



**NOAA  
FISHERIES**

Northwest  
Region

# Electronic Monitoring

Management Compliance Requirements

February 26, 2013



**NOAA FISHERIES**

# Currently tested Archipelago EM data

- **Whiting EFP (2004-2010)**
  - 98% "On-the-grounds" data compliance
    - 2% potentially selective when undesired bycatch suspected with computer box on/off switch
  - 99% of sets taking place in the fishery were reviewed
    - percentage of sets with discards reduced to 4.1% in 2010
- **Morro Bay Fixed Gear (2008, 2010)**
  - Had the equipment not been turned off, the capture success would have been over 99.99%
  - **Pots**
    - RFIDs probably needed
  - EM system categorized 22% of the total rockfish as "red rockfish"
    - not able to determine aurora, splitnose, bank rockfish, shortspine thornyhead or longspine thornyhead to the species level

# Matrix Priorities

- Camera Placement:
  - Individual Vessel Monitoring Plans crucial.
- Tamper proof, *versus* Tamper evident.
- Secure reliable data.

# Matrix Priorities

- E-Logbook
  - Crucial if <100% review of video data for audit compliance and Protected Species reporting.

# Matrix Priorities

## Digital Cameras

- Newly Available Archipelago Internet Protocol (IP) digital cameras and corresponding “control box”
  - Pros- More compatible with computer vision algorithm development
    - Variable frame rates (higher frames per second)
      - “Control points (disposition, species ID, etc)”
  - Cons- Not yet tested in West Coast fisheries

## Analogue cameras

- Well tested on the West Coast
- Appears to be incompatible with robust computer vision analytics software development.

# Maximized Retention

## Maximized Retention

- Flexible and customizable management structure
- No Discards without observer, or:
  - Development of a discard estimation unit
  - Length, volume modeling, potential scale, intelli-glass scanner, species detection
    - How financially valuable with 1-4% discard ratio?
- Clearly defined "Operational Discards"

# Management Compliance

SFD and PR responsibilities

NWFSC, and NW Region Sustainable Fisheries Division (SFD), and Protected Resources (PR) responsibility to effectively monitor ESA listed species

- Recent Final Groundfish BO
  - West Coast Groundfish Endangered Species Workgroup (WCGESW) in development.
- Salmon BO
- All listed species that interact with West Coast groundfish fisheries, not just fish.

# Management Compliance

## SFD and PR responsibilities

- Northern Pacific Halibut Act
- Pacific Whiting Act
- MSA
- MMPA
- ESA
- Unaccounted for Fishing Mortality
  - Gear interaction mortality
  - Escaped but injured catch mortality
  - Lost nets & gear, continued mortality estimates



# Management Compliance

## Repercussions to Current Management Systems, wish list

- Requires few statistical calculations/expansions (census over sampling)
- Vessel accounting can be done in a timely way, deficit calculations are undisputable, survivability credits can be accounted for, and carryover calculations can be made in a timely way.
- Current system is pretty complex, so we need a system that does not add to the complexity.
- Easy to put into regulations and is flexible to changing management needs-

# Management Compliance

## Repercussions to Current Management Systems, wish list

- Easy to administer
- Easy to determine compliance
- Clearly developed goals and objectives

# Management Compliance

## Repercussions to Current Management Systems, wish list

- Inseason automated information streams (ubiquitous)
- Meets inseason management needs
  - Streamline Council inseason decisions
- Timely and accurate data that fishermen, fleets, and managers trust when decisions are made about:
  - Landings
  - Discards
  - Protected species
  - Halibut
- Timely and accurate data that fishermen, fleets, and managers trust when decisions are made
- Develop Data Management Plan

# Management Compliance

## Repercussions to Current Management Systems, wish list

- Recognizes state management needs
  - Complements or enhances the basic state data collection programs
    - Standardized across the states as much as possible
- Feeds federal and state tracking systems, but is amenable to private uses
  - Risk pools, co-ops, seafood certification marketing that may all have their own monitoring and reporting systems.
- Combines fish tickets, camera data (image sensor synthesized), captain log data, observer log data
- Requires minimal human manual transcription

# Management Compliance

Repercussions to Current Management Systems, wish list

Different institutional/contracting arrangements

- Type Approval vs Master Contract Process

# Management Compliance

## Repercussions to Current Management Systems, wish list

- Costs are transparent, well documented, and alternatives can be objectively assessed
- Easy for fishermen to comply with and pay for whatever equipment or processes are needed to cover their data collection and reporting responsibilities.

