



Aleutian and Bering Climate Vulnerability Assessment

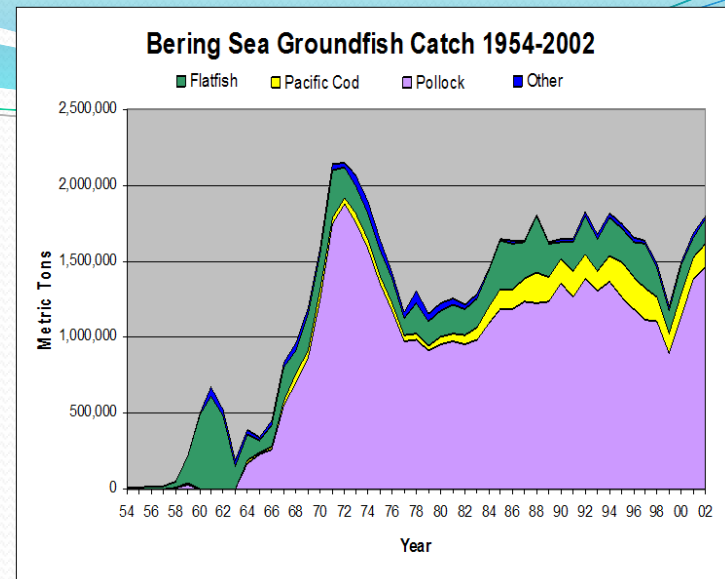
**Fish/Shellfish/Commercial Fisheries
Expert Group**

**Presented by Gordon Kruse
January 24, 2014**

Eastern Bering Sea

Species

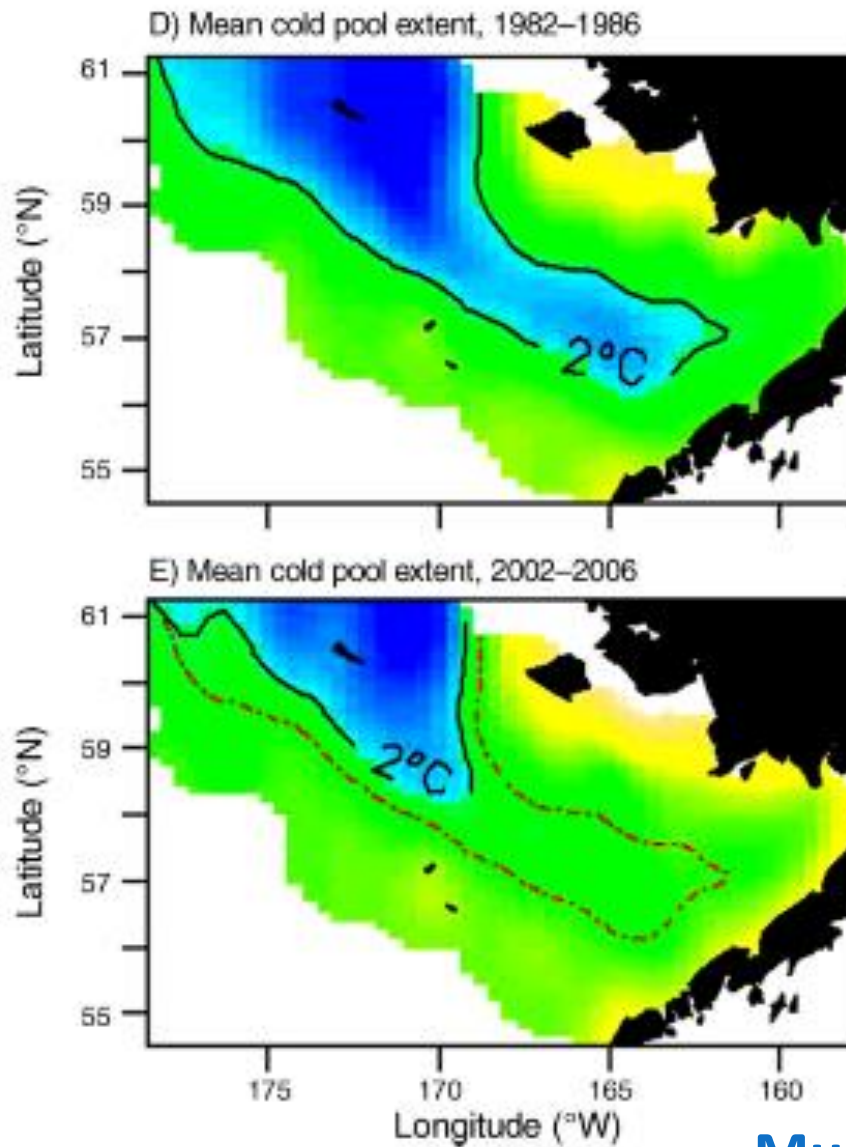
- Walleye pollock, Pacific cod, flatfishes (e.g., yellowfin sole, arrowtooth flounder)
- Salmon & herring
- Snow crab, Tanner crab, red and blue king crabs



