The BC Groundfish Hook and Line Catch Monitoring Program: GFHLCMP

A brief summary of the design and the history of the development and implementation

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Rick Stanley

Outline

- Background: History and fishery
- The design: Stress the interrelated nature of the design and components (not just EM, not 100%)
- Performance
- “How did DFO force this down Industry throats?”
Adenda (if needed)

- Piece counts — weight?
- Why 10% audit?
- How does the Scoring work in the audit?
- Bird bycatch as an additional challenge
- Why does monitoring have to be “100%” in the BC trawl, HL (+trap) fisheries? Why not partial?
- Trust

Documents


The HL (and trap) Fishery

Groundfish Commercial Sectors

<table>
<thead>
<tr>
<th>Species</th>
<th>Licence Category</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rockfishes (39+ spp.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sablefish</td>
<td>T</td>
<td>Trawl</td>
</tr>
<tr>
<td>Spiny dogfish</td>
<td>K</td>
<td>Sablefish</td>
</tr>
<tr>
<td>Lingcod</td>
<td>Schedule II</td>
<td>Schedule II</td>
</tr>
<tr>
<td>Pacific halibut</td>
<td>Outside Zn-A</td>
<td>Outside Zn-A</td>
</tr>
<tr>
<td></td>
<td>Outside Zn-B</td>
<td>Outside Zn-B</td>
</tr>
<tr>
<td></td>
<td>Outside Zn-C</td>
<td>Outside Zn-C</td>
</tr>
<tr>
<td></td>
<td>Outside Zn-D</td>
<td>Outside Zn-D</td>
</tr>
<tr>
<td></td>
<td>FL Halibut</td>
<td>FL Halibut</td>
</tr>
</tbody>
</table>
after many years, 1999-2006, of intensive discussion, debate and then planning...
**2006**

The Canadian Groundfish Integrated Pilot Project (CGIPP)

- Two Key Objectives
  - Conservation
  - Industry Sustainability/Viability

- With two key elements
  - Effective monitoring (GFHLCMP)
  - Full Transferable quotas (quota shares)

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**Design for Quota Species**

- 100% Dockside Monitoring
- 100% EM GPS
- 100% EM Video Capture
- 10% EM Video Review of counts
- 100% Fisher logs
- weight
- 100% retention of rockfish
- 100% piece counts for some sectors at dock
- counts
Monitoring Complexity

Roughy Rockfish
Sebastes alabamensis
- Yield based on length, weight, and age
- Characteristic: dark middle

Bluntnose Rockfish
Sebastes mentoculis
- Black spots in upper thymus, with orange tail
- Characteristic: orange tail

Design for quota species

- 100% Dockside Monitoring
- 100% EM Video Capture
- 100% EM GPS
- 100% Fisher logs
- 10% EM Video Review of counts
- 100% piece counts for some sectors at dock
- 100% retention of rockfish
- Genetics sampling in a trawl survey

Counts

Weight

100% retention of rockfish
Design for non-quota species

100% Dockside Monitoring

100% EM Video Capture -> Monitoring

100% EM GPS

100% Fisher logs

Expand to total fleet catches for non-quota species

Overall Performance

- Has everyone’s confidence (intuitively and with testing)
- Credible estimates of discards for the first time with no suspicion of “observer” bias
  - New estimates provided basis for recreating historical estimates
  - 2006+ data exerting increasing leverage on assessment
  - Less bickering about actual catch
- Leveraging inter-sectoral allocation discussions
- Flexible/expandable (ramping up on bycatch species, birds etc.)
- Cheaper surveillance
- More retention less wastage
- Etc.
Overall Performance

- **Best** for Rockfish (~39 species)
  - Fisher logs verified by random audit
  - 100% retention and sorted/counted at dockside

- **Better** for non-rockfish quota species (accountable species)
  - Fisher logs verified by random audit
  - DMP weights for landings by species
  - Discards in piece counts (some groupings)

- **Adequate** for discarded no-value species (responsible species)
  - 10% expanded estimates at fleet level
  - piece counts only (some groupings)

Key Contextual Ingredients that helped

- “Carrot” (IVQs, retention of all species)
- “Stick” (Fix it or lose it by 2005, or even worse…)
- Long History of failure
  - Limited entry
  - Voluntary logbooks ➔ Mandatory logbooks
  - Sales slips ➔ Dockside Monitoring
  - No at-sea observations ➔ Partial observer
  - “Shiny bauble” exhaustion
Other Key Contextual Ingredients

- Some technical elements in place (DMP, Fisher Logbooks)
- Leadership in place
  - Government leadership (reduction in top-down, command/control attitude)
  - Service provider and IT leadership
  - Industry Leadership

Key Process Ingredients

- Keep your eye on principles not shiny baubles
- Focus on Information not Data
- Risk managed the needs (adequacy not perfection)
  - Is it worth the $$
  - Needs vs. wants
- Worked from hypothetical and/or real budgets
  - Audit + 10%
  - $$ savings hard-wired to design choices
Key Process ingredients

- Everyone at the table, Industry (1/sector)
- Government
  - Managers
  - Enforcement
  - Science
  - Service Provider
- Same People for many years (~10 y)
- Everyone “owned” the decisions

Outline

Technical

Contextual, process, and people issues during design and implementation
Adenda

- Piece counts → weight?
- Why 10% and not 15% audit?
- How does the Scoring work in the audit?
- Bird bycatch as an additional challenge
- Why does monitoring have to be “100%” in the BC trawl, HL (+trap) fisheries? Why not partial?
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Piece count → Weight

- Is Science happy with going from no estimates of discards to unbiased and precise estimate of piece counts? With full retention (DMP) of rockfish?

