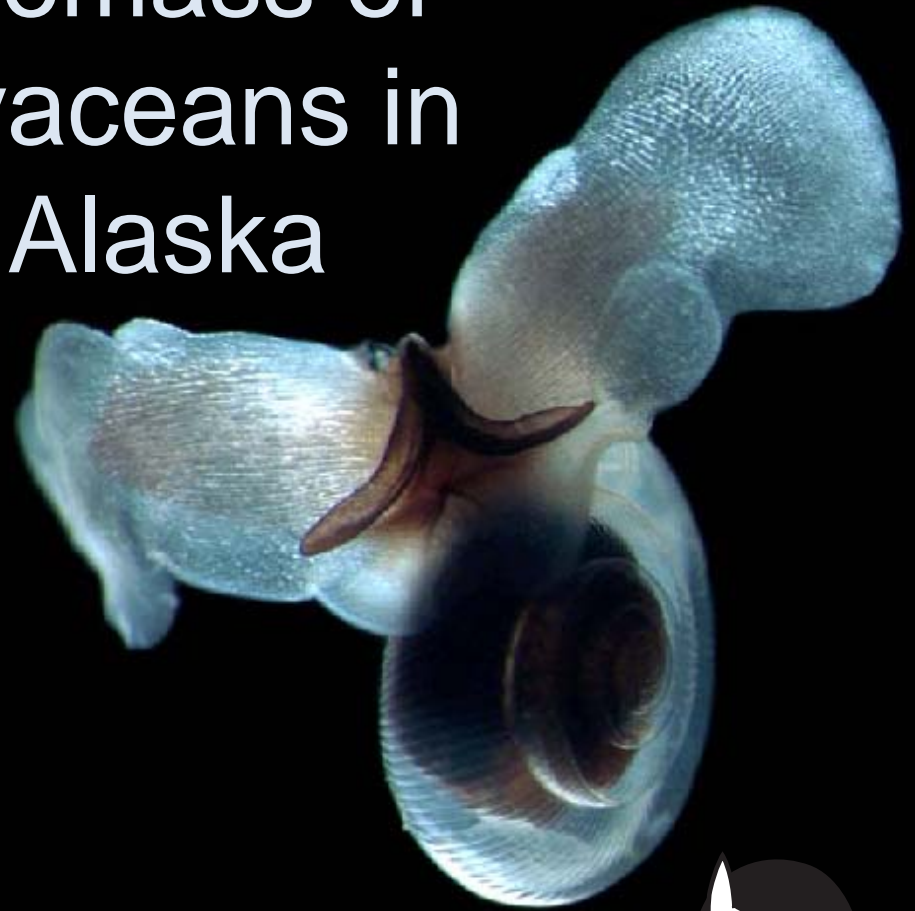


Estimates of the composition, abundance, and biomass of pteropods and larvaceans in the coastal Gulf of Alaska



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Background

Opisthobranchia

- Pelagic Molluscs including the gymnosomes (naked) and thecosomes (shelled)

Larvacea (Appendicularia)

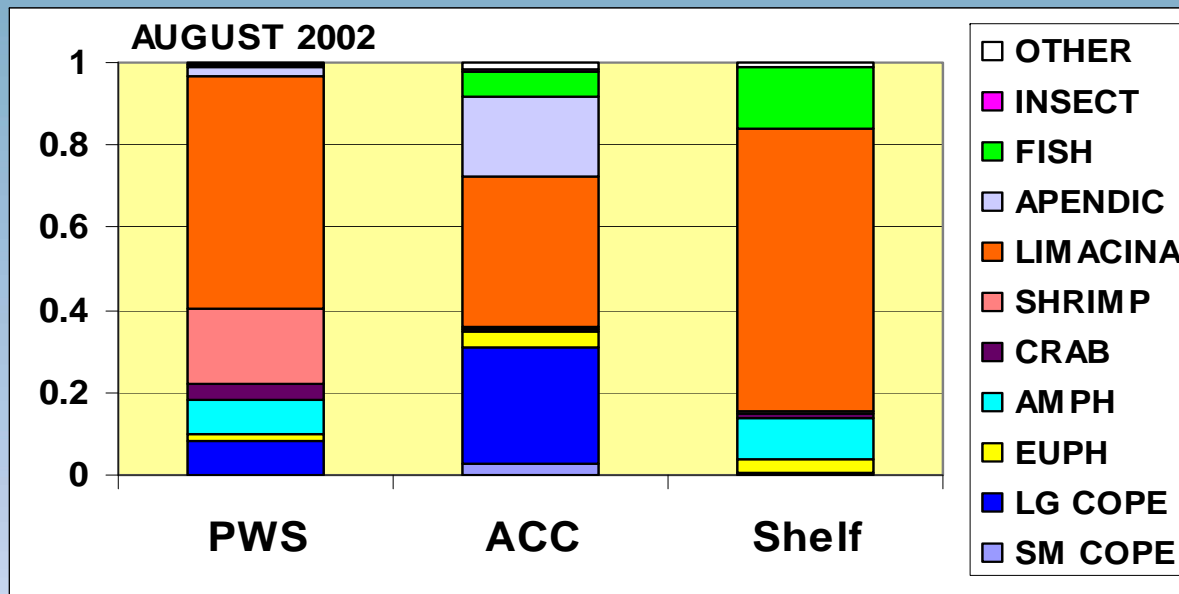
- Free-swimming pelagic tunicates with a trunk and tail
- Can use colloidal particles as food (Flood 1998)
- Low biomass is compensated for by high growth rates (Hopcroft *et al.* 1998)

Community



Background

- Result of GoA GLOBEC program: juvenile pink salmon appear to preferentially feed upon larvaceans and pteropods
- When pteropods are a larger proportion of the juvenile salmon's diet, returns of that year class are enhanced (Armstrong *et al.* 2005).



