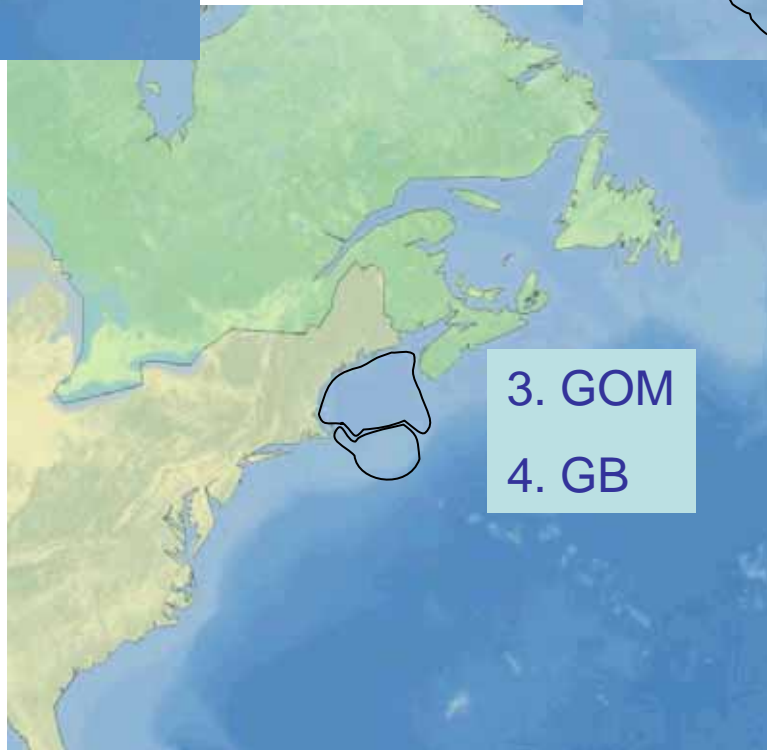
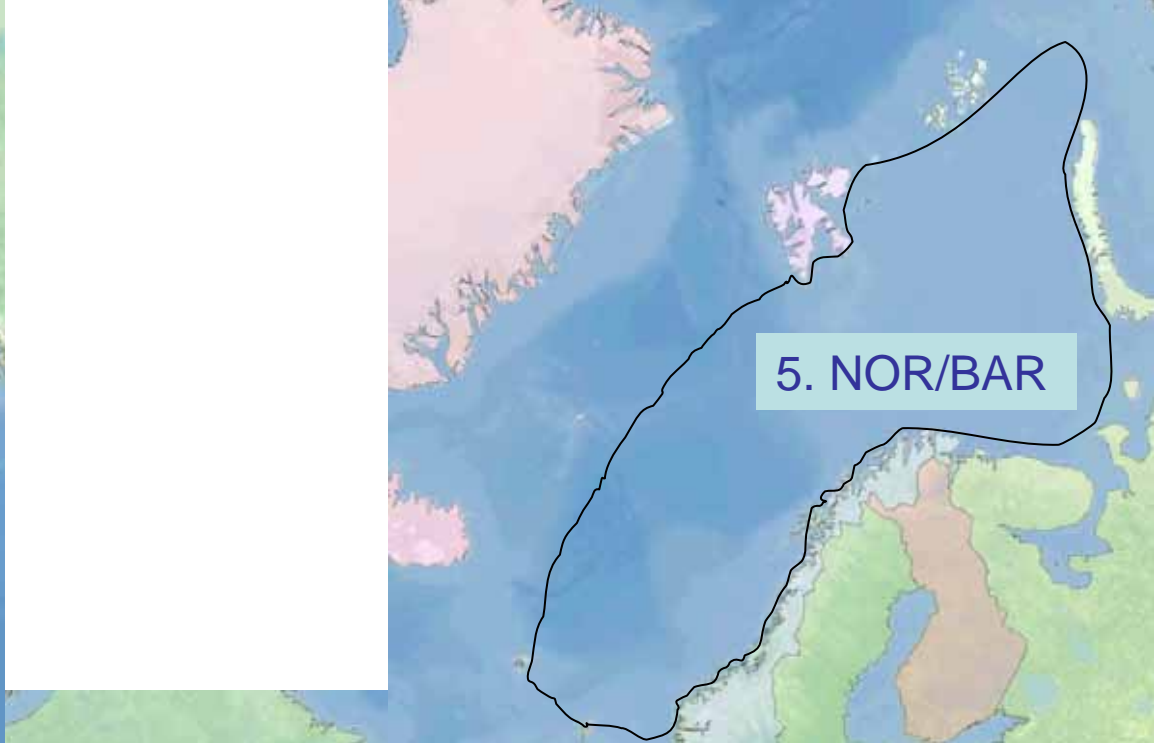


A comparison of community and trophic structure in five marine ecosystems based on energy budgets and system metrics

