



**Lobster Research Planning Video Conference**  
**NSERC / FFAW Project: Sustainable Fisheries**  
**Lobsters in Western Newfoundland:**  
**Reproductive Relative to Economic Value**

**13 & 14 May 2009**

**Participants/Organizations – Investigators**

**Participants/Organizations – Advisory**

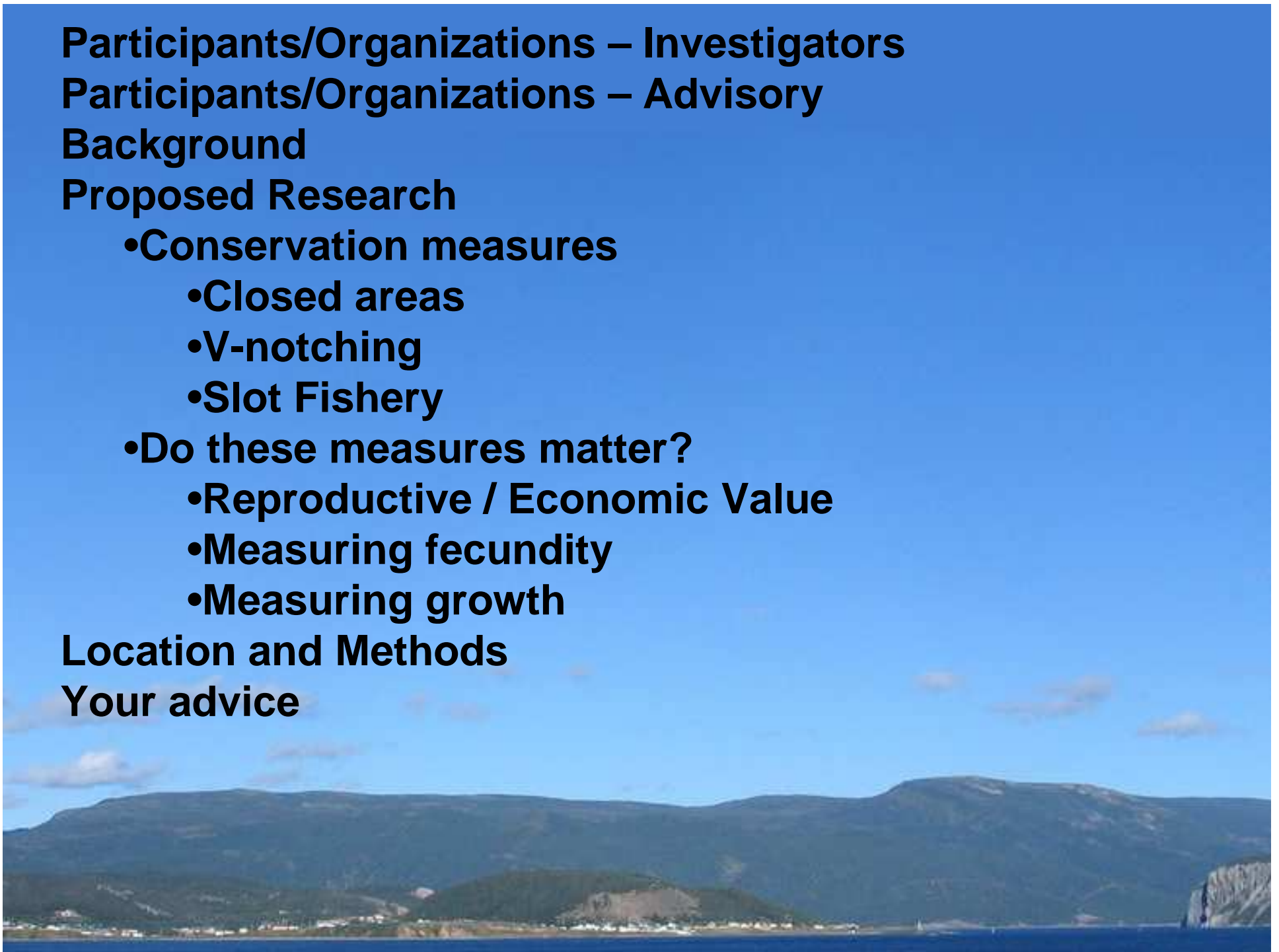
**Background**

**Proposed Research**

- **Conservation measures**
  - **Closed areas**
  - **V-notching**
  - **Slot Fishery**
- **Do these measures matter?**
  - **Reproductive / Economic Value**
  - **Measuring fecundity**
  - **Measuring growth**

**Location and Methods**

**Your advice**



▶ Overview

▶ Globalization & Recovery

▶ Rural Youth & Recovery

▶ Fishplants - Past & Future

▶ Critical Habitat

▶ Governing for the Future

▶ New Initiatives

▶ Curriculum for Recovery

▶ Promoting Dialogue

## Collaborative Research — an Overview

Researchers at Sir Wilfred Grenfell College and Memorial University along with multiple community partners have received funding for a Community-University Research for Recovery Alliance focusing on Newfoundland's west coast marine ecosystems and fishing communities. Our activities will include:



- Broadening use and public engagement with the Bonne Bay Marine Station
- Linking research and local knowledge to develop key recovery strategies for the region
- Enhancing the capacity of fish harvesters and fishing communities within the region to engage in recovery strategies
- Integrating existing knowledge and developing new knowledge about fish, fisheries and fishing communities
- Transferring knowledge to the region and between generations through innovative community-based educational programs and initiatives



Social Sciences and  
Humanities Research Council  
(SSHRC)



Memorial University

## Participants/Organizations – Investigators

- Jens Currie – Department of Biology, MUN
- Barbara Neis – Department of Sociology, MUN
- David Schneider – Ocean Sciences Centre, MUN
- Paul Snelgrove – Ocean Sciences Centre MUN
- Jason Spingle (FFAW)
- Monte Way (FFAW)
- Kathy Whiffen – Department of Biology, MUN
- Kate Wilke – Ocean Science Centre, MUN

•And of course....



## **Participants/Organizations - Advisory**

### **NSERC Advisory Committee**

- **Low Incze (University of Southern Maine)**
- **Bob Steneck (University of Maine)**
- **Rick Wahle (Bigelow Lab, Boothbay Harbor, Maine)**

