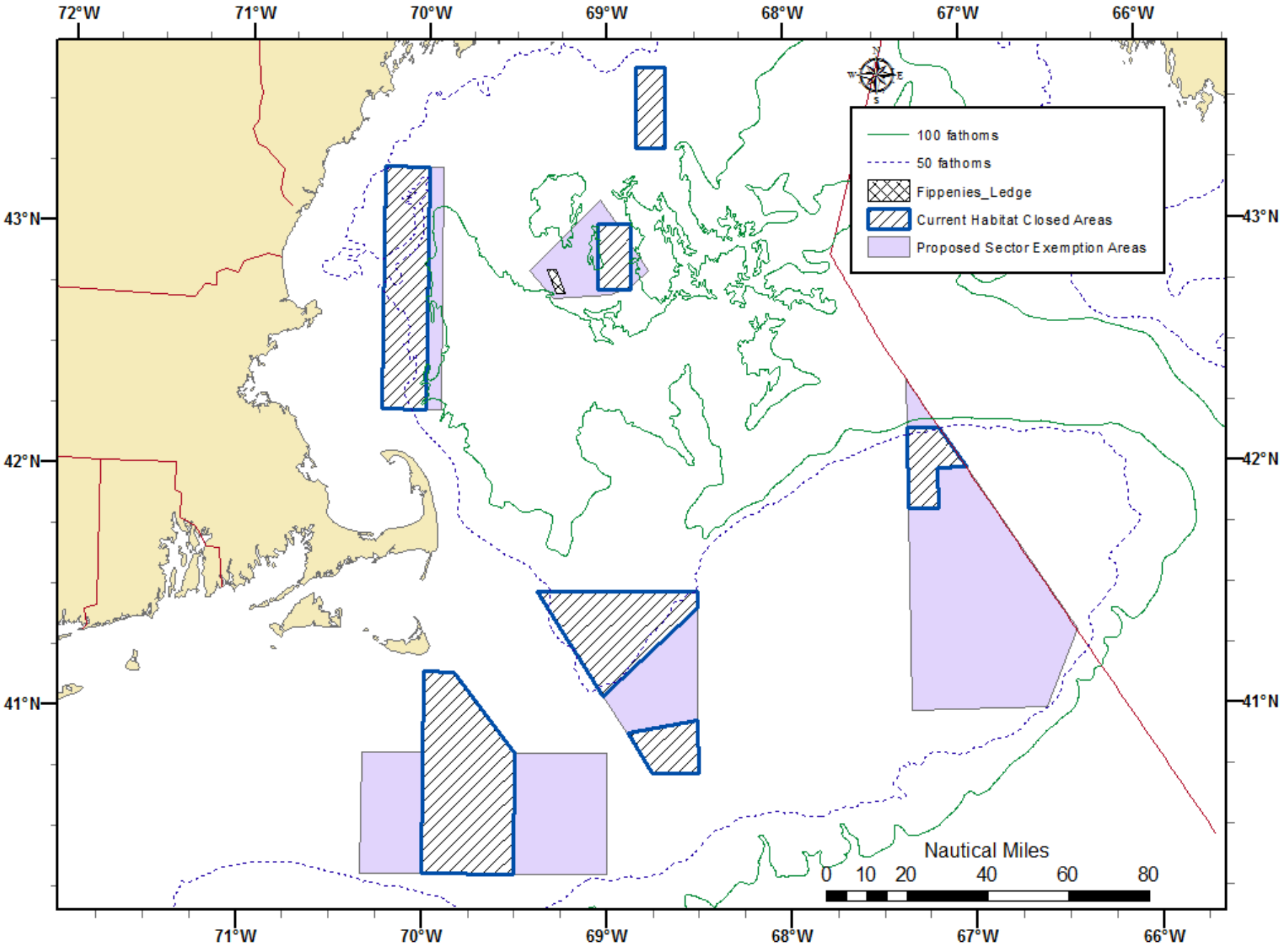
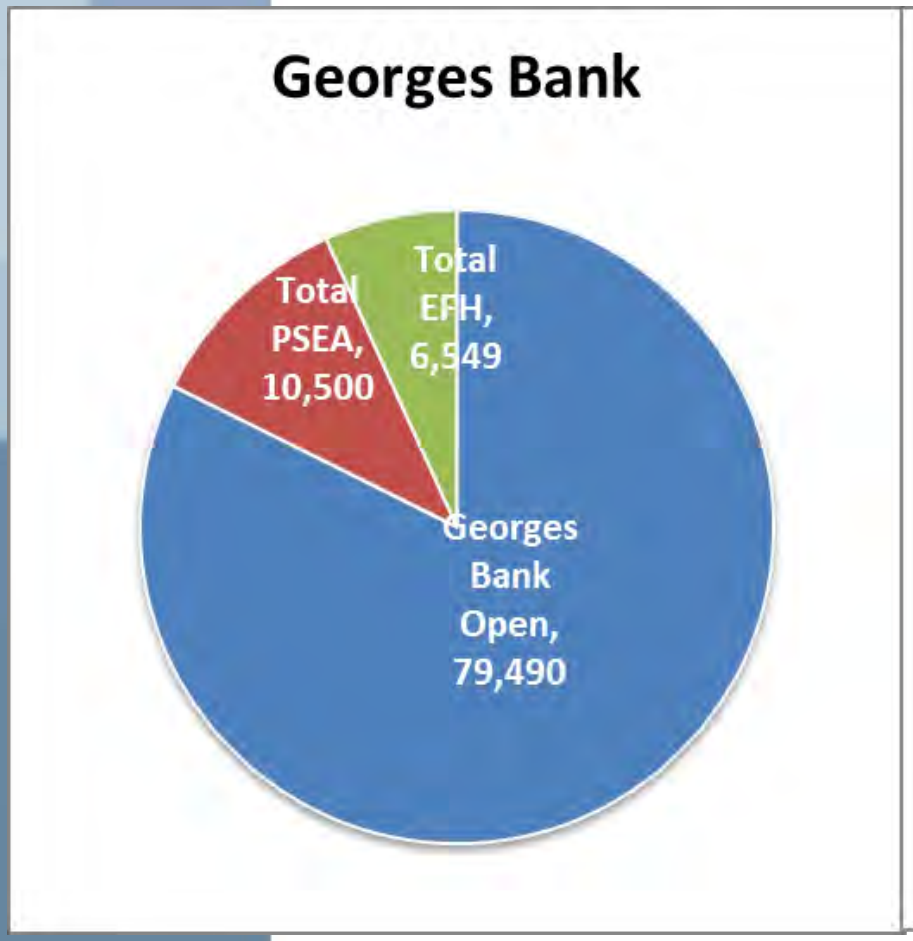
Analysis of Sector Exemptions to Year Round Closed Areas

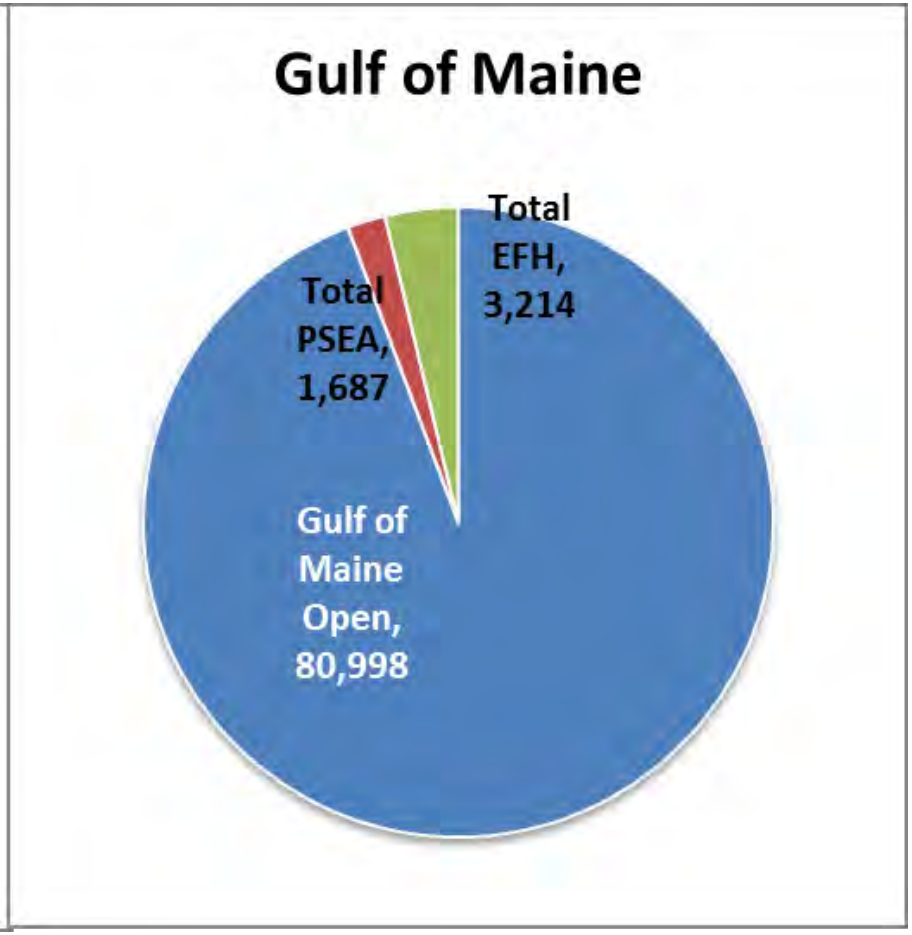
Andrew Applegate

Chair Closed Area Technical Team

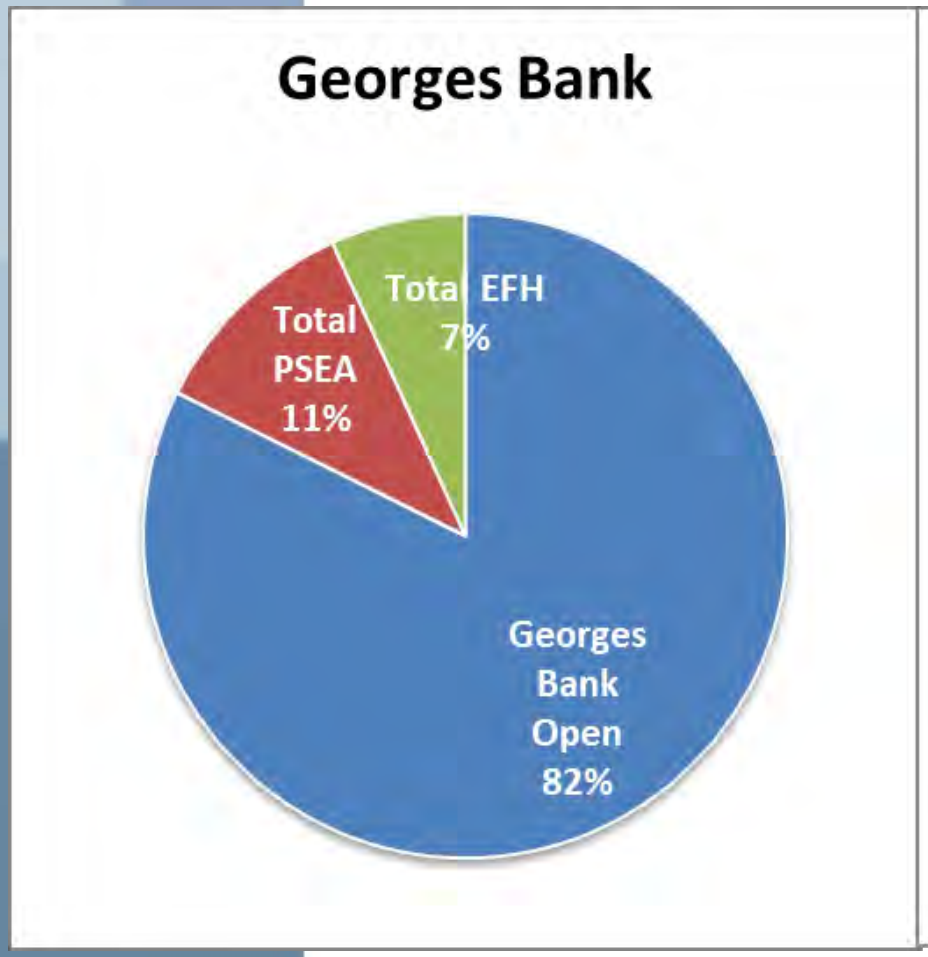

72°W
71°W
70°W
69°W
68°W
67°W
66°W
43°N
42°N
41°N
100 fathoms
50 fathoms
Fippenies_Ledge
Current Habitat Closed Areas
Proposed Sector Exemption Areas
Nautical Miles
0 10 20 40 60 80

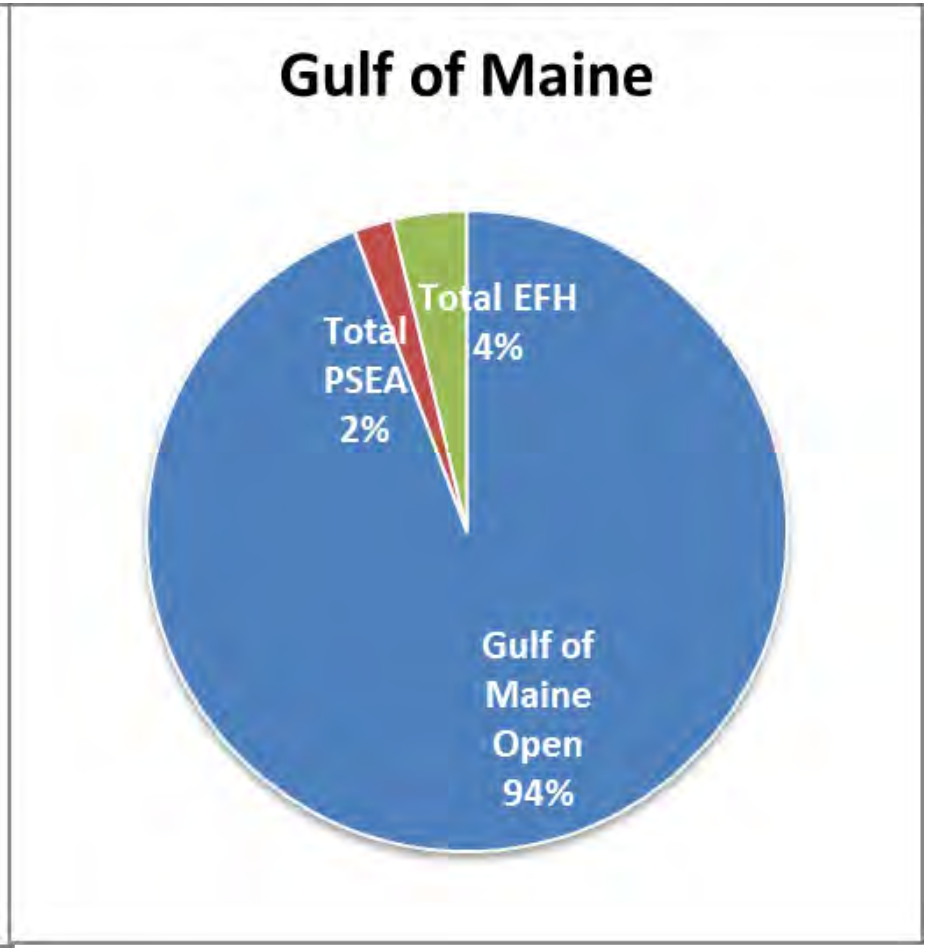
Area (nm2)