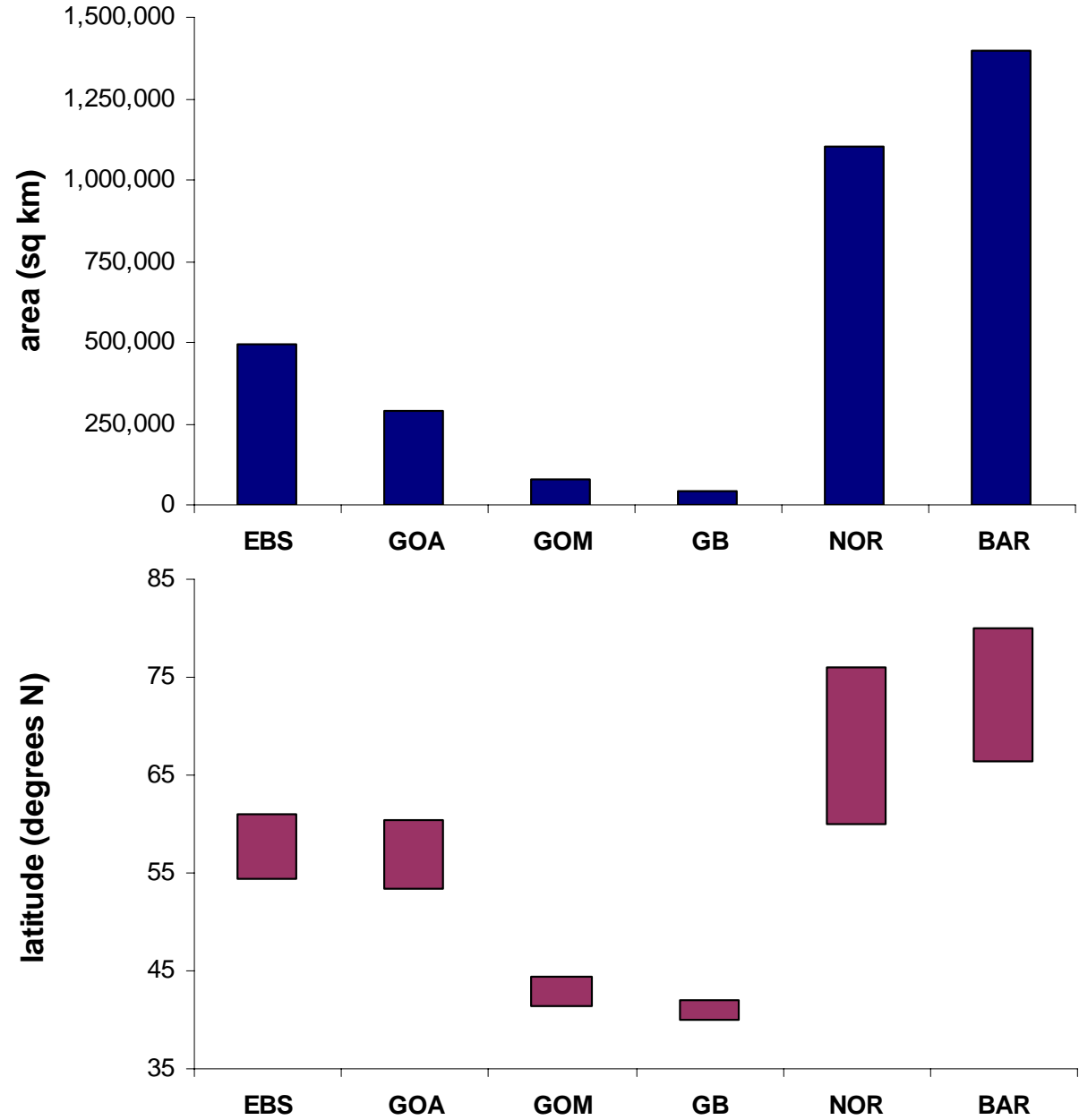
Sarah Gaichas, Georg Skaret, Jannike Falk-Petersen,
Jason S. Link, William Overholtz, Bernard A. Megrey,
Harald Gjoesaeter, William Stockhausen, Are
Dommasnes, Kevin Friedland, and Kerim Aydin

Objectives

- Marine Ecosystems of Norway and U.S. project
- Compare Northern Hemisphere marine systems
 - Environment
 - Biota
 - Fisheries
- Elucidate pan-basin synchronies and differences



