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# Environmental Change and Fisheries Governance: The Newfoundland and Labrador Experience

**East Coast Climate Change & Fisheries Governance Workshop**

**Washington, DC, March 19, 2014**

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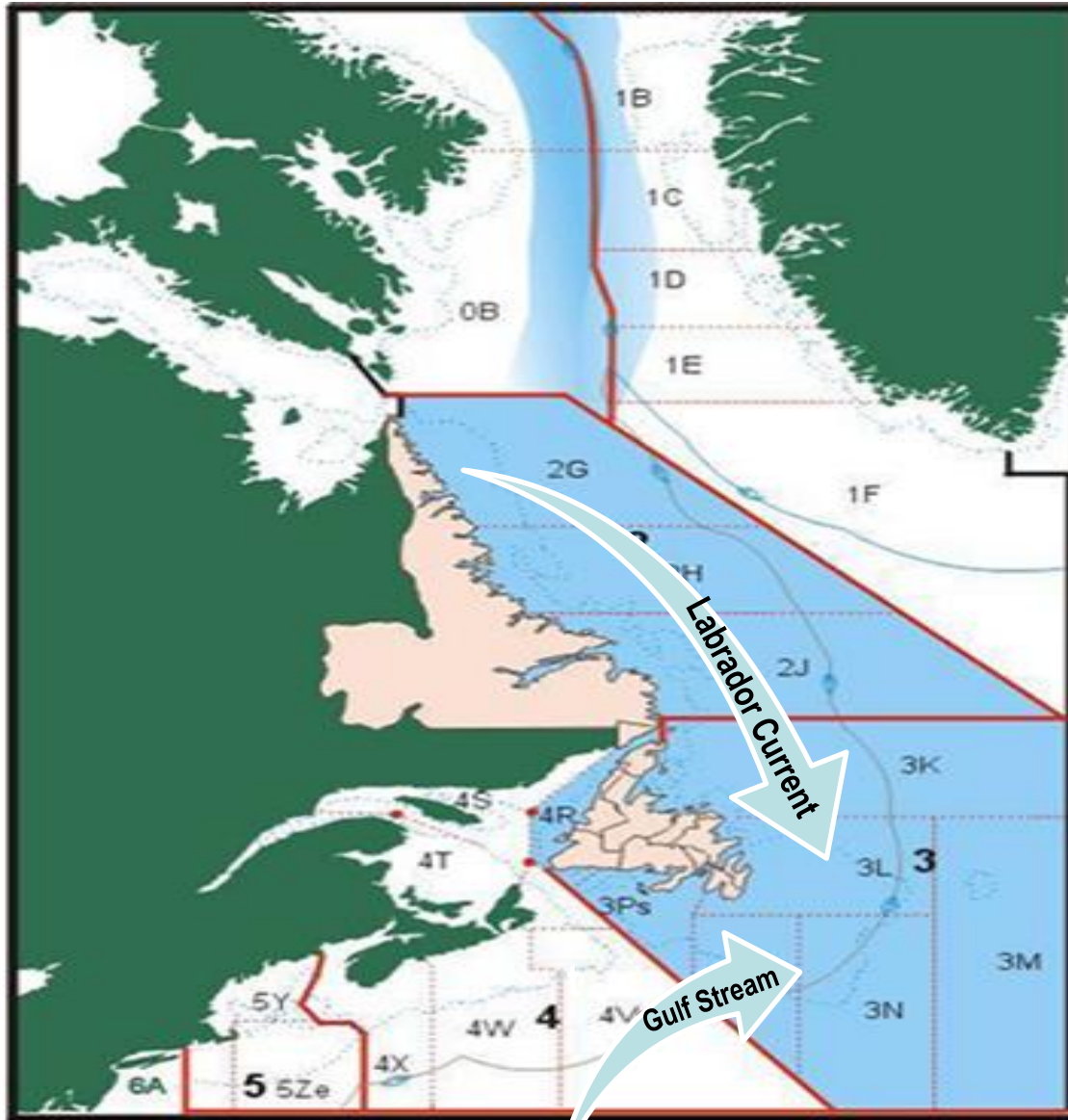