Armstrong *et al.*

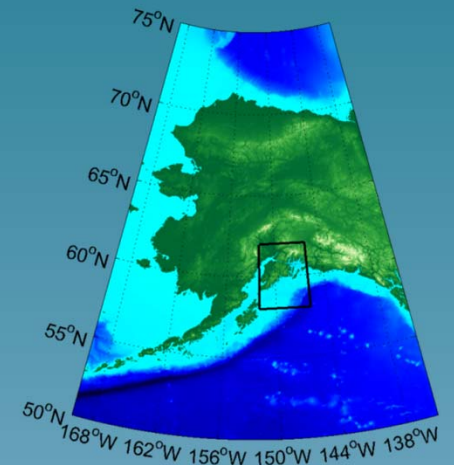
Background

GLOBEC: 1998-2004

- 13 Stations across shelf
- 5 stations Prince William Sound
- Occurrence: 6-7 cruises per year

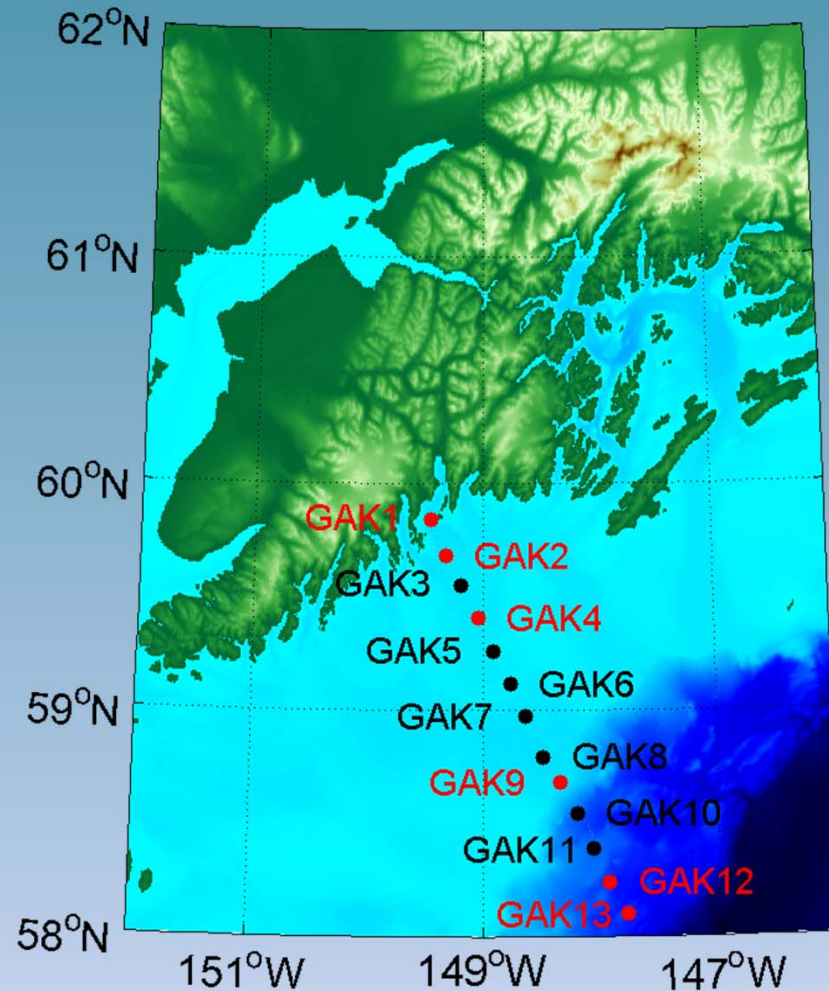
Seward Line: 2005-Present

- Same methods as GLOBEC
- Occurrence: May, Sept



Sampling Procedures