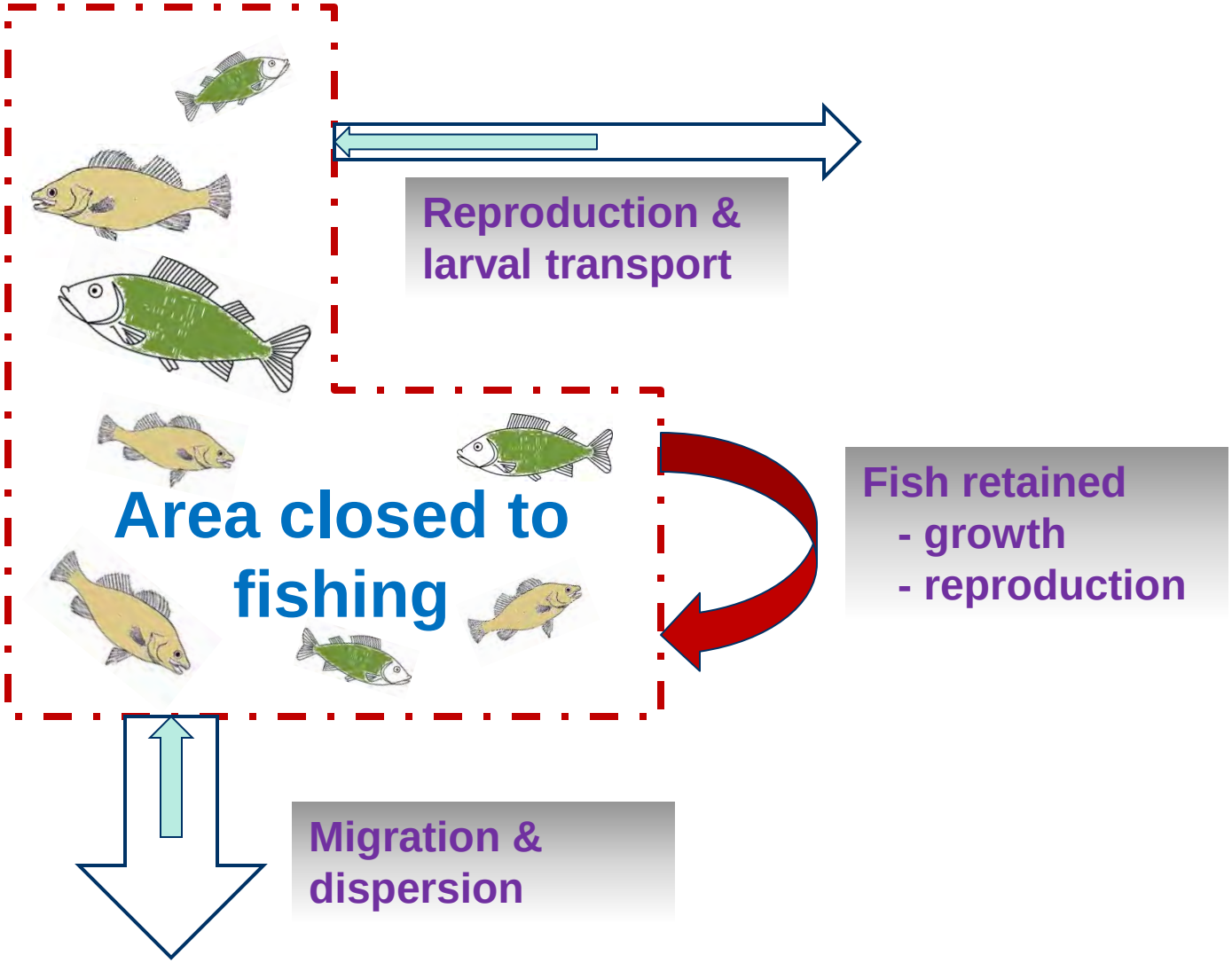

Georges Bank
Total PSEA, 10,500
Total EFH, 6,549
Georges Bank Open, 79,490

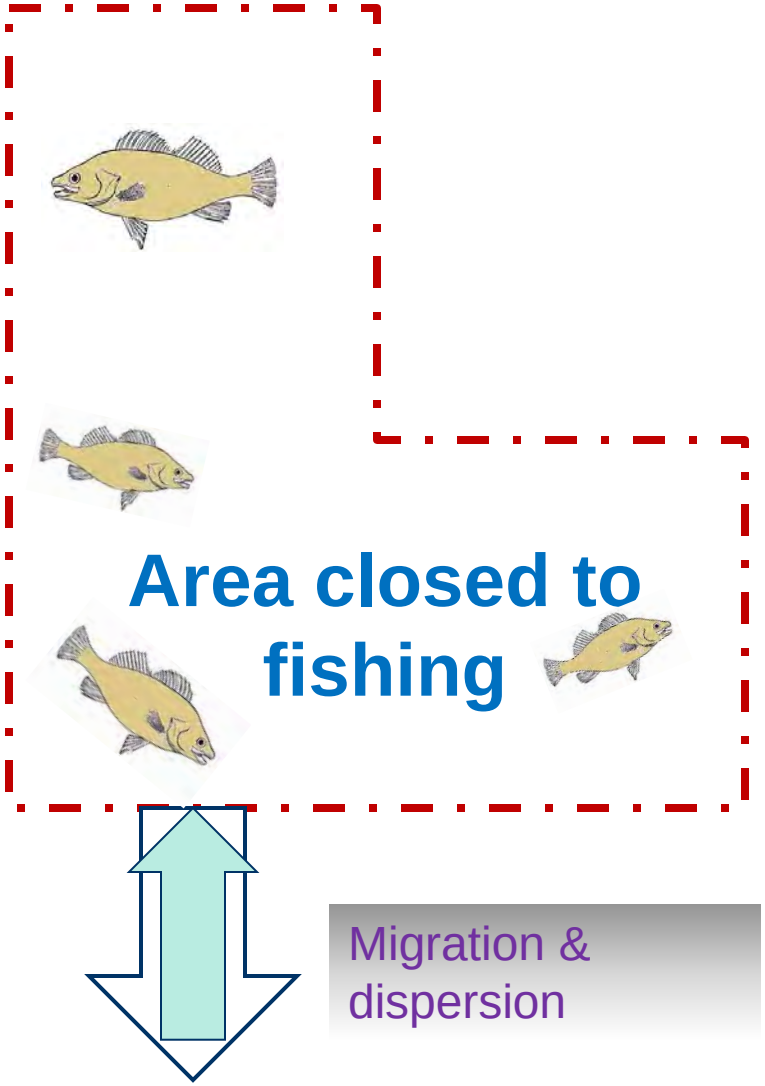

Gulf of Maine
Total PSEA, 1,687
Total EFH, 3,214
Gulf of Maine Open, 80,998

Area

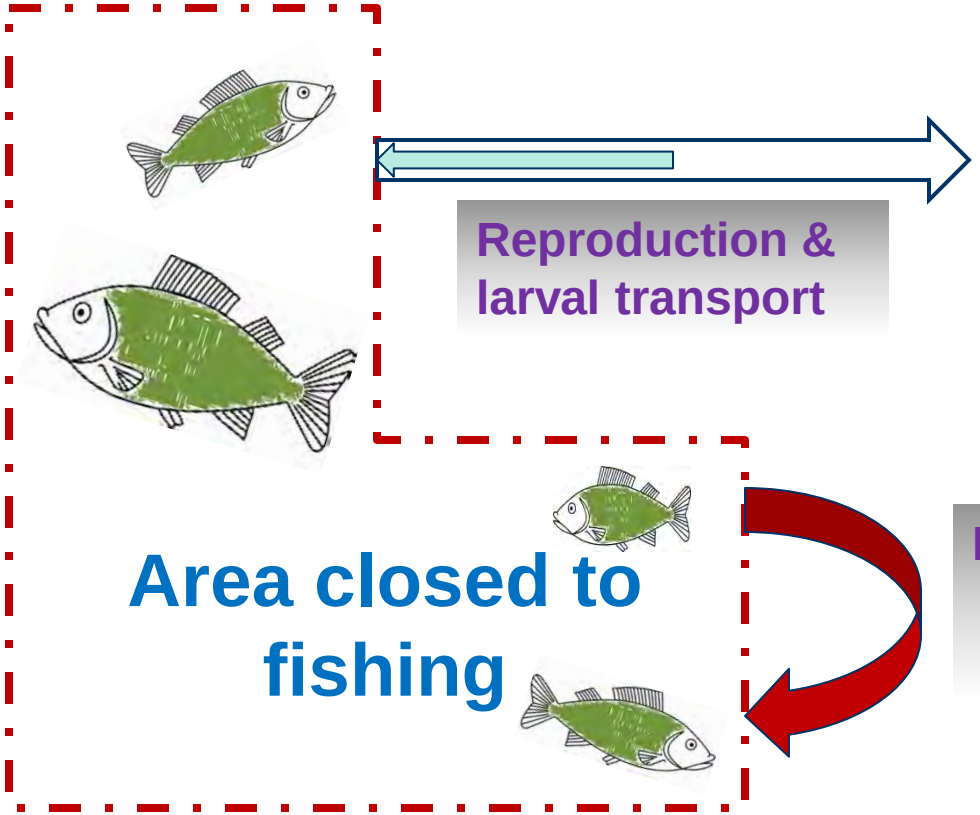

Georges Bank
Total EFH 7%
Total PSEA 11%
Georges Bank Open 82%


Gulf of Maine
Total EFH 4%
Total PSEA 2%
Gulf of Maine Open 94%


Reproduction &
larval transport
Area closed to
fishing
Fish retained
- growth
- reproduction
Migration &
dispersion



- Nearly identical length frequencies
- Biological characteristics may or may not be different, but no trend
- Enhanced productivity realized by the fishery
- Difficult to measure effect



- Length-frequencies different
- Disproportionate biomass
- Biological characteristics more likely to be different from open fishing areas

- BACI trends in biomass and/or abundance
- Difficult to measure enhanced recruitment

Literature

- Positive effects on haddock & winter flounder
- No effect detected for cod & yellowtail flounder abundance or biomass
- Cod subpopulation differences; benefit to resident cod

Biological differences between open, habitat, and sector exemption areas

- Most extensive analysis of survey data
- Very few differences noted
  - Weight at length
  - Length at age
  - Maturity at age or length
  - Length frequency at depth

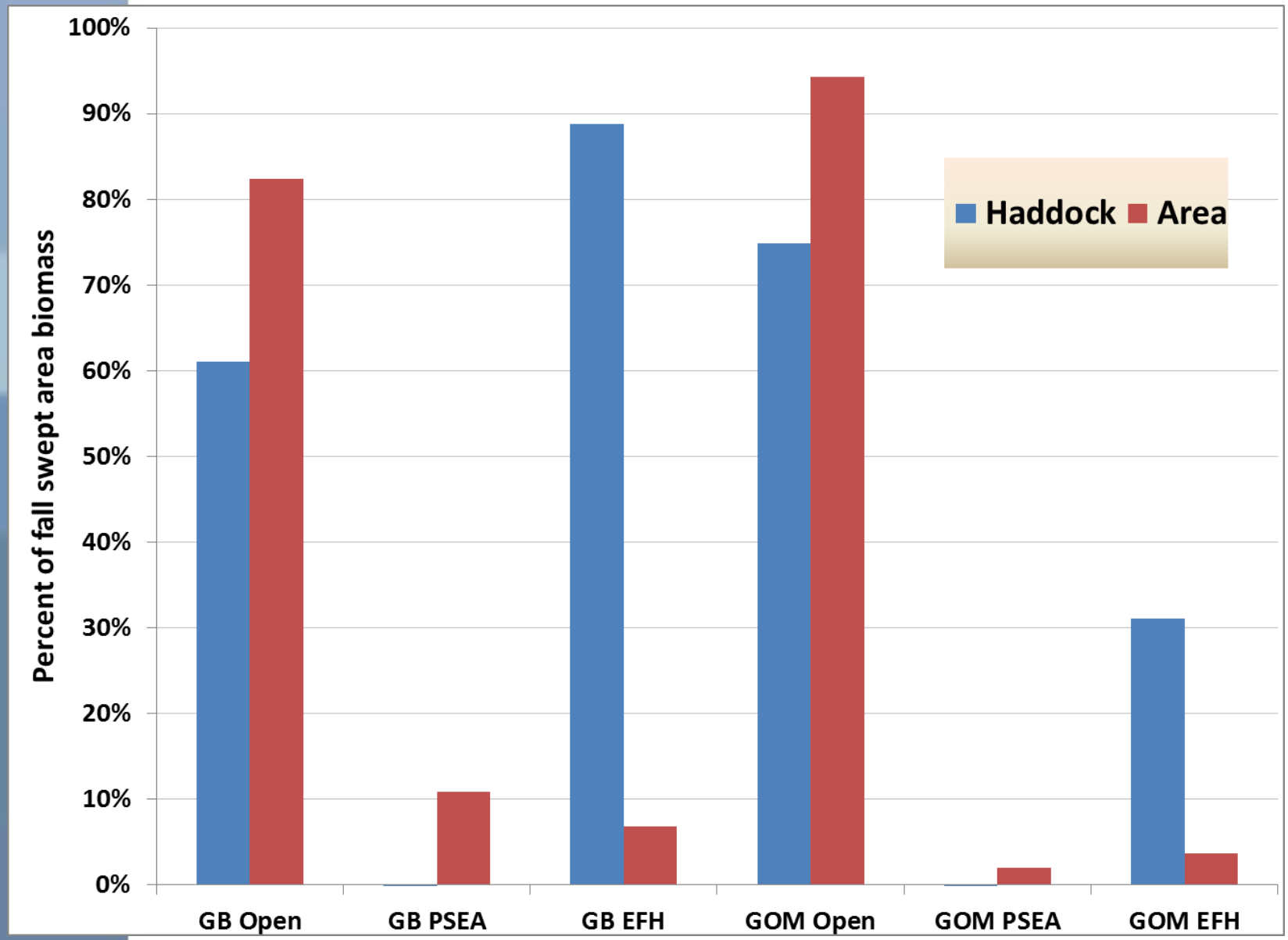
Biological differences between open, habitat, and sector exemption areas

- Differences for some stocks
  - Comparative length frequencies
  - Distribution of old mature females
  - Distribution of developing and ripe females

