NOAA FISHERIES

West Coast Region

Electronic Monitoring in the West Coast Groundfish Trawl Fishery

Implementing EM for At-Sea Pacific Whiting and Shorebased Catch Shares

Justin Kavanaugh and Melissa Hooper

West Coast Groundfish Trawl Fishery: Sectors

Merluccius productus AKA Pacific hake AKA Pacific Whiting

Whiting by the numbers: 2018*

	Mothership (mt)	Catcher Processor (mt)	Shoreside (mt)
2018 Allocation	96,644	136,912	169,127
Harvest	67,096	116,074	129,180

*PacFIN report 202 updated 12/31/2018

West Coast Groundfish Trawl Fishery: Monitoring requirements

- 100% Observer coverage for all sectors
  - MS & C/P: **2 observers** >125ft
  - C/Vs (MS and IFQ): **1 observer**

- Shoreside processing plants: **Catch Monitors**

Electronic Monitoring Program: EFP

- Catch share observer coverage costs
- Quest for less expensive and/or more flexible alternative to human observer coverage in meeting 100% monitoring requirement
- Exempted Fishing Permits
- Deployed on 34 vessels in 2015 and 43 in 2018
  - Midwater trawl, bottom trawl, pots

Whiting fleet in EM

2018 EM Whiting vessels

- 16 MSCV
- 23 CV
- 27 distinct whiting boats

Electronic Monitoring Program: Key Points

- Vessel and crew
- Service Providers (hardware, support)
- Review and Catch Accounting
- Feedback
- Enforcement

Communication

Vessel and Crew

- Existing participant of fishery
  - LEP, vessel account, etc.
- Understand EM system operation and their responsibilities
- Vessel Monitoring Plan (VMP) - collaborative
- Address issues immediately
- Complete EM data set, recording up to offload start
- Submit drives, logbooks

Vessel Name: Super Catcher | Departure: Date 08/22/2014 (Month Day Year) Time 20:00 (Local – 24-hour) | Port: Newport

Federal Document No: 123456 | Return: Date 09/08/2014 (Month Day Year) Time 15:30 (Local – 24-hour)

Crew Size (including Captain): 3

EFP trip (check if yes): ☑ | Observed trip (check if yes): ☐ | Buyer(s): Arctic Storm

DATE mo/day		TIME Local 24-hour clock	LATITUDE Degrees	LATITUDE Minutes	LONGITUDE Degrees	LONGITUDE Minutes	Average depth of catch (fathoms)	NET TYPE	Target Strategy	Estimated pounds retained each tow – Retained	Discards	Codend Capacity
8/23	set	0700	45	42 • 51	124	25 • 51	151	MDT	PWHT	70,300 lbs	500 lbs	80,000 lbs
	up	1235	45	13 • 55	124	16 • 42						
8/23	set	1422	45	16 • 55	124	25 • 13	132	MDT	PWHT	65,250 lbs	0 lbs	70,000 lbs
	up	2046	45	25 • 33	124	55 • 16						
8/24	set	0642	45	16 • 51	124	33 • 16	133	MDT	PWHT	66,500 lbs	20 lbs	65,000 lbs
	up	1131	45	51 • 13	124	42 • 25						
[illegible]								DT	PWHT	72,320 lbs	550 lbs	75,000 lbs
[illegible]								DT	PWHT	65,000 lbs	0 lbs	65,000 lbs
[illegible]								DT	PWHT	70,300 lbs	150 lbs	70,000 lbs
[illegible]								DT	PWHT	35,650 lbs	50 lbs	65,000 lbs
8/26	up	1800	45	51 • 13	124	55 • 33	135	MDT	PWHT	67,870 lb		lbs
8/27	set	0733	45	25 • 33	124	25 • 16	135	MDT	PWHT	58,880 lb		lbs
	up	1036	45	51 • 42	124	25 • 51						

REMARKS:

Signed: Signature

ETED BY AGENCY

VESSEL	FISH RECEIVING TICKET NO.
PORT	

Report codend capacity at the haul level if different for each haul

Comment on:
- Malfunctions
- Gear/catch issues
- Delays in offload, additional video
- Fish ticket number(s)