# Canadian Department of Fisheries & Oceans

- Responsible for all aspects of marine fisheries management including science, enforcement, habitat protection, licencing and allocations
- 6 Regions- each with its own challenges
- Newfoundland and Labrador Region
  - Uniquely situated at convergence of cold Labrador current and warm Gulf Stream



# NEWFOUNDLAND AND LABRADOR



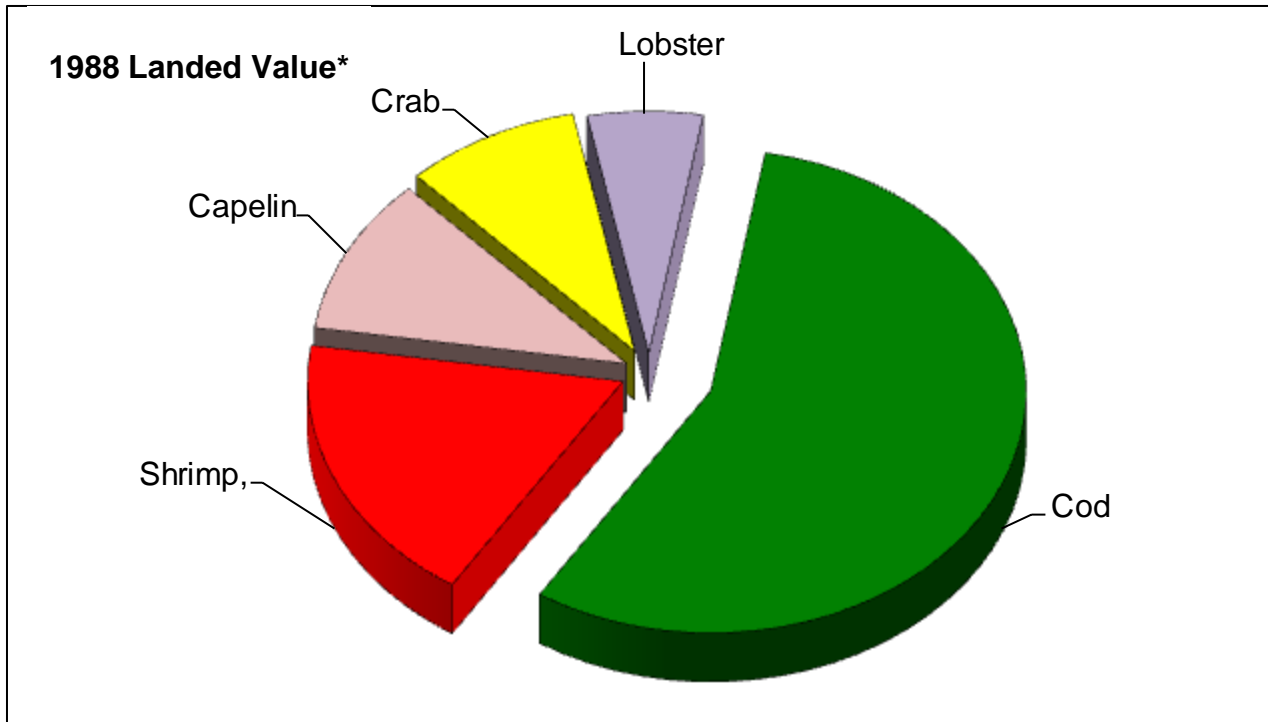


# Pre-1992 Fishery

- Fleet shares established following 200 mile EZZ in 1977
- Small boat fleet
  - Labour intensive – 10, 000 Fish harvesters
  - High volume, low value seasonal fishery
  - Competitive fishery – government-managed common property resource
- Industrial Fleet
  - Large off-shore boats
  - Capital intensive
  - High volume, low value, year-round fishery
  - Defined company shares in each fishery
- Policy Focus – Employment maximization



