

Analysis of the invertebrate zooplankton component of the SEAMAP plankton samples

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NOAA SEAMAP

- Southeast Area Monitoring and Assessment Program
 - Cooperative State/Federal/University program
 - Long-term fisheries independent data
 - Gulf of Mexico, South Atlantic, and Caribbean
- SEAMAP Plankton
 - Over 29 Years
 - Extensive database of early life stages of fishes of the GOM from over 250 stations
 - Unfortunately, zooplankton has been neglected



Importance of Zooplankton

- Link between primary production and higher trophic levels
- Provide an important forage base for fisheries
 - Mid-trophic species
 - Larval forms of higher trophic species
- Commercially important invertebrate species have a planktonic life stage
 - Shrimp, crabs, oysters
- Indicators of environmental change (Hays et al. 2005)

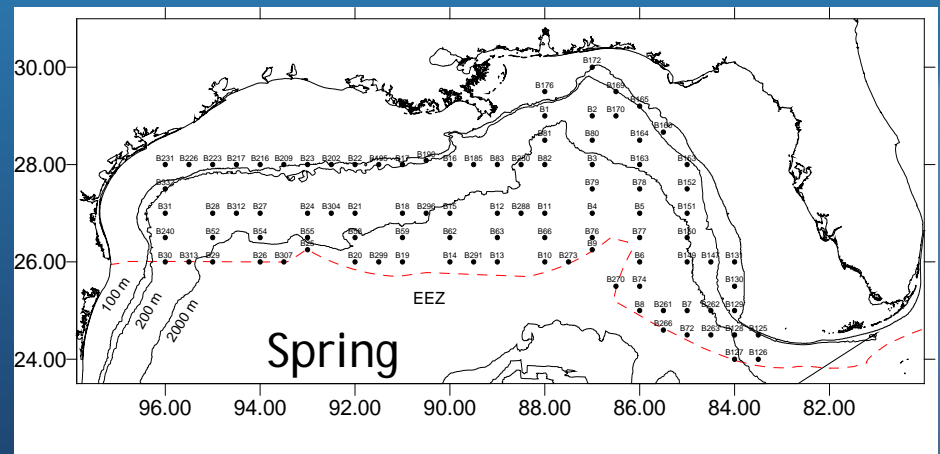
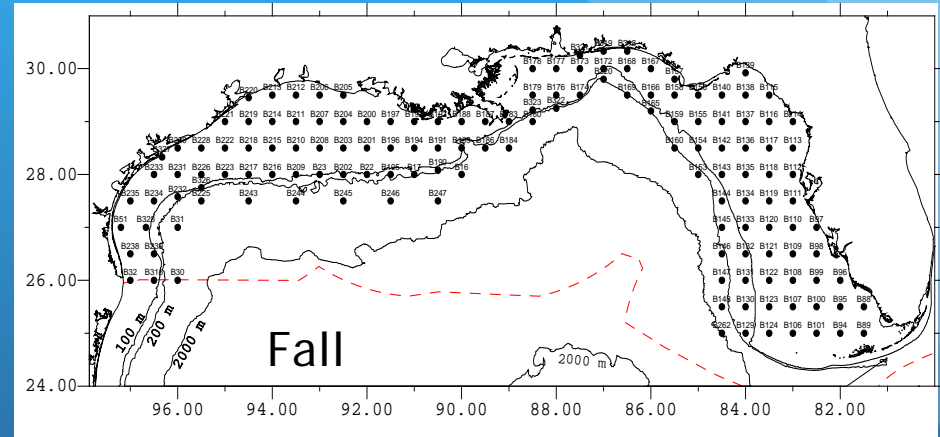
Objectives

NGI Project: Identifying linkages between zooplankton dynamics, fishery resources, and climate change in the Northern Gulf of Mexico

- Direct additional zooplankton analysis of samples at ZSIOP
- Incorporate zooplankton data into time-series database

Zooplankton Collection

- SEAMAP Plankton Surveys:
 - Spring and Fall annually
 - Winter every other year
 - Groundfish cruises
- Stations 30nm apart
 - Bongo: 61cm, 333 μ m
 - Neuston: 1x2m, 947 μ m