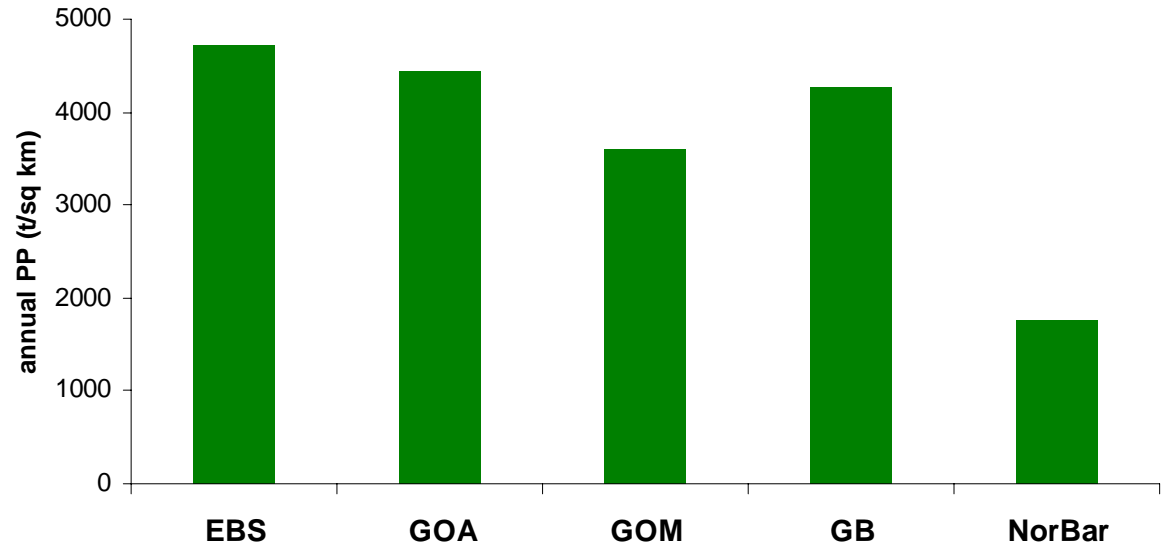
Physical: area and latitude



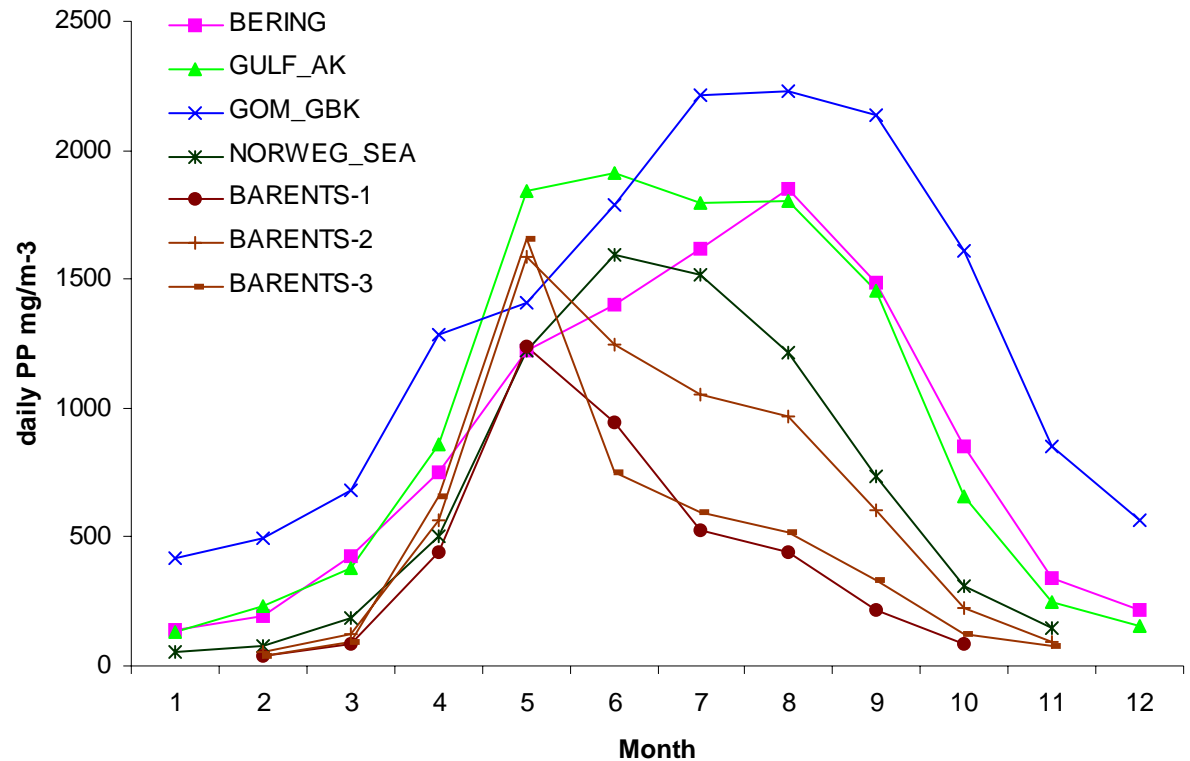
Methods

- Energy budgets derived from mass balance food web models constructed for each ecosystem
 - Aggregated to common functional groups
 - Presented in common biomass, production, and consumption units (t/km^2) and ratios to facilitate cross-system comparisons
- Network metrics