# When Cod was King



**\*Total top five species = 83% of total value**

Source: DFO



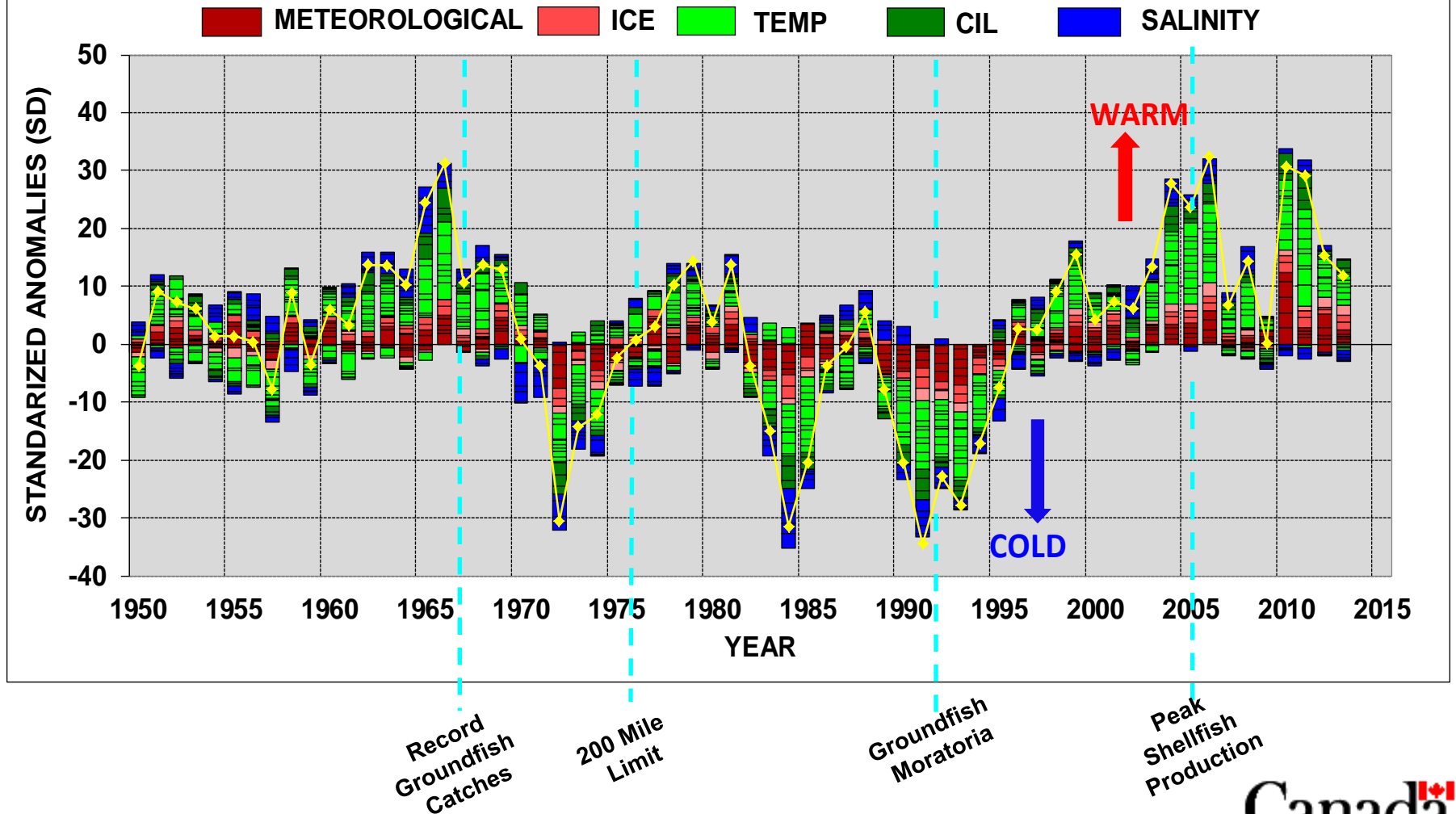
# Groundfish Collapse- The First Environmental Shock

- Protracted cold water conditions began in 1980s
- By early 1990s, most groundfish stocks collapsed and under fishing moratorium
  - result of combined effects of overfishing and unfavourable environmental conditions
- Other stocks collapsed at same time, including non-commercial species.