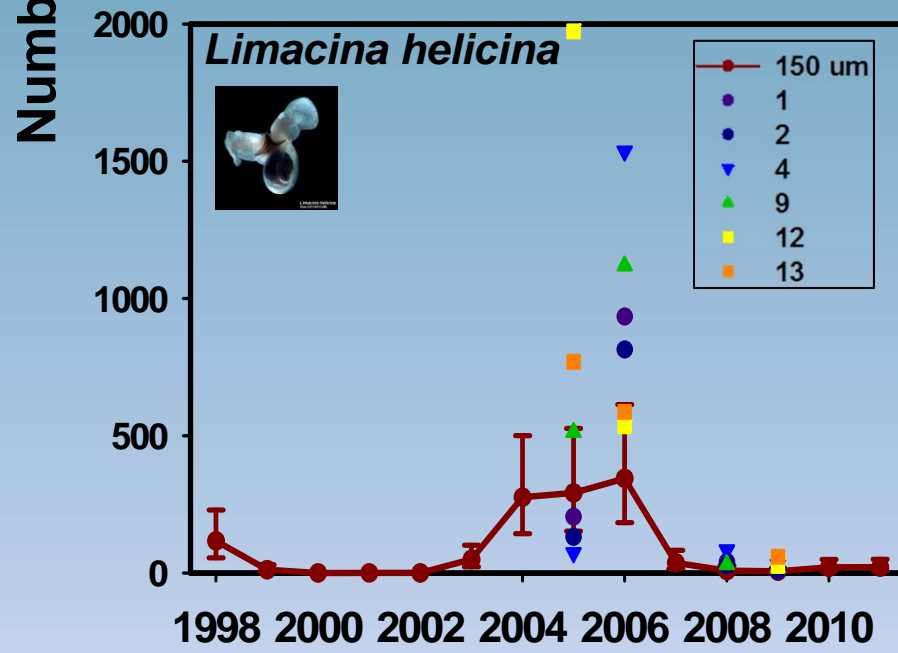
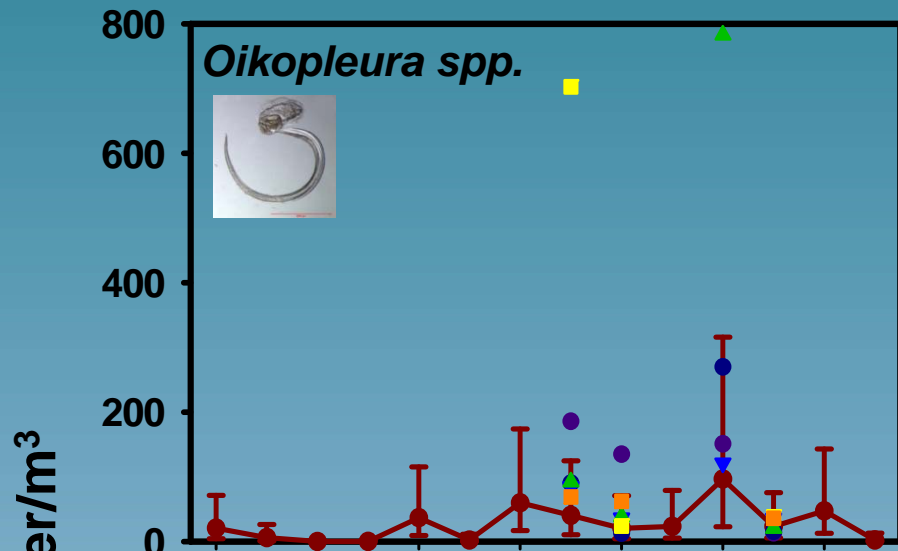
- Variety of mesh sizes and gear types used
- Focus: 53um fine mesh CalVet net
- Tow from 100m to surface
- Samples preserved in 10% buffered formalin



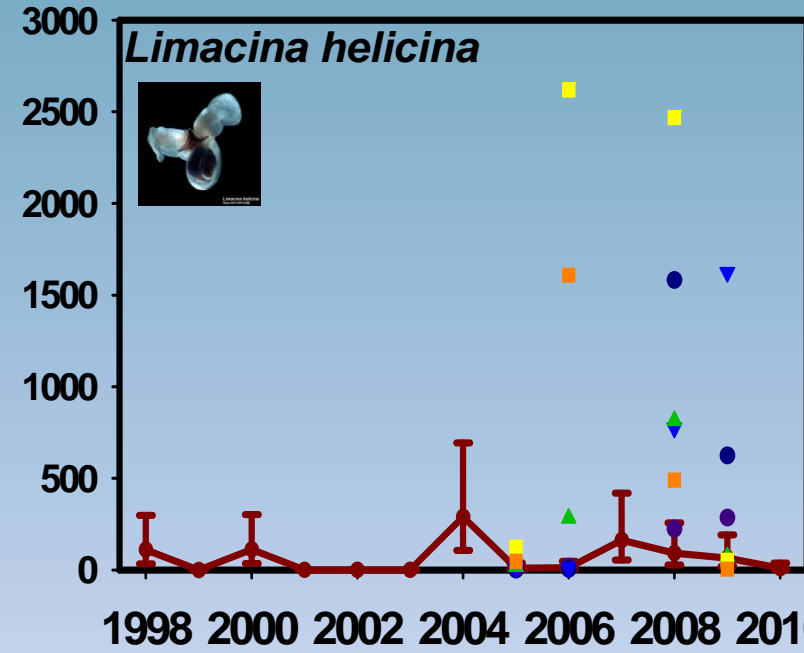
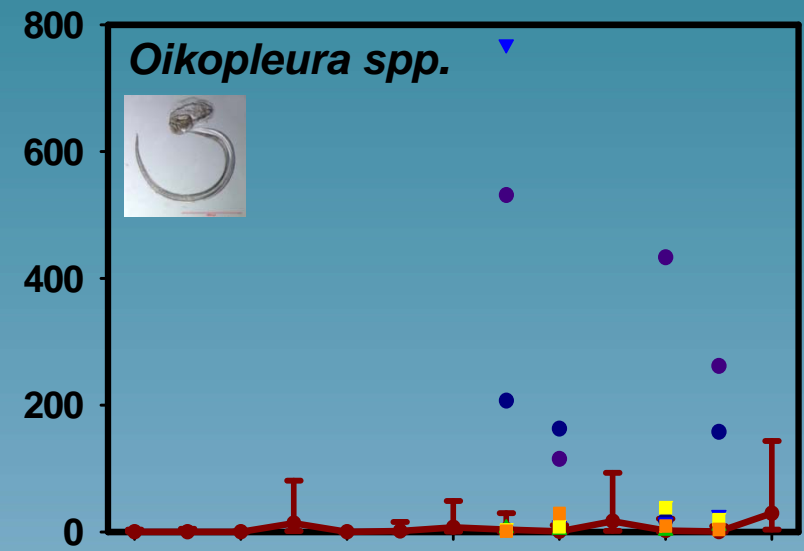
Objectives

