



# Atlantic Cod in Canada

OECD Workshop on the Economics of Rebuilding Fisheries  
May 2009

Dr. Barbara Best, Economic Analysis and Statistics



## ~1990: Northwest Atlantic cod stocks collapse

- event is well known – complexity of story not common knowledge
- over-fishing combined with fundamental productivity changes
  - scientific debate over relative importance continues
  - changes may have some genetic basis - selection under heavy fishing
- notable economic shock – “biggest layoff in Canadian history”
- 1992: northern cod fishery closed
- by 1994: most cod fisheries under moratorium
- tens of thousands of jobs lost in geographic regions with few (or no) economic alternatives
- rapid recovery initially anticipated based on historical growth and natural mortality rates
  - Northern cod closure initially announced as a two-year moratorium



## Rebuilding in the 1990s: moratoria and adjustment programs

- economic adjustment programs during moratoria included:
  - licence retirement, early retirement for both harvesters and processors
  - retraining, income assistance and other forms of aid (e.g. vessel tie-up)
- higher than anticipated program uptake
  - money diverted from capacity reduction to income assistance
- 1997 Auditor General Report:

*“Currently, the incentive is for fishers to remain attached to the fishery rather than to leave it. In fact, those involved in the industry may see an advantage to strengthening the attachment where possible, since federal income support or employment insurance benefits remain attractive compared with other social support programs, and few employment alternatives exist. It appears that provincial governments and other organizations may have little reason to encourage people to leave the fishery; in the absence of employment alternatives, the demand on provincial social programs could increase.”*



## Rebuilding in the 1990s (cont'd)

- by late 1990s:
  - modest biomass increases for some stocks, but no “recovery”
  - program funding expired (over \$3B spent)
  - capacity reduction goals not achieved
- no single definitive scientific explanation for cause of collapse
  - scientific uncertainty opened the door to appeals for small scale fisheries for harvesters to stay involved and monitor stocks
- small scale fisheries have persisted in most areas
- today, there's a new *status quo*, with a significant shift in wealth
  - impacts were not evenly felt (access to shellfish?)
  - processing sector was hard hit