### **Industry**

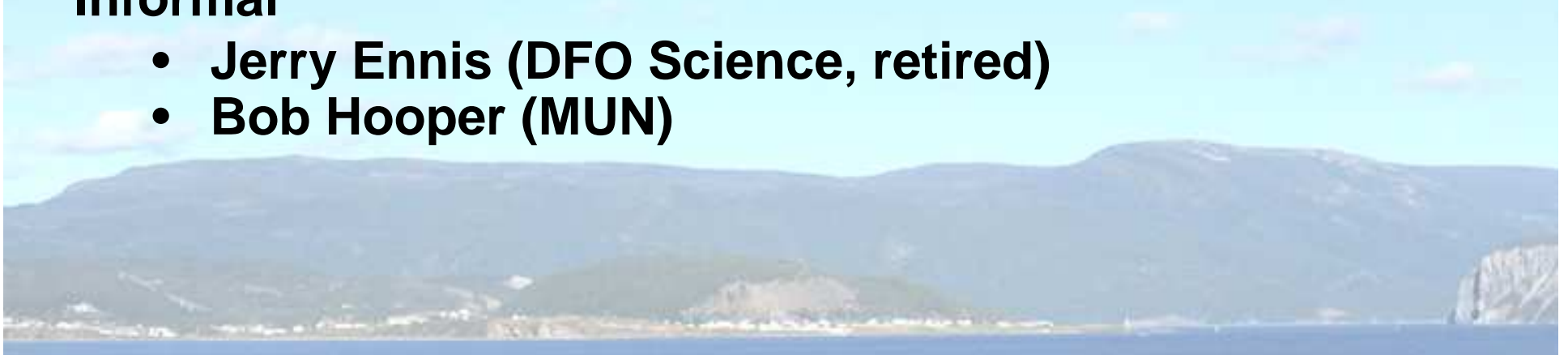
- **Harvey Jarvis (FFAW)**

### **Department of Fisheries and Oceans, St. John's, NL**

- **Roanne Collins (Science Branch)**
- **Helen Griffiths (Oceans Branch)**
- **Jennifer Janes (Oceans Branch)**

### **Informal**

- **Jerry Ennis (DFO Science, retired)**
- **Bob Hooper (MUN)**



## **NSERC / FFAW Project: Sustainable Fisheries**

- **Lobsters in Western Newfoundland:**
- **Reproductive Relative to Economic Value**

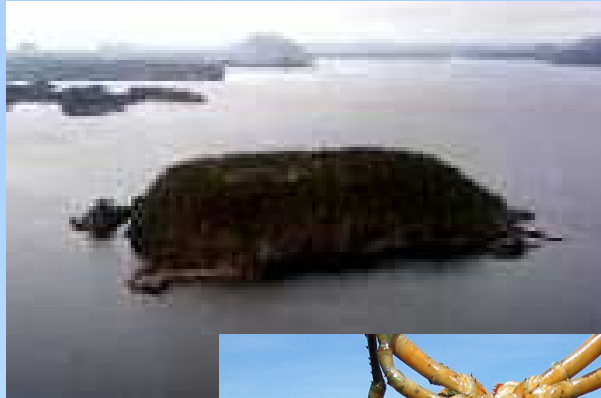
### **Background**

- **\$550 million/year in landed value, export market**
- **Value of regular income to rural communities**



# Conservation measures

- Closed areas



- V-notching



- Slot Fishery



# Proposed Research

- Conservation measures
- Do these measures matter?

