

Science, Service, Stewardship



ELECTRONIC MONITORING IN THE NORTH PACIFIC

**NOAA
FISHERIES
SERVICE**

AFSC-FMA

Electronic Monitoring

- North Pacific Fisheries Management Council (Council) Action and Strategic Plan
- What is the current state of Electronic Monitoring?
- What are we doing now to implement and advance EM/ER in the North Pacific?
- Why are Innovations important?
- What is *EFIS*?
- How *EFIS* could inform stock assessments, catch estimations, management and Industry?

Council Motion

October 2012 motion:

“The Council requests that NMFS provide a strategic planning document for electronic monitoring (EM) that identifies the Council’s EM management **objective of collecting at-sea discard estimates from the 40’ – 57.5’ IFQ fleet**, and the timeline and vision for how the EM pilot project in 2013 and future years’ projects will serve to meet this objective, including funding.”

This motion also forwarded an Advisory Panel recommendation to: “Recommend that NMFS report to the Council on other EM options that may be appropriate to replace or supplement human observers.”

Why is the Strategic Plan Important?

IT IS ABOUT THE PLANNING PROCESS TO:

Resolve policy, technical, budgetary, enforcement, regulatory impediments to a way-forward on EM.

Re-examine monitoring requirements in the context of all methodologies that can achieve a more cost-effective and sustainable program.

Realign regulatory framework that matches management with technical and fiscal constraints on monitoring.

Gain agreement on direction (Monitoring Objectives).

Choosing a EM strategy has long-term implications for data quality, data timeliness, policy, regulatory burden and costs.

Strengths, Weaknesses, Opportunities, and Threats

Strengths (internal)

- Leadership focus on EM advancement
- Dedicated and capable staff
- Success implementing performance based approaches in regulation
- A committed Council
- AK experience with EM/ER in a range of applications
- AK experience advancing EM technology in survey applications
- AK reputation for doing things right
- NMFS investment in IT infrastructure
- Large scale implementation of ER across Alaska
- Inter-agency collaboration on ER

Strengths, Weaknesses, Opportunities, and Threats

Weaknesses (Internal)

- Lack of agreement on monitoring objectives, data needs and priorities
- Demands that do not take into account time for regulatory processes and scientific study to make informed decisions
- Variable, and sometimes unrealistic, expectations of what EM can do
- Lack of stable funding for EM
- Funding shortfalls, staff resources and competing demands on staff time

Strengths, Weaknesses, Opportunities, and Threats

Opportunities (external)

- EM programs in place in other parts of the world
- EM work emerging in other regions
- Collaborative fishing industry members who are eager to advance EM
- Many advanced technologies that are mature and tested
- Emerging technologies with high potential
- Many potential partnerships to advance EM work
- Various funding sources may be available

Strengths, Weaknesses, Opportunities, and Threats

Threats (external)

- Information demands can exceed the capacity of people or EM (**unconstrained by reality**)
- Lack of EM service providers
- An unpredictable federal budget environment
- Data quality challenges (prove it!)
- Maintaining chain of custody and data integrity
- Confidentiality restrictions and protections
- Competition for money and time
- Industry and agency/Council objectives for EM may conflict

Current State of Camera Based EM

Can video data be used to estimate catch?

**Commercial Fishing for Pacific cod
in the North Pacific. MOVIE FILE**



Can video data be used to estimate catch?

No operational video monitoring programs in NMFS-managed fisheries where data extracted from video are used for science or management purposes.

Why not?

- Inability to accurately identify species
- Cannot obtain weights of discarded fish
- Length of time required to obtain and review video and extract all requisite information
- Cannot collect biological samples
- Many Studies (>60 EM Studies)

NEFSC 2010 and 2012 EM Reports

Video Monitoring

- Effective at monitoring compliance in full retention fisheries where species identifications and weights can be determined by dockside monitors.
- Potential where the catch is brought on board individually (gillnet, longline, and jig), and each specimen can be identified and total counts at varying taxonomic levels can be made.
- May not be effective for observing catch of rare or endangered species (species identification and chain of custody)

What are We Doing to Implement and Advance EM/ER in the North Pacific?