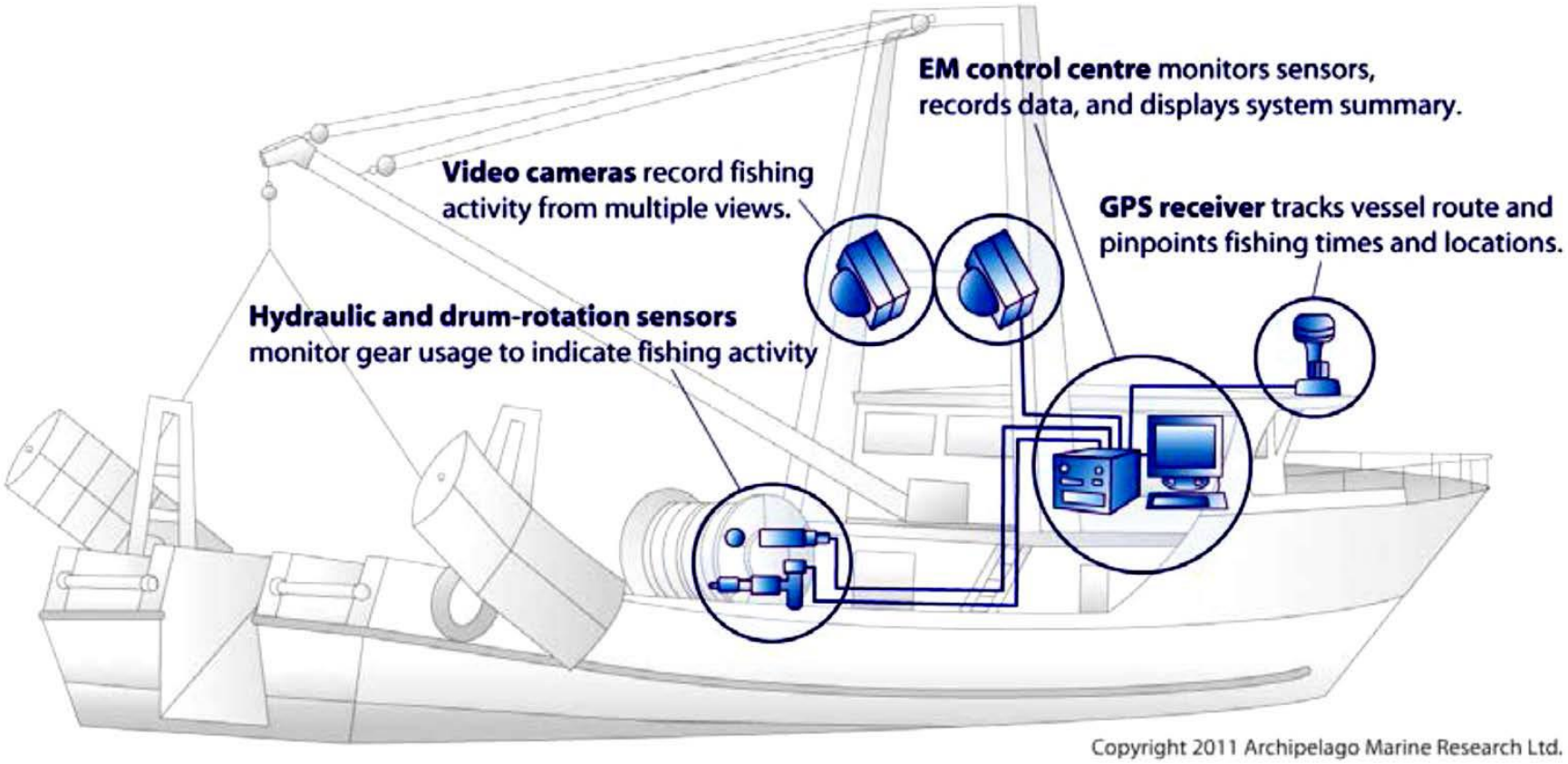
Report retained and discarded catch at haul level in pounds

Report all hauls even if no catch

Service Providers

- EM Authorization
- Hardware installation, technical assistance, and maintenance services to EM vessels
- At-sea support
- Service technicians
- VMP support

Service Providers: Hardware



Vessel Monitoring Plan

- Accurately describes fishing operations on a specific vessel
- How EM system and associated equipment configured to meet performance standards
- Diagrams, camera views, lighting, frame rates, image resolution, sensor trigger thresholds, etc.
- Catch handling protocols
- Malfunction tables