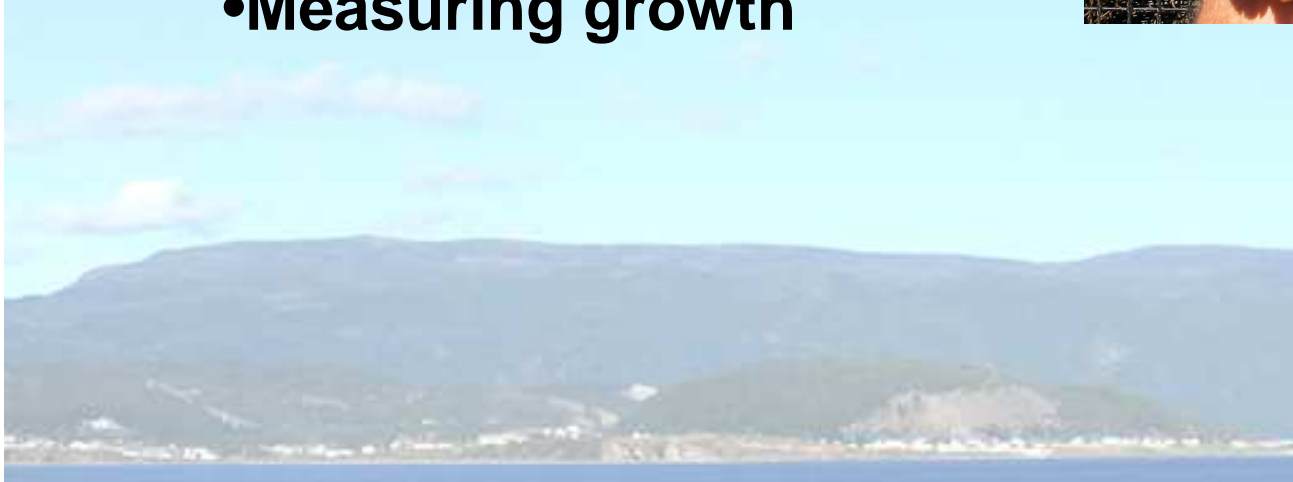
## • Reproductive / Economic Value

## • Measuring fecundity

## • Measuring growth



The screenshot shows a website page for 'Jumbo Live Lobsters (4 - 10 pounds)'. The page features a search bar, a navigation menu with categories like 'Live Lobster', 'New England Clambake', and 'Alaskan King Crab Legs', and a main content area. The main content area includes a photo of a man holding two large lobsters, a description of the lobsters, and three product listings: 'Four Pound Jumbo Lobster' for \$67.34, 'Eight Pound Jumbo Lobster' for \$134.68, and 'Nine Pound Jumbo Lobster' for \$151.52. The page also includes an 'iSafeSite' logo and a 'Resources' section.



# Do these measures matter?

## •Reproductive / Economic Value

Home > [Live Lobster](#) > [Jumbo Live Lobsters \(4 - 10 pounds\)](#)

SEARCH  GO

**Categories**

- Home
- Live Lobster
- New England Clambake
- Alaskan King Crab Legs
- Fresh Seafood & Fillets
- Lobster Meat
- Live Lobster & King Crab Chowder & Bisques
- Scallops
- Lobster Tails
- Shrimp
- Smoked Seafood
- Fresh Shellfish
- Stuffed Quahogs
- Seafood Combo Meals
- Accessories
- Corporate Gifts
- Gift Certificates

**iSafeSite**  
Certified & Monitored  
CLICK TO VERIFY  
LIFETIME MEMBER

**Resources**

- Seafood Articles NEW!
- Seafood Recipes
- Wine Recommendation
- Seafood Facts & Info
- Our History
- Testimonials

**Customer Service**

- Shopping Cart
- Shipping Policies &



**Jumbo Live Lobsters (4 - 10 pounds)**

We keep these massive live lobsters in darkened seawater tanks. The water is kept chilled at a constant 38 degrees so as to simulate their natural environment. This process keeps the lobsters strong and healthy. These are hard shelled lobsters and full of meat.