Eastern Bering Sea

Habitats

- Middle domain of the central/south
 - Region of ice/cold pool dynamics
- Coastal areas (warming/salinity/etc.)
 - off Yukon River – salmon migration
 - Norton Sound – benthic-dominated area with strong warming forecasts
- Northern area with persistent low pH
 - Snow crab/blue king crab habitat

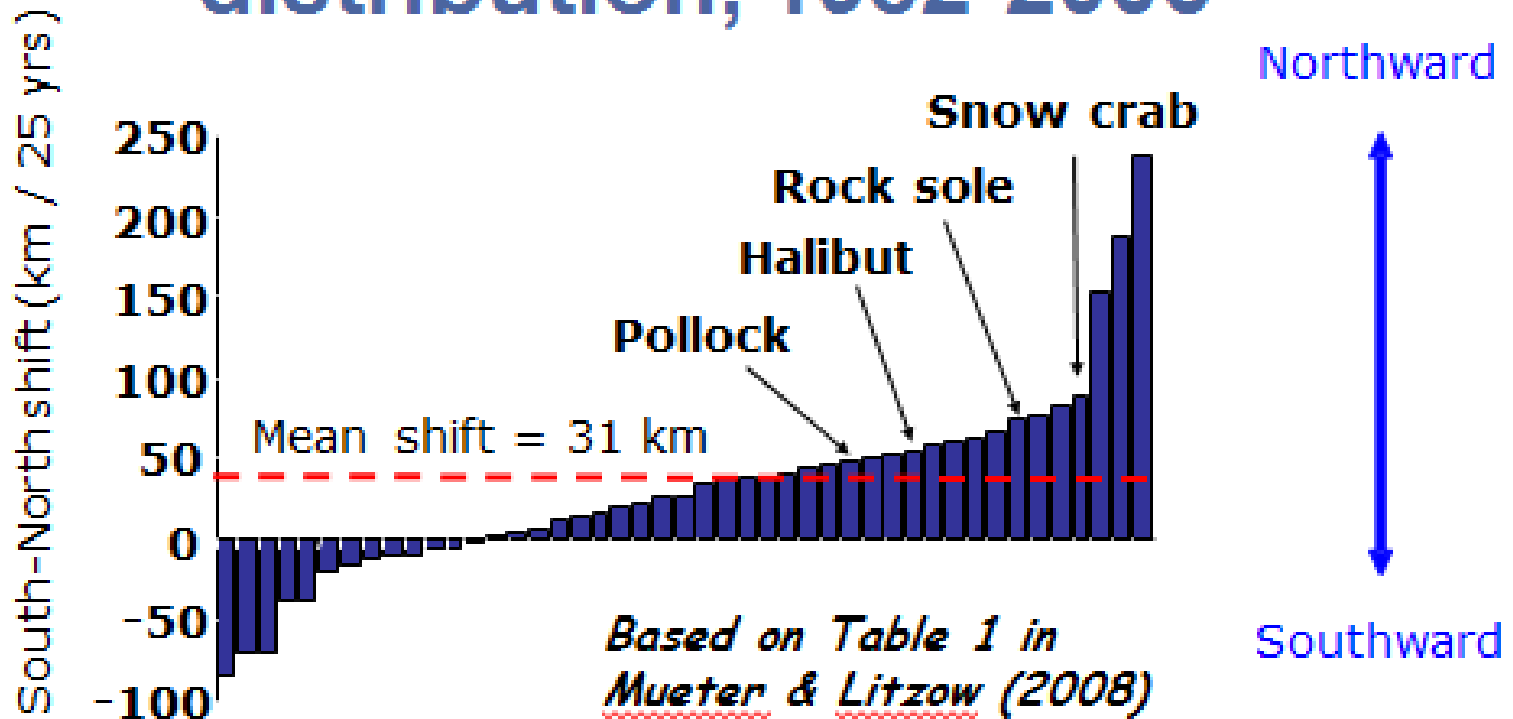


Eastern Bering Sea

Components

- Ice extent/thickness → bloom timing/location