# Management Compliance

## Repercussions to Current Management Systems, wish list

- Consider effects on, and First Receiver roles in comprehensive EM data stream development
- Increase in federal observer certified shoreside samplers

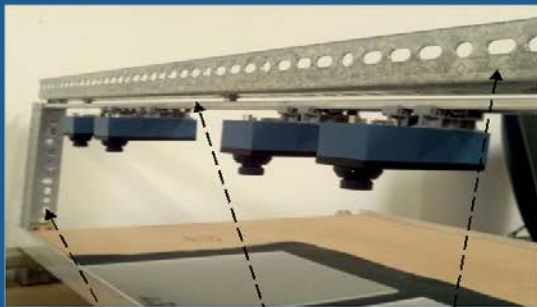
### All involved in development of EM regulation need to recognize:

- Federal budgetary processes
- Inconsistent time of when federal funds can be made to contactors or grantees who are part of the process

# Future Agency & Industry-Driven Vessel Prototype Development

NWR research

- Automated shorebased CM baseline census possible?
  - Simplified sorting requirements for data poor/moderate species?



Approximate positioning of two pairs of MTVS on din rail

Din rail

Crown bolt perforated  
Right angle (80 inches)

Height variable up to top 80 inches

4 USB HS  
Wires < 5 m

110 Volts

Network connection  
(static IP Address for  
External access FTP)

Prepared by GP at General Vision 9-30-2012



# Future EM, CVM

Hardware Development, Data Services, Content delivery (transmission), Software Engineering, etc.

- Determine proper timeline for next generation of EM units for implementation
- NRT, with some real-time management
  - Enforcement
  - On-the-grounds bycatch reduction occurring
    - SOC & PS
    - FR to Vessel
    - Vessel to Vessel
    - Synthesized data estimate results, not all uncompressed data transmitted via satellite.
    - Compatible with acoustic gear retrieval systems
- 100% computer vision census in addition to proper percentage of human review
  - 100% Initial human review necessary for first 1-2+ years for rare event detection and training of CVM units
- Technology driven regulation simplification?
  - Elimination of crossover provisions, Improved catch accounting, etc.

# Future EM, CVM

Hardware Development, Data Services, Content delivery (transmission), Software Engineering, etc.

- Type approval process could prove burdensome for industry/market driven innovations.
- Sustainability certification, online at-sea to processor to market auctioning
  - Reduce time product not available to market
  - Increased profits likely
    - Compensate for investment in EM/CVM unit & infrastructure
- Vessel owners have more direct online access to a copy of their data for vessel operations monitoring and NRT marketing opportunities.
- Agency developing MOU with Navy.
  - Marine Domain Awareness
  - Automated Ecosystem sensing & modeling

# SFD-NWR

## Next Steps

- Current technology, Phase I
  - Many years of experience
  - efp (whiting), 6 years
  - Morro Bay (fixed gear), 2 years + Canadian success
  - Increased shoreside observing and sampling
  - Commitment to begin phase II
  - Sort out needed observer rates
  
- Next Generation, Phase II, 3-5 years
  - Get Started and increase collaboration
  - Creative R&D funding structure
  - Near Real Time (NRT) more Real-time capabilities

# NWR CVM Research Effort Update

## Hardware Research & Development

- Pacific Seafood will have 100 Mbps (mega bits per second) high bandwidth connection by June at new office facility, maybe sooner
- Bornstein Seafood joining in the collaboration effort, just finalized OLE formalities with Bornstein board
  - Site analysis conducted
  - Bornstein has agreed to assist
  - 100 Mbps connectivity, & Charter Communications is next-door
    - Necessary for SFD staff, academic collaborators, General Vision (CogniMem) Automation to control camera aperture in a web-based format
      - SFD in Seattle, GV in Petaluma (CA), and OR port sampler can all communicate via conference line (cell), to coordinate effectively on training of OFS and data mod/poor species.
      - Crucial to incorporate automated data transmission strategy
        - Improving timeliness of data
  - Hopeful for installation soon, possibly between March and April Council meetings