- Determine the composition, abundance and biomass of larvaceans and pteropods in the Coastal Gulf of Alaska GLOBEC samples collected with 53um mesh nets
- ***Is there a relationship of these groups to salmon survival?***

Spring

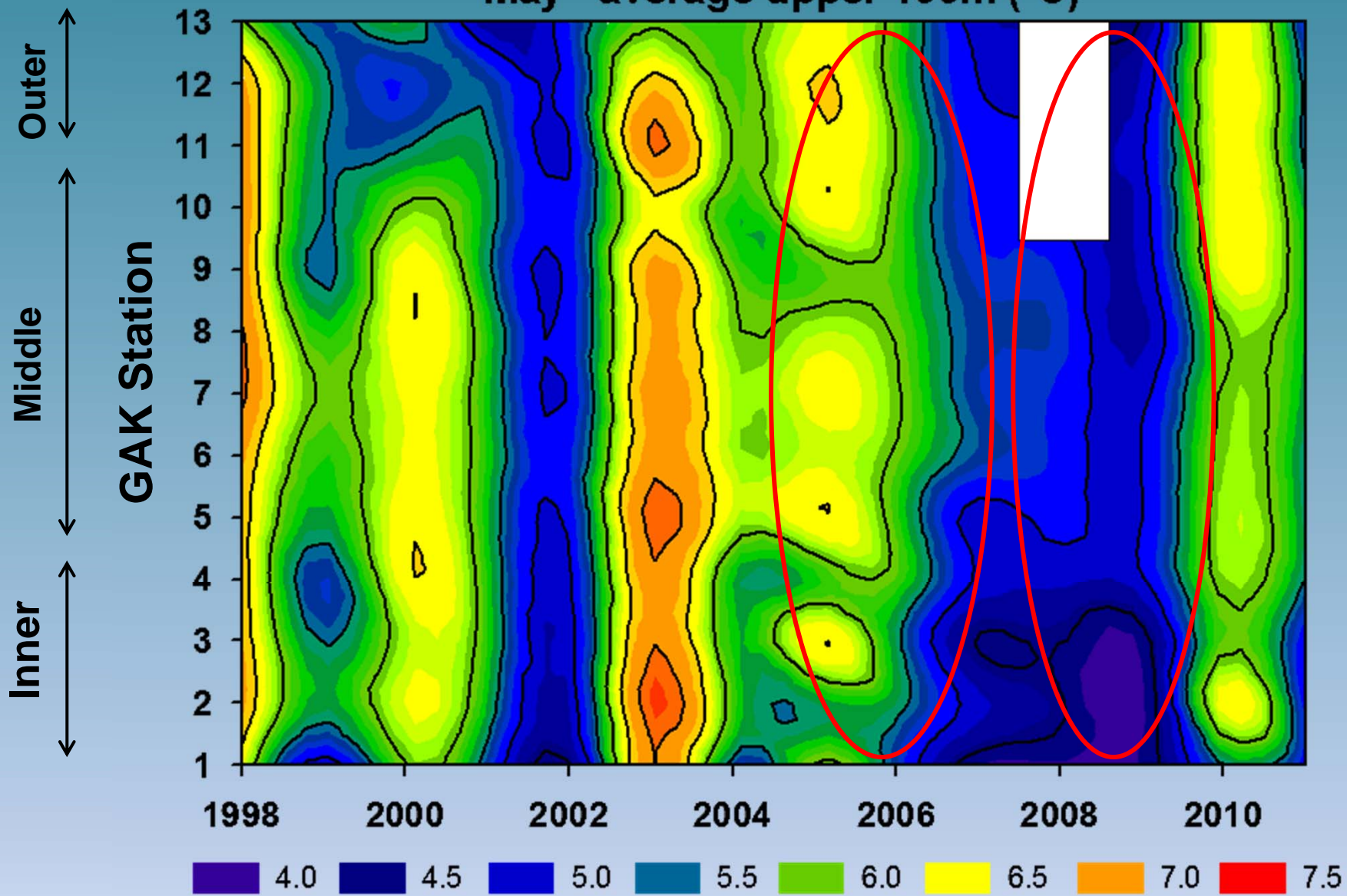


Fall



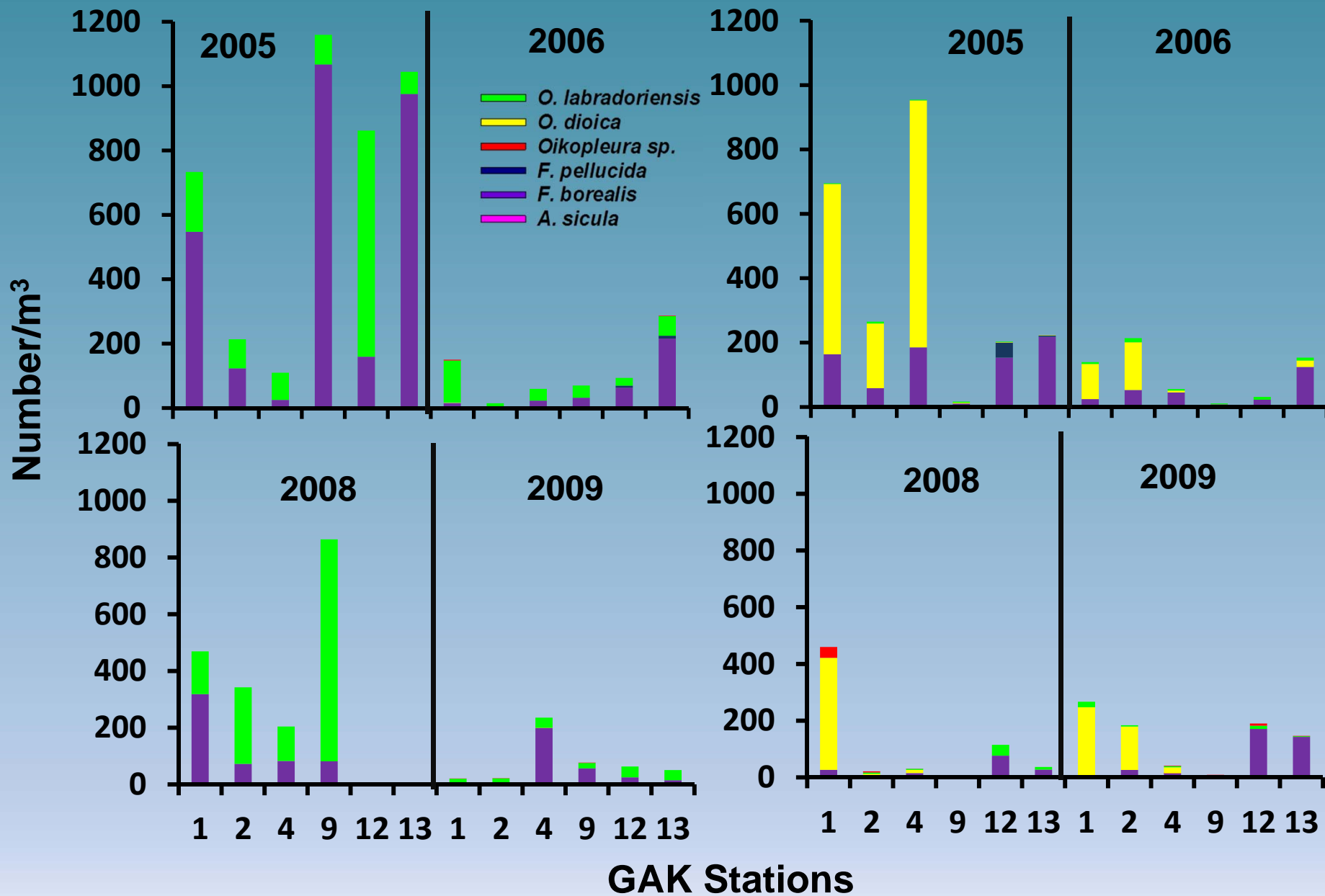
Year

May - average upper 100m (°C)



