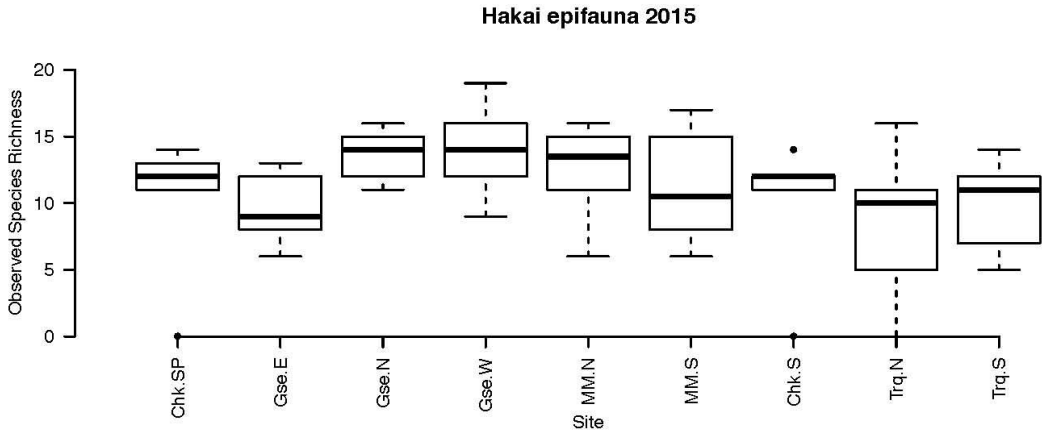
Biodiversity integrates local and regional processes

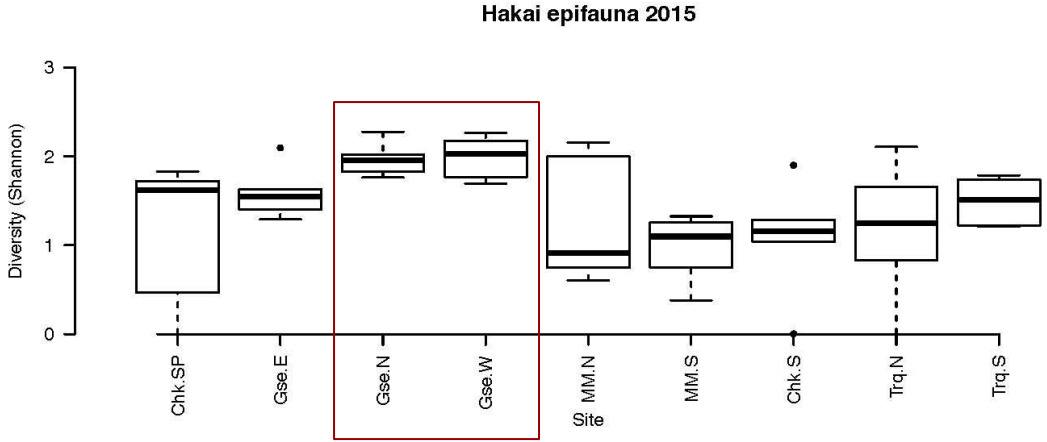


- > 70 taxa, likely at least double that
- We are developing DNA barcoding methods
- Fish food: fast life cycles, high consumption rates