- Extent of cold pool → species distributions & predator-prey interactions
- Magnitude & species composition of spring bloom → early life stage survival
- Temperature → physiology & phenology
- Acute changes in pH, temp. & salinity → tolerance limits/mortality

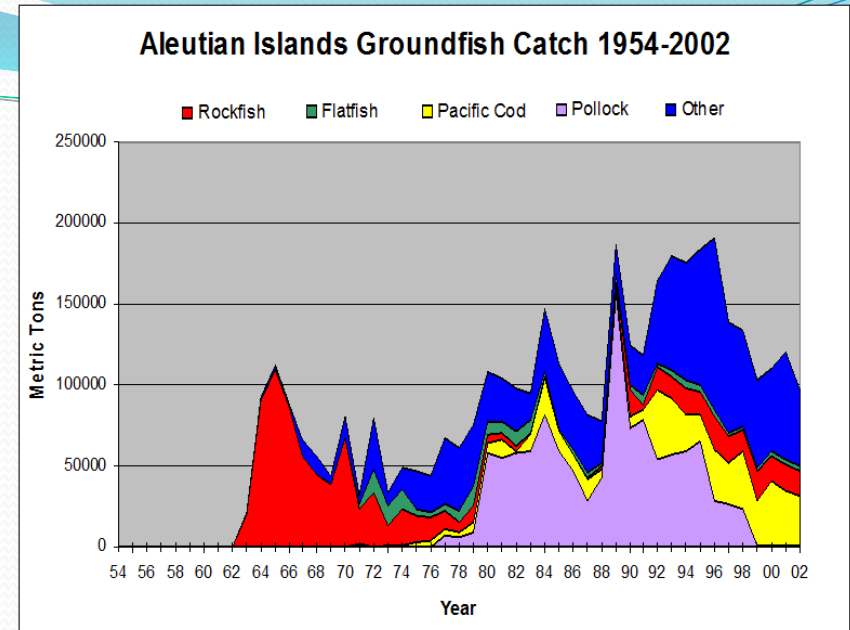
North-South shifts in distribution, 1982-2006



Aleutian Islands

Species

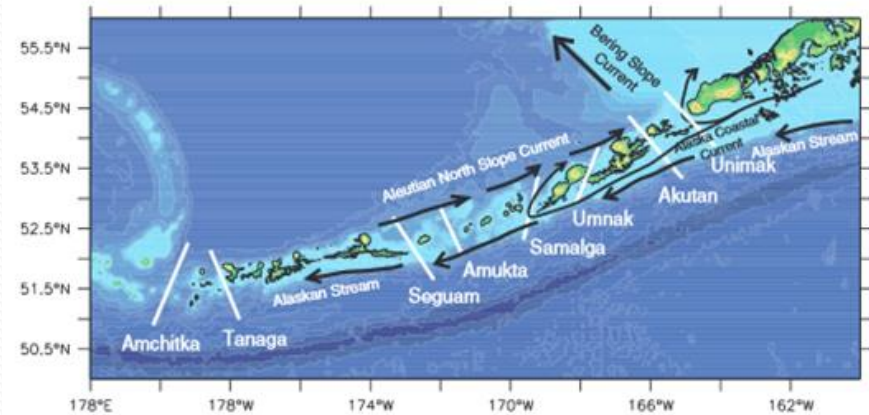
- Atka mackerel, walleye pollock, Pacific cod, rockfishes
- Golden king crab
- Deep-water corals



