Preliminary Thoughts on Observer Functions and the Corresponding Abilities of Electronic Monitoring (Northwest Fishery Science Center (NWFSC) Response)

Council staff asked various offices within NMFS to provide:

1. A list of
    a. the functions or data that you rely on and is currently provided by the observer program, and
    b. your initial thoughts about the ability of vessel based electronic monitoring to address those needs, and
2. A list of functions or needs not met by the current observer program which may be met by vessel based electronic monitoring.

The attached matrices were provided to facilitate response. This document contains the responses provided by the NWFSC as the preliminary thoughts of Jon McVeigh.

DRAFT

1. Midwater Trawl for Catcher Vessels Delivering At-sea

Central Assumptions Regarding Electronic Monitoring Hardware and Regulations
e.g. camera placement, hatch sensors, maximum retention regulations.
Hardware: Tamper Proof System, Secure/Watertight Data Storage, Digital Cameras, Encrypted Data, Sensors, Deck/Stern Lighting, Bridge Monitor, GPS, VMS, Geo Fencing, E Log Book (These were borrowed from Danya's matrix)

Regulations: 100% retention, No night fishing, Observer or shoreside sampling requirements, protected resource take protocols and authorities

General Assumptions: 100% retention fishery with no discarding allowed at sea, restrictions on night fishing unless all catch can be tracked and accounted for at night, continued observer coverage on C/Ps and Motherships. This is likely a very good candidate for EM.

Note: Any fishery that operates under 100% retention with a shoreside sampling component has the potential to lose important haul specific catch information that is captured by at-sea observers. This is due to the likely mixing of catch if multiple hauls are retrieved during a trip. Catch could not then be attributed to individual hauls, only at the trip level.

Table 1.a McVeigh's initial thoughts on ability of electronic monitoring to provide data/functions currently provided through 100% observer coverage for **midwater trawl for catcher vessels delivering at-sea.**

1. Functions and/or Data Provided by Current On-Board Observers	2. Related Management Objective	3. Can be Provided by Electronic Monitoring ?(Y/N)	4. If Electronic Monitoring =Yes Any comments in addition to central assumption?		5. If Electronic Monitoring = No or Presents Difficulty	
			4a. Comments on Camera or Other Coverage Required to Meet Need	4b. Type of Regulatory Modifications Needed	5a. Priority of Need.	5b. Alternative Adjustments
1. Catch composition and accounting (when sorting at sea – not common)	NS-2, FMP-O1, FMP-O3, FMP-O11, A20-O1, perhaps others	N			High	Full retention with continued A-SHOP sampling
2.Compliance monitoring		Y	Cameras must be vessel specific and carry the full array of electronics necessary (listed above). Data processing and infrastructure needs to be in place to handle and process data.	100% retention, no night fishing, continued A-SHOP sampling		
3.Biological Sampling (when sorting at sea – not common)	NS-2, FMP-O1, FMP-O3, FMP-O11, A20-O1, perhaps others	N			Very High	Full retention with continued A-SHOP sampling. 100% retention does not promote reduced mortality for Pacific Halibut or other species.
4.Protected Resource monitoring and sampling	ESA and BiOp RPMs	N			Very High	

Table 1.b. . McVeigh's initial thoughts on other needs which electronic monitoring might meet, not currently met by 100% observer coverage.

1. What Else Can Vessel Based Electronic Monitoring Do to Meet Data and Monitoring Needs?	2. Comments on Camera or Other Coverage Required to Meet Need	3. Comments on type of Regulatory Modifications Needed
1.Electronic Logbook	Would need to work with camera system if deployed. Could work standalone and increase efficiency and timeliness of logbook data.	Require electronic logbooks.
2.VMS	If more accurate and dependable, could help inform science of actual areas being fished instead of start and end points.	

2. Midwater Trawl for Catcher Vessels Delivering *Shoreside*

Central Assumptions Regarding Electronic Monitoring Hardware and Regulations
e.g. camera placement, hatch sensors, maximum retention regulations.
Hardware: Tamper Proof System, Secure/Watertight Data Storage, Digital Cameras, Encrypted Data, Sensors, Deck/Stern Lighting, Bridge Monitor, GPS, VMS, Geo Fencing, E Log Book (These were borrowed from Danya's matrix)

Regulations: 100% retention, No night fishing, Observer or shoreside sampling requirements, protected resource take protocols and authorities

General Assumptions: 100% retention fishery with no discarding allowed at sea, restrictions on night fishing unless all catch can be tracked and accounted for at night, shoreside observer/sampling program. This is likely a very good candidate for EM.