# The Newfoundland Shelf: A Variable Ocean Environment

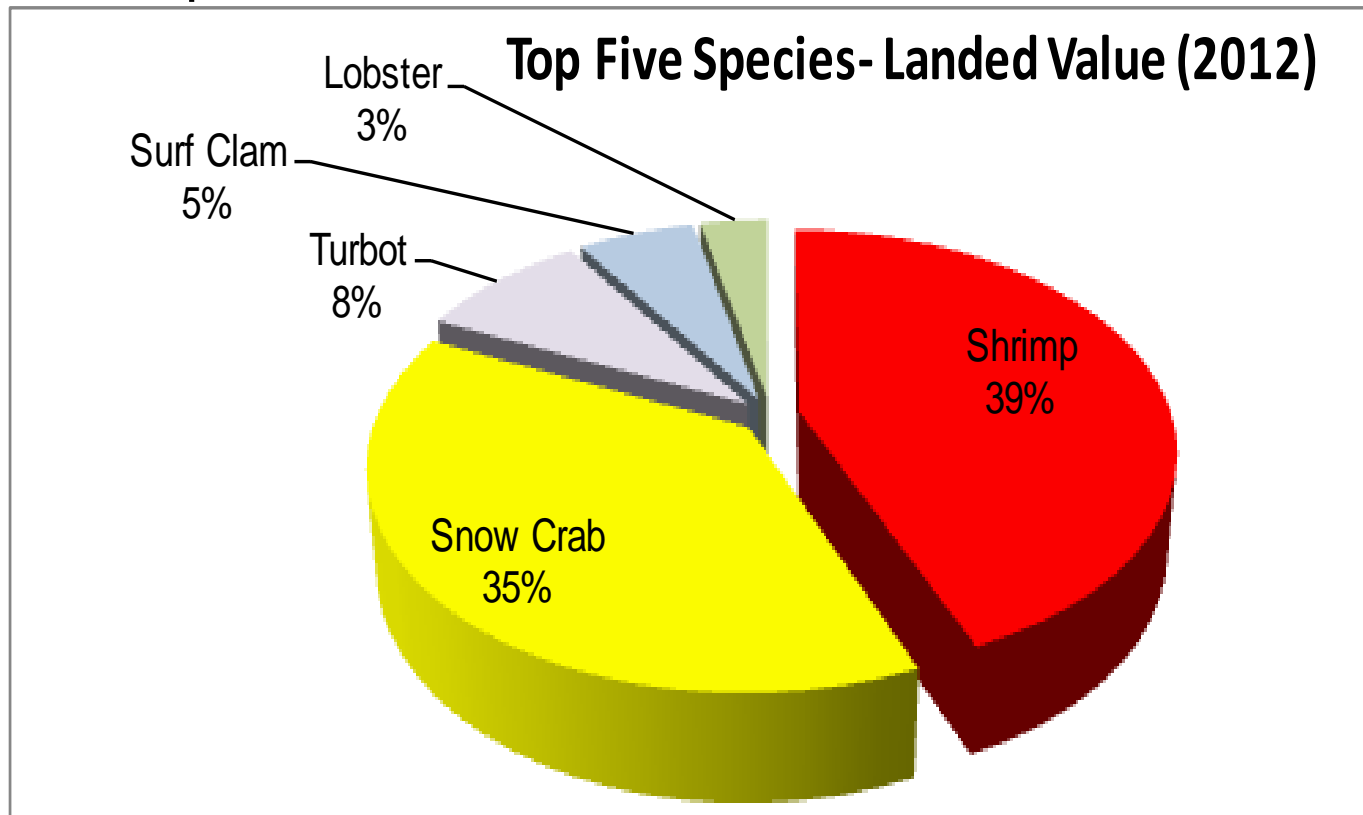
PHYSICAL ENVIRONMENT COMPOSITE CLIMATE INDEX





# The Shellfish Era

- Cold water and absence of groundfish
  - Perfect for shellfish- especially Snow Crab and Northern shrimp







