Science, Service, Stewardship

2013 Electronic Monitoring Pilot Project

"Those Who Forget *History* Are Doomed to Repeat It"

FMA
Alaska Fisheries Science Center, Seattle, USA

NOAA FISHERIES SERVICE

Science, Service, Stewardship

Council Intent for Electronic Monitoring

Explore EM as a potential alternative to human observes for specific types of vessels with the intent of having it available in the first year of the restructured observer program.

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Electronic Monitoring: Lessons Learned and Recommendations for Further Development

PFMC Agenda Item I.4.d Supplemental Public Comment 2 April 2012

Pilot Studies

- 30 studies, 13 projects, 5 fisheries, 3 countries
- Each with a unique set of objectives, priorities and timeframe for deliverables

Electronic Monitoring: Lessons Learned and Recommendations for Further Development

PFMC Agenda Item I.4.d Supplemental Public Comment 2 April 2012

Key Findings

•Communication/cooperation among vessel operators, EM providers and regulatory bodies, including enforcement officials, is key to the success of an EM program.

•Use of EM technologies in a given fishery must be geared to the specific enforcement and managements needs of that fishery with installation and configuration of systems unique to each vessel.

•Development and use of Vessel Monitoring Plans, where the catch handling procedures and EM equipment operation obligations are outlined, is highly recommended.

FMA Alaska Fisheries Science Center, Seattle, USA

Electronic Monitoring: Lessons Learned and Recommendations for Further Development

Issues

•Issues reported include1) EM reliability, 2) data quality 3) identification of similar species and species groups, 4) collection of biological information and 5) testing the veracity of self reported information.

•Nearly all of the studies used camera based systems from a single company.

2010 Northeast Multispecies Fishery Electronic Monitoring Pilot Study Report

Goal:

The goal of the study was to evaluate the utility of EMS as a first means to monitor catch on a real-time basis in the Northeast groundfish sector fleet. (204 trips and 745 hauls, 73% high, 9% adequate 18% poor)

Conclusion:

Given the issues identified under the first year of the pilot project monitoring strategies for 2012 cannot incorporate EM

2010 Northeast Multispecies Fishery Electronic Monitoring Pilot Study Report

Future Recommendations

- A more robust EM system is required to provide the high quality data needed for allocation accounting and sub-Annual Catch Limits (ACL) monitoring.

- Need to improve the accuracy and reliability of species identification.

- EM is not sufficiently effective at monitoring weights of discarded fish by species.

- Need for catch handling modifications by crew to improve data quality.

- Need additional data sources to allow analysis of discrepancies between EM and observer data to clarify the effectiveness of the EM data.

EM program in the groundfish hook-and-line fishery in British Columbia

Since April, 2006 has been part of a integrated management plan

“The principal impetus to improving monitoring arose from concerns over the status of several rockfish stocks, and the inability of management to ensure their conservation and sustainability without reliable catch data.” Stanley et.al., 2011

EM approach in the groundfish hook-and-line fishery in British Columbia

100% rockfish requirements

Table 2. Components of the GHLCMP showing programme elements, monitoring objectives, and coverage level.

Element	Objective	Coverage (%)
Hails	Confirm valid fishing trips	100
Logbooks	Create complete record of fishing operations	100
EM sensor	Collect complete sensor record of trip	100
	Verify logbooks	100
	Confirm valid fishing locations	100
EM imagery	Collect complete image record of catch retrieval operations	100
	Random review to audit logbook catch record	10
Dockside monitoring	Verify record of species and weights of landed catch	100
	Individual counts by species of landed catch	30 – 40 (volume)

Hails refer to the hail-in and hail-out by harvesters as they provide notification of intent to leave for a fishing trip and return to unload from a fishing trip, respectively. EM refers to the EM component of the programme.

From Stanley et.al.,2011

EM approach in the groundfish hook-and-line fishery in British Columbia

100% rockfish requirements

Table 5. GHLCMP performance over four programme years, showing the size of the fishery, the proportion of trips that could be assessed by audit, and the number of comparisons performed.