Are you kidding me!
Piece count $\rightarrow$ Weight

- Lots of opportunities for borrowing a mean weight from other sources
  - Surveys
  - Other fisheries
  - Tactical deployment of observers (every 3 years)

- How much uncertainty would error in the mean weight of discards in pieces introduce into an assessment, relative to
  - The magnitude and uncertainty in the estimates of retained and discarded other catch sources
  - Other sources of uncertainty in the assessment
    - Catchability ($q$) = 1 in a trawl survey
    - Time invariance $M, q, S/R,$ etc.

- Needs vs. wants: risk-managing information needs, not data wants.

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Rob Kronlund : BC sablefish assessment

“I use survey data for weights.

*Pieces of sublegal converted to weight by average sublegal weight, pieces of legal converted by average legal weight.*

*It is not the biggest problem in Sablefish assessment to worry about. Much bigger issues related to processes we can’t control.*
Piece count → Weight

Rick: Has Management encountered any problems owing to the absence of mean weight or length data?

Rob Tadey (Groundfish Manager):

“None

Some requirements for a value for bookkeeping of IVQ. For example, a discarded adult lingcod, but industry recommended using 12 lb. (overestimate) as a deterrent.”

- Note: Science does not have to use the 12 lb. placeholder value

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Scoring

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Trip Score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Poor</td>
</tr>
<tr>
<td></td>
<td>Good</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Difference (EM – Logbook)</th>
<th>Difference (EM – Logbook)</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;30 pieces</td>
<td>≥ 30 pieces</td>
<td>0</td>
</tr>
<tr>
<td>0-1 Piece</td>
<td>0-4%</td>
<td>10</td>
</tr>
<tr>
<td>2-3 pieces</td>
<td>5-10%</td>
<td>9</td>
</tr>
<tr>
<td>4-6 pieces</td>
<td>10-20%</td>
<td>8</td>
</tr>
<tr>
<td>7-12 Pieces</td>
<td>20-30%</td>
<td>7</td>
</tr>
<tr>
<td>13-15 Pieces</td>
<td>30-40%</td>
<td>5</td>
</tr>
<tr>
<td>14-18 Pieces</td>
<td>40-50%</td>
<td>3</td>
</tr>
<tr>
<td>19-30 Pieces</td>
<td>&gt; 50%</td>
<td>0</td>
</tr>
</tbody>
</table>
Scoring

Randomly chosen 10%

FLog Data → Test #1 → DMP

FLog Data → Test #2 → Video Imagery

FLog Data → Test #3 → Winch and GPS Sensor

Acceptable → GO fishing

Needs Improvement → GO fishing ...but

Unacceptable → Consequences

Scoring

Year 2

Trip Score

Poor

0

2

4

6

8

10

Good
Annual Score

Trip Score

Year 3

Poor

Good

0 - 1 | 1 - 2 | 2 - 3 | 3 - 4 | 4 - 5 | 5 - 6 | 6 - 7 | 7 - 8 | 8 - 9 | 9 - 10 | Total |
---|---|---|---|---|---|---|---|---|---|---|
0  | 1  | 0  | 2  | 3  | 4  | 5  | 7  | 4  | 1  | 27   | 1.8% |
1  | 0  | 0  | 2  | 2  | 6  | 5  | 2  | 1  | 20  | 1.3% |
2  | 0  | 0  | 1  | 1  | 5  | 2  | 6  | 4  | 9  | 28   | 1.8% |
3  | 0  | 0  | 1  | 2  | 5  | 3  | 4  | 7  | 13  | 4  | 33   | 2.2% |
4  | 0  | 0  | 0  | 2  | 5  | 6  | 6  | 5  | 3  | 33   | 2.2% |
5  | 0  | 0  | 0  | 2  | 5  | 7  | 14 | 16 | 13  | 4  | 65   | 4.3% |
6  | 0  | 0  | 1  | 0  | 6  | 7  | 14 | 24 | 32  | 32  | 92   | 6.0% |
7  | 0  | 0  | 1  | 4  | 8  | 20 | 22 | 51 | 78  | 20  | 213  | 13.9% |
8  | 0  | 1  | 2  | 5  | 15 | 18 | 39 | 88 | 264 | 163 | 595  | 39.0% |
9  | 1  | 3  | 1  | 3  | 24 | 47 | 179| 163| 421 | 27.6% |
Total | 4 | 7 | 21 | 57 | 76 | 142 | 251 | 595 | 373 | 1,527 | 100.0%
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Why 100%, have you not heard of statistical expansion?

Motive, means, opportunity

1. Scale: One fishing event can wreck havoc because of the ratio of Fishing power to quotas

2. Observer bias: fishers’ ability to finesse catch composition is better than statisticians ability to conduct stratified expansion.

3. Perception: Fisher A needs to know that Fisher B cannot dump, because Fisher A needs to know that Fisher B will have to buy quota from A (at a premium) to get out of a pickle.

4. Perception: with 100% the ENGO’s went away in trawl
Key Process Ingredients

• Trust?

Government Principles

• Account for all rockfish catches
• Rockfish catches will be managed to area
• Fishermen will be individually accountable for their catch
• Monitoring standards will be established to meet the above three objectives
• Species of concern will be closely examined …
Industry Principles

- Conservation with improved research and assessments.
- Improved catch utilization.
- Sector and individual accountability.
- Increased industry responsibility and cost recovery.
- Security of access and a "year-round" fishery.
- Economic viability and efficiency.
- Improved social benefits.
- Comprehensive management with administrative and operational simplicity.