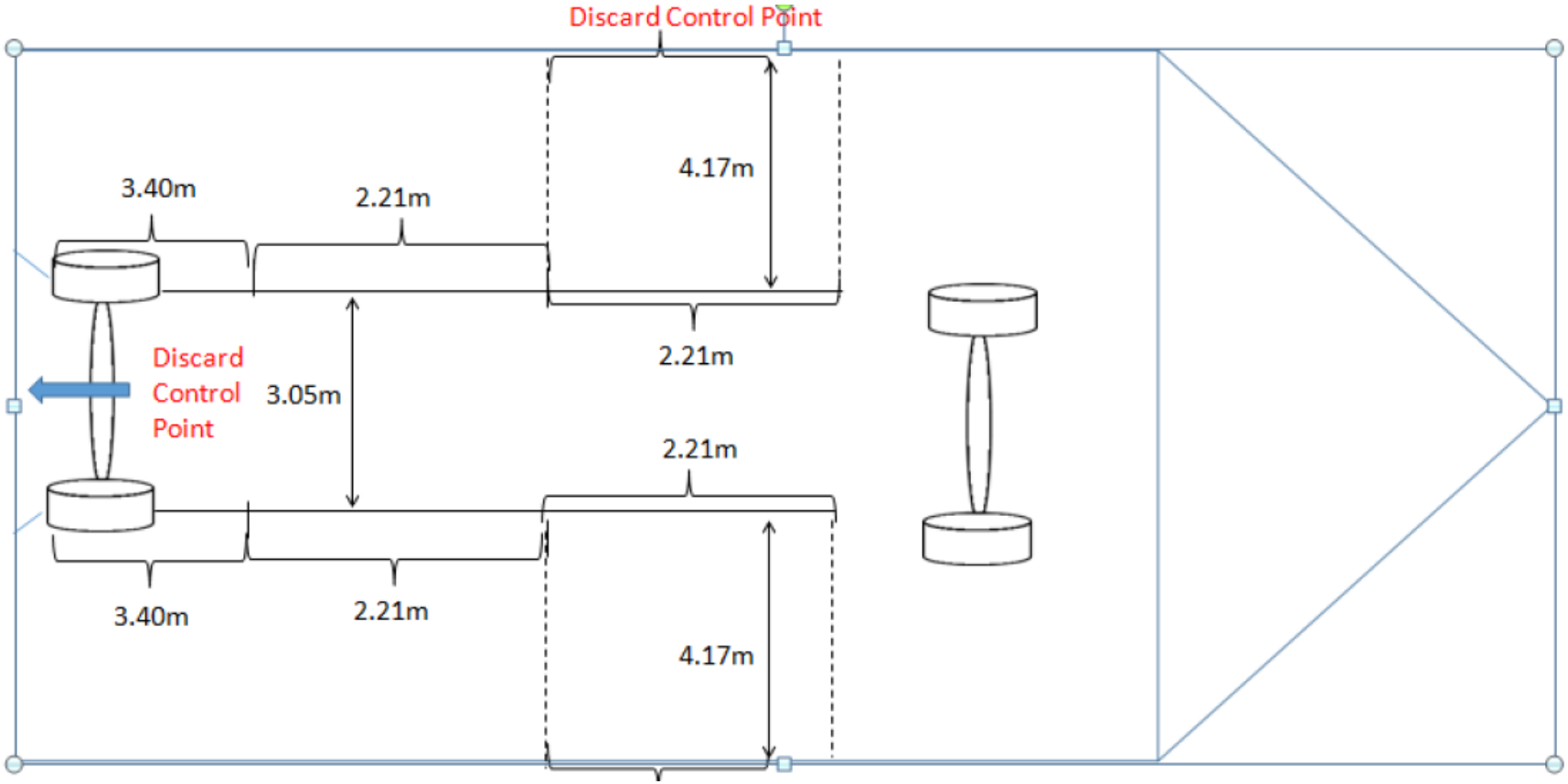
Vessel Monitoring Plan

Camera Name	Deck View	Hardware	2.8mm fixed
Location	Forward Gantry	Trigger Settings	Always
View	Deck	Recording Exceptions	None
FPS	5	Run On Time	Always

Camera View

Camera Location

Vessel Monitoring Plan



Vessel Monitoring Plan

Definitions:

Critical – prevents the system from collecting data that can identify the fishing time, location, and catch (species and weight).