Note: Any fishery that operates under 100% retention with a shoreside sampling component has the potential to lose important haul specific catch information that is captured by at-sea observers. This is due to the likely mixing of catch if multiple hauls are retrieved during a trip. Catch could not then be attributed to individual hauls, only at the trip level.

Table 2.a McVeigh's initial thoughts on ability of electronic monitoring to provide data/functions currently provided through 100% observer coverage for **midwater trawl for catcher vessels delivering shoreside**.

1. Functions and/or Data Provided by Current On-Board Observers	2. Related Management Objective	3. Can be Provided by Electronic Monitoring ?(Y/N)	4. If Electronic Monitoring =Yes Any comments in addition to central assumption?		5. If Electronic Monitoring = No or Presents Difficulty	
			4a. Comments on Camera or Other Coverage Required to Meet Need	4b. Type of Regulatory Modifications Needed	5a. Priority of Need.	5b. Alternative Adjustments
1. Catch composition and accounting	NS-2, FMP-O1, FMP-O3, FMP-O11, A20-O1, perhaps others	N			High	Full retention with shoreside sampling or integrated observer sampling program at an appropriate level to be determined by science need.
2.Compliance monitoring		Y	Cameras must be vessel specific and carry the full array of electronics necessary (listed above). Data processing and infrastructure needs to be in place to handle and process data.	100% retention, no night fishing, shoreside sampling		
3.Biological Sampling	NS-2, FMP-O1, FMP-O3, FMP-O11, A20-O1, perhaps others	N			Very High	Could be met with 100% retention and shoreside sampling or integrated observer sampling program at an appropriate level to be determined by science need. 100% retention does not promote reduced mortality for Pacific Halibut or other species.
4.Protected Resource monitoring and sampling	ESA and BiOp RPMs	N			Very High	

Table 2.b. . McVeigh's initial thoughts on other needs which electronic monitoring might meet, not currently met by 100% observer coverage.

1. What Else Can Vessel Based Electronic Monitoring Do to Meet Data and Monitoring Needs?	2. Comments on Camera or Other Coverage Required to Meet Need	3. Comments on type of Regulatory Modifications Needed
1.Electronic Logbook	Would need to work with camera system if deployed. Could work standalone and increase efficiency and timeliness of logbook data.	Require electronic logbooks.
2.VMS	If more accurate and dependable, could help inform science of actual areas being fished instead of start and end points.	

3. **Bottom Trawl** (large and small footrope, including flatfish trawl)

Central Assumptions Regarding Electronic Monitoring Hardware and Regulations
e.g. camera placement, hatch sensors, maximum retention regulations.
Hardware: Tamper Proof System, Secure/Watertight Data Storage, Digital Cameras, Encrypted Data, Sensors, Deck/Stern Lighting, Bridge Monitor, GPS, VMS, Geo Fencing, E Log Book (These were borrowed from Danya's matrix)

Regulations: Retention requirements, discard protocols and equipment, observer coverage

General Assumptions: This could also be implemented as a 100% retention fishery, but that is unlikely due to the amount of sorting and discarding currently happening in the fishery. To allow for discarding, sophisticated systems would need to be in place to speciate and quantify discards, which are currently unproven. Restrictions on night fishing unless all catch can be tracked and accounted for at night. A continued observer program would be necessary to obtain biological samples and likely catch composition for non-IFQ species and protected resource monitoring/sampling. This is likely to be a very challenging and/or expensive fishery to implement EM in with while allowing discarding at sea.

Note: Any fishery that operates under 100% retention with a shoreside sampling component has the potential to lose important haul specific catch information that is captured by at-sea observers. This is due to the likely mixing of catch if multiple hauls are retrieved during a trip. Catch could not then be attributed to individual hauls, only at the trip level.

Table 3.a _____'s initial thoughts on ability of electronic monitoring to provide data/functions currently provided through 100% observer coverage for **bottom trawl (large and small footrope, including flatfish trawl).**

1. Functions and/or Data Provided by Current On-Board Observers	2. Related Management Objective	3. Can be Provided by Electronic Monitoring ?(Y/N)	4. If Electronic Monitoring =Yes Any comments in addition to central assumption?		5. If Electronic Monitoring = No or Presents Difficulty	
			4a. Comments on Camera or Other Coverage Required to Meet Need	4b. Type of Regulatory Modifications Needed	5a. Priority of Need.	5b. Alternative Adjustments
1. Catch composition and accounting	NS-2, FMP-O1, FMP-O3, FMP-O11, A20-O1, perhaps others	N			High	Full retention with shoreside sampling or integrated observer sampling program at an appropriate level to be determined by science need.
2.Compliance monitoring		Y	Cameras must be vessel specific and carry the full array of electronics necessary (listed above). Data processing and infrastructure needs to be in place to handle and process data.	100% retention, no night fishing, shoreside sampling		
3.Biological Sampling	NS-2, FMP-O1, FMP-O3, FMP-O11, A20-O1, perhaps others	N			Very High	Could be met with 100% retention and shoreside sampling or integrated observer sampling program at an appropriate level to be determined by science need. 100% retention does not promote reduced mortality for Pacific Halibut or other species.
4.Protected Resource monitoring and sampling	ESA and BiOp RPMs	N			Very High	