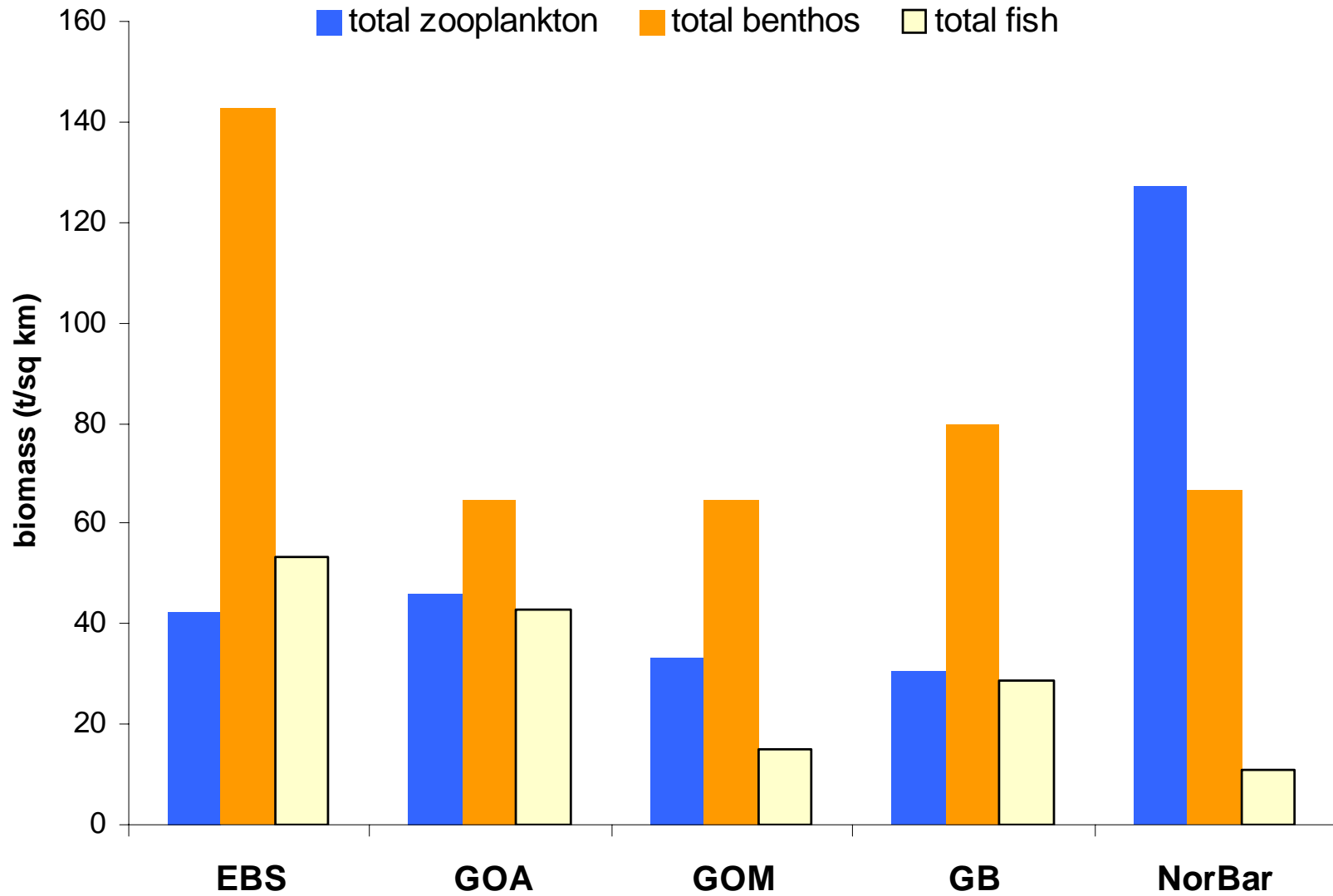
Primary productivity



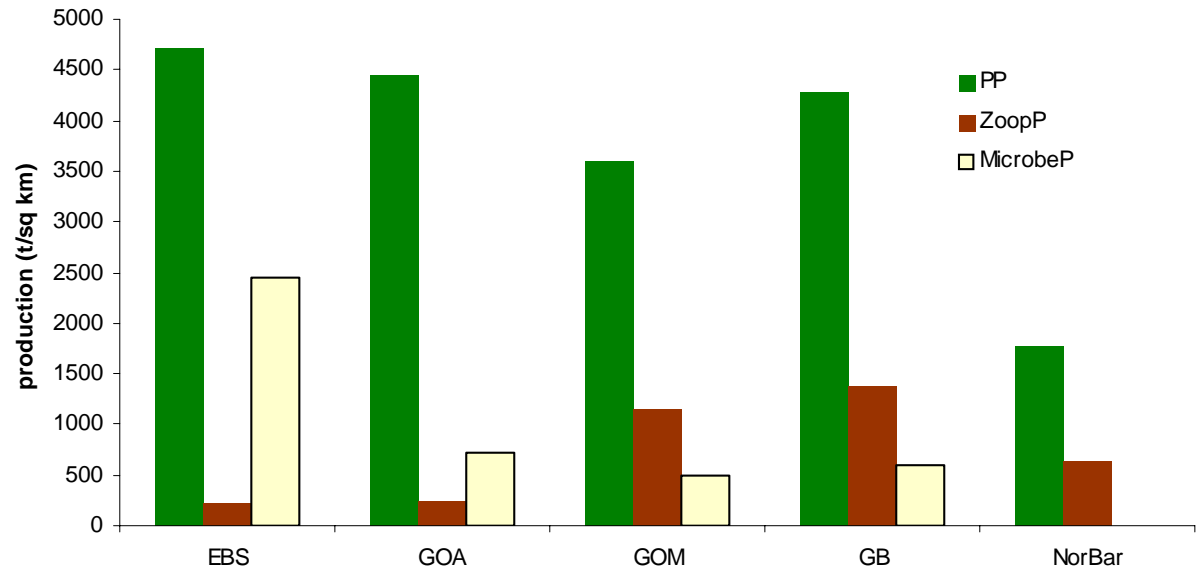
Seasonal production based on Behrenfeld & Falkowski (1997) VGPM algorithm
Please see MENU time series and climate talks for more detail...