[Four Pound Jumbo Lobster](#)  
**\$67.34**



[Eight Pound Jumbo Lobster](#)  
**\$134.68**



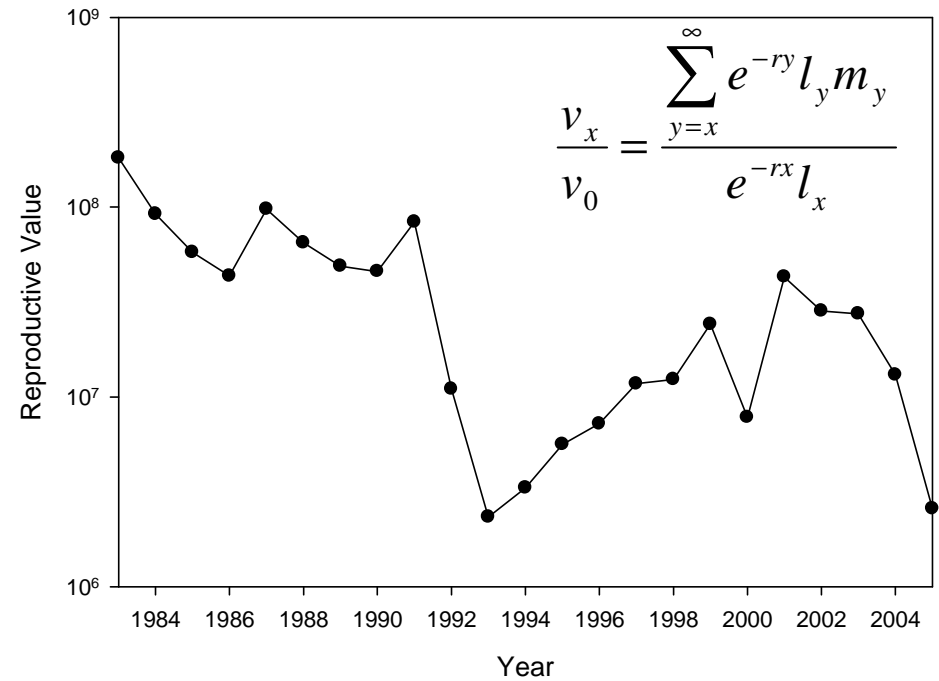
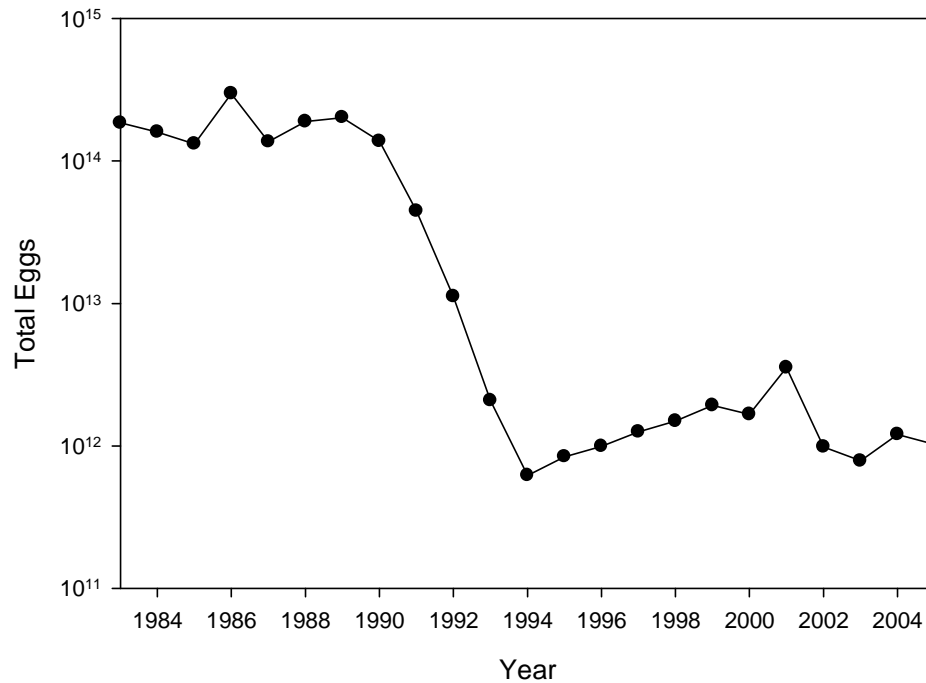
[Nine Pound Jumbo Lobster](#)  
**\$151.52**



What is a lobster worth to the person who catches it?