Parameter	2006/2007	2007/2008	2008/2009	2009/2010
Number of vessels	230	230	220	202
Number of trips	1 476	1 519	1 399	1 323
Testable trips (%)				
Dockside vs. logbooks	95	98	98	99
EM sensor vs. logbooks	97	97	97	100
EM imagery vs. logbooks	88	93	94	99
Number of tests performed				
Dockside vs. logbooks	n/a	n/a	3 268	3 364
EM sensor vs. logbooks	n/a	28 457	26 176	23 423
EM imagery vs. logbooks	n/a	5 412	13 172	12 030
Total	n/a	n/a	42 616	38 817

Stanley et.al.,2012 compared estimates derived from EM and DSM/LB

EM approach in the groundfish hook-and-line fishery in British Columbia (200 vessels 1,300 trips)

Summary:
Discard catch- based on logbook (verified through 10% EM audit/rockfish scoring approach)

Retained catch - Fish tickets provide official record of landings verified by dockside monitors

Dockside monitors - Collect biological specimens and verify sorting requirements

EM approach in the groundfish hook-and-line fishery in British Columbia (200 vessels 1,300 trips)

Drawbacks:

- Scoring process is complex and only include a select list of species
- Video imagery selected for audit is unusable (the review target of 10% of events per trip was not met for 9% of all trips, and 6% of all trips received no review Stanley et al., 2012.)
- Disposal of the retained catch before landing remains a possibility (5% tolerance standard)
- No biological specimen data for discarded catch
- Cannot confirm rare catch events
    - each additional species included in the scoring and/or increase in auditing percentage adds incrementally to the complexity and cost of the work.
- Species identification difficulties lead to estimates for generic categories (i.e. “birds”)

What the #@^%$!
Only an EM Pilot Project in 2013?

- Regulatory
- Technology
- Data
- Partnerships
- Clear Management need/objective

Regulatory Framework

- Enforcement needs
- Installation and configuration requirements
- Technology requirements
- Data quality and operational requirements

Technology

- Camera systems
- Non-camera systems
- E-logs
- The challenge is to determine which technologies are best suited to meet specific needs and requirements for North Pacific fisheries in the most cost-effective manner as possible.

Data

- Data quality needs
- EM System reliability
- Minimum data Quality standards
- Data storage, data elements and infrastructure

Before EM can be approved as a substitute for traditional at-sea monitoring, it must be proven to provide the types and quality of data that are needed to monitor catch accurately.

Partnerships

- Building trust and cooperation
- Agency Role
- Industry Role

Without cooperation we will be unable to develop EM systems that address management needs for this fishing sector

2013 Electronic Monitoring Pilot Project in the North Pacific

A contract was developed by NMFS

- Solicit a business to develop a EM system
- Deploy and troubleshoot
- Maintain video based EM onboard fishing vessels
- Beginning 2nd Calendar quarter in 2013

Contract includes providing a test product to ensure the final EM designed will meet our objectives

- Cooperation from fleet
- At-sea trials
- Alter design as required

Which vessels will be included in the 2013 EM pilot project?

Limit EM deployment to IFQ vessels 40-57.5' in length

- However, IFQ is a quota management system where the right to harvest pacific halibut or sablefish is issued to a permit holder that is an individual.

How do you define a vessel as IFQ?

- We define the EM eligible frame of vessels to those 40-57.5' in length (Vessel Selection stratum) that have a history of landing IFQ in prior years in quarters 2-4.