Zooplankton Collection

- Samples preserved in 95% EtOH or 10% Form
 - Transferred into 95% EtOH
- Samples shipped to ZSIOP about twice a year for processing



Zooplankton Processing

- ZSIOP: Plankton Sorting and Identification Center, Poland
- Displacement Volume
- Samples split with Folsom splitter
 - Aliquot of 400-500 zooplankters
 - 200 copepods, 200 everything else
 - Decapods have separate protocol



Zooplankton Processing

- Organisms identified to lowest practical level:
 - Decapods: 11 groups
 - Other Inverts: 26 groups
- Taxa are placed in individual vials
- Data sheets and vials shipped back to Pascagoula



Counted and Entered Samples

Survey	Cruise	Month	Year	Bongo	Neuston	Total
Fall Plankton	GU0303	Sept	2003	140	140	280
Fall Groundfish	OR0256	Oct-Nov	2003	53	54	107
Spring Plankton	GU0502	Apr-May	2005	106	106	212
Summer Groundfish	OR0276	Jun-Jul	2007	42	40	82
Winter Plankton	GU0702	Mar	2007	42	41	83
Winter Plankton	OR0280	Feb-Mar	2008	165	66	231
Winter Plankton	GU0901	Feb-Mar	2009	---	108	108

Counted but Not Entered

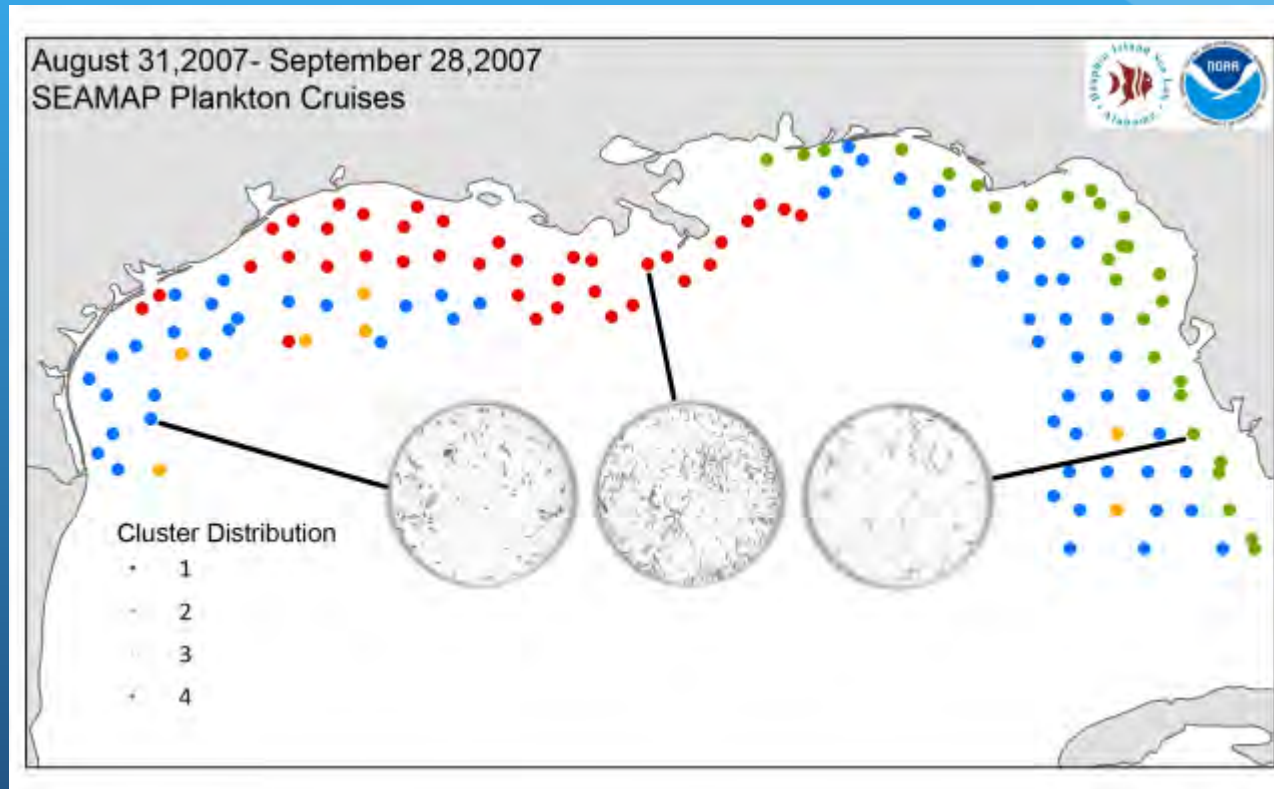
Cruise	Month	Year	Bongo	Neuston	Total
GU0901	Feb-Mar	2009	103	---	103
OR0287	Jun-Jul	2009	53	48	101
OR0278	Oct-Nov	2007	26		26
GU0706	Oct-Nov	2007		34	34