# Do these measures matter?

- Reproductive / Economic Value



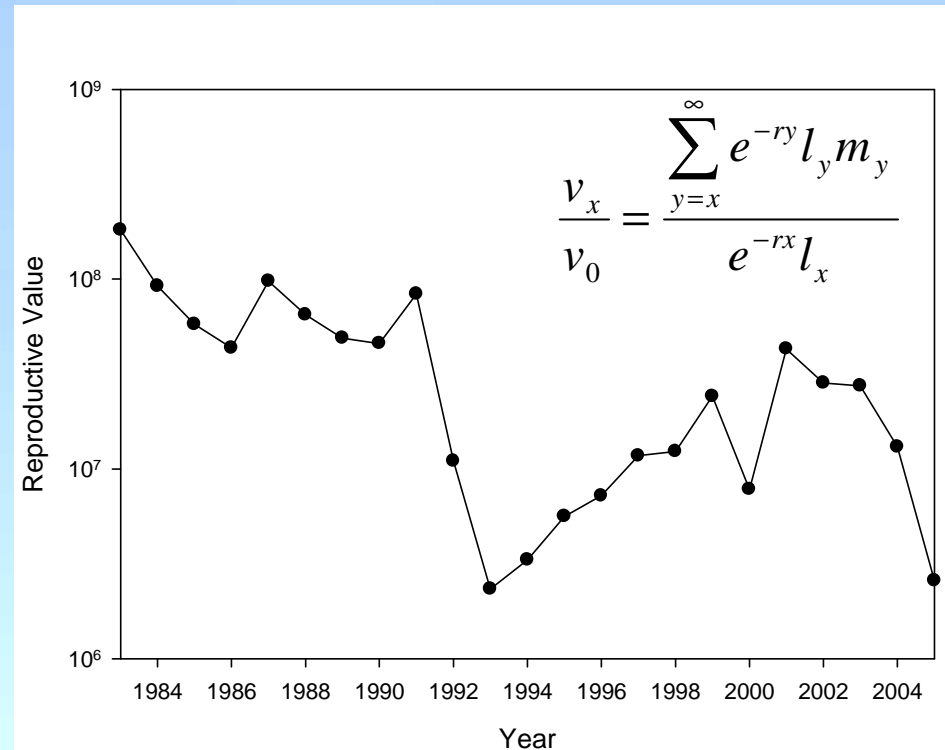
# Do these measures matter?

## •Reproductive / Economic Value

Fecundity by itself a misleading measure in long lived species as it discounts future egg production if the measure is fecundity at age rather than lifetime fecundity

Walters and Martell 2004  
*Fisheries Ecology and Management*  
Princeton University Press