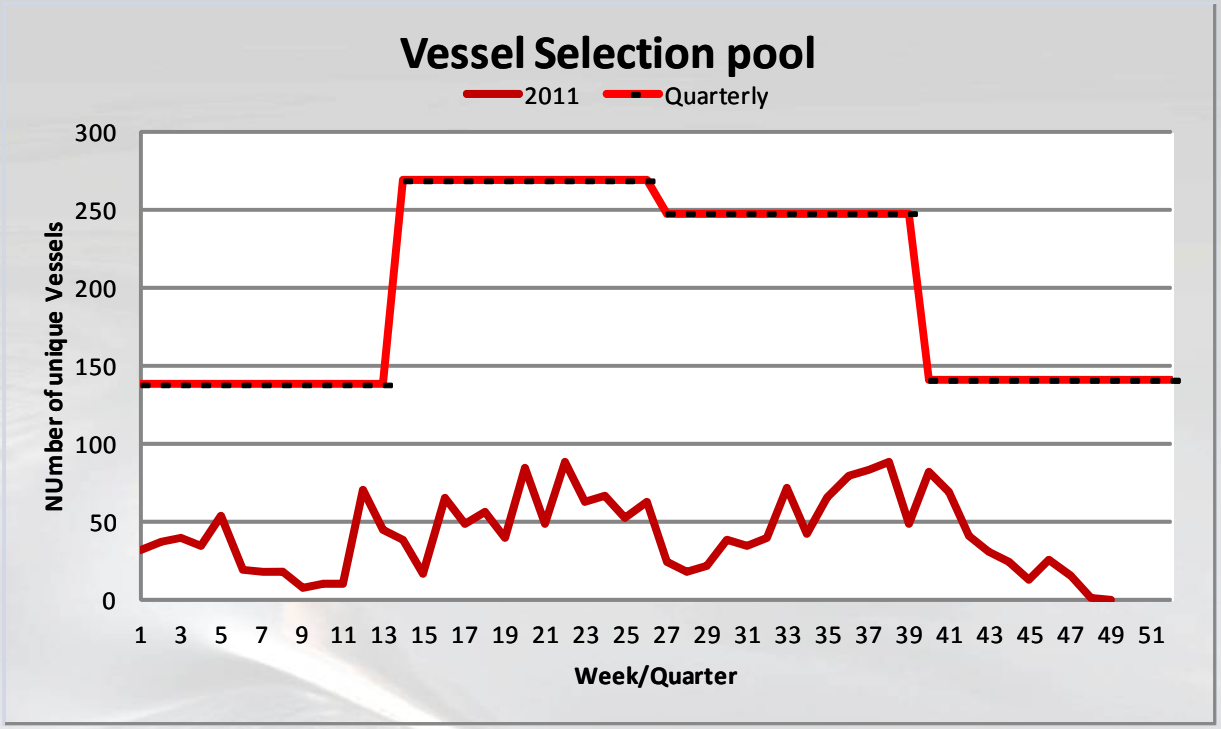
Vessels where the owner has indicated they want to participate

- Initial mailing (early Nov. 2012) includes an self-addressed stamped post card that must be returned by February 1st, 2013 to participate in EM pilot
- How many vessels are willing to participate

Vessels fishing out of Sitka, Homer, Petersburg and Kodiak[1/]

