NSERC / FFAW Project: Sustainable Fisheries

Lobsters in Western Newfoundland: Reproductive Relative to Economic Value

Community Consultation and Follow-up

Plum Point at the Plum Point Motel, 6 April 2011
Cow Head at the Shallow Bay Motel, 7 April 2011
Stephenville at the Holiday Inn, 8 April 2011
Visual presentations at Cow Head and Stephenville

• CURRA context
• Participants/Organizations – Investigators
• Participants/Organizations – Advisory
• Results of NSERC/FFAW research to date
  • Conservation measures
    • Closed areas
    • V-notching
    • Slot Fishery
• Current issues, addressed at consultations

Summary of current issues, slot fishery
Follow-up, 10 April 2011, based on consultations
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
- Create a multi-disciplinary platform for future research and collaborations
Participants/Organizations – Investigators

• David Schneider – Ocean Sciences Centre, MUN
• Barbara Neis – Department of Sociology, MUN
• Kate Wilke – Ocean Science Centre, MUN
• Cailin Xu – Ocean Sciences Centre MUN
• MUN Students: Kathy Whiffen, Jens Currie, Jamie Raper
• Jason Spingle (FFAW)
• Monty Way (FFAW)

• And of course....
Participants/Organizations - Advisory

NSERC Advisory Committee
- Lew 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)

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 – Do they matter?

• Closed areas

• V-notching

• Slot Fishery
Do these measures matter?

• Reproductive / Economic Value

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

What is that lobster worth to the lobster population?
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

It’s like dividends and interest. What are future dividends worth on a 7 year certificate of deposit at the bank?

[7 years from egg to legal size]
Evaluation of conservation measures

- Closed areas

\[ \frac{v_x}{v_0} \] Closed area compared to adjacent area

- 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
Evaluation of conservation measures - Results

- **Closed areas**

- **V-notching**

- **Slot Fishery**

\[ \frac{V_x}{V_0} \]

- 33% increase in current and future egg production

- 20% increase in current and future egg production

\[ \frac{V_x}{V_0} \]

- 30% increase in current and future egg production
Questions arising.
- What if we change the upper limit on slot?
- Does window fishery work? Compared to slot
- Does % females with eggs depend on size?
- Does heavier fishing on males affect egg number?
- Does catch decrease due to more jumbos?
Current issues:

- What if we change the upper limit on slot?
Current issues:

- Does window fishery work? Compared to slot
Discussion at all three consultations was lively and informative.
Summary, based on all three consultations.

- What if we change the upper limit on slot?
  - Substantial reduction in effect if slot to 150 mm
- Does window fishery work?
  - Eliminates jumbos in fishable areas
  - Substantial reduction in effect, similar to 150 mm slot
- Does % females with eggs depend on size?
  - Preliminary results
    - Percent with eggs about 40%, regardless of size
    - Small sample size, needs better estimate
  - Does heavier fishing on males affect egg number?
    - Yes, if jumbo males needed to fertilize jumbo females
  - Does catch decrease due to more jumbos? [Next]
Summary, based on all three consultations.
Does catch decrease due to more jumbos?

• We can look at catch but we cannot expect solid science answer on effects of jumbos on catch:
  • Catch due to many factors, including effort
  • Catch is variable, obscuring effects
  • Lag from egg to legal size is 5-7 years

• Free-ranging lobsters in large tanks tell us:
  • No destruction of small lobsters, if shelter
  • Destruction of molting lobsters, despite shelter
Summary – Slot fishery

Advantages of slot fishery:
• Increased egg production [30%]
• Large males present for fertilization [Yes]
• Egg production by stable numbers of females [Yes]

Disadvantages of slot fishery
• Destruction of small lobsters in traps [Yes]
• Destruction of small lobsters outside traps [No?]  
• Effects of increased jumbos on catch [unknown]

Adaptive management
• Mitigate – move jumbos to non fishable areas
• Replace – increase v-notching
• Closures – safe areas for jumbos, within LFA
• Others ?