# Post- Moratoria Governance- The Quest for Stability

- Policies promoted economic sustainability in fishery
- Reduced participation in (and dependency) on the fishery
  - Licence retirement
  - Enterprise combining
- Greater industry “ownership” and self-adjustment (catch shares and enterprise combining)
- Government role focused on conservation
  - TAC setting
  - Stable shares
  - Multi-year planning and decision rules – put them on auto-pilot

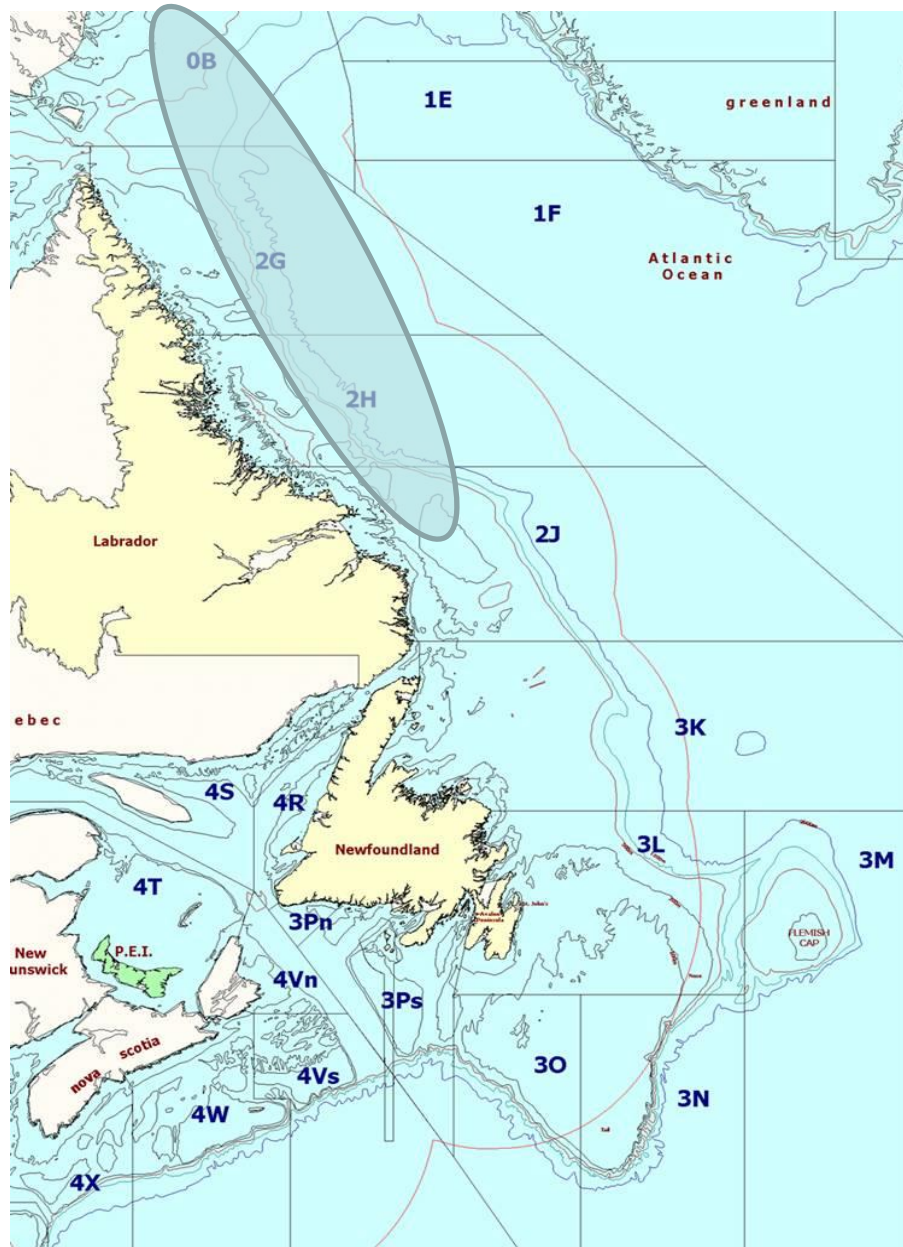


# Shellfish Declines- Another Environmental Shock?

- Ocean warmed almost 2°C since early 2000's
  - good for groundfish
  - bad for shellfish
- Biological impact on reproduction and juvenile survival
  - Impact on fisheries felt several years later