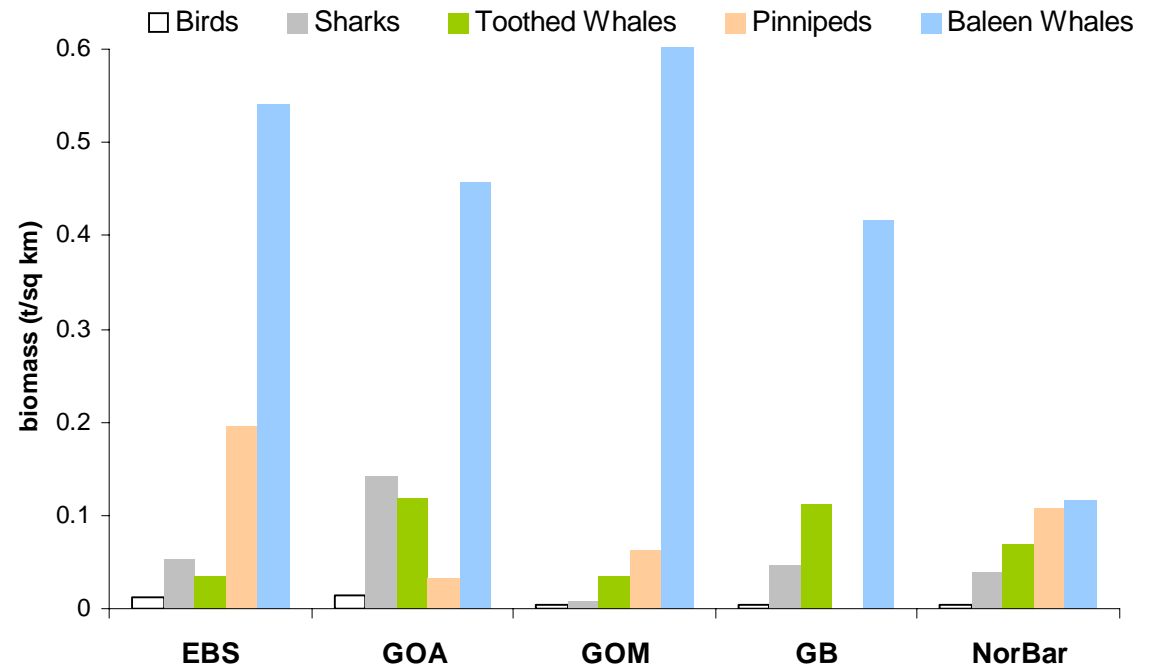
Benthic and pelagic inverts, fish biomass