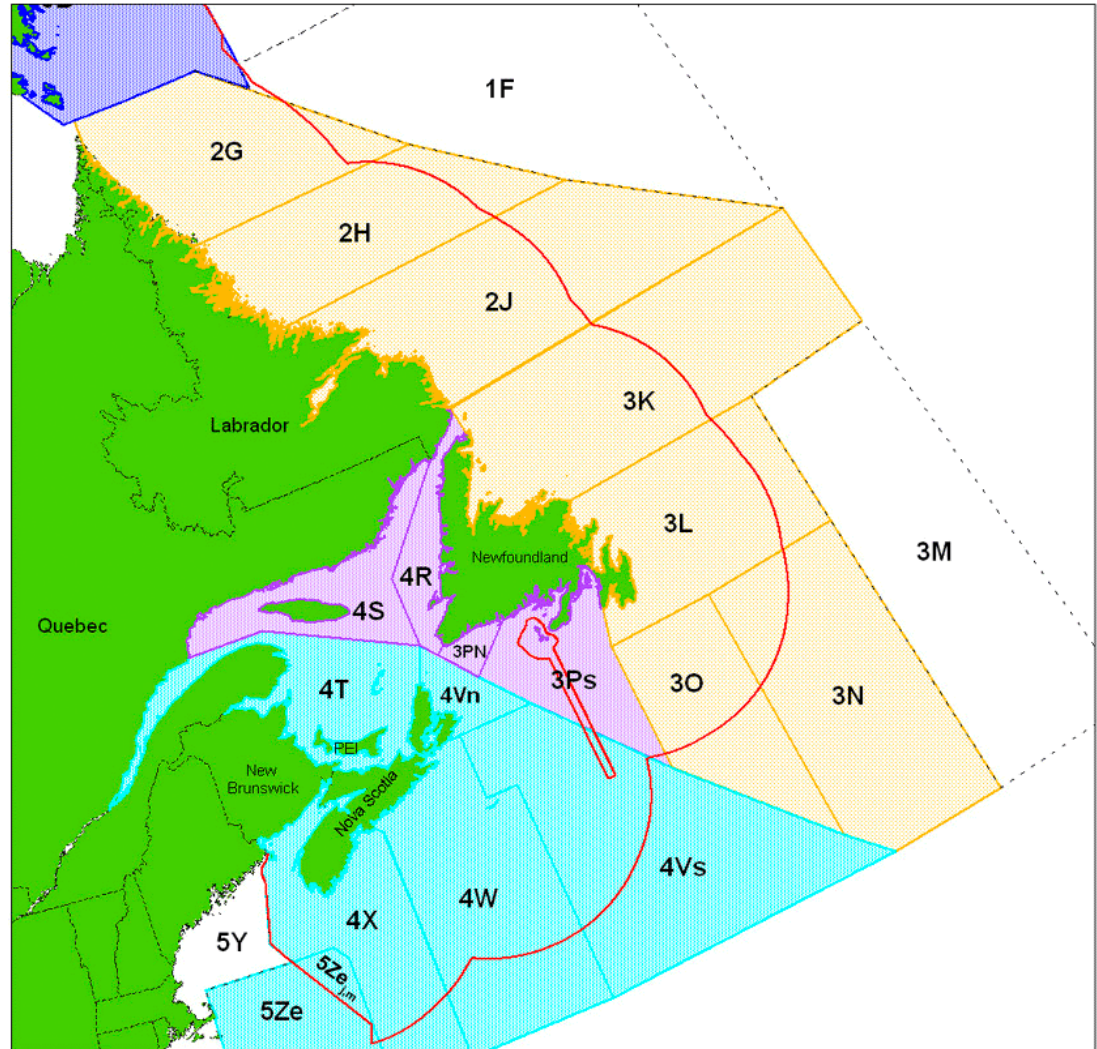


small fisheries:

- 2J3KL
- 3Ps
- 4RS3Pn
- 4TVn(N-A)
- 4X, 5Y
- 5Ze(j,m)

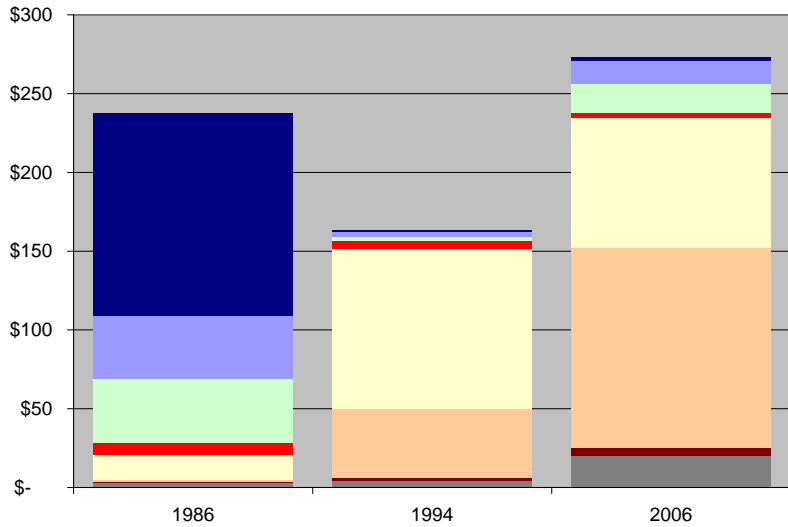
ongoing moratoria:

- 2GH
- 3NO
- 4Vn(M-O)
- 4VsW

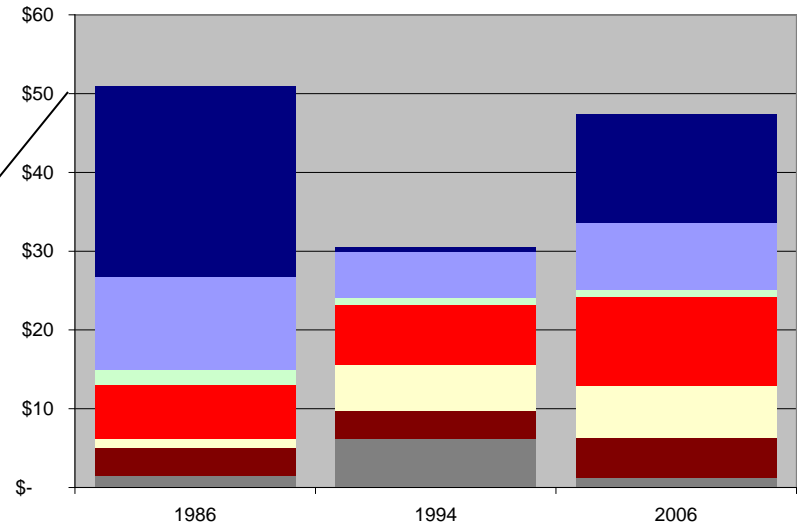




# Fisheries Today



2J3KL (Northern cod)