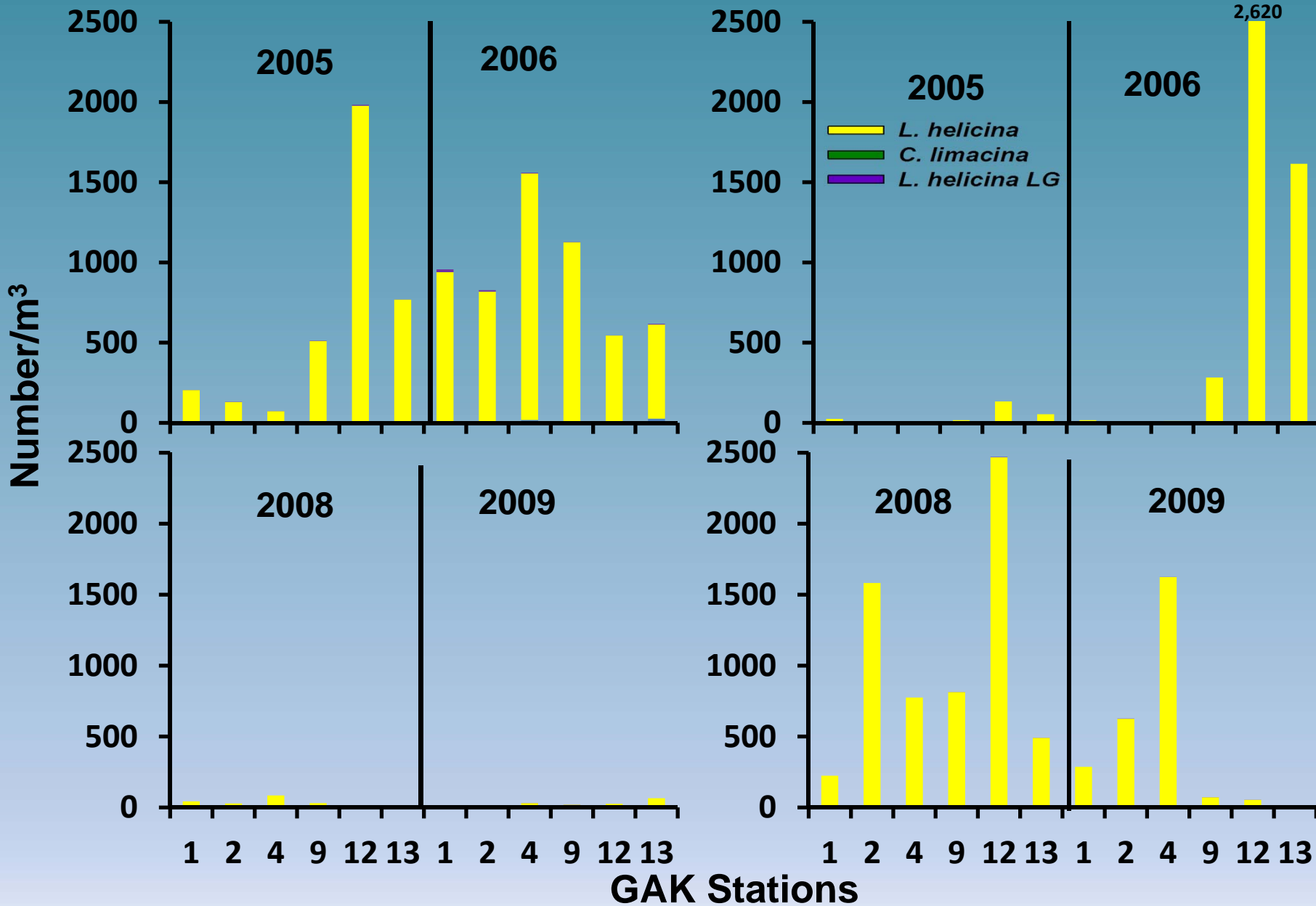
Spring

Fall

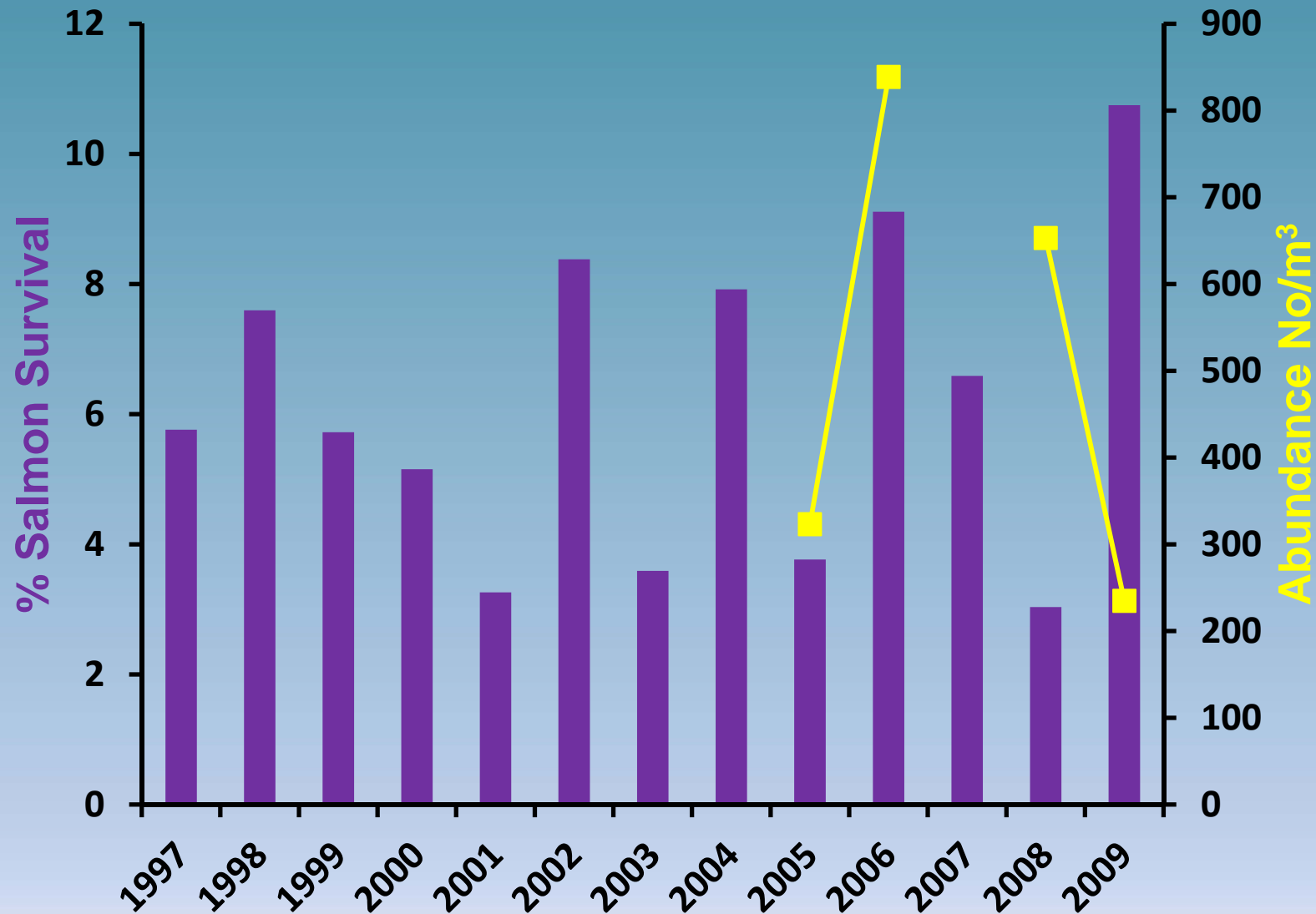


Spring

Fall



Salmon survival vs. *L. helicina* abundance