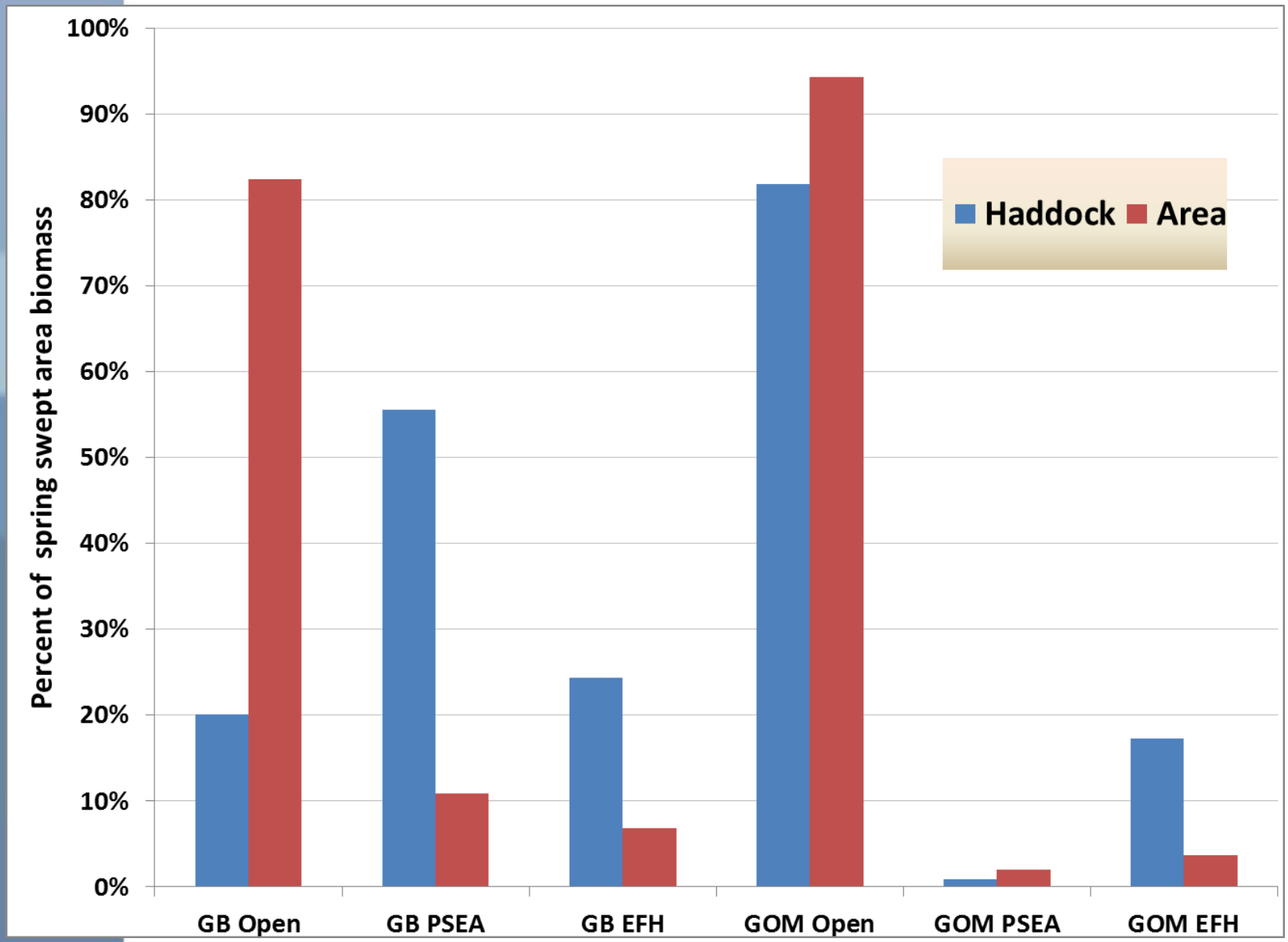
Qualitative biological differences

Stocks with biological differences	Stocks with some differences	Stocks with no observable differences
Haddock	Yellowtail flounder	Winter skate
Winter flounder	Barndoor skate	Pollock
Cod	Cod sub-populations	Redfish
	American lobster	Monkfish
		Thorny skate
		Atlantic wolfish

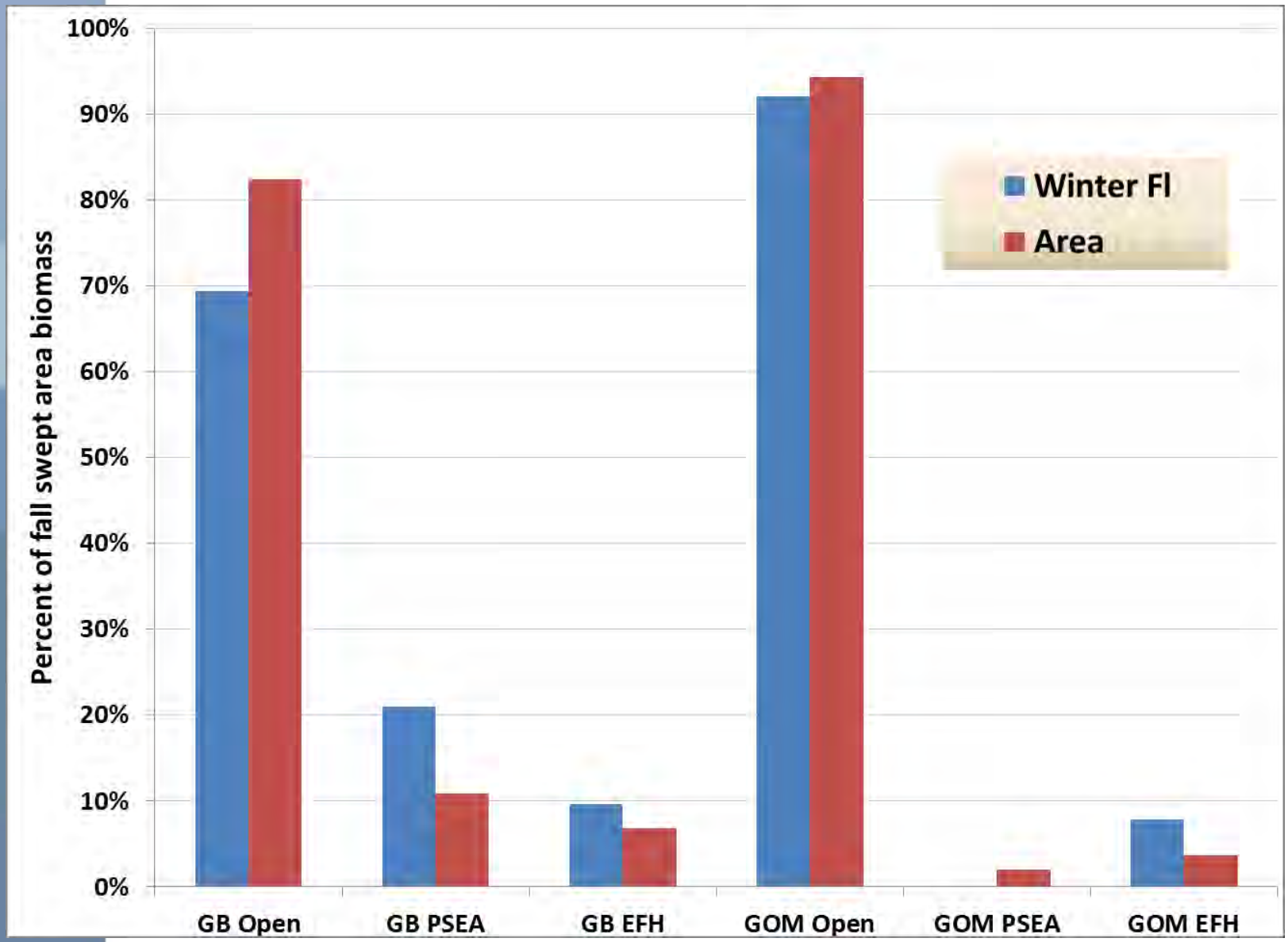
Haddock fall biomass distribution



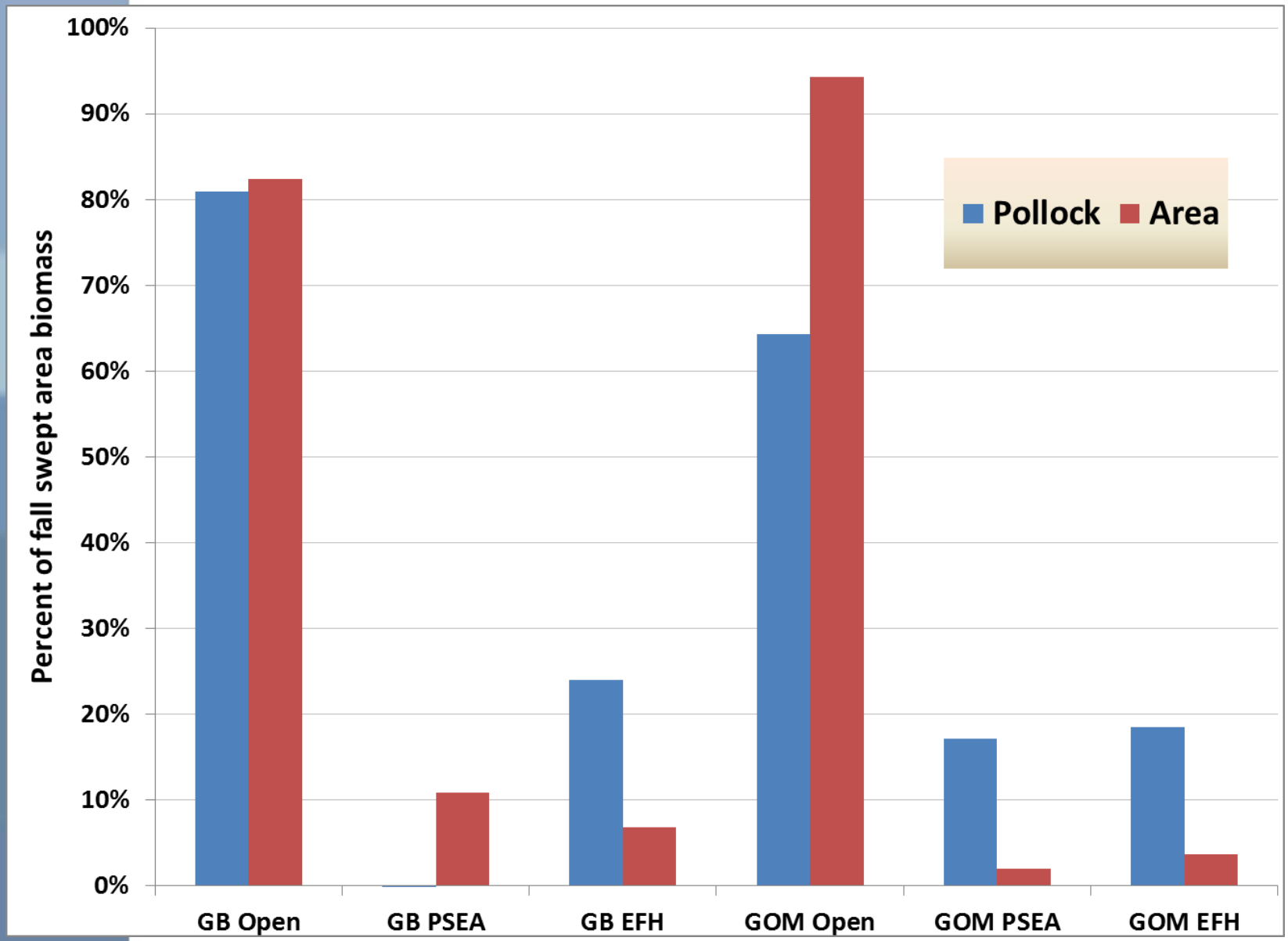
Haddock spring biomass distribution



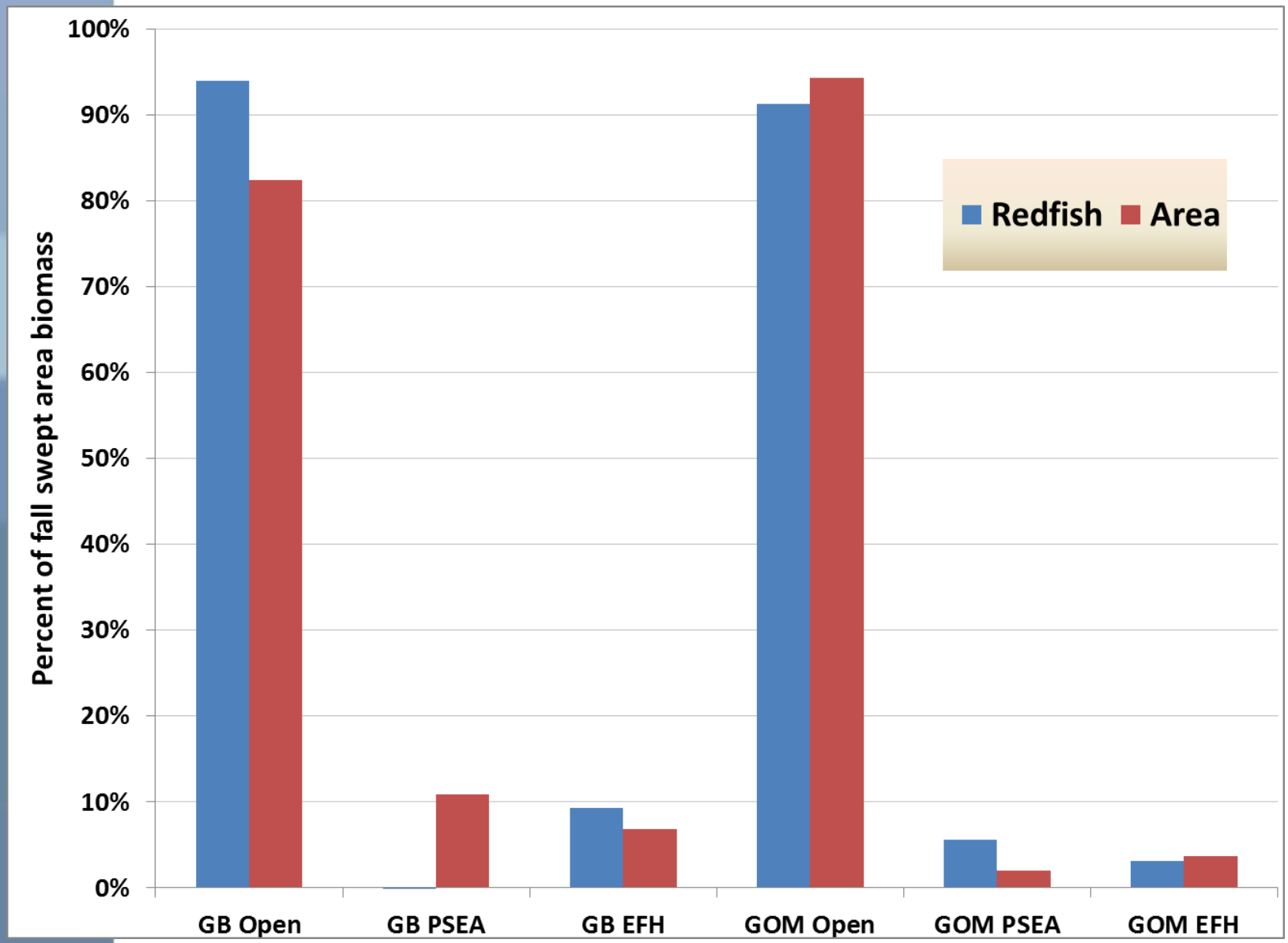
Winter flounder fall biomass distribution