AFSC EM/ER Projects in the North Pacific

In The Field Right now

- Atlas, Compliance Monitoring, Elog, Eticket, Flow Scales
- Camera based EM systems in small vessel fixed gear fleet

Field Deployment over the next 6 months

- Stereo cameras
- Chute cameras
- Automate catch event capture
- Automate length sampling (to infer weight)
- Enhance Species Recognition

Data Integration

- GUI front-end to enter EM data into NORPAC tables
- GUI interface for image processing

CamTrawl



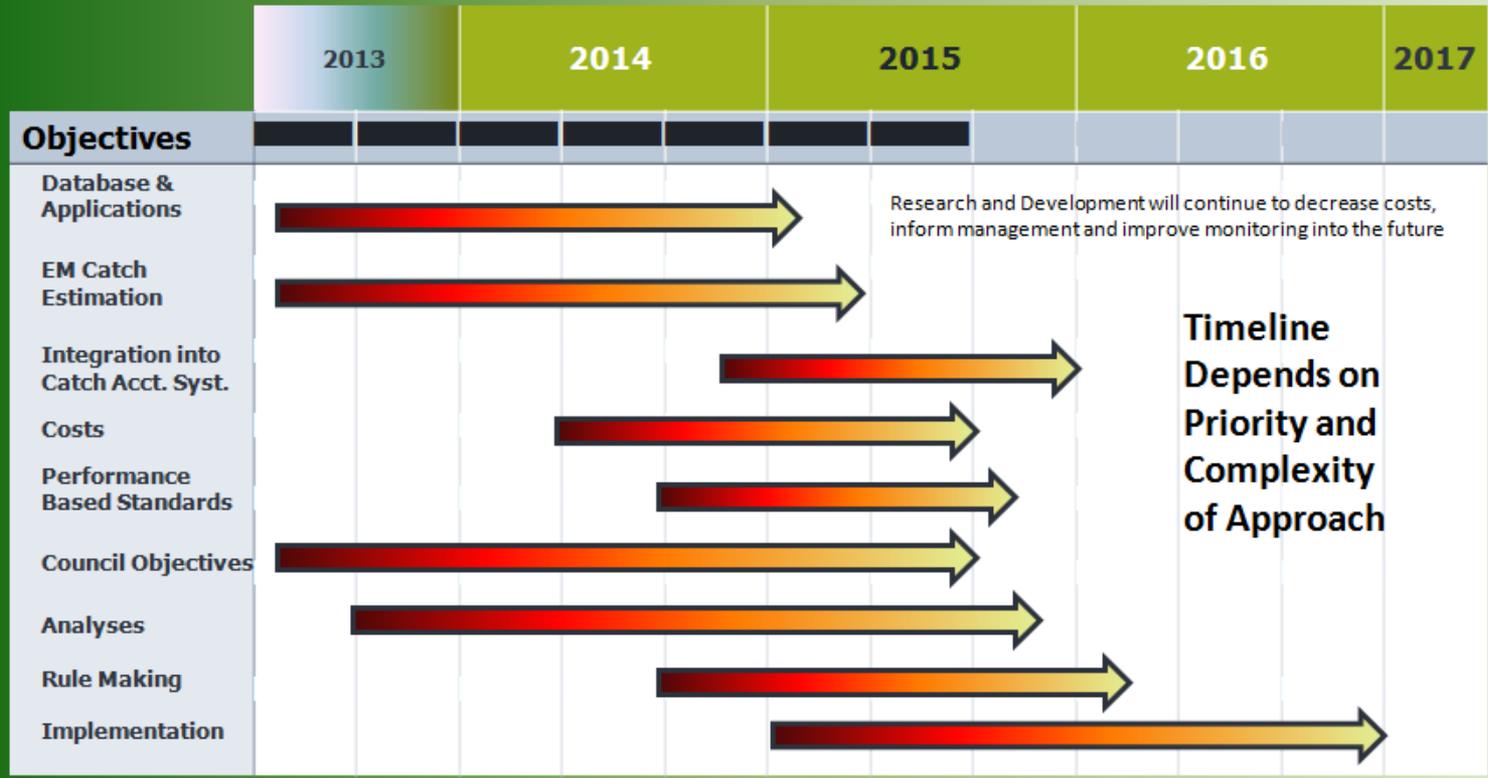
Why are Innovations Important?