Aleutian Islands

Habitats

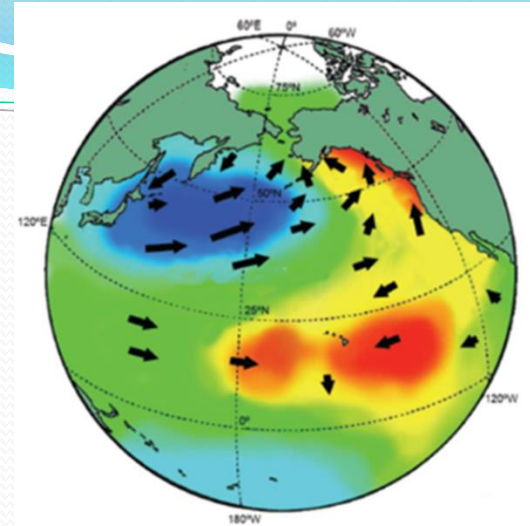
- Eastern AI – ACC, western AI – oceanic waters
- Narrow continental shelf and slope
- Focus on critical fish habitats (e.g., spawning areas)



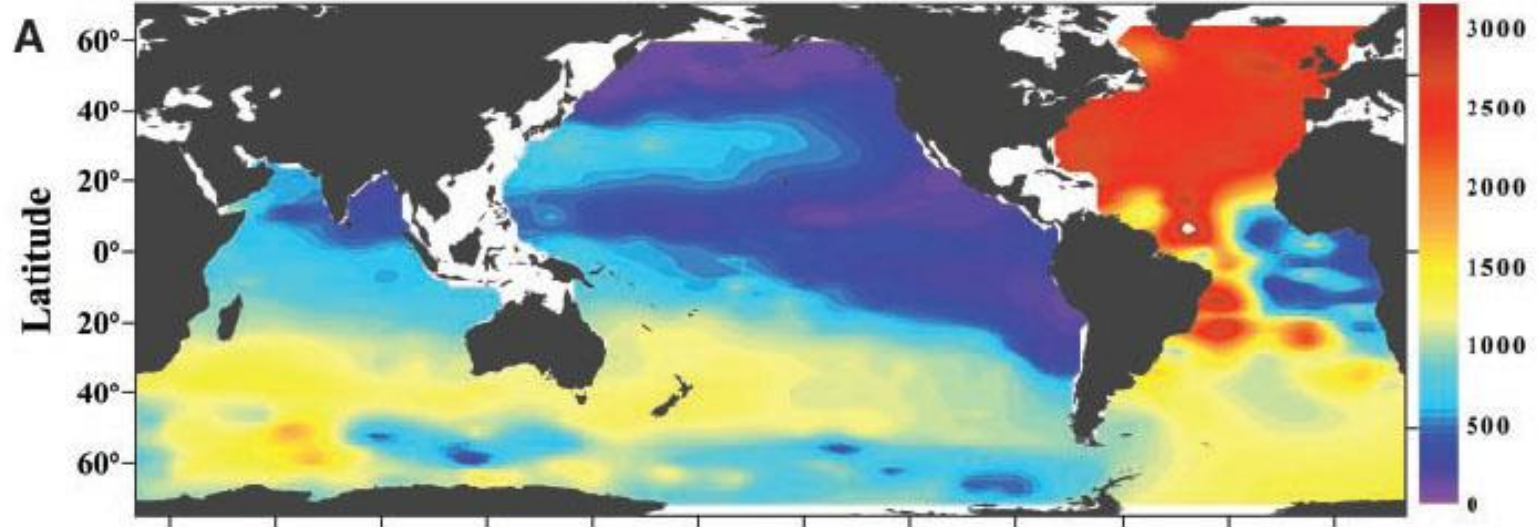
Aleutian Islands

Components

- Large uncertainty for Aleutian Islands
- Temperature → no northward shift
- Winds → change in current flow through passes → shift in alongshore species distributions
- PDO → ocean conditions
- Ocean acidification → crab & corals



Aragonite Saturation Depth



Calcite Saturation Depth