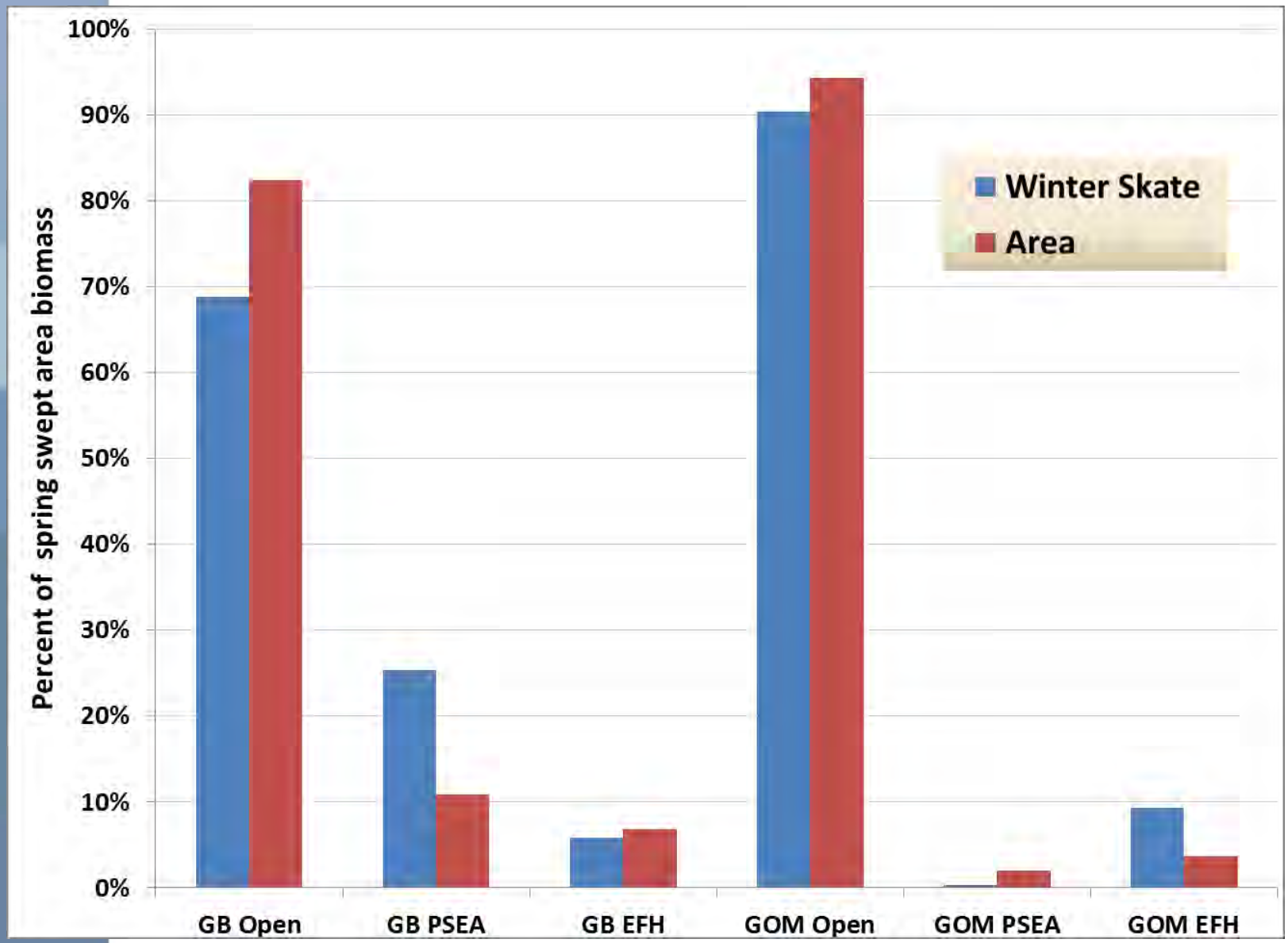
Pollock fall biomass distribution



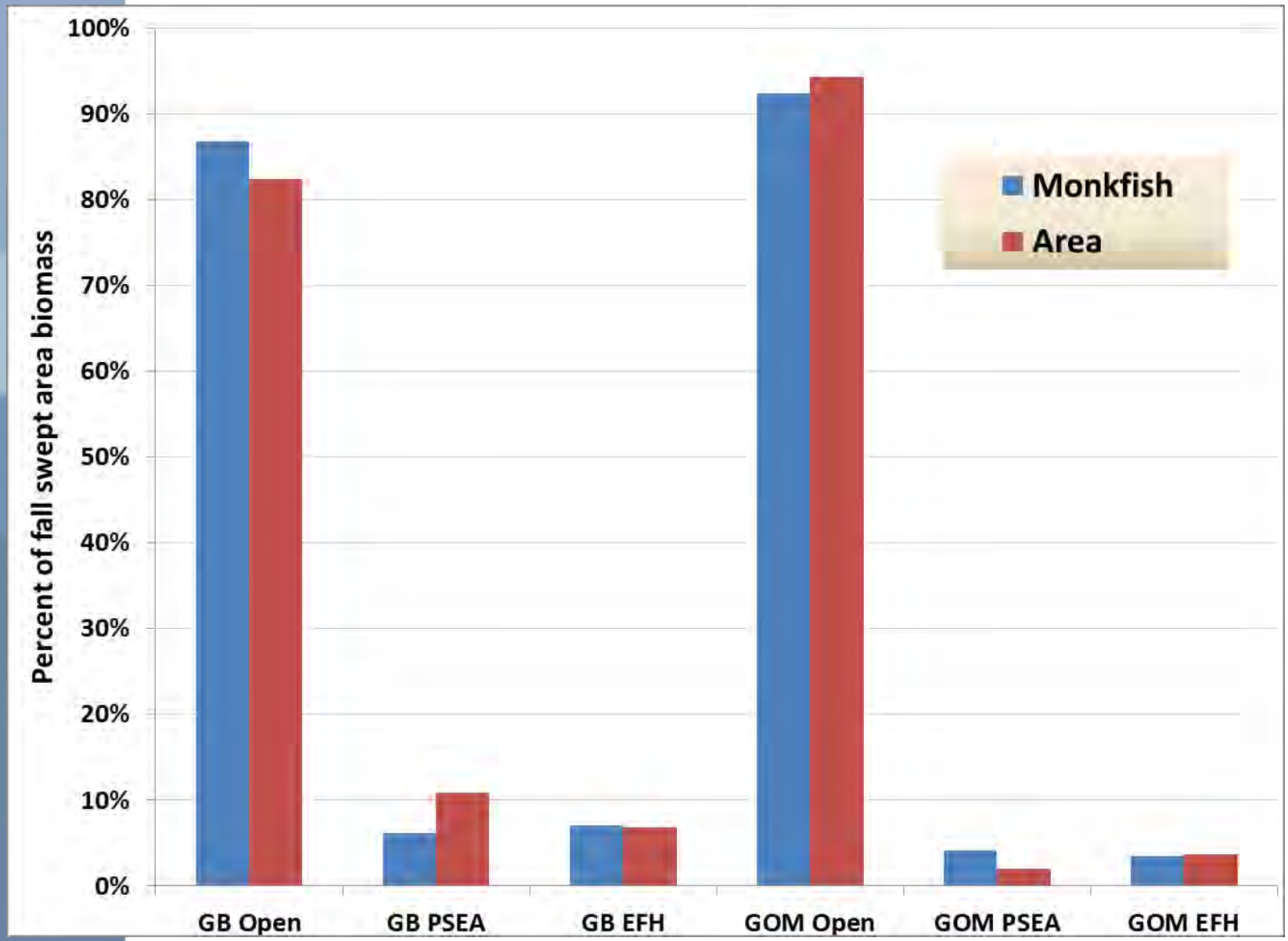
Redfish fall biomass distribution



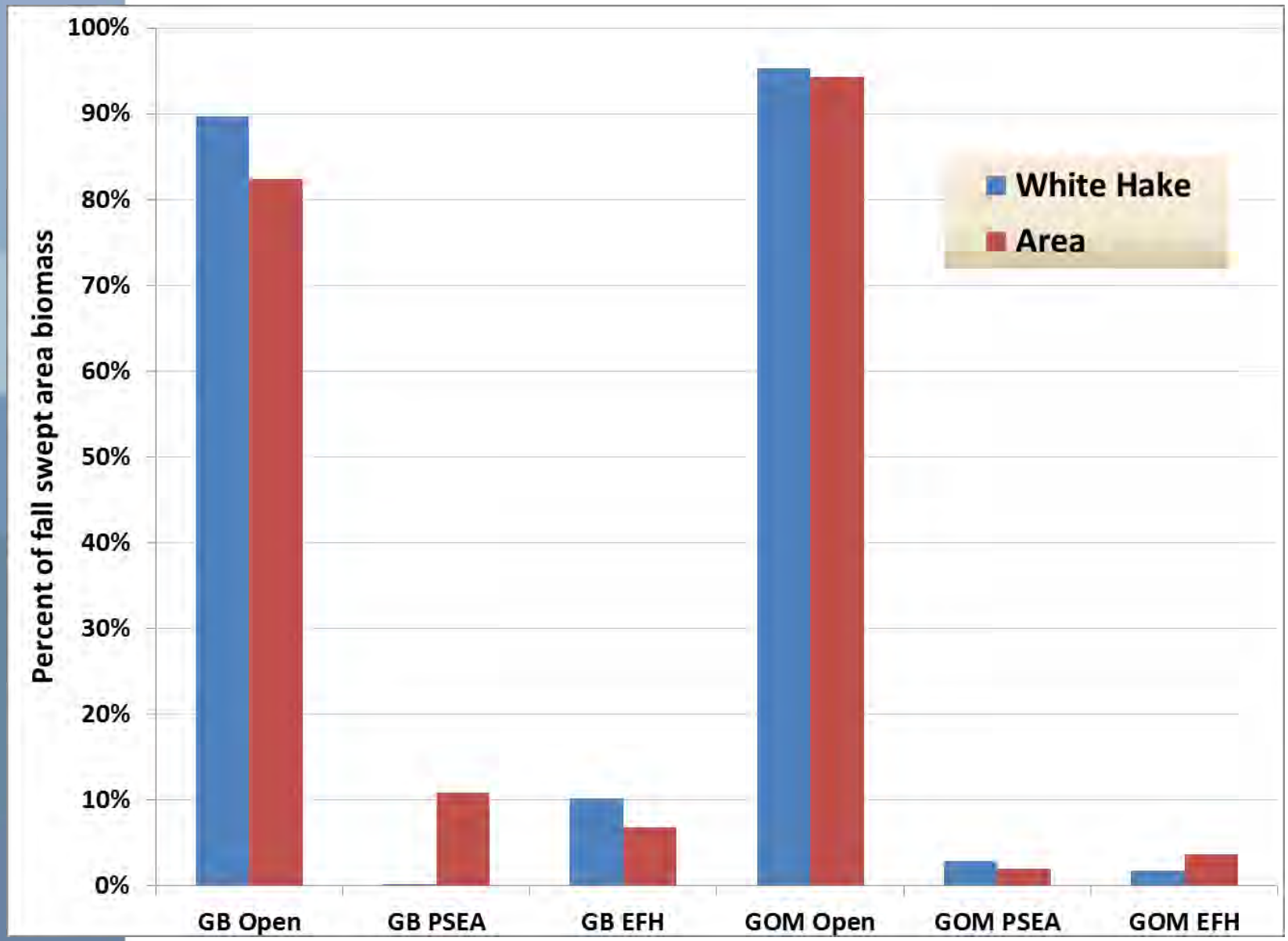
Winter skate spring biomass distribution