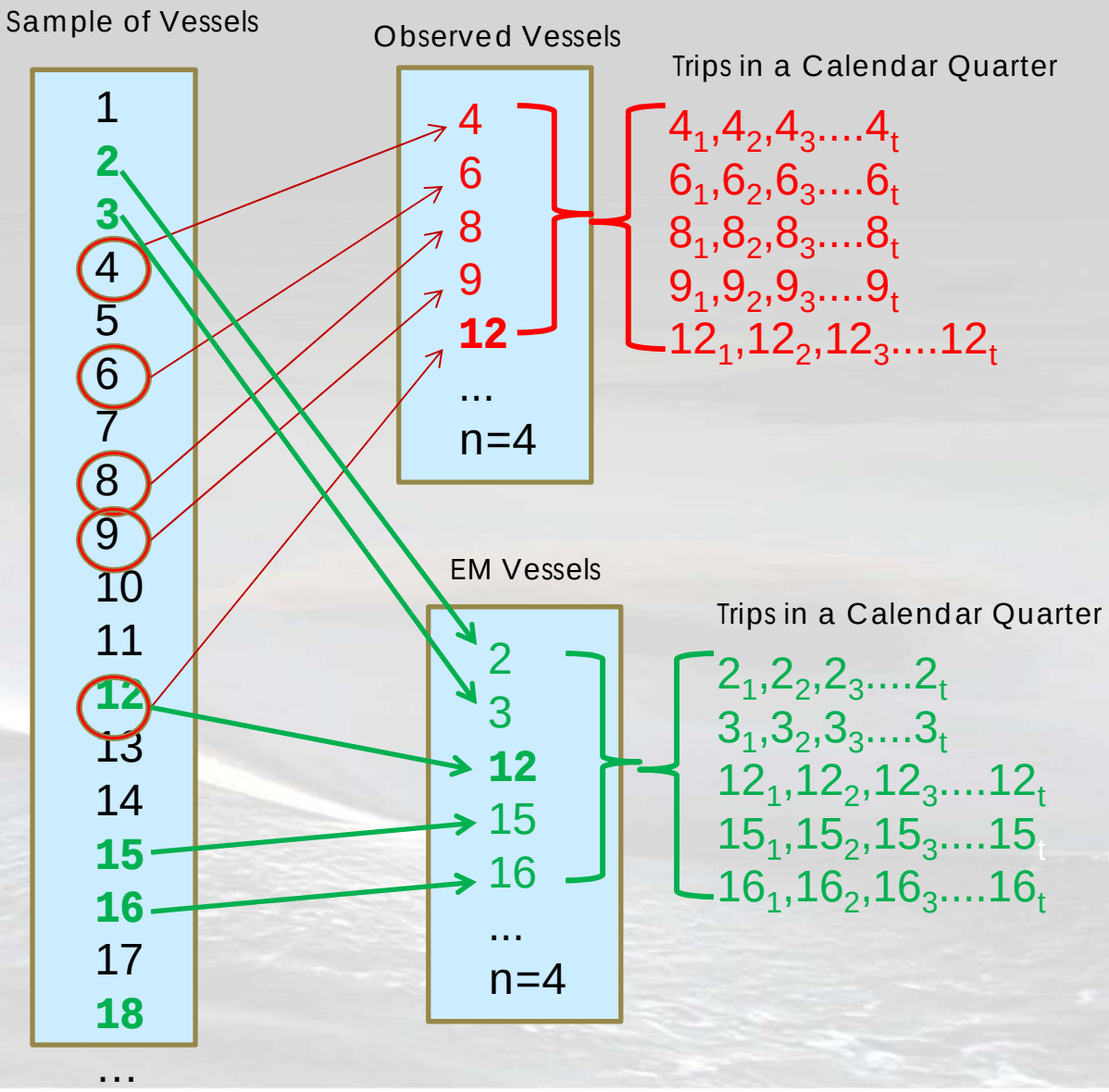
- Limited funding and number of units

Which vessels will be included in the 2013 EM pilot project?



How does EM VS work?

Green = I want to participate ☺ Random selection of participating vessels ☺



DSR Rockfish Retention Requirements

Rockfish Possession and Landing Requirements (5 AAC 28.171)