- Reduces our dependence on self reported data
- Could dramatically change the cost-benefit ratios through automated processing

ELECTRONIC MONITORING AND ELECTRONIC REPORTING PROJECT MANAGEMENT TIMELINE

EM/ER INTEGRATION INTO THE NORTH PACIFIC DATA COLLECTION PROGRAM

ELECTRONIC MONITORING AND ELECTRONIC REPORTING PROJECT MANAGEMENT



Started
 To be completed
 Completed

What is *EFIS*?

What can we do now?

1. Serves as independent ER System that independently collects set, haul positions and effort for observed and unobserved vessels (spatial/temporal dataset)
2. Base data collection system where a camera could be “plugged in”
3. Provides data to develop fisheries depended system for estimating CPUE **where total time** is known

What is *EFIS*?

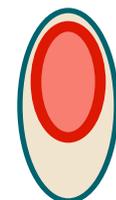
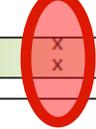
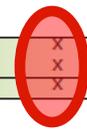
What can we do in the near future?

1. Adaptive database architecture (Industry and Agency)
 - Data such as depth, temperature, acoustics, protected species interactions and/or count data
2. Automated download when a vessel reaches port
 - Port of Landing and Vessel Id allows for automated link to E-Landing.
3. Provides a data entry system for fisherman to track catch, effort, landing and costs

Where do we think EFIS has the greatest potential improve Stock Assessments?

Fishery Dependent Data

Region	Species	Assessment Tier*	Assessment Frequency (A = Annual; B = Biennial with an off-year update)	Federal Fishery Management Catch Estimate Reports	Biological and Catch Data from Federal Fishery Observers	State (AK) Fishery Catch Estimate Reports	Biological and Catch Data from State (AK) Crab Observers	Acoustic Vessels of Opportunity (Commercial Fishing Vessels)	Federal Longline Unit-Effort (CPUE) Data	Federal Trawl and Pot Fishery CPUE Data
EBS	Pollock	1	A	X	X			X		
Bogoslof Is.	Pollock	5	B	X	X					
AI	Pollock	3	A	X	X					
GOA	Pollock	3	A	X	X	X				
BSAI	Pacific cod	3	A	X	X	X			X	X
GOA	Pacific cod	3	A	X	X	X			X	X
BSAI/GOA	Sablefish	3	A	X	X	X			X	X
BSAI	Yellowfin sole	1	A	X	X					
BSAI	Greenland turbot	3	A	X	X					
BSAI	Arrowtooth flounder	3	B	X	X					
GOA	Arrowtooth flounder	3	B	X	X					
BSAI	Kamchatka flounder	5	A	X	X					
BSAI	Northern rocksole	1	A	X	X					
GOA	Northern & Southern rock sole	3	A	X	X					
GOA	Deep water flatfish	5 & 6	B	X	X					
GOA	Shallow water flatfish	5	B	X	X					
BSAI	Flathead sole	3	B	X	X					
GOA	Flathead sole	3	B	X	X					
GOA	Rex sole	5	B	X	X					
BSAI	Alaska plaice	3	B	X	X					
BSAI	Other flatfish	5	B	X	X					
BSAI	Pacific ocean perch	3	B	X	X					
GOA	Pacific ocean perch	3	B	X	X					
BSAI	Northern rockfish	3	B	X	X					
GOA	Northern rockfish	3	B	X	X					
BSAI	Rougheye & Blackspotted rockfish	3	B	X	X					
GOA	Rougheye & Blackspotted rockfish	3	B	X	X					
BSAI	Shortraker rockfish	5	B	X	X					
GOA	Shortraker rockfish	5	B	X	X					
GOA	Dusky rockfish	3	B	X	X					
GOA	Demersal shelf rockfish	4	B	X	X	X				
GOA	Thornyheads	5	B	X	X					
BSAI	Other rockfish	5	B	X	X					
GOA	Other rockfish	5	B	X	X					
BSAI	Atka mackerel	3	A	X	X					
GOA	Atka mackerel	6	B	X	X					
BSAI	Squid	6	B	X	X					
GOA	Squid	6	B	X	X					
BSAI	Skates	3	B	X	X					
GOA	Skates	5	B	X	X	X				
BSAI	Sharks	6	B	X	X	X			X	
GOA	Sharks	6	B	X	X	X				
BSAI	Octopus	6	B	X	X	X				
GOA	Octopus	6	B	X	X	X				