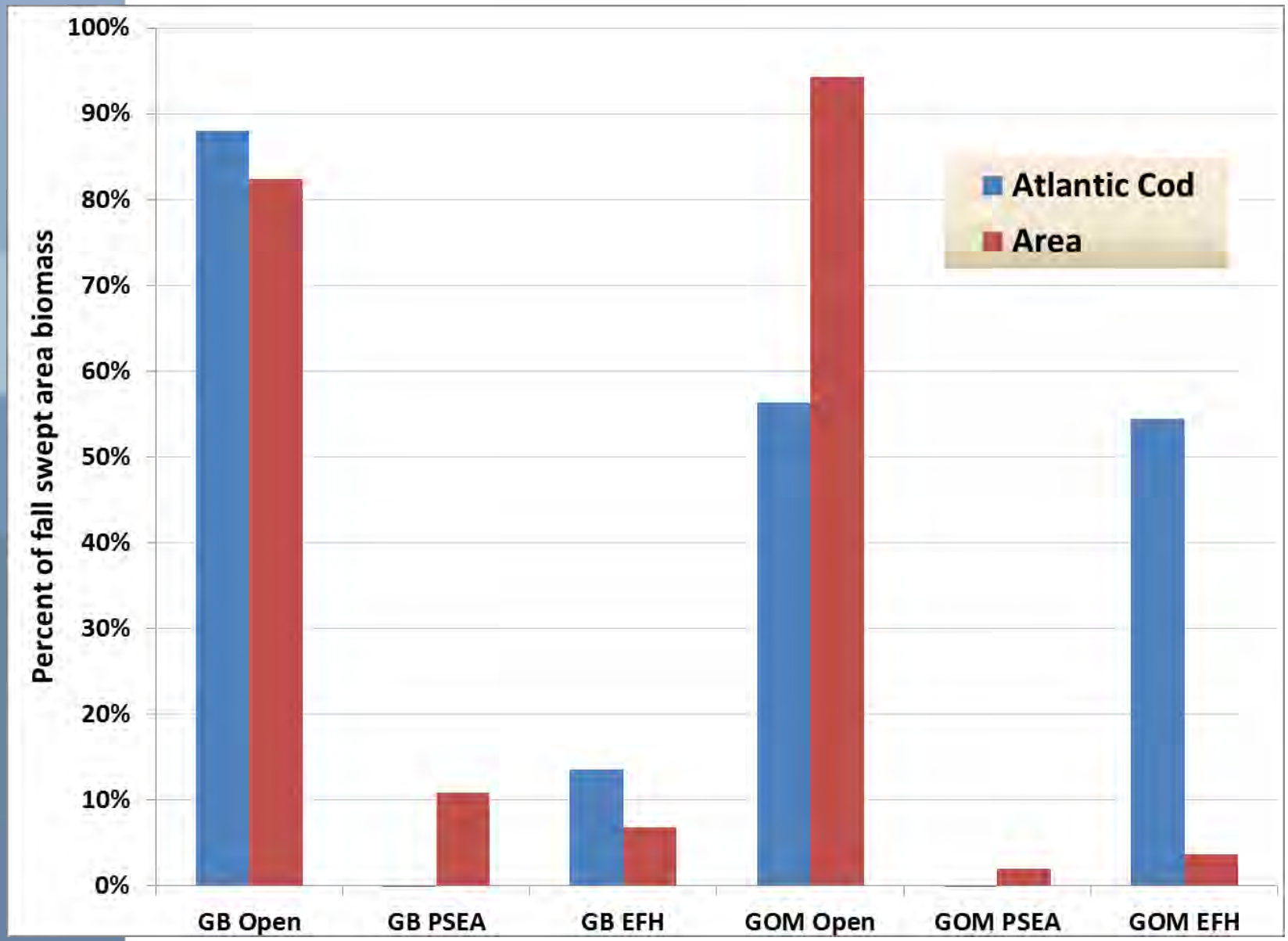
Monkfish fall biomass distribution



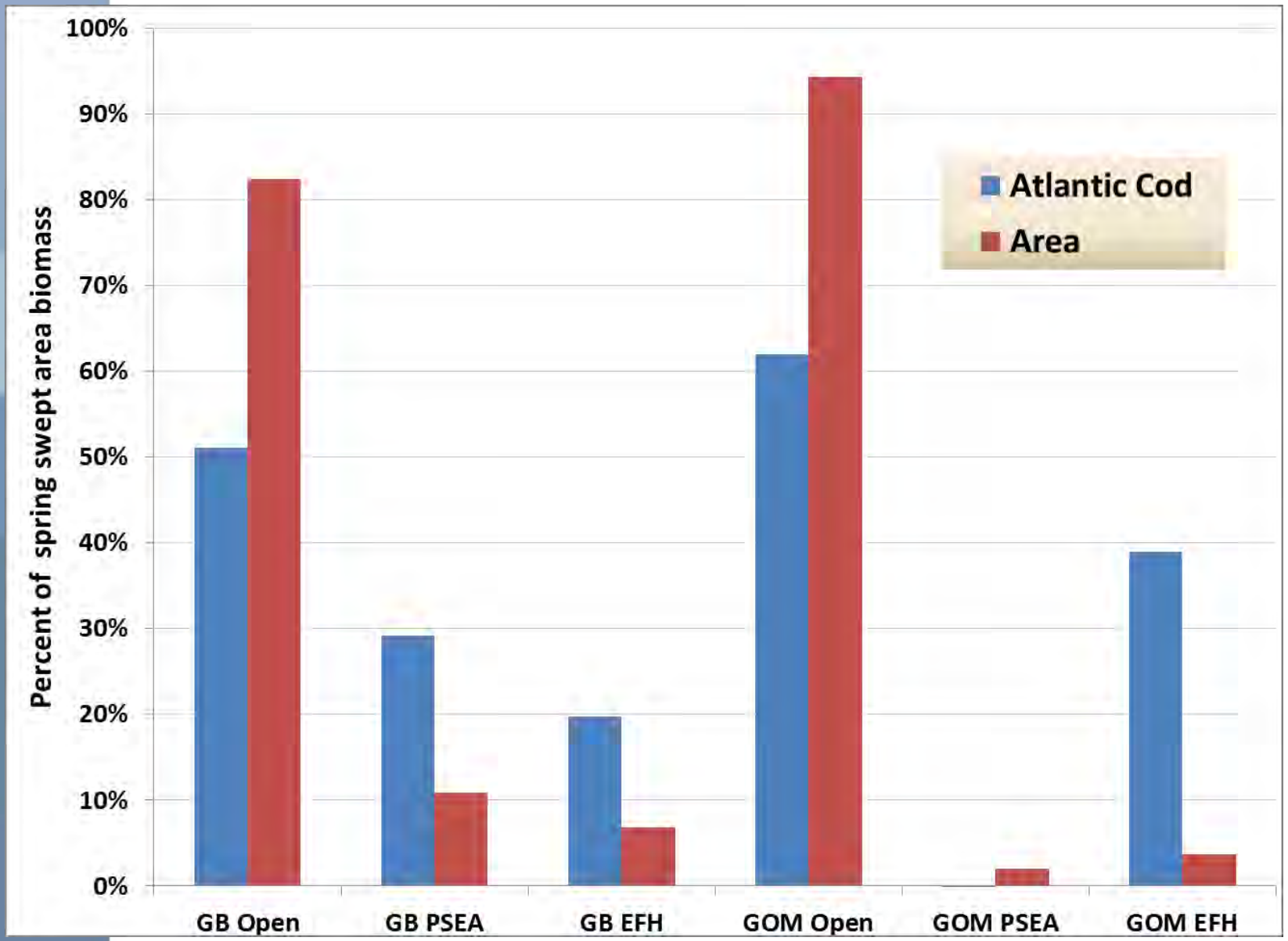
White hake fall biomass distribution



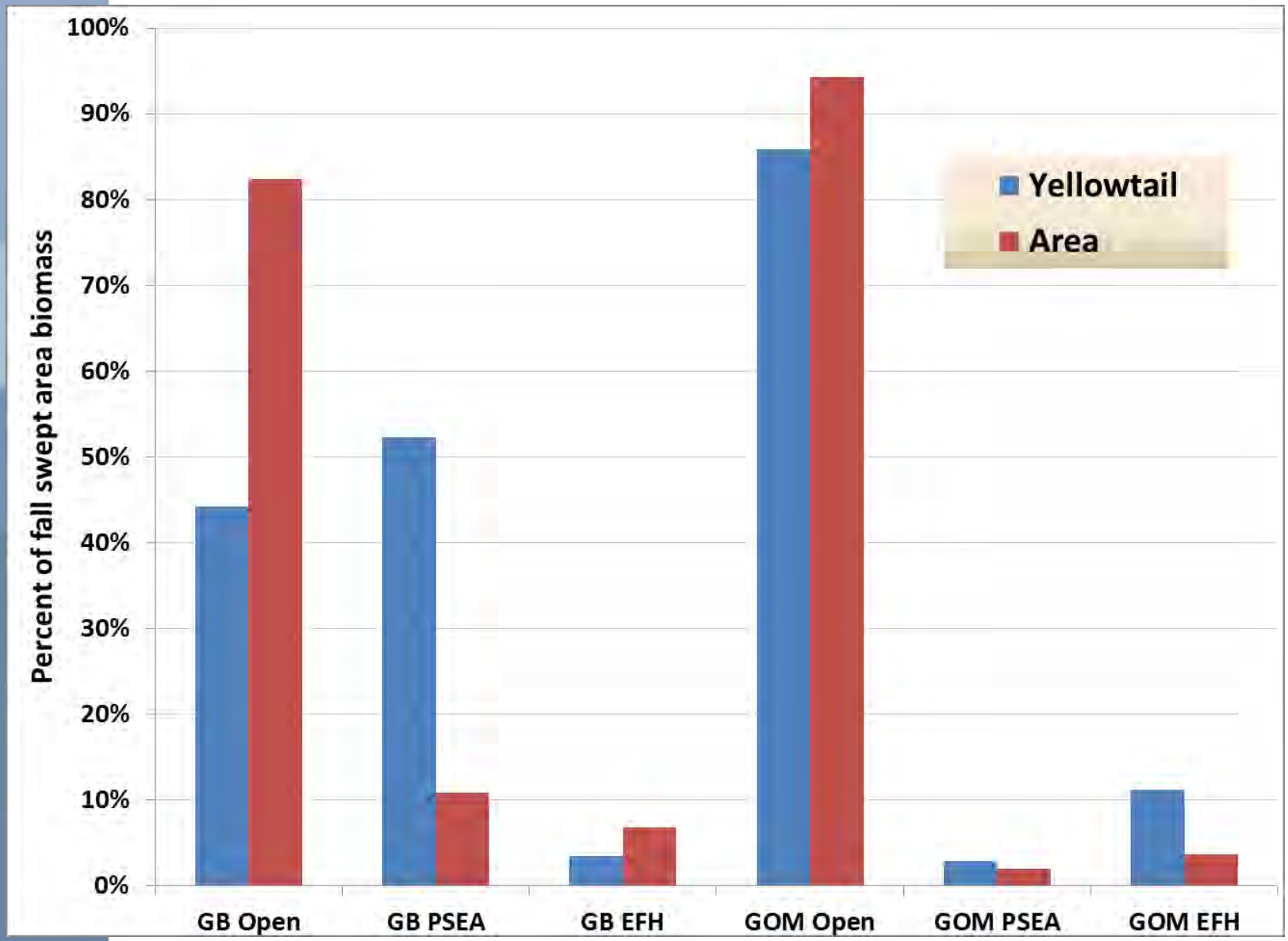
Cod fall biomass distribution



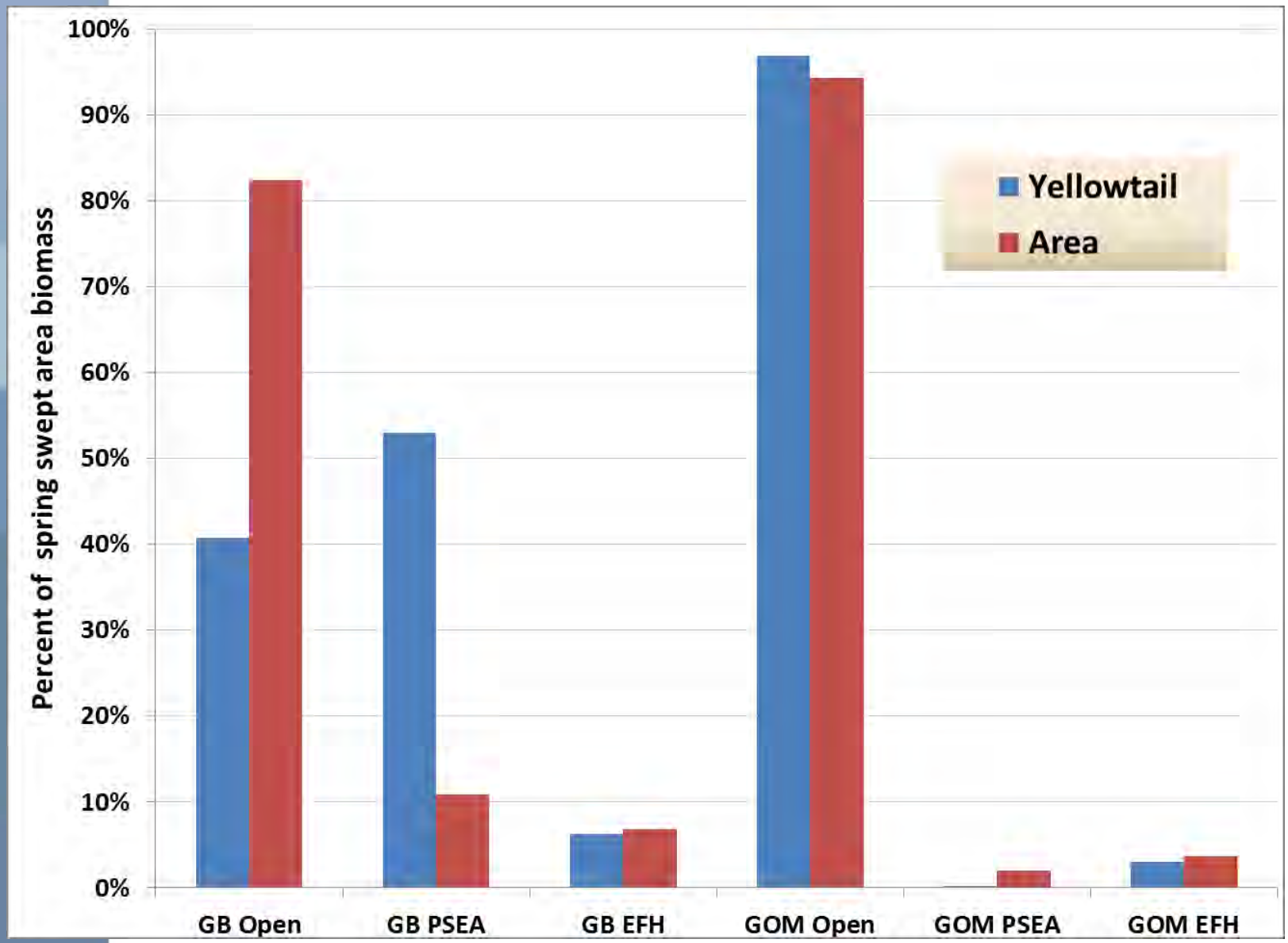
Cod spring biomass distribution



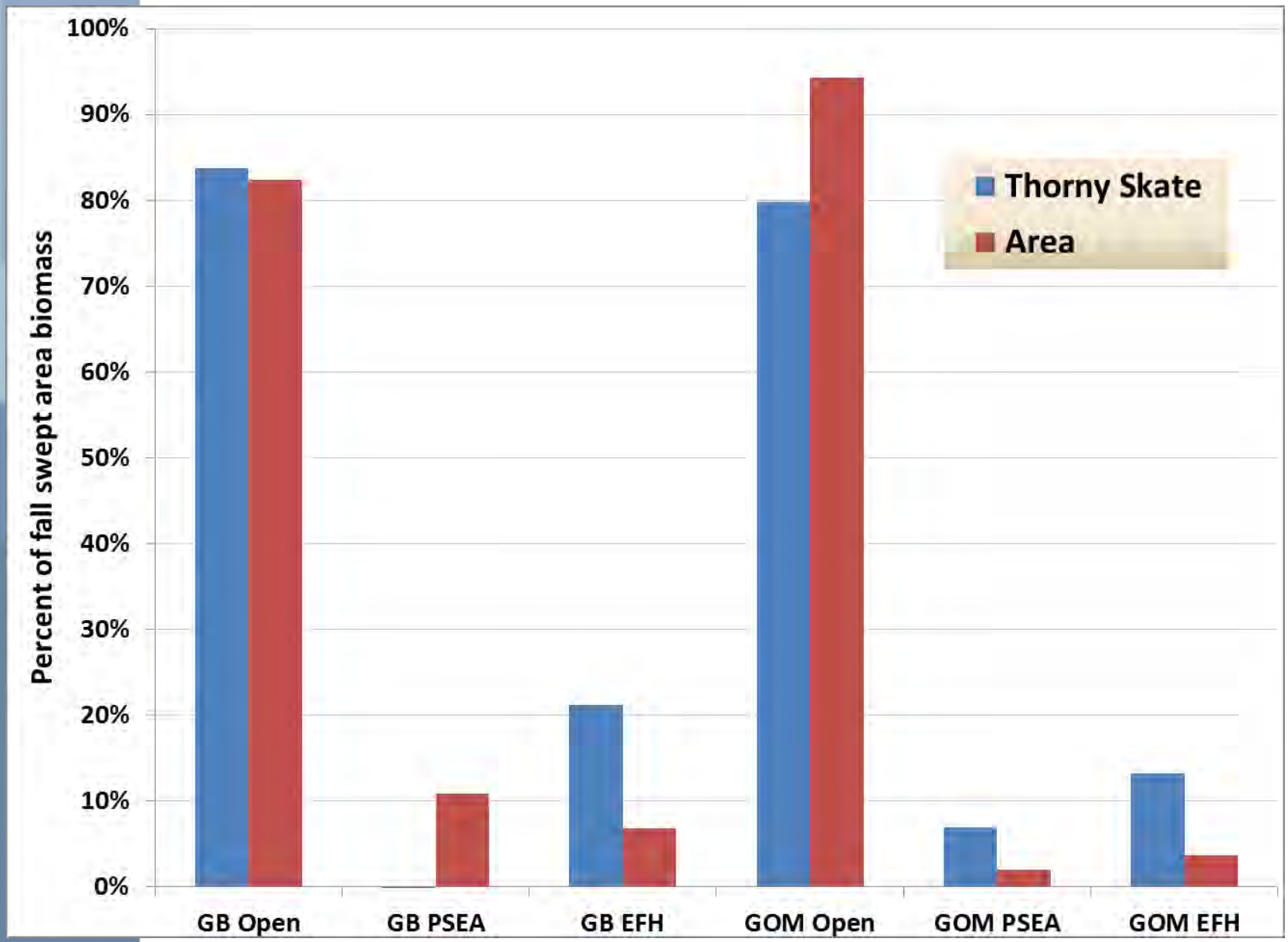
Yellowtail flounder fall biomass distribution



