

Electronic Monitoring in the Shore-Side Hake Fishery 2004 to 2010

Howard McElderry Archipelago Marine Research Ltd. <u>howardm@archipelago.ca</u>



Fishery Profile

	2004	2005	2006	2007	2008	2009	2010
Vessels	24	28	35	36	36	33	35
Season Length	~60	~60	~50	~40	~150	~70	180
Catch (000's mt)			100	92	64	42	66
Fishing Trips	1,003	1,105	1,113	820	609	478	750
Fishing Events	1,762	2,013	2,197	1,796	1,248	940	1,843
Total Seadays	823	982	1,043	875	745	475	1,268
Total Hours	19,755	23,575	25,030	20,980	17,900	11,665	30,518





EM Program 2004-2010

- Monitoring Objectives
 - Maximize Retention
 - Fishing Location
- Operational Components:
 - EM Systems on All Vessels Operating 24/7
 - Imagery Recorded While Fish Onboard
 - Monthly Analysis of EM Data
 - Compliance Reports to NMFS
 - Season Performance Feedback to NMFS and Fisher
- Governance
 - Regulated thru EFP
 - Funded 25:75, NOAA:Industry





At Sea EM System



EM Observe[™] Monitoring Hardware EM Record[™] Data Logging Software Electronic Monitoring Technology for Fishing Vessels



Monitor and record fishing activity automatically

- Create a complete trip profile with GPS, sensors, and up to eight video cameras.
- Log gear deployment, catch, hycatch, and handling activities.
- Confirm the exact line and location of every fishing event.
- Customize operating modes for a range of fishing activities and gear types.
- Provide wheelhouse crew with a real-time view of all fishing activities on deck.

Video cameras record fishing activity from multiple views.
Hydraulic and drum-rotation sensors monitor gear usage to indicate fishing activity

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Land Based Analysis Software







Results Summary

	2004	2005	2006	2007	2008	2009	2010
Vessels	24	28	35	36	36	33	35
Catch (000's mt)			100	92	64	42	66
Fishing Trips	1003	1105	1113	820	609	478	750
Fishing Events	1762	2013	2197	1796	1248	940	1843
EM Success	96%	98%	87%	89%	97%	99%	99%
Discard Events	327	238	367	243	52	129	76
Total Discarded	~1500	1440	1228	694	125	288	177
Avg. Discard amt		6.0	3.0	2.9	2.4	3.0	2.3



Discard Event Classification

- Selective Selective removal of catch from deck
- Net Cleaning Towing empty net
- On Deck Discharging fish from deck
- Net Flushing Discharging fish after net on board
- Net Bleeding Discharging fish before net on board



Discard Types (MT)



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Discard Types (# Events)





Discards by Vessel 2005-2010





Fishing Trip Timelines







Vessel Trip Timelines – Full Season

302619-8 23.70		
302619-7 45.15		
302619-6 34.87		
302619-5 20.18		
302619-4 19.50		
302619-3 30.07		
302619-2 20.67		
302619-1 33.53		
302408-5 38.67		
302408-4 23.40		
302408-3 35.42		
302408-2 71.42		
302408-1 84.42		
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300365-6 21.33		Discarding Event
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Spatial Distribution 2004-2010



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Key EFP Milestones

- 2004 'Full Retention'
- 2005 'Maximized Retention'
- 2008 'Unavoidable Discards' return to port.
- General trends:
 - Expanding EM 'duty of care' requirements
 - Expanding vessel log data quality



Key Operational Elements

- 2004 2006 Annual technical reports
- 2007 2010:
 - Project operations centralized
 - Compliance issues defined
 - OLE more aligned with program
 - Structured data reports
 - 100% data archiving
 - Intensified emphasis on EM Log comparison
- Regular feedback to skippers



EM Technology Developments

- Platform Transition
 - Integrated sensor and video data
 - Improved reliability
- EM Analysis Software
- Other
 - Data encryption
 - IP cameras
 - Up to 8 cameras
 - Improved sensors
 - Real time 'Health Statement' via satellite



Program Cost Issues

- Average cost per Seaday \$225-300
- Key Issue No Tenure
 - Large mob/demob effort
 - Annual EM lease cost
 - Limited infrastructure
- Cost could be 30-50% lower





Summary

- EM program provided fine scale data to effectively monitor full retention compliance,
- Data set also better characterizes fishery, individualize accountability and improve rule design,
- EFP was effective for setting regulations,
- EFP and EM program together drove significant change in the fishery.

Thanks!