## Why use reproductive value?



# Location and Methods

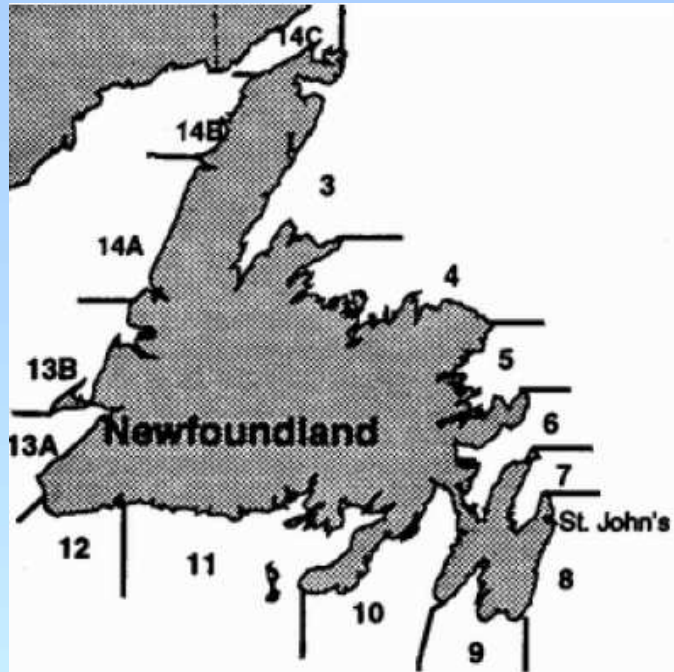
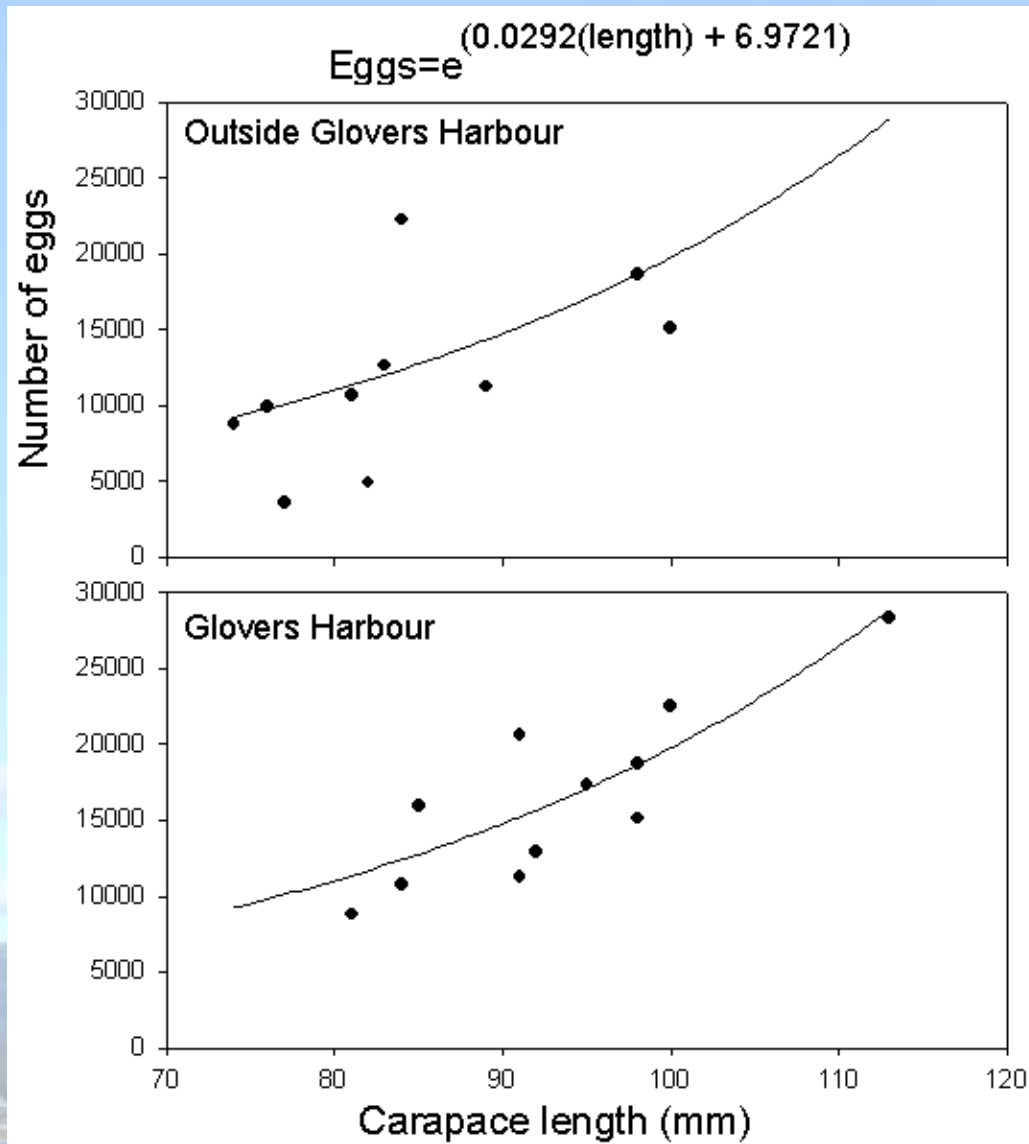


Figure 1: Newfoundland and Labrador Lobster Fishing Areas.