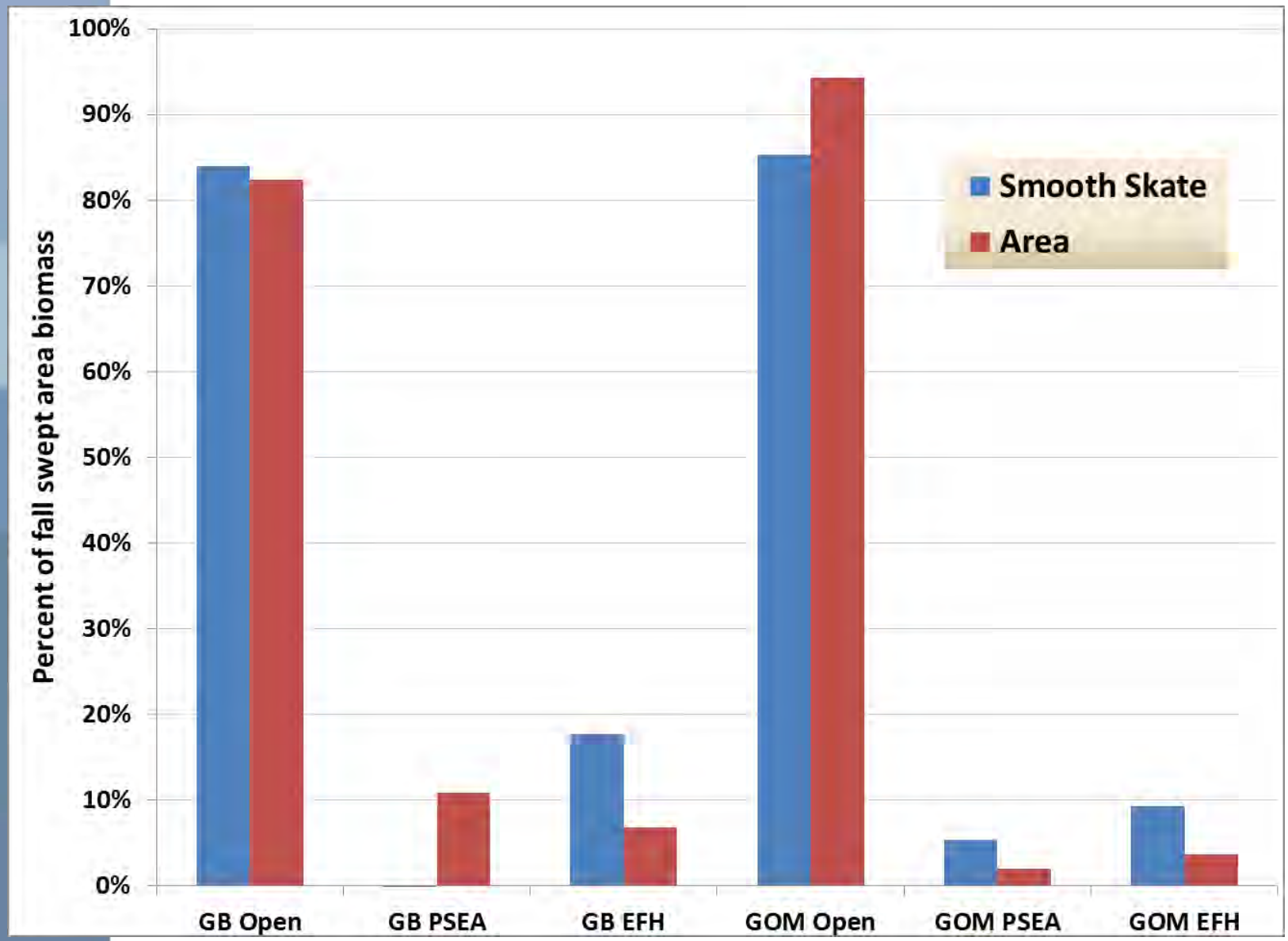
Yellowtail flounder spring biomass distribution



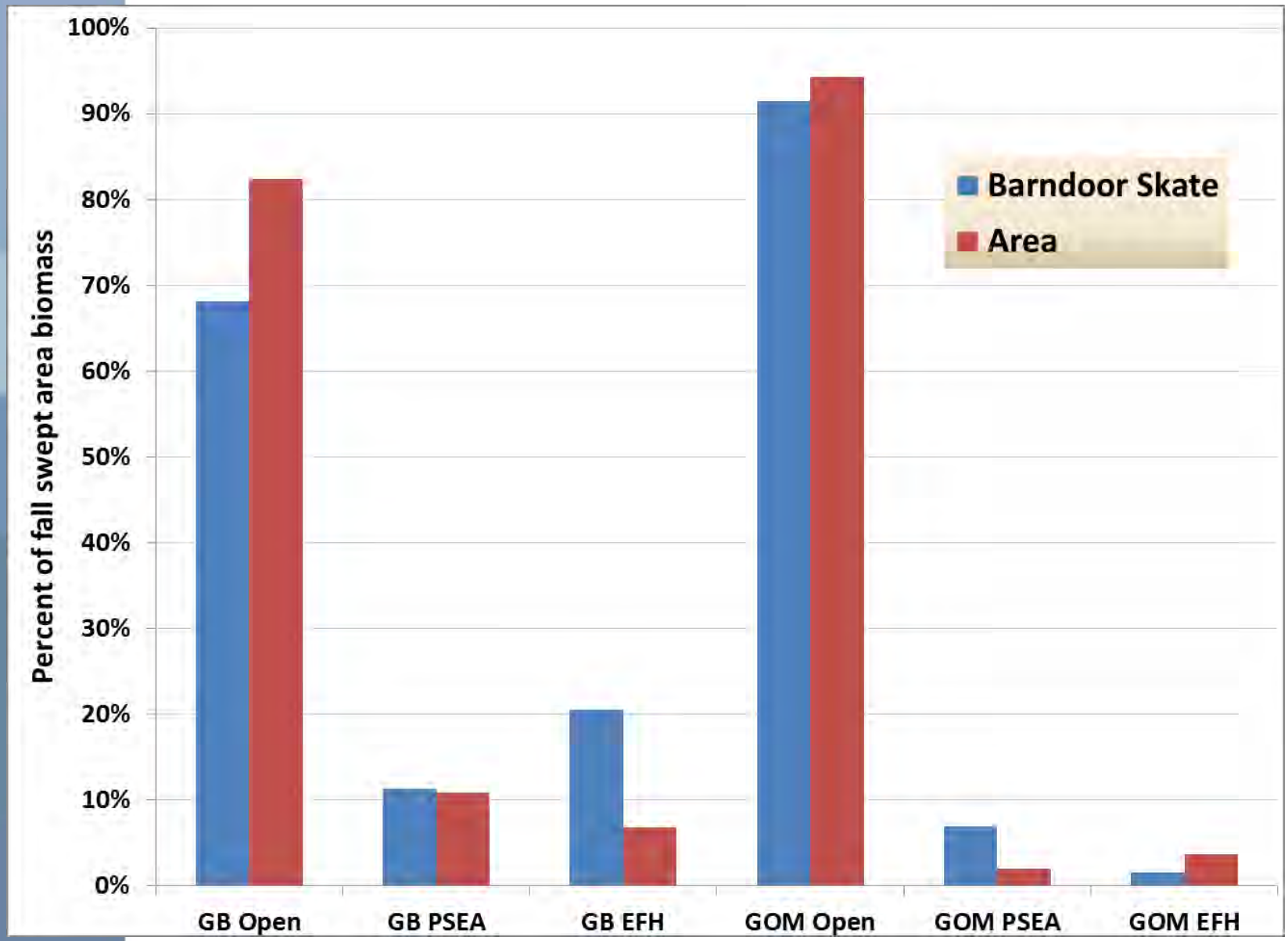
Thorny skate fall biomass distribution



Smooth skate fall biomass distribution



Barndoor skate fall biomass distribution



Qualitative impacts

	Georges Bank Haddock	Gulf of Maine haddock	Georges Bank cod	Gulf of Maine cod	Georges Bank/SNE winter flounder	Georges Bank yellowtail flounder	Cape cod yellowtail flounder	Pollock
Age/size structure	Med	Low	Med	High	High	Low	Low	Med
Spawning	Low	Low	High	Med	High	High	Low	Med
Spawning potential	Low	Low	High	Med	High	High	Low	Med
Preservation of sub-populaitions	Low	Low	Med	High	High	Unk	Low	Low
Rebuilding potential	Low	Low	High	Med	Med for GB High for SNE	High	Low	Low

	Redfish	Monkfish, N&S	Winter skate	Thorny skate	Barndoor skate	American lobster	Wolffish
Age/size structure	Low	Low	Low	Low	Low	Low	Low
Spawning	Low	Low	Low	Low	Unk	Low*	Unk
Spawning potential	Low	Low	Low	Low	Low	Low	Low
Preservation of sub-populaitions	Low	Low	Low	Low	Low	Low	Low
Rebuilding potential	Med	Low	Low	Low WGOM Med Cashes	Low	Low	Unk

Economic benefits

- Potential reduction in costs
  - Less travel
  - Less fishing time
  - Less unwanted bycatch

- Potential increases in revenue
  - Greater access to stocks
  - May be constrained by catches of cod and yellowtail flounder.

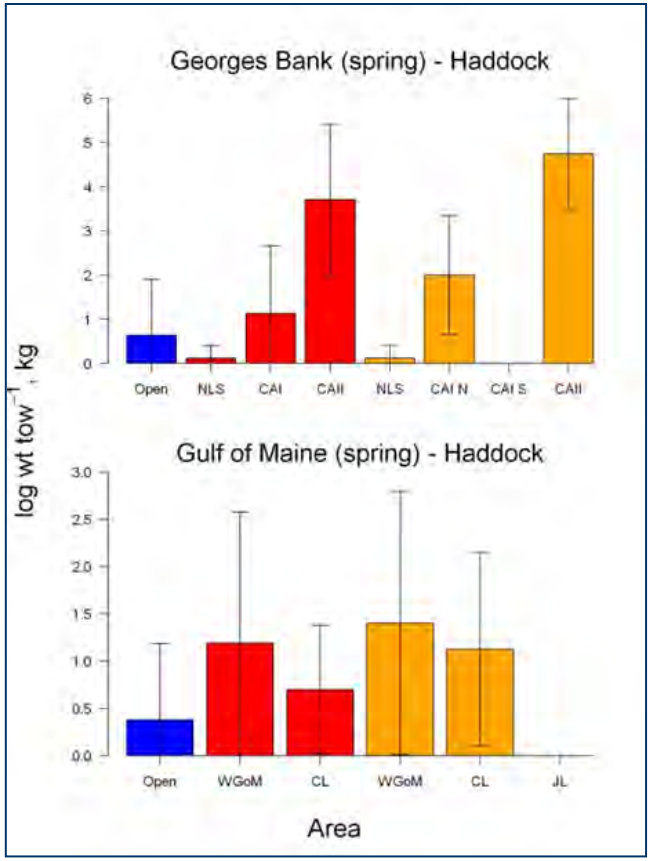
Expected CPUE

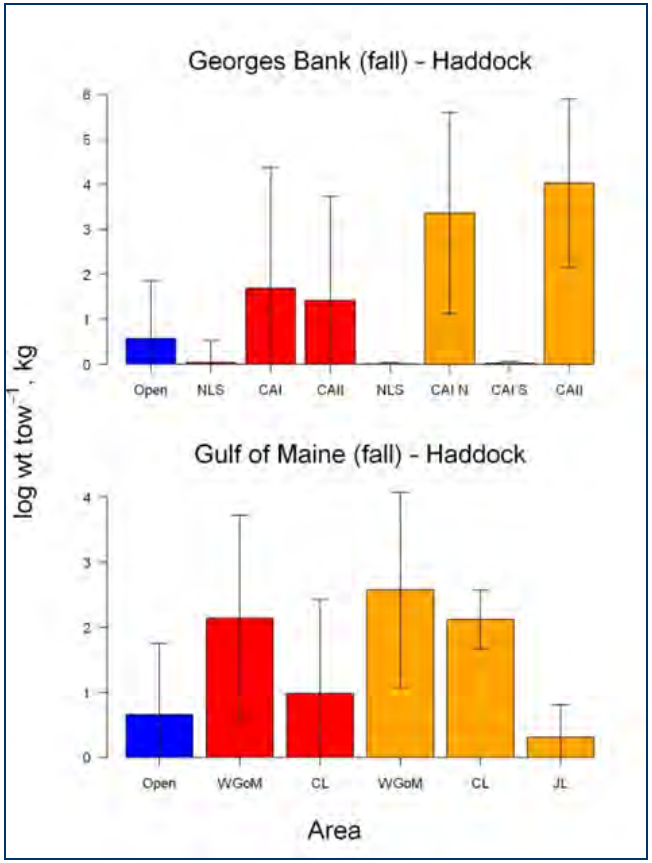
- Survey CPUE [mean biomass (kg/tow) and abundance (number/tow)} higher in closed areas than open
- High variance
  - Blue bars = open areas
  - Red bars = closed areas
  - Orange bars = habitat areas

CPUE haddock

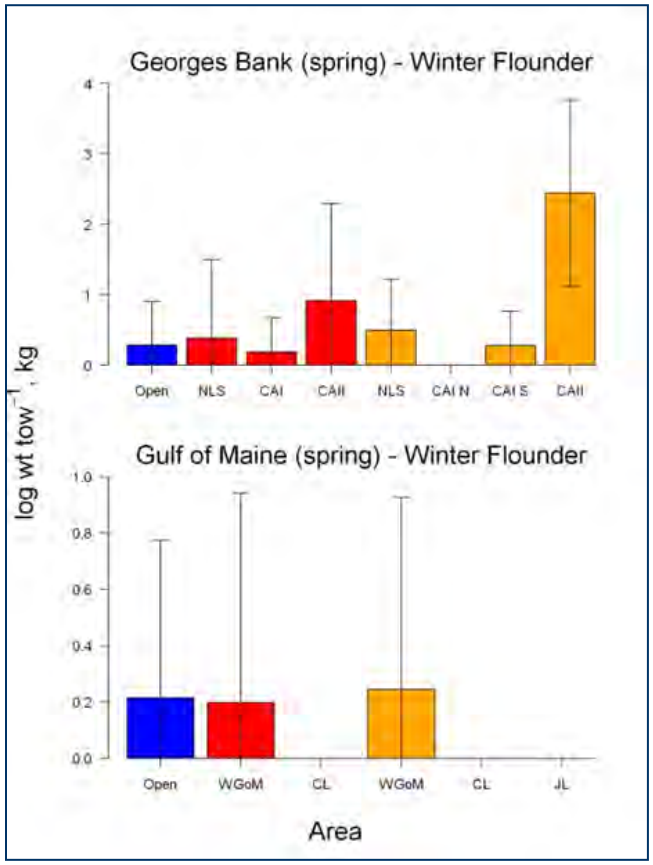
Includes 2003 year class

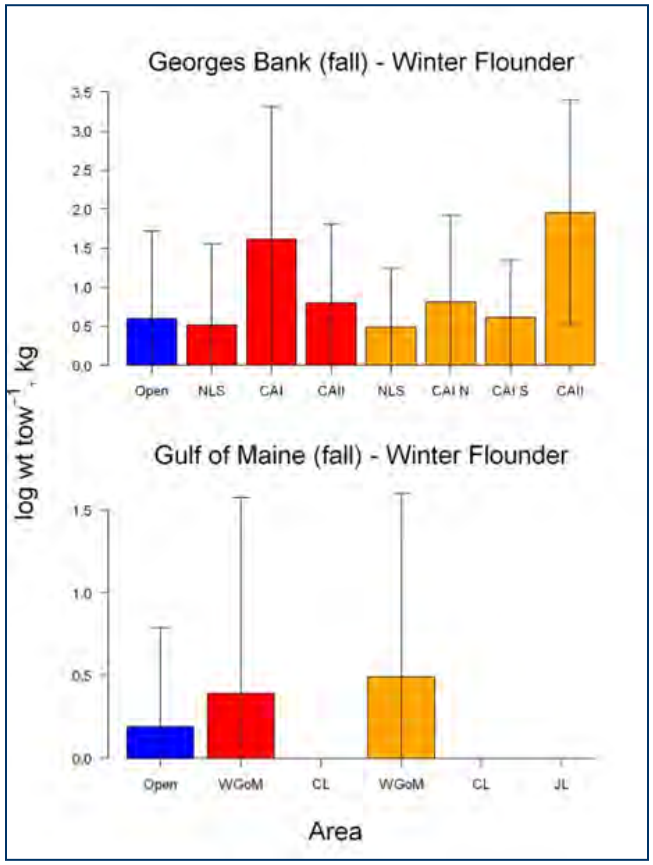
- Blue bars = open areas
- Red bars = closed areas
- Orange bars = habitat areas