Table 3.b. . McVeigh's initial thoughts on other needs which electronic monitoring might meet, not currently met by 100% observer coverage.

1. What Else Can Vessel Based Electronic Monitoring Do to Meet Data and Monitoring Needs?	2. Comments on Camera or Other Coverage Required to Meet Need	3. Comments on type of Regulatory Modifications Needed
1.Electronic Logbook	Would need to work with camera system if deployed. Could work standalone and increase efficiency and timeliness of logbook data.	Require electronic logbooks.
2.VMS	If more accurate and dependable, could help inform science of actual areas being fished instead of start and end points.	

4. Vessels Participating in Trawl Rationalization Program Using Fixed Gear

Central Assumptions Regarding Electronic Monitoring Hardware and Regulations
e.g. camera placement, hatch sensors, maximum retention regulations.
Hardware: Tamper Proof System, Secure/Watertight Data Storage, Digital Cameras, Encrypted Data, Sensors, Deck/Stern Lighting, Bridge Monitor, GPS, VMS, Geo Fencing, E Log Book (These were borrowed from Danya's matrix)

Regulations: Retention requirements, discard protocols and equipment, observer coverage

General Assumptions: 100% retention fishery with no discarding allowed at sea (one issue that has not been resolved with fixed gear is the issue of drop-offs. Fish often are not able to be brought aboard or retrieved and are dead. A camera system would need to be able to speciate and quantify discards which is currently a challenge for rockfish in particular), restrictions on night fishing unless all catch can be tracked and accounted for at night, shoreside observer/sampling program. This is likely a good candidate for EM if the drop-off issue is addressed.

Note: Any fishery that operates under 100% retention with a shoreside sampling component has the potential to lose important haul specific catch information that is captured by at-sea observers. This is due to the likely mixing of catch if multiple hauls are retrieved during a trip. Catch could not then be attributed to individual hauls, only at the trip level.

Table 4.a _____'s initial thoughts on ability of electronic monitoring to provide data/functions currently provided through 100% observer coverage for **fixed gear vessels.**

1. Functions and/or Data Provided by Current On-Board Observers	2. Related Management Objective	3. Can be Provided by Electronic Monitoring ?(Y/N)	4. If Electronic Monitoring =Yes Any comments in addition to central assumption?		5. If Electronic Monitoring = No or Presents Difficulty	
			4a. Comments on Camera or Other Coverage Required to Meet Need	4b. Comments on type of Regulatory Modifications Needed	5a. Priority of Need.	5b. Alternative Adjustments
1. Catch composition and accounting	NS-2, FMP-O1, FMP-O3, FMP-O11, A20-O1, perhaps others	N			High	Full retention with shoreside sampling or integrated observer sampling program at an appropriate level to be determined by science need.
2.Compliance monitoring		Y	Cameras must be vessel specific and carry the full array of electronics necessary (listed above). Data processing and infrastructure needs to be in place to handle and process data.	100% retention, no night fishing, shoreside sampling		
3.Biological Sampling	NS-2, FMP-O1, FMP-O3, FMP-O11, A20-O1, perhaps others	N			Very High	Could be met with 100% retention and shoreside sampling or integrated observer sampling program at an appropriate level to be determined by science need. 100% retention does not promote reduced mortality for Pacific Halibut or other species.
4.Protected Resource monitoring and sampling	ESA and BiOp RPMs	N			Very High. Fixed gear has a history of seabird interactions/takes	

Table 4.b. . McVeigh's initial thoughts on other needs which electronic monitoring might meet, not currently met by 100% observer coverage.

1. What Else Can Vessel Based Electronic Monitoring Do to Meet Data and Monitoring Needs?	2. Comments on Camera or Other Coverage Required to Meet Need	3. Comments on type of Regulatory Modifications Needed
1.Electronic Logbook	Would need to work with camera system if deployed. Could work standalone and increase efficiency and timeliness of logbook data.	Require electronic logbooks.
2.VMS	If more accurate and dependable, could help inform science of actual areas being fished instead of start and end points.	