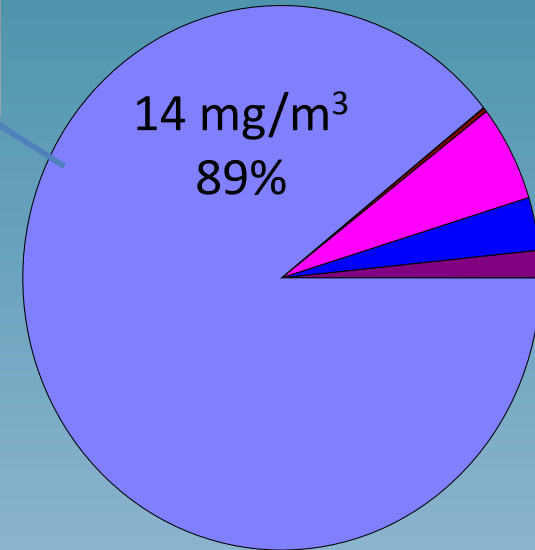
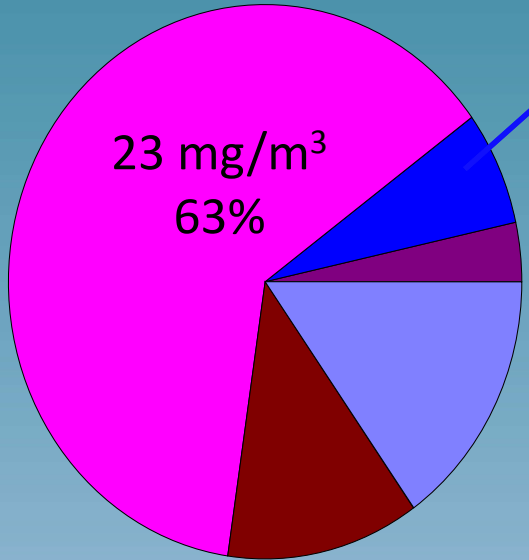


Biomass

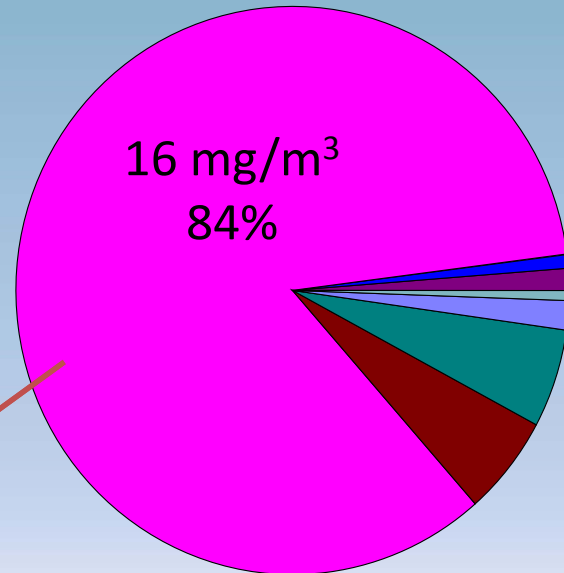
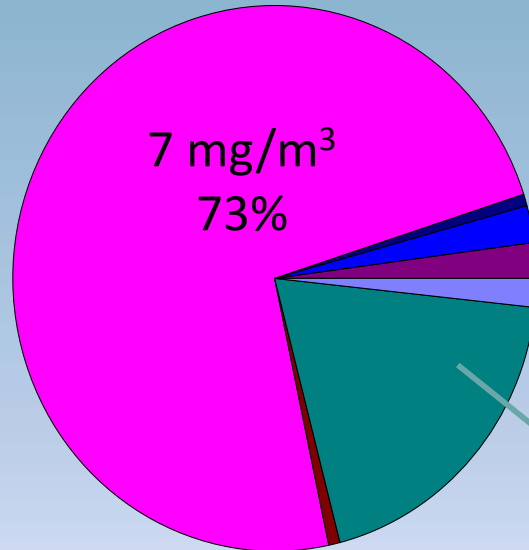
2005 & 2006