CPUE winter flounder

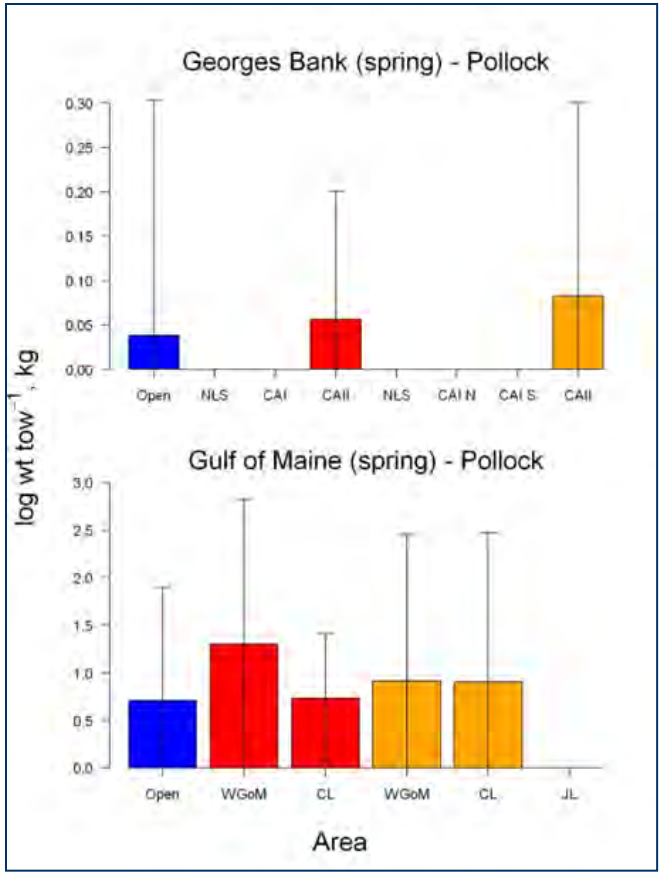


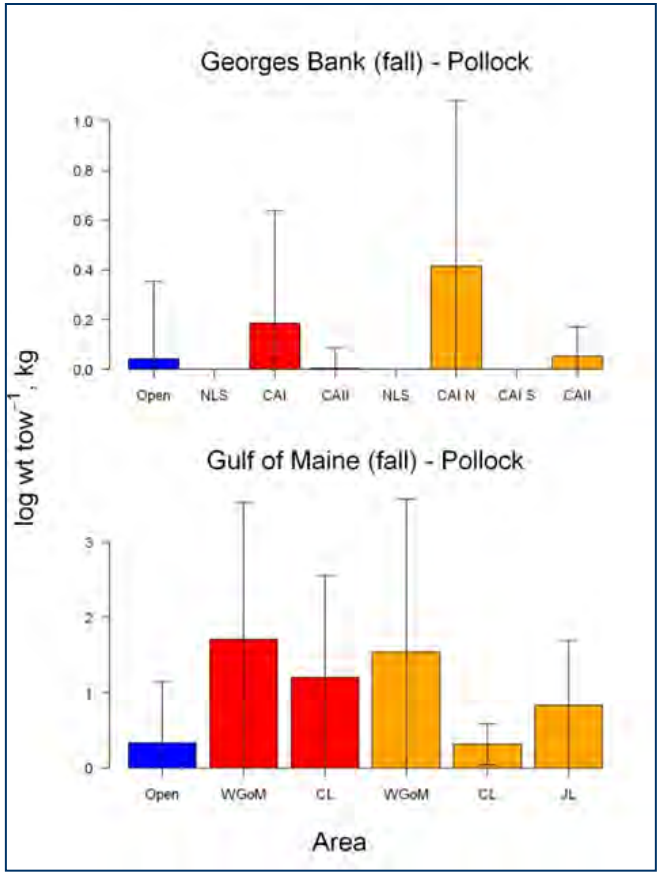


- Blue bars = open areas
- Red bars = closed areas
- Orange bars = habitat areas

CPUE pollock

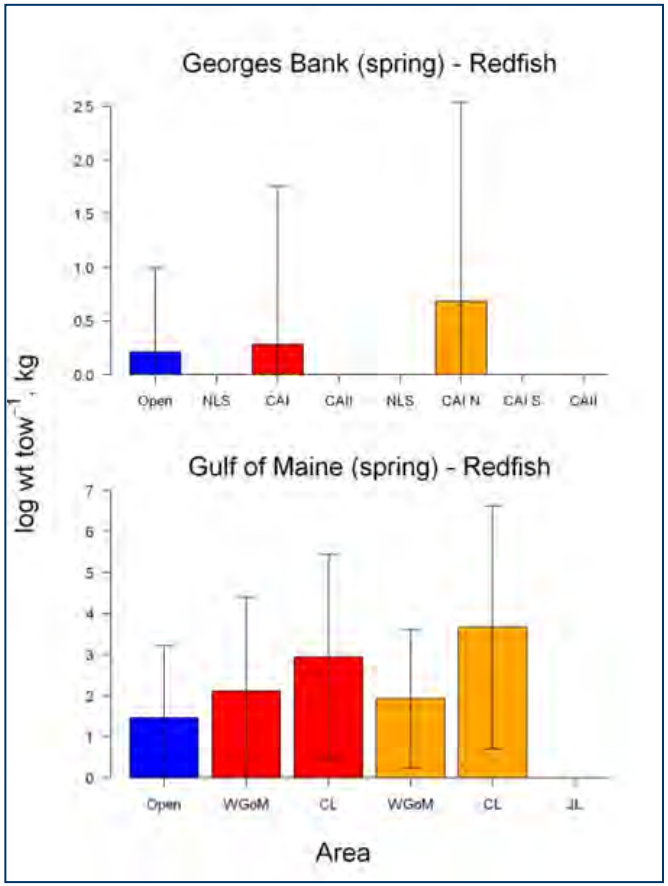
- Blue bars = open areas
- Red bars = closed areas
- Orange bars = habitat areas

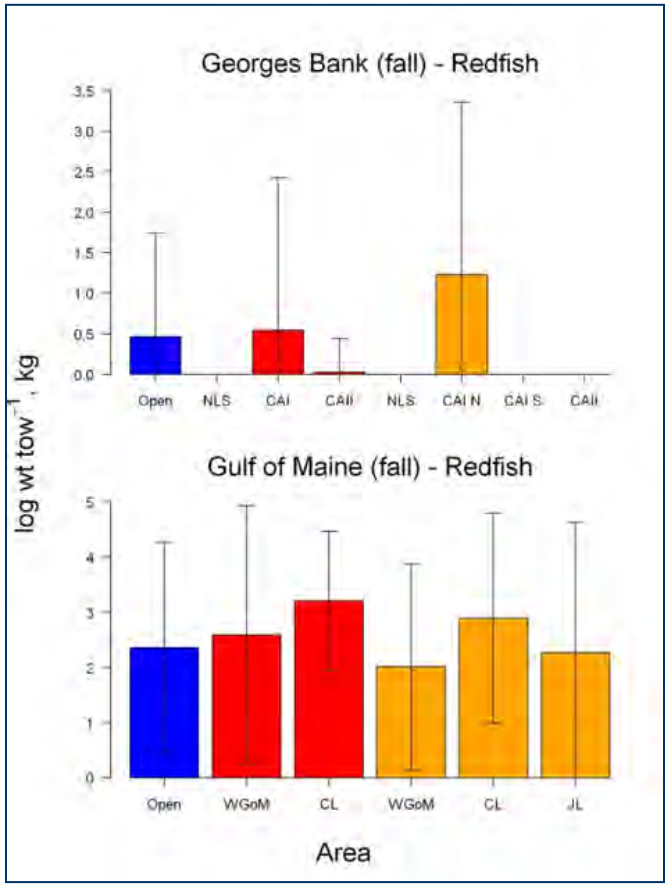




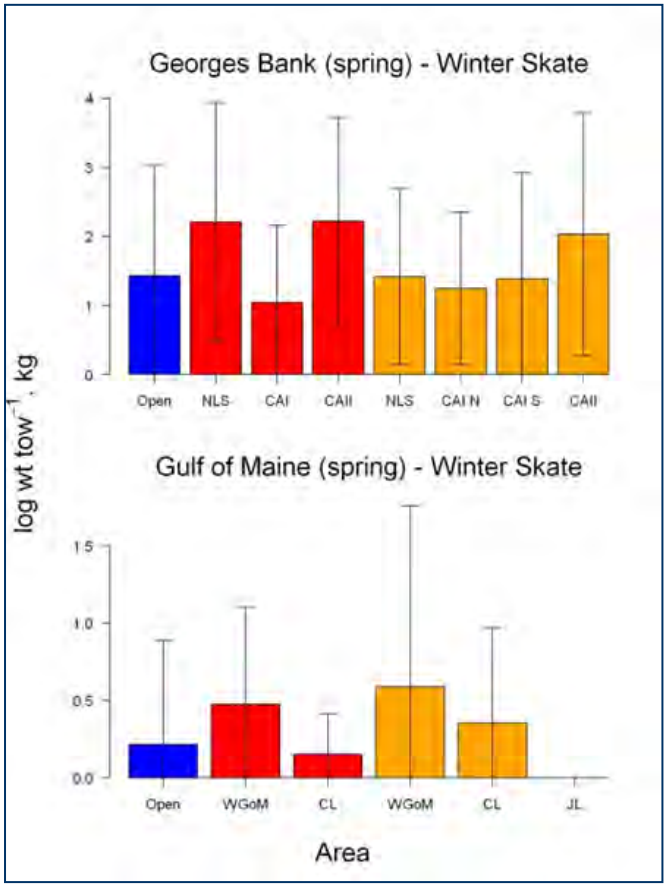
CPUE redfish

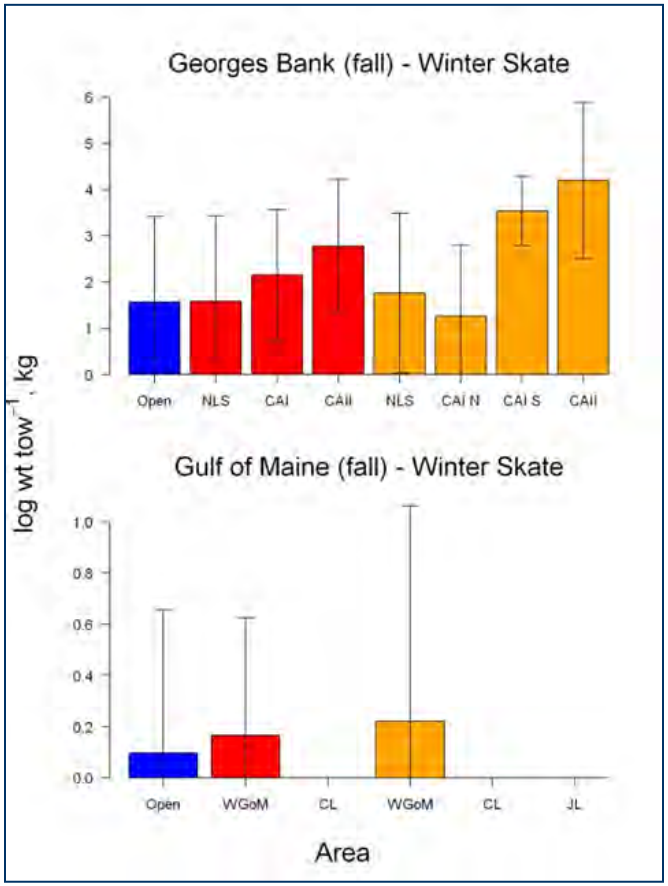
- Blue bars = open areas
- Red bars = closed areas
- Orange bars = habitat areas