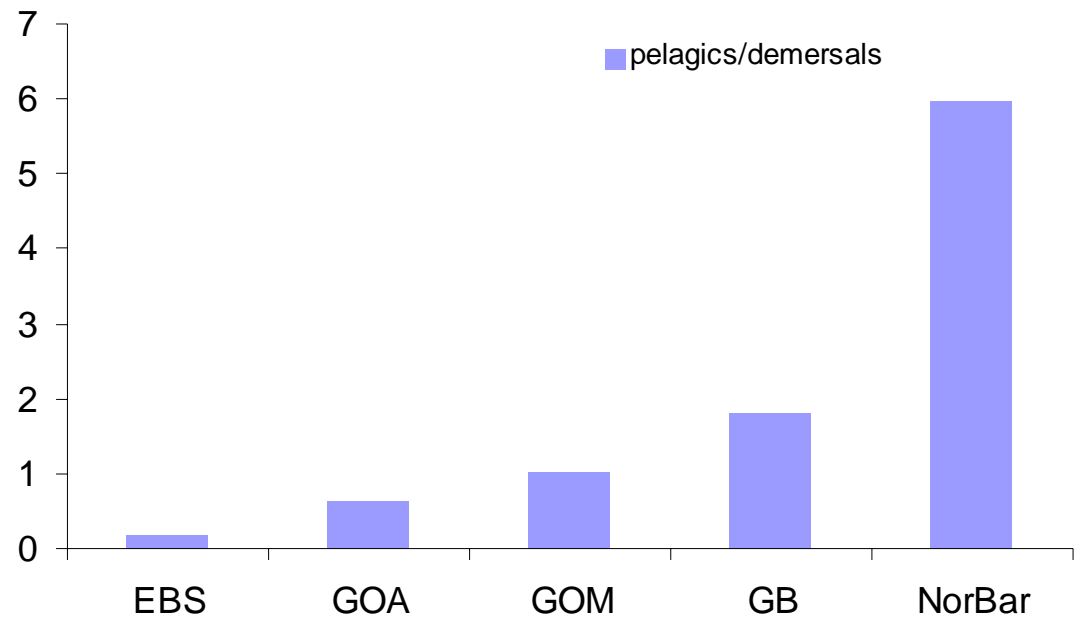
Production and production ratios



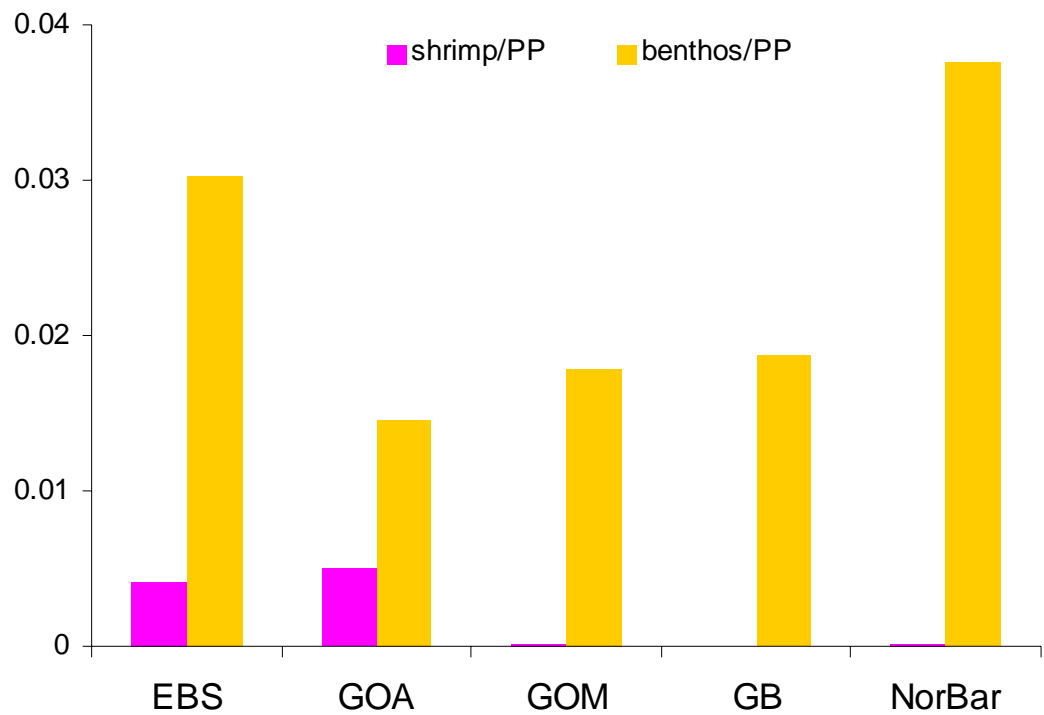
Biomass by group



