



Vessel Based Electronic Monitoring Feasibility

Evaluation: Enforcement



Biological Sampling

- Presume the pre-IFQ NW Science Center sampling program will continue.
- Science Observers deployed on a percentage basis, with data extrapolated across the fleet.

Glossary of Terms

- Science Observer – a person doing biological sampling etc.
- Compliance Monitor – a person doing catch accounting monitoring
- EM - Electronic Monitoring
 - Camera and E Log Book
- EMS - Electronic Monitoring System
- EMP – Electronic Monitoring Plan

Electronic Monitoring Video Monitoring / E Log Book

My Assumptions:

- Management and Compliance Monitoring
- More specifically, Documenting Harvest and Discard Events
- To what end?
 - Full Accountability for all Harvested and Discarded Catch
 - Beyond video recording, need some means for determining amount and species identification of the discarded harvest

Questions to be addressed

- For what purpose? A: Management and Compliance
- What system do we use?
- What are the components?
- Who pays for what?
- Purchase or lease?
- Who does the video analysis?
- How is that analysis done?
- How fast?
- How fast does it need to be done?
- To what level of accuracy?
- How fine a scale do we need?
- Will the data be used for more than catch accounting?
- How will it be handled/stored/accessed?
- Who owns the data?
- How far into the weeds do we want to go today?
- Costs? Premature, depends on how you answer the above.

What reference should we use?

- What do we know?
- What do we trust?
- What can we verify?
- What can we incorporate now?

My Frame of Reference

- For what Purpose?
 - Management and Compliance Monitoring
 - More specific, Recording Harvest and Discard Events
 - w/ Full Accountability for all Harvest and Discards
- By Using
 - what we know
 - what we trust
 - what we can verify
 - what we can incorporate now.

Compliance Monitoring

- Enforcement Objective
 - Tell me the Number /Hold Accountable
 - Complete Data Set
 - EFP demonstrated equipment can be made tamper proof and highly dependable
 - But, if someone wants to beat the camera, they can
 - Agreement amongst the parties
 - Definition of accountable discards
 - Process for estimating those discards
 - Standard? management, scientific, other?
 - Timely / Accurate Accounting
 - For OLE, scientific accuracy is not necessary
 - Timeliness is negotiable: Industry / Management driven
 - Defensible in Court
 - Legal requirement : what is reasonable, i.e. best information available
 - Evidentiary requirements regarding handling of the data
 - Clear and Secure “Chain of Custody” from collection point to final user
 - Maintain data for minimum of 5 years

Enforceability Elements

- Good Regulatory Package
- Good Video Monitoring System
- Good Data Analysis Program
- Disincentives to Discourage Bad Behavior
 - Prohibitions and Punitive Enforcement Sanctions
 - Due Process (lengthy and expensive, not at all timely)
 - Monetary Penalties
 - Permit Sanction
 - Loss of privileges
 - Administrative:
 - i.e. permit not renewed
 - loss of camera privilege / compliance monitor required (better)
 - Incentives for Good Behavior?

Compliance Options

- Voluntary or Regulated Behavior
- Voluntary Approach
 - How do you hold accountable?
- Regulatory Approach
 - Regulation development
 - Enforcement
 - Due Process
 - Arduous
 - Time Consuming,
 - Expensive for all parties involved
 - Is there an alternative?

Is there an alternative?

- At Sea Pacific Whiting Fishery Cooperatives
- IFQ Shoreside Risk Pools
- Incentive Based Behavior Modification at Work
 - derived through participants receiving perceived benefits
 - participants held accountable through the underlying agreements of the participants
 - initial decision to join is voluntary

My Alternative: The PSMFC Electronic Monitoring Cooperative (EMC)

- *This proposal has not been vetted by General Counsel and will require significant legal analysis.*

PSMFC EMC Program

- Premise:
 - Programs depend upon compliance to achieve program goals and objectives
 - Whether institutionalized by regulation or implemented as demonstration pilots, outcomes are influenced by participant behavior

Overarching Regulation

- 100% compliance monitor coverage is required to fish in the Limited Entry Trawl fishery to include:
 - MSCV endorsed vessels
 - Shoreside IFQ Pacific whiting vessels
 - IFQ bottom trawl vessels
 - IFQ fixed gear vessels
- In lieu of 100% compliance monitor
 - participants may join the Pacific States Marine Fisheries Commission (PSMFC) Electronic Monitoring Cooperative (EMC).