CPUE winter skate

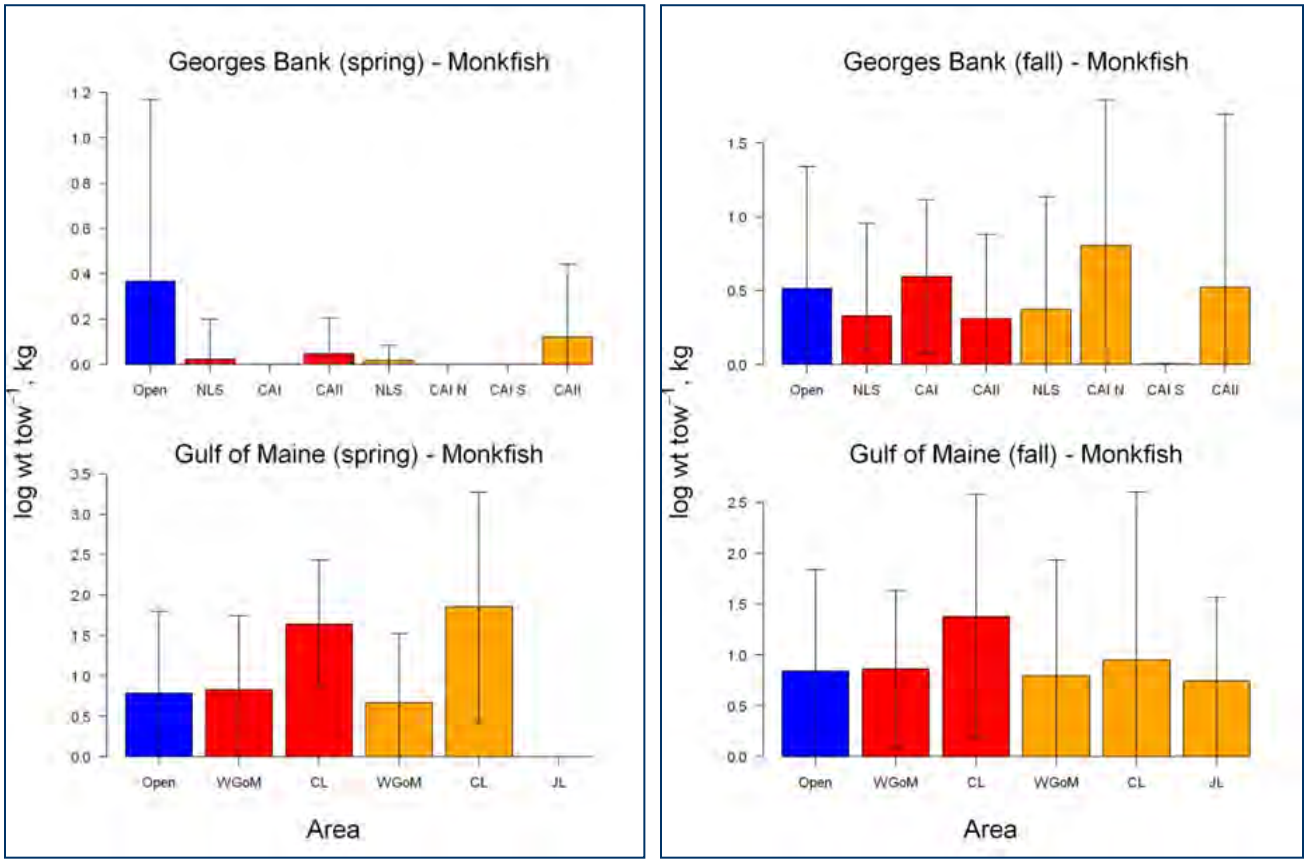




- Blue bars = open areas
- Red bars = closed areas
- Orange bars = habitat areas

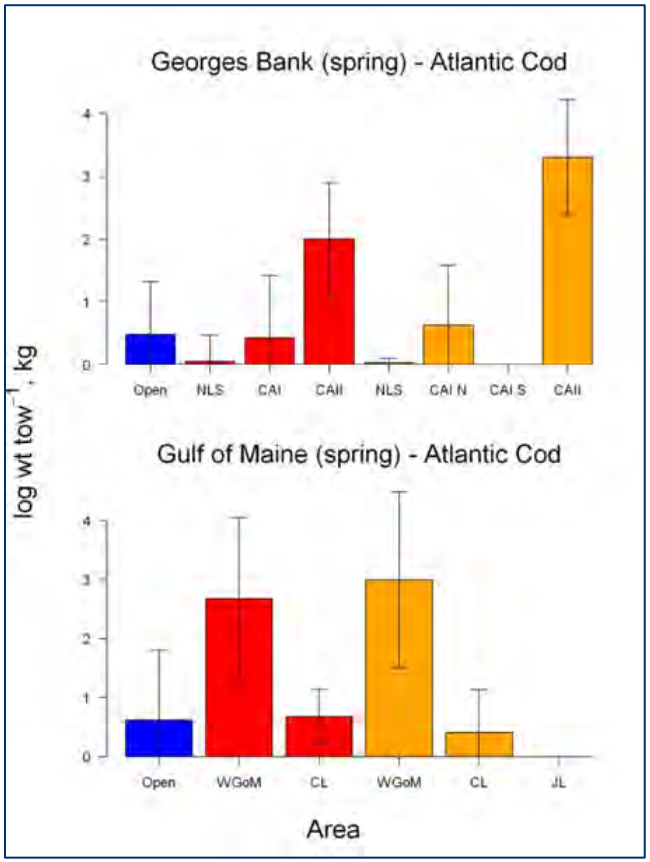
CPUE monkfish

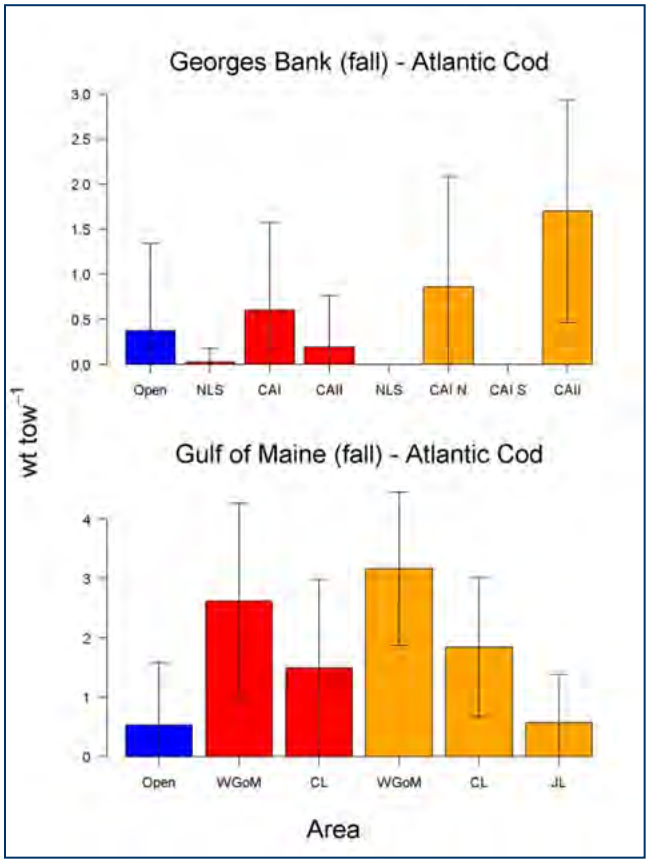
- Blue bars = open areas
- Red bars = closed areas
- Orange bars = habitat areas



CPUE cod

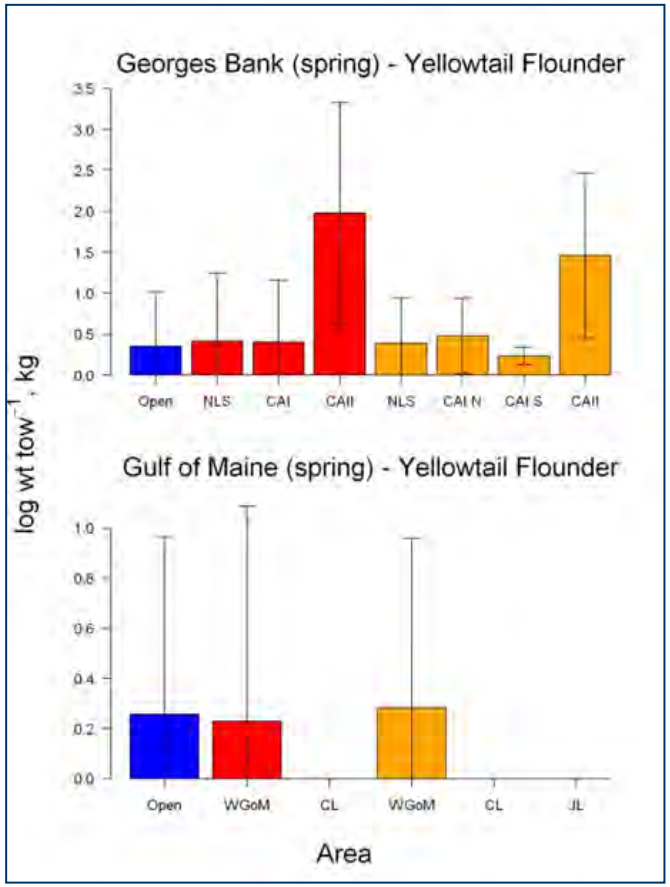
- Blue bars = open areas
- Red bars = closed areas
- Orange bars = habitat areas

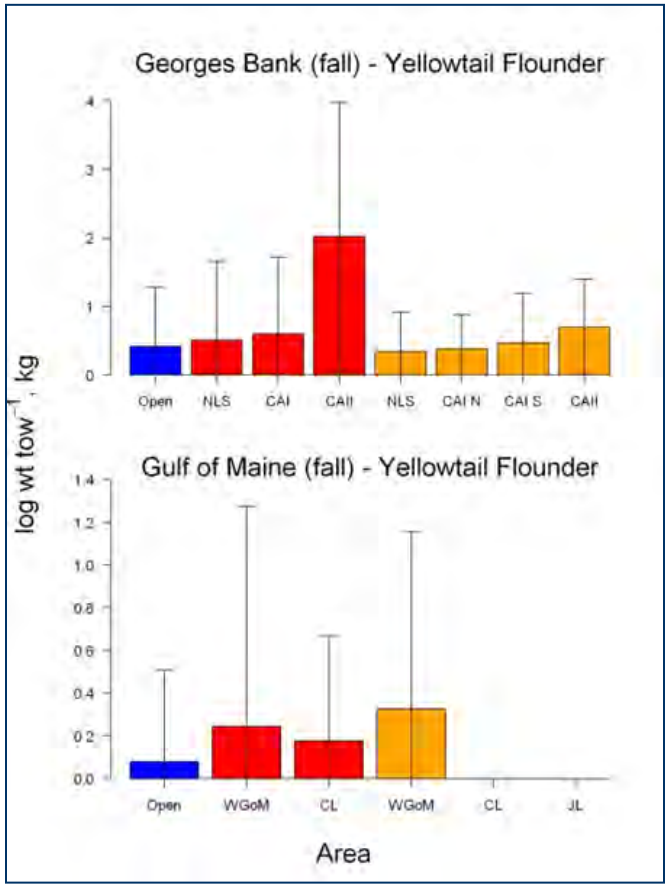




CPUE yellowtail flounder

- Blue bars = open areas
- Red bars = closed areas
- Orange bars = habitat areas



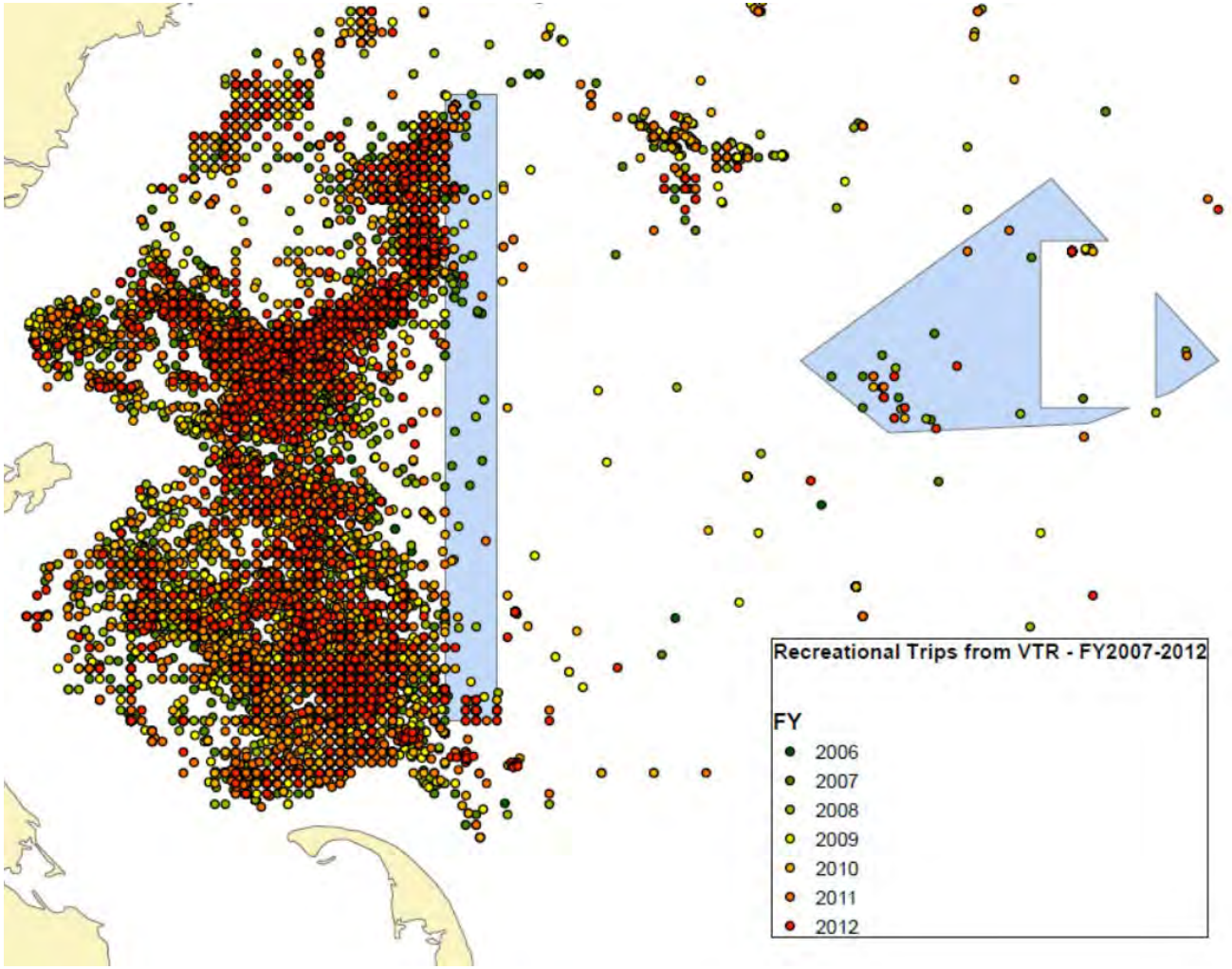


Economic effects

- Economic costs
  - Long term effects on biological productivity
  - Use conflict (recreational fishery WGOM and lobster fishing CA1)

- Uncertainty
  - Unknown number and extent of exemption applications
  - Gears (Separator vs standard trawl; gillnets)
  - Effects on productivity have unknown magnitude and substantial risk

Recreational fishing VTR trips by charter and party boats



Essential Fish Habitat

- **EFH areas remain closed**
- **Relatively high degree of natural bottom disturbance in the GB PSEAs**
- **Most GB PSEAs have been fished with dredges in access programs or by trawls in SAPs.**
- **Low degree in the WGOM and CL areas, but other than Wildcat Knoll, less vulnerability (predominately mud habitat) than EFH areas that remain closed**

Protected species

- Could cause lobster effort displacement
- Two areas of concern are the possible bycatch of gillnets in the WGOM and NLS areas (harbor porpoise and Atlantic sturgeon)

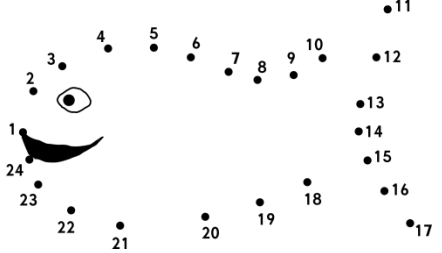
Social perspectives & effects

- Varied opinions
  - Areas prevent access to some critical stocks
  - Areas are no longer producing intended benefits
  - Areas are producing critical protection and improving productivity

Social perspectives & effects

- Correct inconsistency between output controls and need for large area closures to control mortality
- Greater potential to achieve ACE allocation
- Potential increases in user conflicts
- Perceived harm to other activities in closed areas, such as recreational fishing

Summary



- Limited biological impacts to some stocks (haddock, winter flounder, yellowtail flounder, cod subpopulations)
- Limited impacts to EFH (high energy or mud)
- Limited impacts to protected species; some concern in WGOM and NLS areas
- Some economic benefit in the short term; possible long term economic costs
- Positive and negative social impacts