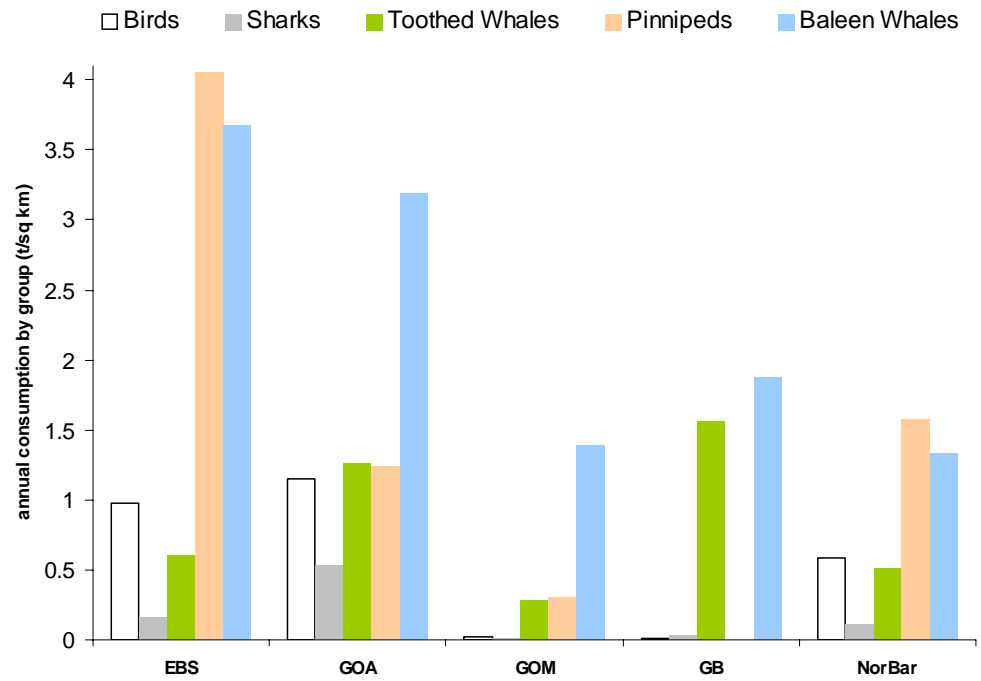
Biomass ratios



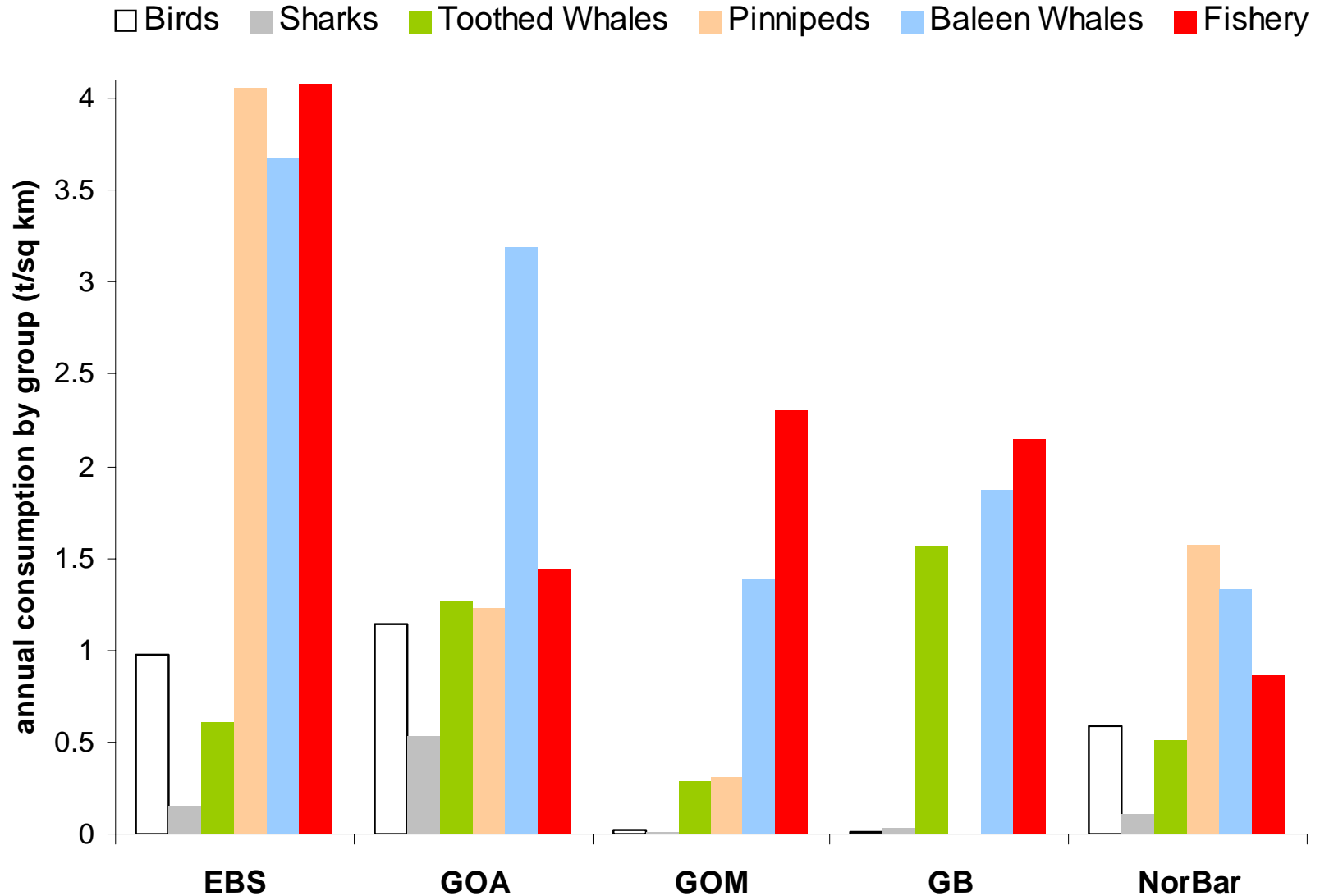
Biomass to Primary Production, and biomass ratios