Where do we think EFIS has the greatest potential improve Catch Estimates and Management?

		Monitoring Tools							
Program	Fishery	Paper logbook ¹	E-logbook	Flow Scale	VMS	Video	100% observer coverage	2nd observer	ATLAS
Catch Share	AFA CPs/motherships	N	Y	Y	Y	Y	Y	Y	Y
	BSAI Trawl CPs in H&G	Y	Y - voluntary	Y	Y	Y	Y	Y	Y
	CGOA Rockfish CP	N	Y	Y	Y	Y	Y	Y	Y
	BSAI P.cod Freezer Longliner	N	Y	Y	Y	Y	Y	Y	Y
	CR Crab CP	Y	N	Y	Y	N	Y - not NMFS	N	N
	AFA CVs	Y	few- voluntary	NA	Y	N	Y	N	Y ³
	CGOA Rockfish CV	Y	N	NA	Y	N	Y	N	Y
	IFQ CP Sablefish	Y	N	N	Y -AI only	N	Y	N	N
	IFQ CP Halibut	Y	N	N	Y -AI only	N	Y	N	N
	IFQ CV Sablefish	Y	N	NA	Y -AI only	N	N	N	N
	IFQ CV Halibut ²	Y ²	N	NA	Y -AI only	N	N	N	N
Non-Catch Share	BSAI CP Longline Turbot	Y	N	N	Y	N	Y	N	Y
	GOA CP Trawl	Y	Y- voluntary	N	Y	N	Y	N	Y
	GOA CP Longline	Y	Y voluntary	N	Y	N	Y	N	Y
	BSAI CV Trawl P.cod	Y	N	NA	Y	N	Y-voluntary	N	N
	GOA CV Trawl	Y	N	NA	Y	N	N	N	N
	GOA CV Longline	Y	N	NA	Y	N	N	N	N
	CP Pot	Y	N	N	Y	N	Y	N	Y
	CV Pot	Y	N	NA	Y	N	N	N	N
	Jig	Y	N	NA	Y-AI only	N	N	N	N

1-Paper logbooks are required by NMFS for vessels >60ft
 2-Paper logbooks are required by IPHC for vessels >26ft fishing for halibut; vessels >60ft are also required to submit paper logbooks by NMFS and there is a shared IPHC-NMFS paper logbook.
 3-Atlas is required for vessels over 125 LOV, but many vessels voluntarily use ATLAS

Potential Incentives for the Fishing Community

EFIS

Enable Web-based portal:

1. Summarize and track fishing location and catch
 - Planning (i.e. Increased CPUE efficiencies)
 - Avoid areas of high bycatch
 - Avoid areas of small fish
2. Potential replacement of VMS
 - May take the place of VMS Requirements
3. Track costs for gear, fuel, crew etc.
 - Accounting Efficiencies
 - Reduce overhead
4. Improve Marketing and Sales
 - ThisFish.com
 - Promote sustainability



2013 Observer Program

Changes to support sustainable fisheries