Non-critical – reduces data quality, but does not remove the viewers' ability to determine catch (species and weight). Typically has a known workaround that will allow the vessel to continue fishing.

Action

- In all cases, report the incident in the logbook.
- Contact the AMR support line (1-844-267-3474) to report and trouble shoot the problem. Schedule a service event for your return to port to have the issue resolved as quickly as possible

Table 1. Summary of types of malfunction, resolution, and action for EM system components.

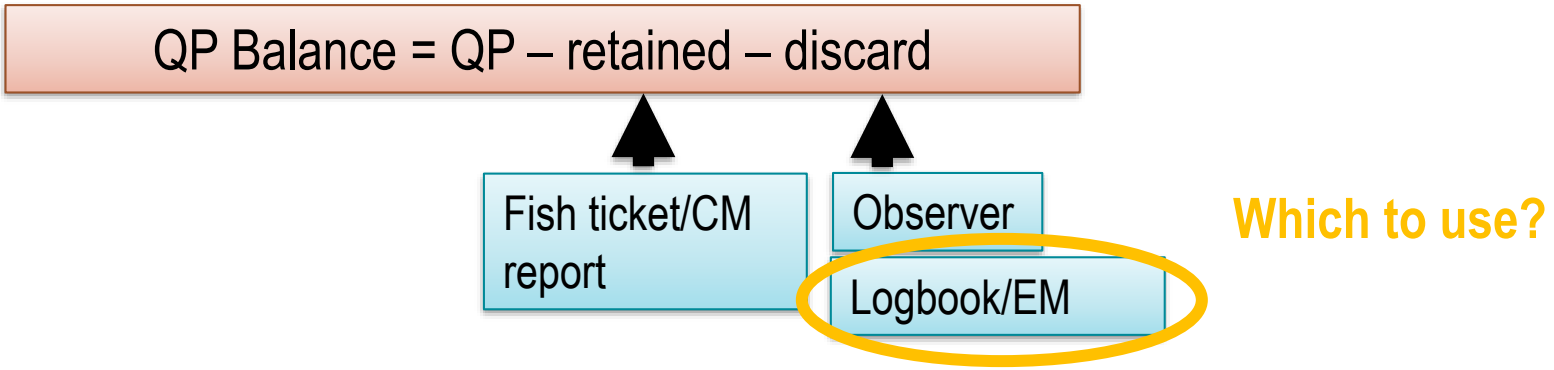
Malfunction Type	Critical/Not Critical	Report to AMR?	Report in Log?	Potential Solution (reduces to not critical)	Immediate Action
Drum sensor	Not critical	Y	Y	Carry spare reflectors	Vessel operator may continue fishing but must trigger video recording manually.
Hydraulic sensor	Not critical	Y	Y	Restart system. Follow trouble shooting guidance.	Vessel operator may continue fishing but must trigger video recording manually.
Drum and hydraulic sensors	Not critical	Y	Y	Restart system. Carry spare reflectors.	Vessel operator may continue fishing but must trigger video recording manually
GPS	Critical	Y	Y	Restart system.	If the vessel has an observer onboard, continue fishing. If the vessel does not have an observer onboard, return to port.
Keyboard	Not critical	Y	Y	Carry spare USB keyboard.	

Data Review

- Review currently managed by PSMFC and paid by NMFS under EFP
- Movement to third party structure, industry paid
- EM Endorsements

Data Review and Catch Accounting (IFQ)

EM used to validate self-reported discards (logbooks)



What if EM ≠ LB?