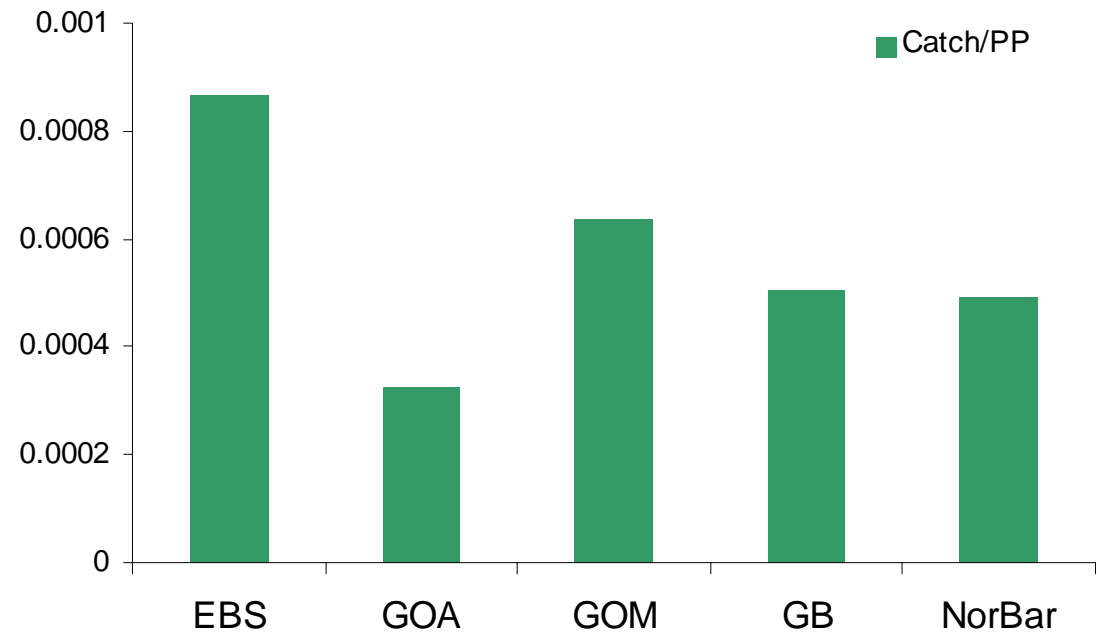
Consumption by group



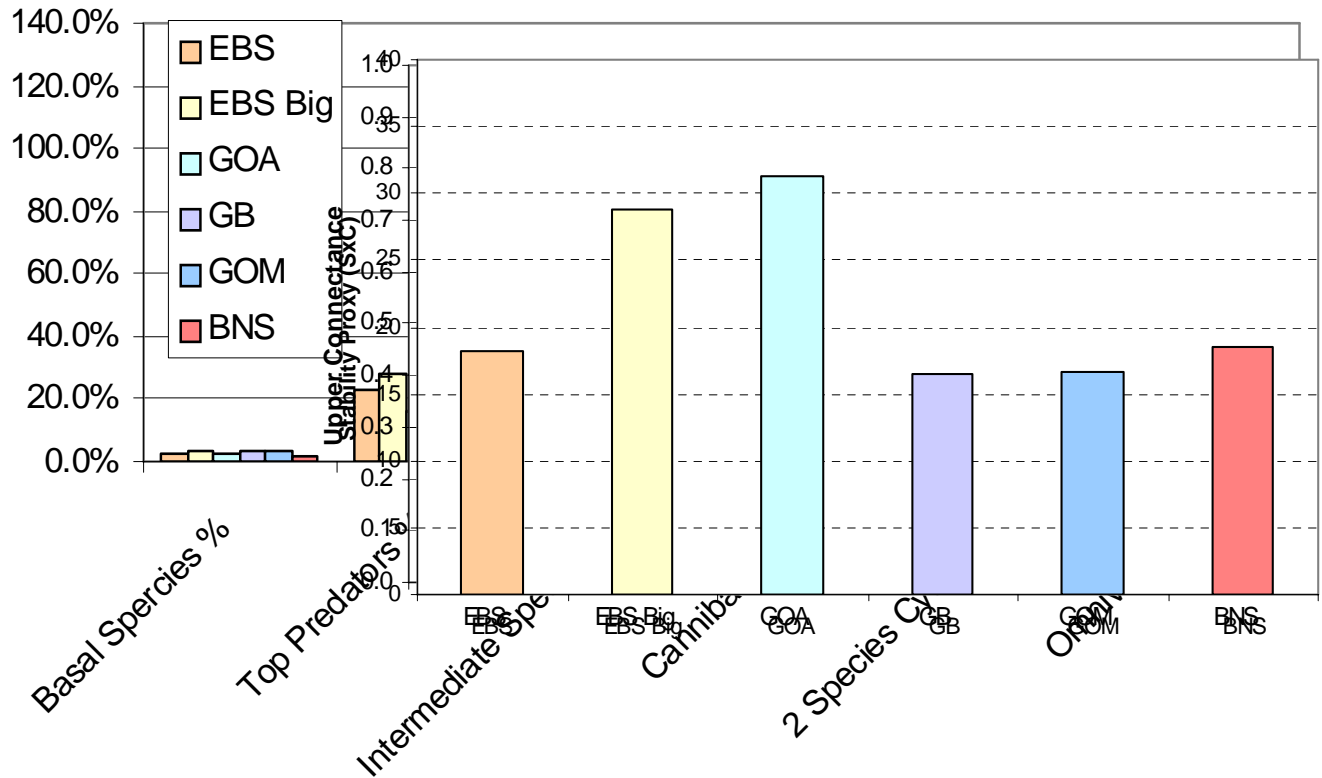
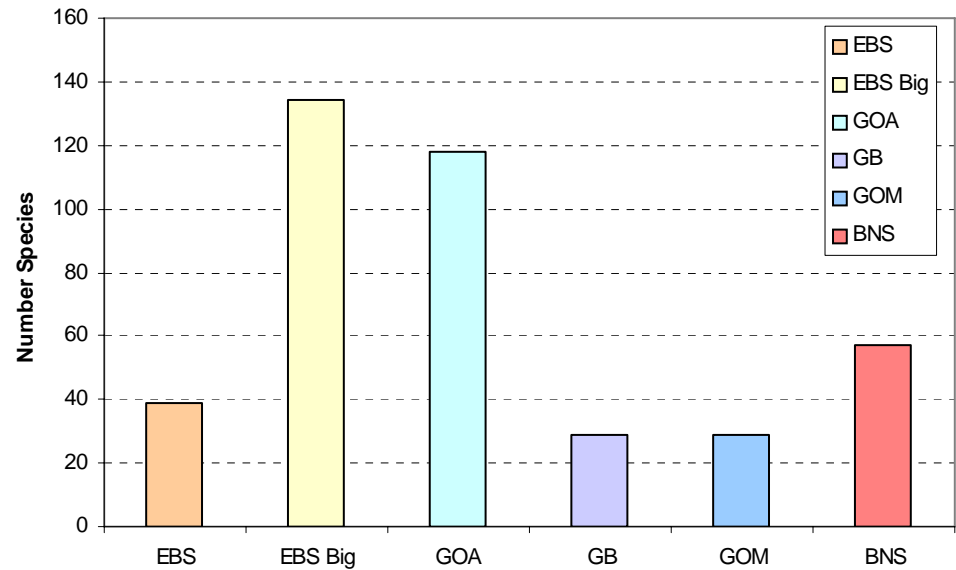
Predator consumption and fishery catch



Catch to Primary Production, Consumption ratios



Network metrics (disaggregated models)



Summary- Commonalities

- High latitude systems with seasonal production regimes, generally high primary productivity
- High fishery production
- High biomass of baleen whales
- Tradeoffs between benthic and pelagic energy pathways

Summary- Differences

- Dominance of demersal vs pelagic fish, to a lesser extent energy flow through the benthic vs pelagic foodweb
- Zooplankton production lower in AK systems
- Primary production lower in NorBar systems
- Benthos production and fishery removals highest in EBS

Future Work

- Examine these hypotheses in more detail to determine how differences in system energy budgets may translate into management advice
- Expand network metric analyses