Zooplankton Summary

- Over 1100 samples spanning 6 years counted and entered into the database
- Over 250 samples currently waiting to be entered
- Even more being processed in Poland

- So, now what?

Community Structure



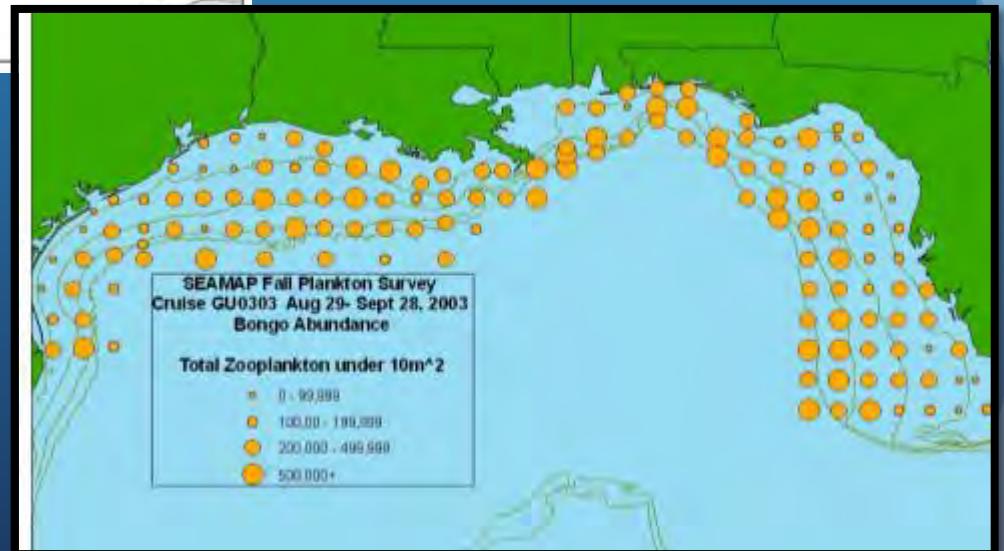
NGI Poster #20: WM Graham et al.