Business rules

1. 10% allowable discrepancy
   - Applied to total weight for whiting (not sorted)
   - Applied to species/group weight for non-whiting (sorted)
   - When >10% difference, use **higher of the two**
   - No allowable discrepancy for overfished species
2. If LB missing, use EM
3. If EM missing, use LB

Data Review

- 100% monitoring = 100% video and sensor review
- Lower review rate likely in the future, with auditing structure in place
- NMFS may audit as needed

Feedback

- Drive report summaries provide feedback to vessel
  - Catch Handling
  - Compliance
  - System/technical
- Reviewed by NMFS and used as flag for follow up
- Drive report database

Enforcement

- Protections to EM technicians
- Retention
- Catch Handling
- Data quality

Lessons Learned

- Logbooks
- Data lag
- Identifying and quantifying at-sea discards
- Tracking hard drives

Don’t reinvent the wheel

Western and Central Pacific Fisheries Commission

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Fully documented fishery: a tool to support a catch quota management system

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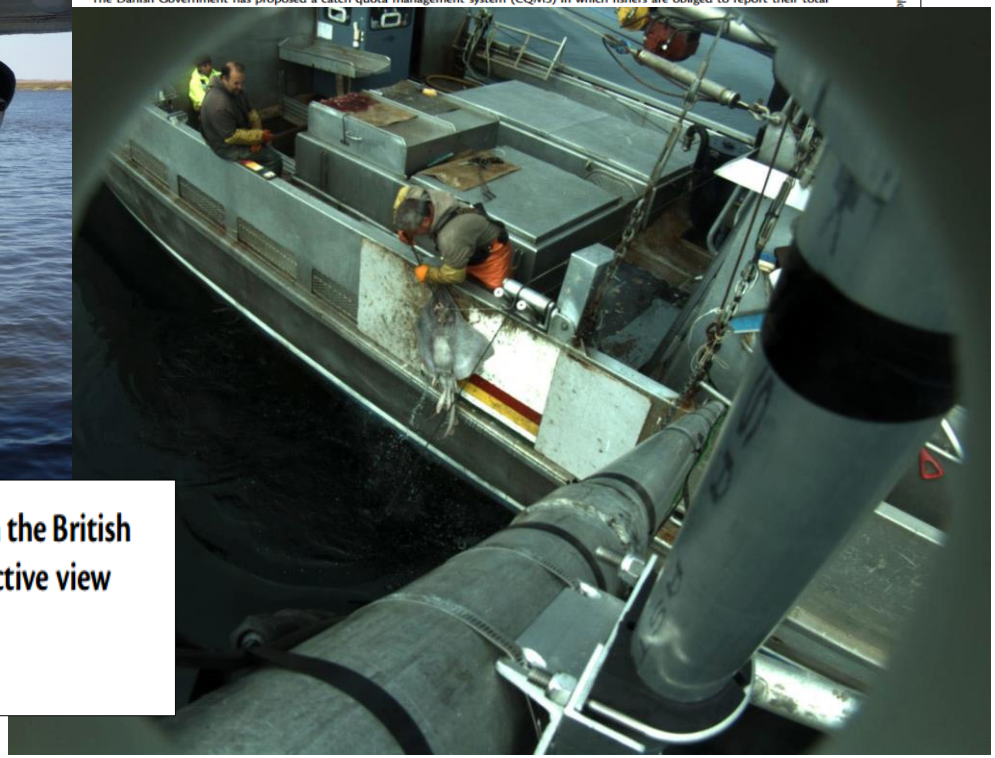
The Danish Government has proposed a catch quota management system (CQMS) in which fishers are obliged to report their total



Design and implementation of electronic monitoring in the British Columbia groundfish hook and line fishery: a retrospective view of the ingredients of success

Richard D. Stanley[1]*, Tameezan Karim[2], John Koolman†, and Howard McElderry[3]

Eye on the Prize

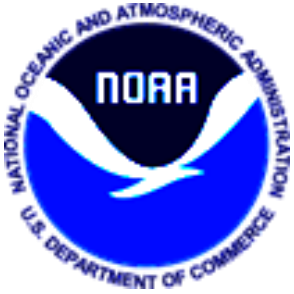
- West Coast Management
  - Rebuilt species ahead of schedule
  - Full accountability
- Make sure EM program is reflecting this accountability of IFQ catch
- Have clear goals, and don't deviate

New Challenges

- Changes to West Coast
  - Lifting gear restrictions and new fishing opportunities
- Standardization
  - Performance standards across regions
- Funding and implementation of EM 2020 and beyond

Collaboration is Key!

ARCHIPELAGO
MARINE RESEARCH



FBGA
FORT BRAGG
GROUNDFISH
ASSOCIATION

EDF
ENVIRONMENTAL
DEFENSE FUND
Finding the ways that work

The Nature Conservancy

HMBGMA
HALF MOON BAY GROUNDFISH MARKETING ASSOCIATION