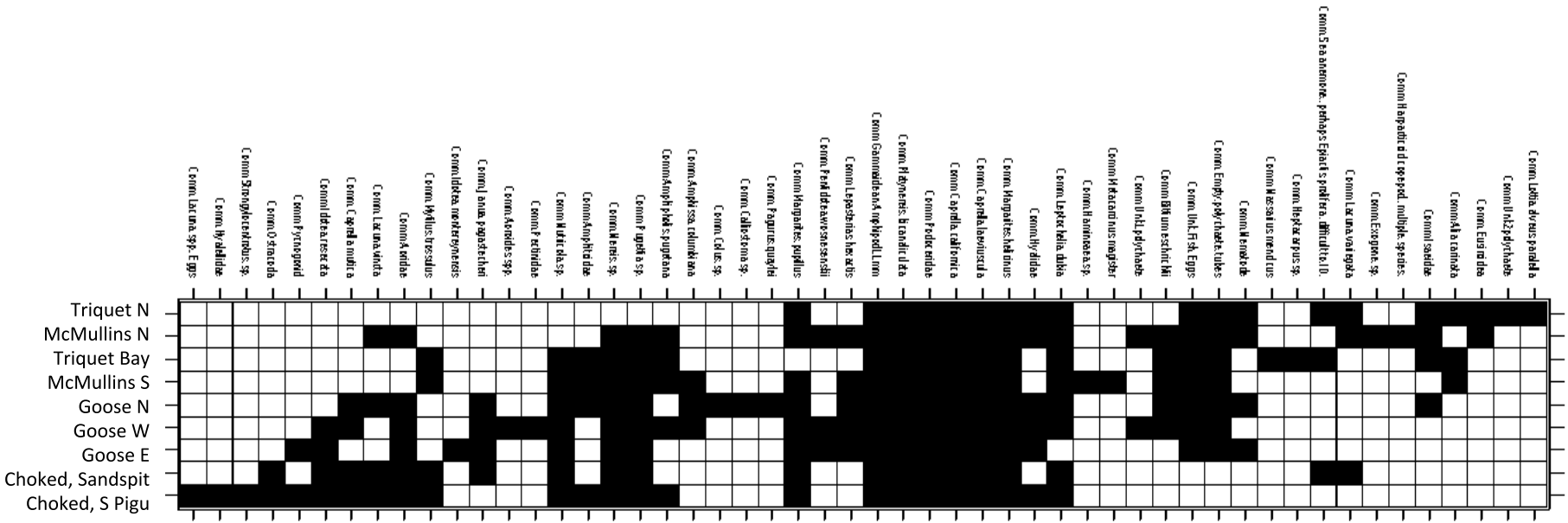



Hakai epifauna 2015
Observed Species Richness
20
15
10
5
0
Chk.SP
Gse.E
Gse.N
Gse.W
MM.N
MM.S
Chk.S
Trq.N
Trq.S
Site


Hakai epifauna 2015
Diversity (Shannon)
3
2
1
0
Chk.SP
Gse.E
Gse.N
Gse.W
MM.N
MM.S
Chk.S
Trq.N
Trq.S
Site

Hakai Seagrass Grazer Biodiversity Results 2015

Meadows tend to have different species in them, but same overall diversity



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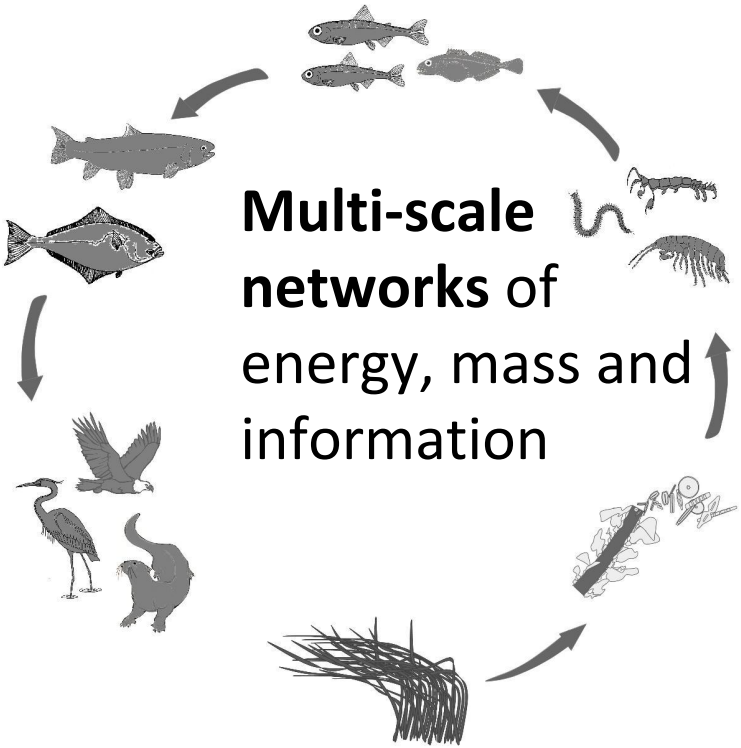
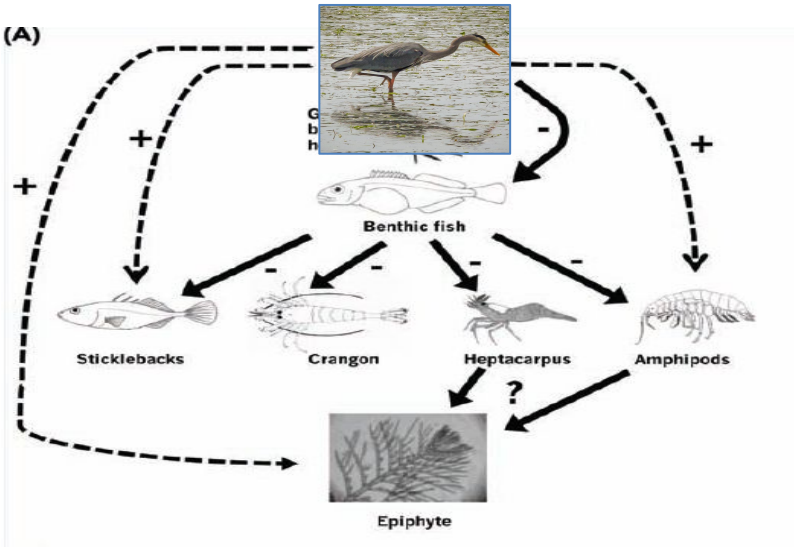