Community Structure

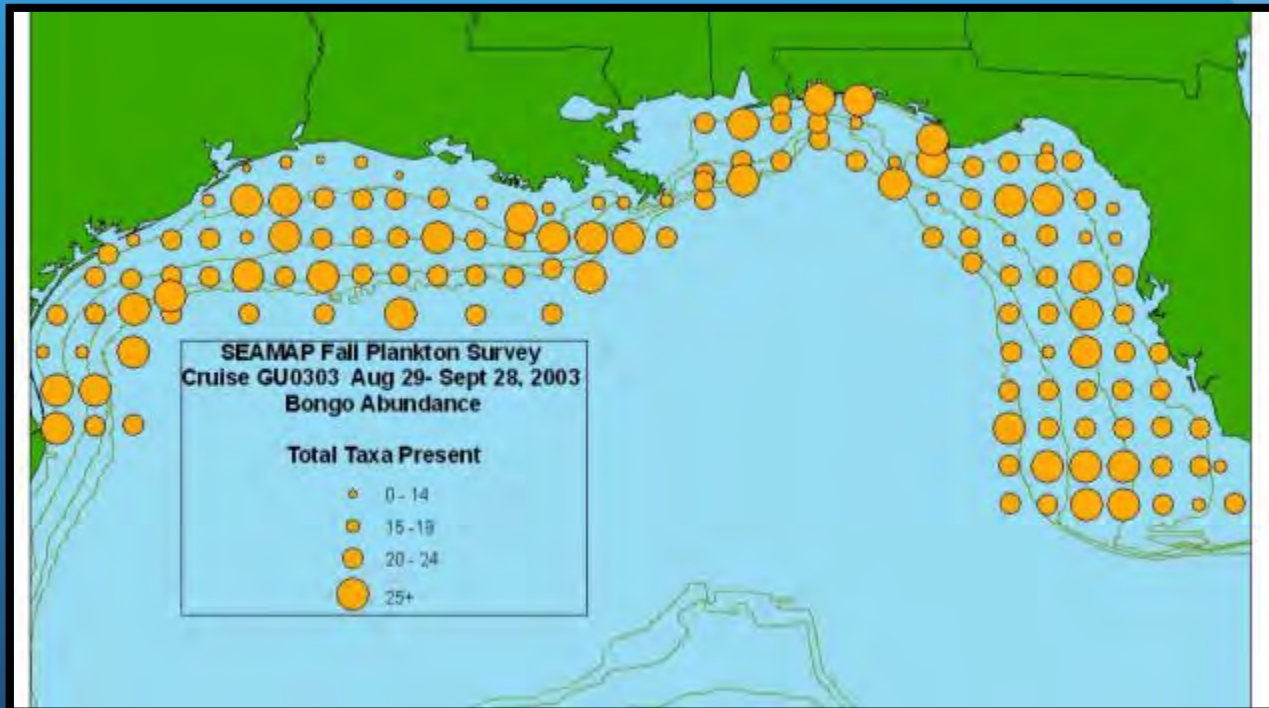
August 31, 2007- September 28, 2007
SEAMAP Plankton Cruises



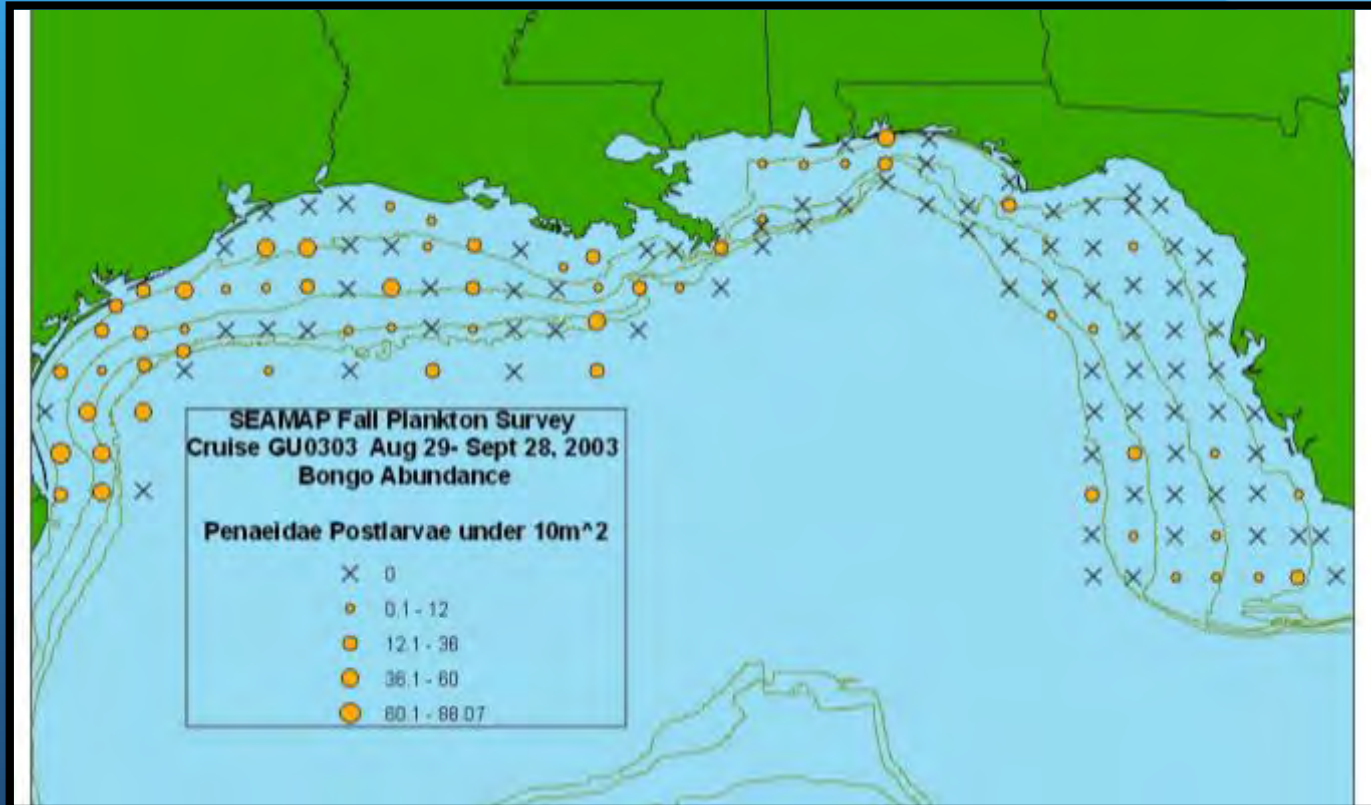
The CUFES sorter (a), collector (b), and the plankton lab at DISL(c).