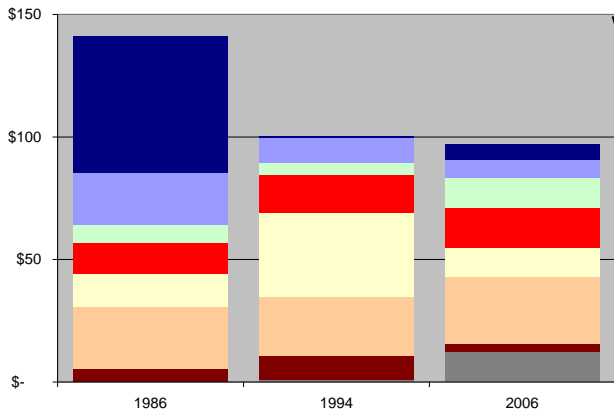
3Ps (St. Pierre Bank cod)

- cod
- lobster
- other shellfish
- other groundfish
- crab
- other
- pelagics
- shrimp

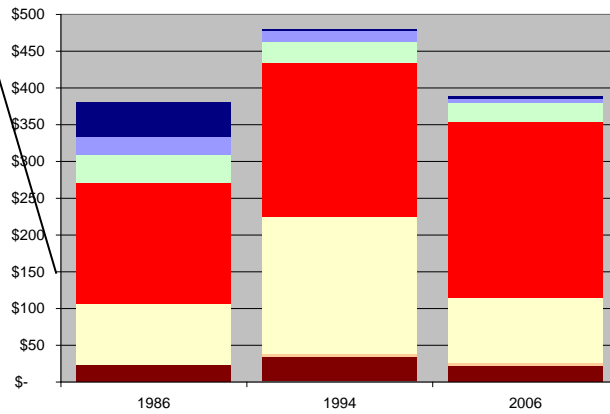
*Fishery values in  
millions of  
constant \$2006*



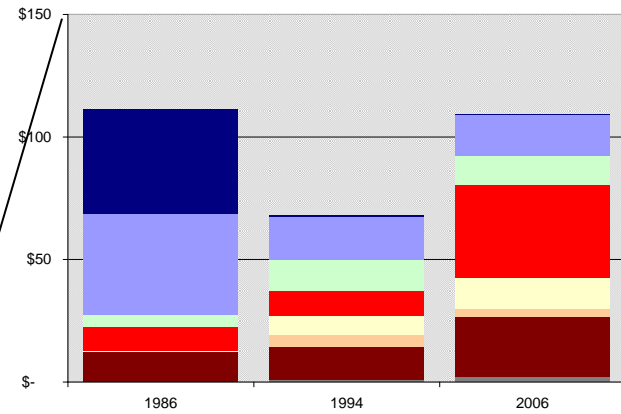
# Fisheries Today



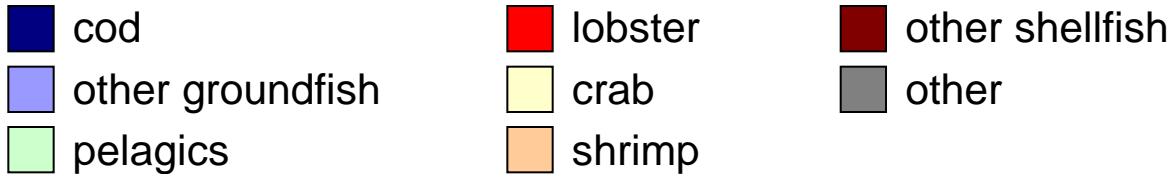
4RS3Pn (northern  
Gulf of St. Lawrence)



4TVn (southern  
Gulf of St. Lawrence)



4VsW (eastern  
Scotian Shelf)



*Fishery values in  
millions of  
constant \$2006*



## Context for Rebuilding in the 2000s

- Small scale cod fisheries have become entrenched – why?
  - there is real economic hardship at individual and community levels
  - but resistance even extends where impacts would be relatively mild
  - harvest activity, even at low levels, also maintains incumbency
    - rights to future benefits, should stocks recover
    - assistance programs have hinged upon attachment
- Science advice is clear: “Small fisheries on depleted stocks are not consistent with recovery.” (Rice *et al.*, 2003)
- How to govern rebuilding in this situation?
- Tools:
  1. Fisheries Act (and Fisheries Renewal policies)
  2. Species at Risk Act (SARA)





## Context for Rebuilding in the 2000s (cont'd)

### Fisheries Act

- Minister has absolute discretion, subject to certain limitations such as administrative law principles and constitutional requirements.
- Most decision making processes not set out in the Act.
- No stand-alone policy on rebuilding plans, embedded within sustainability
- Objectives of Fisheries Renewal suite of policies:
  1. sustainability, achieved through a number of tools, including
    - ecosystem approach
    - precautionary approach (PA)
  2. improved governance, including
    - shared stewardship
    - stability of access and allocation
  3. economic prosperity – tied into achievement of above goals