# Methods

- Measuring fecundity

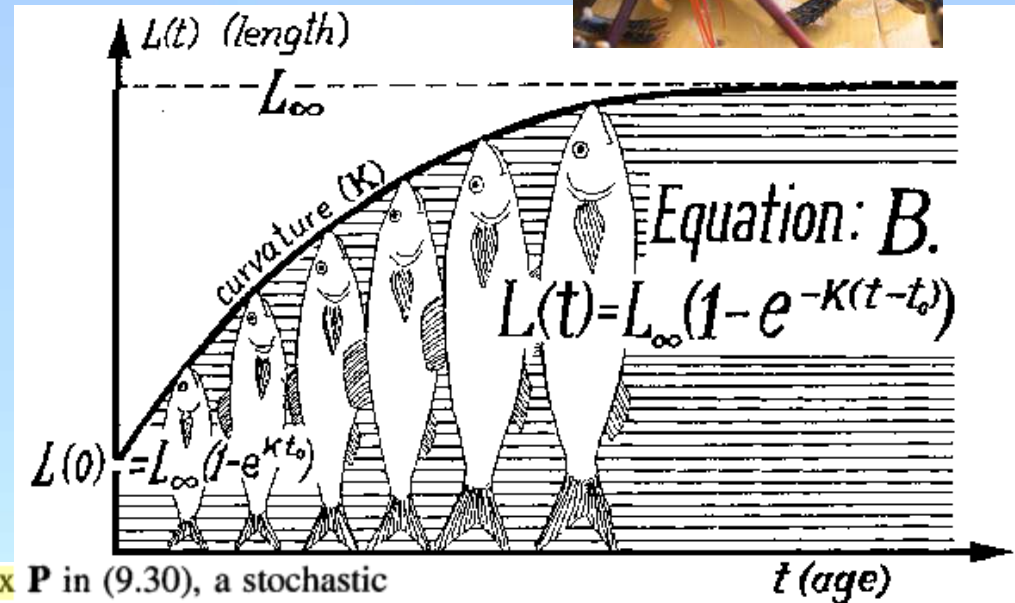


Lobster egg production  
and larval drift potential in the  
Tickles MPA

D.W. Ings, P.V. R.  
Snelgrove, D.C. Schneider  
Report to DFO Oceans,  
2005

# Methods

## •Measuring growth



To obtain the lower triangular **growth transition matrix**  $\mathbf{P}$  in (9.30), a stochastic LVB growth model (cf. section 4.7.3) is used, although in principle any stochastic growth model could be used. The goal is to find the proportion,  $P_{m,l}$ , of fish in length class  $l$  at the start of a time period that survive and are in length class  $m$  at the start of the next time period. If  $l_l$  and  $l_u$  are the two ends of length class  $l$  and  $l^*$  is the midpoint  $(l_l + l_u)/2$ , then the expected length change or growth increment,  $\bar{\Delta}_l$ , over one time period for an individual at mid-length,  $l^*$ , from the LVB model is

$$\bar{\Delta}_l = (L_{\infty} - l^*) (1 - e^{-K}). \quad (9.33)$$

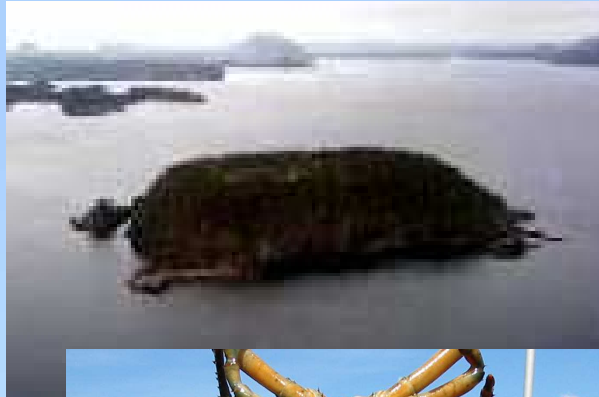
Hence, the expected length,  $E(x)$ , of a fish of mid-length  $l^*$  one time unit later is

$$E(x) = l^* + \bar{\Delta}_l. \quad (9.34)$$

Quinn and Deriso 1999  
*Quantitative Fish Dynamics*  
 Oxford University Press

# Evaluation of conservation measures

## •Closed areas



$\frac{V_x}{V_0}$  With and without a closed area at several spatial scales

## •V-notching



$\frac{V_x}{V_0}$  With and without v-notching, depending on % notched

## •Slot Fishery

$\frac{V_x}{V_0}$  As it depends on the upper limit of the slot



**And now,  
your advice and your queries**