2008 & 2009

Spring

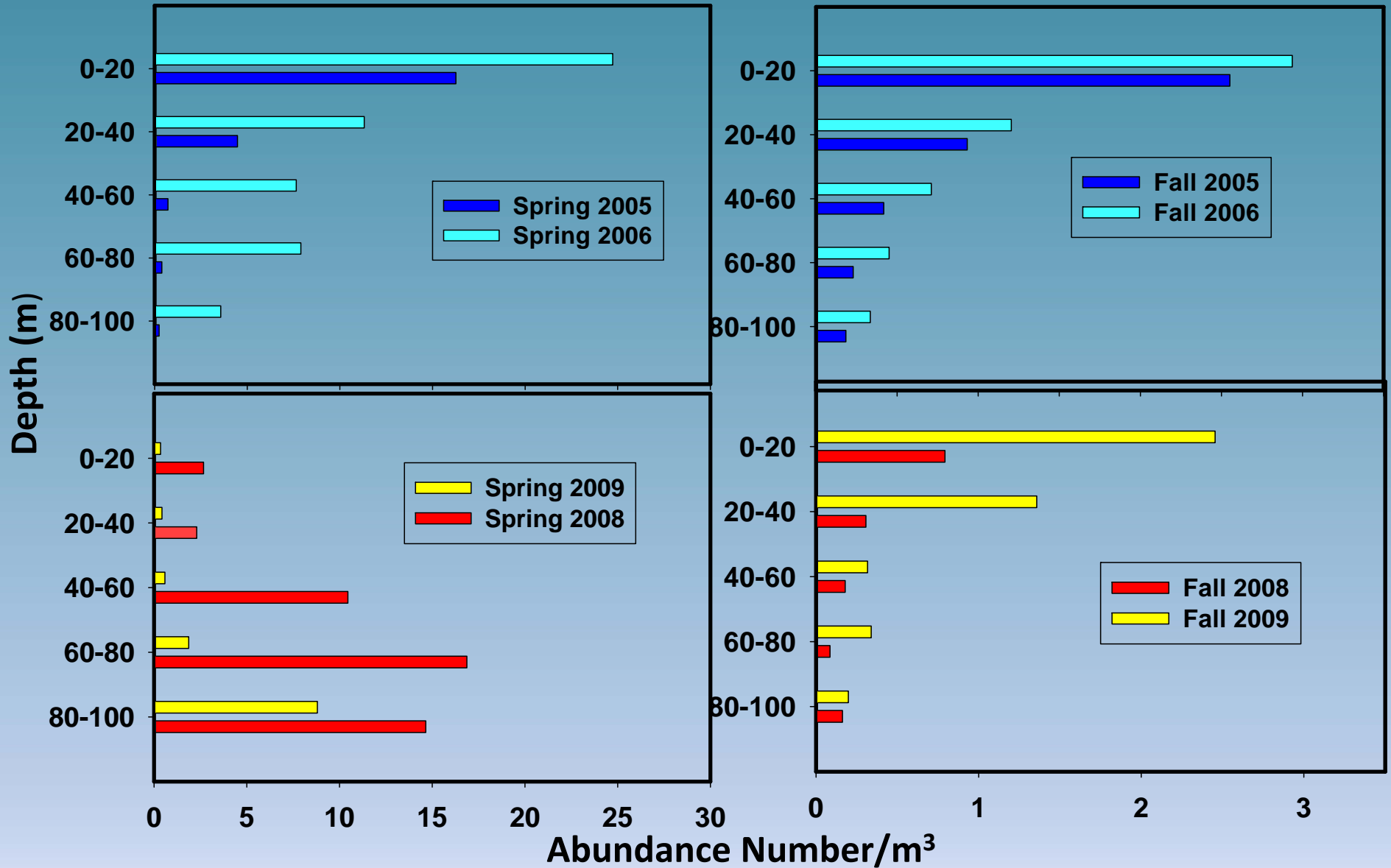


Fall



- C. limacina
- L. helicina
- L. helicina LG
- O. dioica
- O. labradoriensis
- Oikopleura sp.
- F. borealis
- F. pellucida
- Fritillaria sp.
- A. sicula

Vertical distribution of *Oikopleura* spp.



Summary

- Collecting with 53 μm mesh nets show higher numbers than 150 μm for these groups
- *Limacina helicina* is positively correlated with temperature in the spring
- Seasonal differences depict a change in *Oikopleura* spp. composition. *Oikopleura labradoriensis* dominating in the spring and *Oikopleura dioica* in the fall.
- Pink salmon returns may be related to the pteropod *Limacina helicina*, however are also dependent upon other food sources

Future Work

- Establish a growth rate for the dominant pteropod *L. helicina* and *O. labradoriensis* at a temperature relative to the GoA
- Use this rate to calculate productivity for a 15 year timespan
- Compare productivity to pink salmon returns

Acknowledgements

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