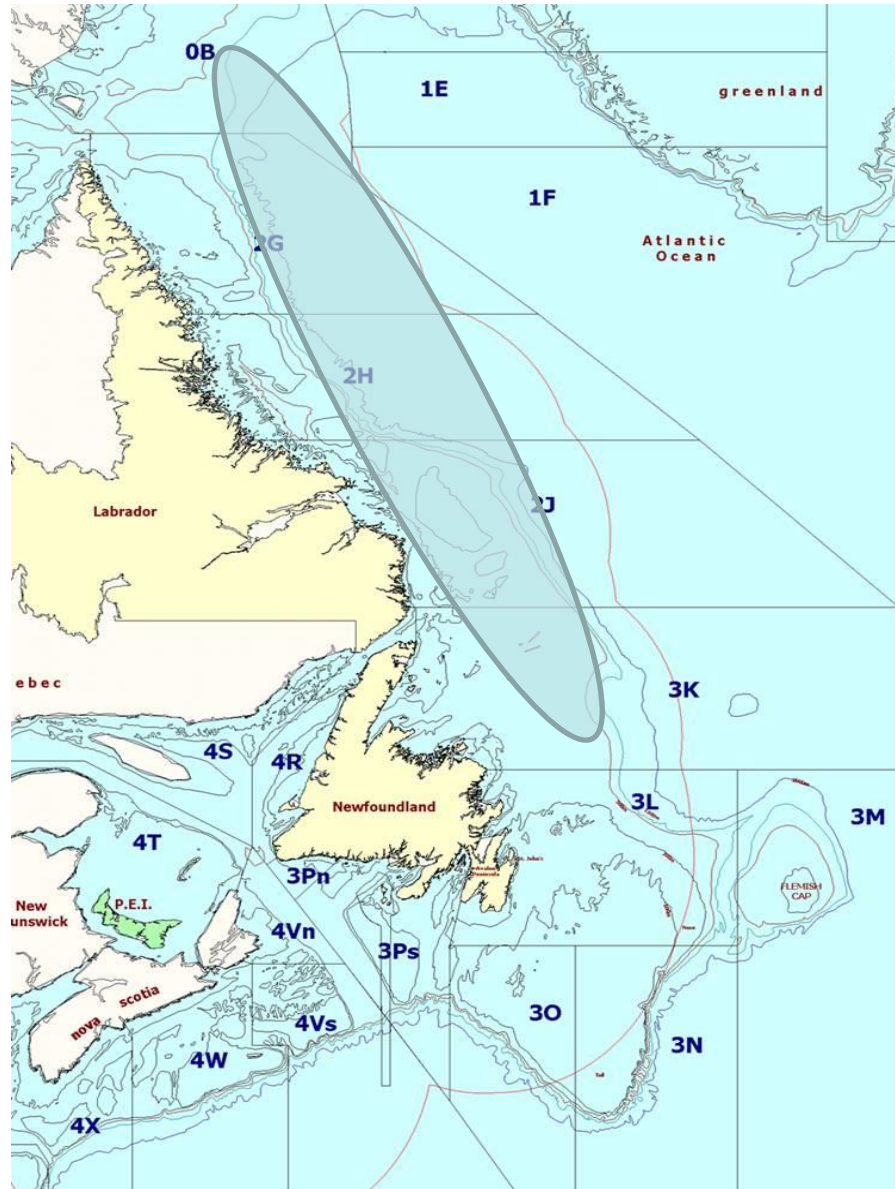


# Distribution of Shrimp Resource 1980's



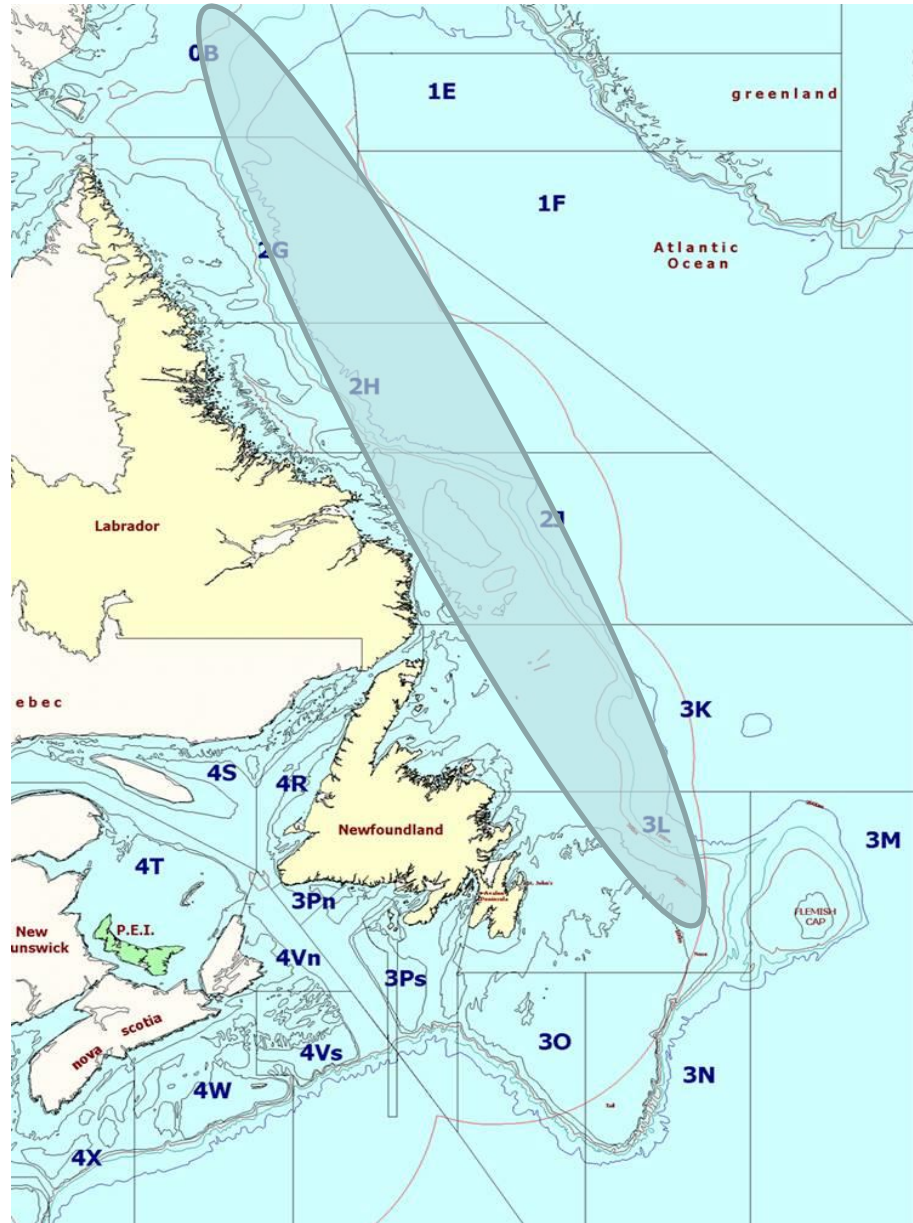


# Anticipated Distribution of Shrimp Resource 2014





# Distribution of Shrimp Resource Mid 2000's





# New Governance Challenges

- 20 years of fleet investments, government policies and fisheries management frameworks predicated on implicit assumption of a stable ecosystem
- Shares of “common property” resource originally established to balance historical dependence and resource adjacency come under pressure when species range or distribution changes
  - Newly adjacent groups demand greater access, threatening economic security of established share-holders
  - Who “owns” the problem - government or industry?





# New Governance Challenges .....cont'd

- How to interpret and apply decision rules and precautionary management approaches?
  - Caution suggests reducing fishing effort in declining stocks and protecting returning stocks until they recover. What stays open during transition?
- Are we preparing for a new environmental equilibrium, or continual change if warming continues?



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# QUESTIONS?