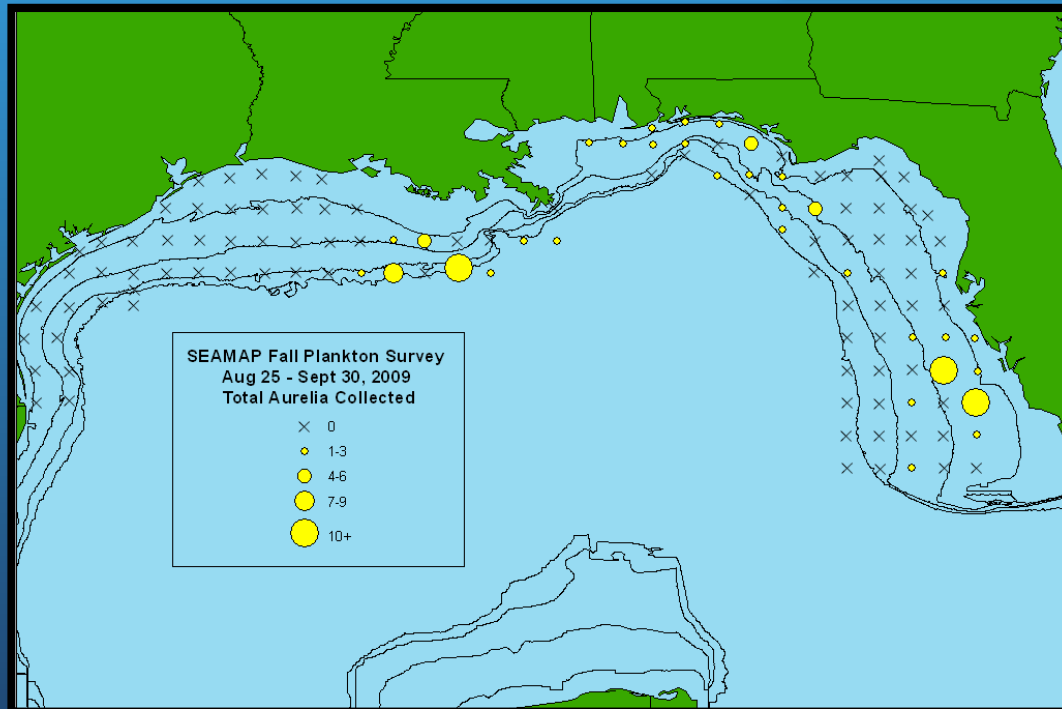
Community Structure



Commercially Important Species



Predatory Impact



NGI Poster #9: AF Millett et al.

Conclusions

- Little to no published data on zooplankton time-series in the GOM, especially on a Gulf-wide scale
- NGI:
 - Begun taking advantage of large stock of plankton samples
 - Since 2006 we have counted and entered over 1100 samples
- Invert Data can provide limitless applications to current and future fisheries research
- Inclusion of invertebrate data will help create a more holistic view of the GOM

Questions?