Multi-scale networks of energy, mass and information

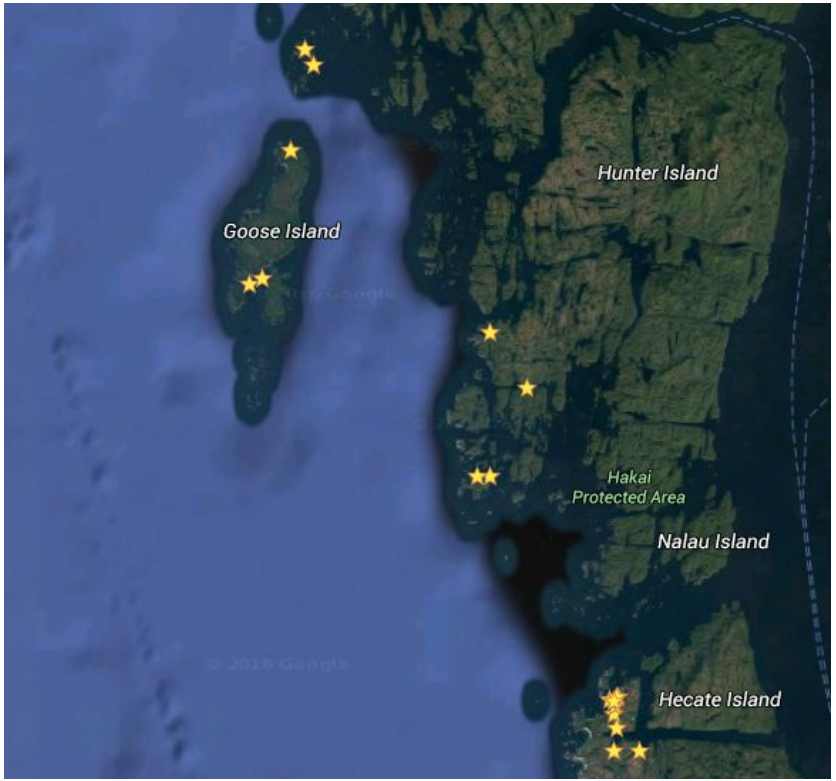


What is the scale of connectivity in eelgrass meadows?

Focused on invertebrate mesograzers

Does dispersal and the spatial arrangement of eelgrass meadows affect taxonomic and functional biodiversity?

- Inventory biodiversity across numerous meadows and multiple years
- DNA barcoding to uncover cryptic diversity
- Monitor metrics of eelgrass health
- Pair with oceanographic data






Using Eelgrass Associated Invertebrates…..

Broad question:

Which microbes are important to hosts, why and how do they get there?

How does taxonomy and habitat affect the bacterial composition of marine invertebrates?

Are there key bacterial taxa associated with marine invertebrates?

Does this relate to diet or habitat?

Future Question:

What do these bacteria do?

What do fish eat in eelgrass?

- We know how invertebrates (fish food) are spatially distributed
- However, are these invertebrates are making up the diet of fish we find in eelgrass?
- Goals to figure this out:
  - Collect zooplankton in and out of meadows, similar to oceanography group
  - Continue collaborating with the beach seining crew
    - Seine at each meadow we sample for eelgrass invertebrates
    - Analyze fish gut data from past 2 years
  - Do DNA barcoding on fish guts
  - Work with Brian Hunt on stable isotopes to build an eelgrass food web