## Fisheries Act and Fisheries Renewal (cont'd)

- Desirable policy direction with good economic properties
- collaborative approach has not been successful to date in the implementation of the precautionary approach for depleted stocks
- for shared stewardship model to work, stakeholders must have some tangible and assured right to benefits in the foreseeable future before willing to undertake near-term sacrifices
- industry has already experienced many years of forfeit through moratoria, with little payoff
- new Fisheries Renewal policy calls for rebuilding plans and “no tolerance for preventable decline” when stocks in Critical Zone
- not clear how industry support will be attained in cases like Atlantic cod where even small fisheries are precluding recovery and closures are warranted



## Context for Rebuilding in the 2000s (cont'd)

### Species at Risk Act (SARA)

- Some elements in common with Fisheries Act, but emphasis and accountability differ
- Two elements relevant to rebuilding populations:
  - Protection – automatic prohibitions on harm to individuals listed as endangered or threatened
  - Recovery Planning – collaborative approach encouraged
- Provides force of law behind “lowest possible mortality” of precautionary approach
- However, listing is a regulatory amendment, and therefore must undergo benefit-cost analysis



## Rebuilding Choices

- Federal government considered SARA protection for cod in 2005
  - listing did not “pass” the benefit-cost test
  - only one population showed any likelihood of benefits within lifetime of current stakeholders, at observed productivity
  - non-market benefits were not quantified, difficult to demonstrate
  - side note: market demand for eco-certification may soon alter the benefit-cost balance in these situations
- Proceeded with a different process begun with 2003 moratorium
  - *Federal-Provincial Strategy for the Rebuilding of Atlantic Cod Stocks*
  - initiative consistent with current collaborative policy directions in Fisheries Renewal
  - Fed-Prov Cod Action Teams, worked in consultation with industry, academics, Aboriginal communities, environmental groups, local interests
  - strategies have supported much information gathering and collaborative conservation harvest plans
  - no success at developing harvest decision rules consistent with the PA



## In a nutshell ....

- Neither framework may be equipped to deal with the particular circumstances of rebuilding Atlantic cod populations
- SARA framework was not well designed for commercially important species
  - loses its “teeth” when socio-economics dominate in regulatory process
- FA/FR policy framework requires that benefits are obvious and tangible to stakeholders that must incur costs
  - biological response has not provided that assurance
  - have not had success implementing PA without it
  - new formalization of PA and accountability may improve success ... yet untested
- These frameworks are not proven credible for rebuilding in this instance



- It may even be the case that, by trying to apply these frameworks to rebuilding cod where they cannot work, the frameworks themselves are made less credible even where they *could* work.
- By espousing the precautionary approach, but not implementing it, position of science in decision process is undermined .
  - if the use of science becomes conveniently optional, decision making will always be vulnerable to accusations of arbitrariness
  - credibility of policy is lost
  - the particular problems of rebuilding severely depleted stocks should not be allowed to damage ability to manage in more tractable situations; e.g., where moderate reductions of allowable catch can improve the benefit stream fairly quickly.
- Instead, need a rebuilding policy designed specifically for these particular problems.



## Elements of a credible rebuilding plan

- Should recognize when the conservation incentives for current participants are not strong. (e.g. when benefits are too remote)
- Should recognize the other incentives that harvesters might have. (e.g. maintaining incumbency)

Once identified, programs can begin to address specific incentives.

- Rebuilding plan should involve strategic scenario examination
  - anticipate the range of possible futures and how each will be recognized
- Delineate a course of action, not just for managing stocks, but for managing changes in economic opportunities
  - in the case of Atlantic cod, harvesters have already seen one shift
  - harvesters can deal with stock uncertainty, but are far more wary of uncertainty in behaviour of regulator with respect to opportunity sharing – why endure pain for someone else's gain?
  - part of rebuilding program should be to provide as much certainty as possible within the range of possible futures



## Elements of a credible rebuilding plan

- Should amount to a contract between government and stakeholders
  - may be necessary to take away decision power from partners in the present when incentives aren't right (conditions must be well defined)
  - in return, make collaborative and binding decisions regarding rules for future (e.g. access and allocation)
- Should provide governance tools required for decisive action.
  - may require some reform of Fisheries Act *re* ministerial discretion in certain situations
- Should maintain integrity with respect to science as basis for decision-making.
  - application of the precautionary approach should not be negotiable unless we are willing to admit that stock rebuilding is negotiable
  - it's up to economists to develop creative solutions to socio-economic problems within the constraints of natural processes





Avoidance of stock depletion is the best path. Continue to develop collaborative policies towards this end.

However, particularly-designed and credible policies must be in place to correct miscalculations that can occur as we continue to apply ever greater pressure to complex systems.