PSMFC EM Cooperative

- Members are authorized to use an approved Electronic Monitoring System (EMS)
 - (answers the what)
- As described in an Electronic Monitoring Plan (EMP)
 - (answers the how)
- Provided by a certified EMS provider
 - (answers the who and starts us down the path of purchase of lease and ultimately who pays for what)
 - options :
 - model after certified observer provider program (IFQ and Amendment 10)
 - PSMFC sole provider
 - others?

Corresponding Regulations

- Potential Supporting Federal Regulations
 - *list is not exhaustive, will need further development and vetting*
 - Comply with all Federal and State Regulations
 - Maximized Retention (non selective discards only)
 - Full Accountability
 - Time and Area Restrictions (660.131)
 - Data Collection Equipment Criteria
 - Data Collection Requirements
 - Vessel Operator Responsibilities
 - System Audits, Pass /Fail Criteria
 - Vessel Operator Performance Standards and Responsibilities
 - Administrative Accountability
 - i. e. Renewal of Permit
 - Loss of Camera use Privilege Criteria
 - Compliance Monitor requirement reinstated

Cooperative Agreement Components

- ***again, list is not exhaustive, will need further development and vetting***
 - Comply with all Federal and State Regulations
 - Maximized Retention
 - Full Accountability
 - Time and Area Restrictions (660.131)
 - Data Collection Equipment Criteria
 - Data Collection Requirements / Vessel Responsibilities
 - Vessel Operator Performance Standards and Responsibilities
 - System Audits, Pass /Fail Criteria
 - Administrative Accountability (i.e. renewal of permit)
 - Discard assessment protocols and procedures, based on management and accounting goals and objectives
 - Scale for Assessing Deductions
 - Deduction made on “Best Information Available” used as a proxy for exact poundage
 - Systems Audits, Pass/Fail
 - Revocation of Cooperative Membership (loss of camera option / 100% observer required)
 - Escape Clause

Industry Cooperative Development Committee

- (1) do further provision scoping for consideration/inclusion in the EM cooperative agreement
- (2) develop a list of vessel operator performance standards and responsibilities
- (3) develop proposed accountability measures
 - ignore / underperform said performance standards and responsibilities.

Strawman Considerations

- Midwater Trawl / MSCV
- Midwater Trawl / Shoreside IFQ
- Bottom Trawl / IFQ
- Fixed Gear / IFQ

Midwater Trawl / MSCV

- Maximum Retention / Full Accountability Fishery:
 - (non selective discards only)
- Electronic Monitoring Plans (EMP):
 - unique to the vessel
 - similar to the catch monitor plan for first receiver site licenses

Electronic Monitoring Plan

- Four Components
 - Operational information
 - Monitoring requirements / Vessel responsibilities
 - Data Sources / Comparison Availability
 - Camera / E-Log Book / Shoreside Catch Monitor
 - EM Data Standards
 - Sensors % / Image % / Image Quality / GPS / VMS / Catch Handling Protocols
 - Vessel Installation Details
 - Power / Control Box / Wire Runs / GPS / VMS / Sensors / Cameras

System Components:

- Tamper Proof System
- Secure/Watertight Data Storage
- Digital Cameras
- Encrypted Data
- Sensors
- Deck/Stern Lighting
- Bridge Monitor
- GPS
- VMS
- Geo Fencing
- E-Log Book
- Video Analysis by SFD/PSMFC
- Others?