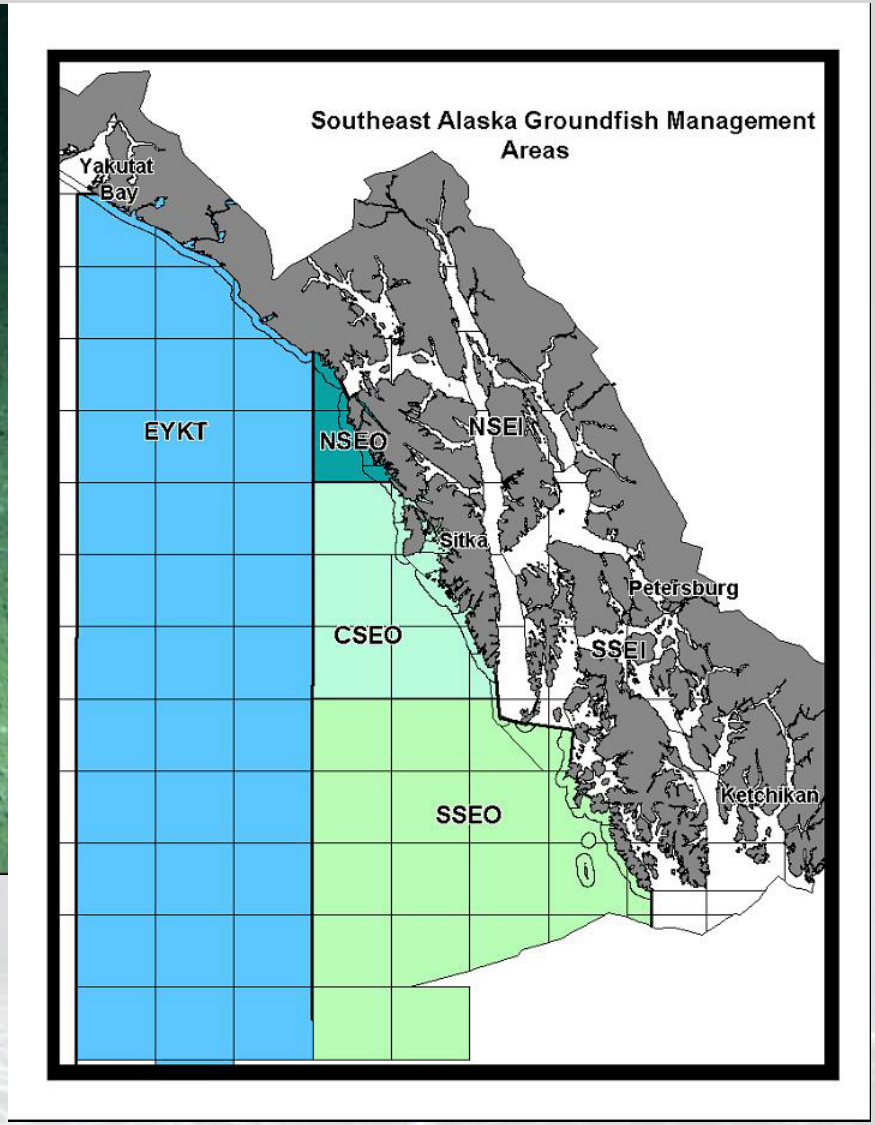
- •A vessel or Commercial Fisheries Entry Commission (CFEC) interim use permit holder fishing for groundfish or halibut must retain, weigh, and report all demersal shelf rockfish (DSR) and black rockfish taken
- • In the Northern Southeast Inside (NSEI) and Southern Southeast Inside (SSEI) Subdistricts only
- •Includes yelloweye, quillback, canary, copper, tiger, china and rosethorn

Federal Demersal Shelf Rockfish Landing Requirements

- •Full retention of DSR in waters east of 140 W. longitude (Southeast Outside District)
- •Must be reported on an ADF&G fish ticket and DSR in excess of bycatch allowances must be reported as bycatch overage.

DSR Rockfish Retention Requirements

Tory O' Connell et.al. 2005



Electronic Monitoring deployment in the 2013

Objective

- Monitor the identity and disposition of Demersal Shelf rockfish in the hook-and-line fishery operating out of southeastern Alaska (NMFS reporting area 649 and 650) and, if funding permits, assess rockfish retentions in the Central Gulf of Alaska (NMFS reporting area 630).

How will we assess retention

- At-sea counts of rockfish from EM
- At-sea counts from observers
- Dockside counts from observers
- Dockside counts from Industry (i.e. landing reports)

Clear Identifiable management need

- EM monitoring task that can likely be measured

Electronic Monitoring deployment in the 2013

How will this aid in the development of EM for this fishery?

- Video data performance standards
  - Species identification issues
  - Maintenance issues
  - Reliability issues

- Vessel Monitoring Plans (standardized templates)
  - Develop cooperative working relationships
  - Define operator responsibilities and standards
  - Catch handling procedures (control points)
  - Develop equipment maintenance procedures

- Innovations
  - Improve species identification
  - Improve ability to measure effort and fleet distribution
  - Improve EM reliability

- Data
  - Evaluate and improve the time to process
  - Identify and economize data storage needs and archiving
  - Improve EM reliability

Electronic Monitoring deployment in the 2013

Future Innovations for 2013?

- Develop less expensive non-camera EM systems for broader fleet coverage
  - Passive monitoring techniques, GPS and data loggers to determine fishing effort and location
  - Vessel operators estimates of discard (elog)
  - E-landing

Without fleet cooperation we will be unable to develop EM systems that address management needs for this fishing sector

2013 Observer Program

Changes to support sustainable fisheries