System Configuration:

- Consistent with previous standards but reflects recent technology advances, i.e. digital cameras
 - Previous EFP and PSMFC pilot
- Technology upgrades as available
 - Digital cameras now
 - Software when available
 - Technology specification could be updated by regulation and/or type approval process (VMS)
- E-Logbook Compatibility

E-Log Book:

- Verification of randomly selected video against log book entries allows for audit procedure that reduces the need to review 100% of the video data
- E-Log Book is a self reporting component that along with camera establishes trust and verification of the data
- Compatible with camera, i.e. timestamp and GPS
- E-Log Book should use state log book as template and convert format from paper to electronic, i.e. same approach used in E-Fish Tickets
- Federal regulations will need to be addressed making groundfish E-Log Books a Federal requirement.
- State log book formats will need to be modified for reporting discards and expanded specifications.
- E-Log Books have a significant “value added” component to their development and implementation.

Data Analysis:

- Responsibility of SFD and PSMFC
- Models to Consider:
 - A system similar to the one used by Archipelago (labor intensive)
 - Software analysis model being developed and tested by Alaska Science Center (minimum of 4 years to perfect)
 - Others?
- Methodology for Estimating Discards
 - Large and small, for deducting vessel accounts
 - Regulations and/or other administrative process
- Recommend Labor Intensive Strategy
 - available now
 - employ software analysis techniques as they become available

Regulation Considerations:

- Use Amendment 10 Draft as template
 - Use regulatory process or type approval process to update technology specifications in the future
 - Regulations defining and describing methodology for estimating discards, large and small
 - Time and Area Restrictions (660.131)
 - PSMFC EMC Regulation Package
 - Others?
- 
- Comply with all Federal and State Regulations
 - Maximized Retention (non selective discards only)
 - Full Accountability
 - Time and Area Restrictions
 - Data Collection Equipment Criteria
 - Data Collection Requirements
 - Vessel Responsibilities
 - System Audits, Pass /Fail Criteria
 - Loss of Camera use Privilege Criteria
 - Vessel Operator Performance Standards and Responsibilities
 - Administrative Accountability (i.e. renewal of permit)

Midwater Trawl / Shoreside IFQ

- Original thought was to evaluate whiting fisheries separately
- As Strawman evolved, became remarkable similar
- But, Opportunity to evaluate specific elements separately
 - For Example: Time and Area Restrictions for At Sea Whiting, Shoreside Whiting, and Bottom Trawl may be different
- Thoughts on Whiting, At-Sea vs. Shoreside?

Bottom Trawl / IFQ

- Additional issues to consider
 - Data Analysis
 - Cameras, to date, have not proven adequate for species id let alone length and weight calculations.
 - For trawl, passing under a camera using some type of measurement scale has not proven reliable except in very restricted conditions.
 - Controlling point of discard may help
 - Fish eye camera may help
 - Could prove to be extremely labor intensive which increases the cost significantly.
 - Software analysis may provide mechanism for id and catch accounting
 - years away from implementation.
 - Continues to demonstrate the need to do more trawl studies

Halibut Viability:

- Option 1. All halibut considered dead under the camera option
- Option 2. Long-term potential for developing a different type of halibut viability model (additional research required)
- Others?

Going Forward:

- We need PSMFC cameras on bottom trawl vessels this summer!!!!
- Species ID
 - As yet, no system has proven to be effective in doing at-sea mixed stock ID.
- Fishing at night
 - As yet, no system has proven to be effective in capturing video at night
 - One potential would be a species id camera/software system deployed in the net itself
 - Potential application of the research being done by Alaska Science Center
 - But we are years away
- Maximum Retention/Full Accountability regulations, and no fishing at night gets us closer, but with no history on camera deployment on bottom trawls we are operating at a severe disadvantage.

Fixed Gear / IFQ

- Maximum Retention (non selective discards only)
 - May only need full retention on IFQ species, or, Rockfish and Sablefish (Analysis needed)
- E-Log Book
 - Value added opportunity is significant
 - Development of a camera option compatible with an E-Log Book could easily be adopted by other fixed gear fisheries
- Halibut Viability
 - Similar to but not necessarily the same as Bottom Trawl
- Time and Area Restrictions may differ