

Project overview:

South Atlantic Snapper Grouper Electronic Monitoring Pilot Project

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SAFMC, Limited Access Privilege Committee

September 14, 2009

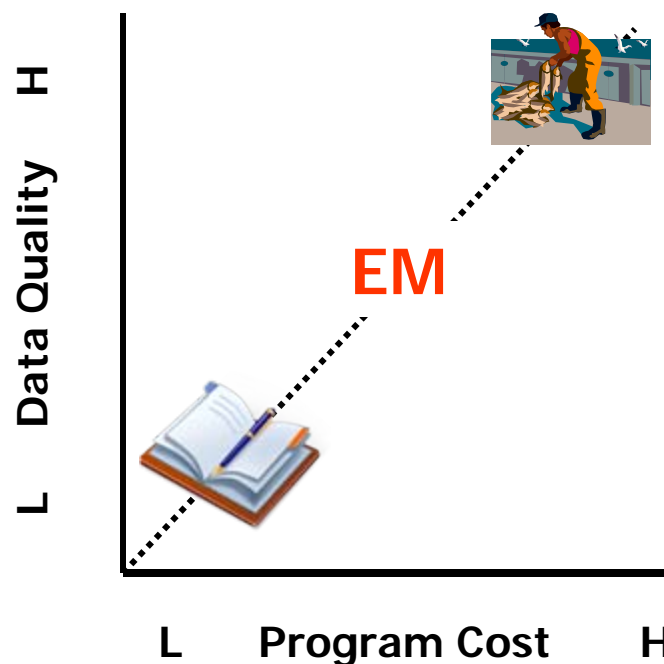
Background

- **Landings (2001-2005) by NC, SC and GA fishermen account for ~56% of the landings.**
- **~80% (2001-2005) of landings are attributable to vertical lines including electric, vertical hook and line gear (bandits) which can be mounted on both small and large commercial F/Vs.**
- **Bandit gear is effective for many target species, but also for non-target species (i.e. bycatch).**
- **Bycatch is an issue in this fishery.**



Need to Address Bycatch

- **Bycatch may be the hampering the recovery of overfished species or those experiencing overfishing.**
- **Several ways to quantify bycatch – all have issues.**
 - Self-reported logbooks
 - At-sea observers
 - Electronic monitoring



How to monitor this fishery?

- **Benefits and drawbacks of observers are well documented – but the costs of observers relative to the value of the fishery becomes an important factor.**
- **Since fishers are already required to submit logbooks – why not evaluate an audit-based approach for evaluating fisher logbook data quality using EM data.**

EM Service Provider

- **Archipelago Marine Services Ltd.**
- **Have conducted numerous pilot projects in a variety of fisheries and has fully implemented EM into some fisheries.**
- **Collectively, there are about 500 EM systems in use with an annual coverage of about 20,000 fishing vessel days at sea.**



Objectives

- **To compare data obtained from electronic video monitoring (EM) to data collected simultaneously with fishermen logbooks and at-sea observers.**
- **To collect information on age-size structure, number and disposition of frequently discarded snapper grouper species; and**
- **To present the findings of this study, along with results from similarly completed or ongoing studies in the Southeast, to fishermen, scientists and other stakeholders at a public workshop.**

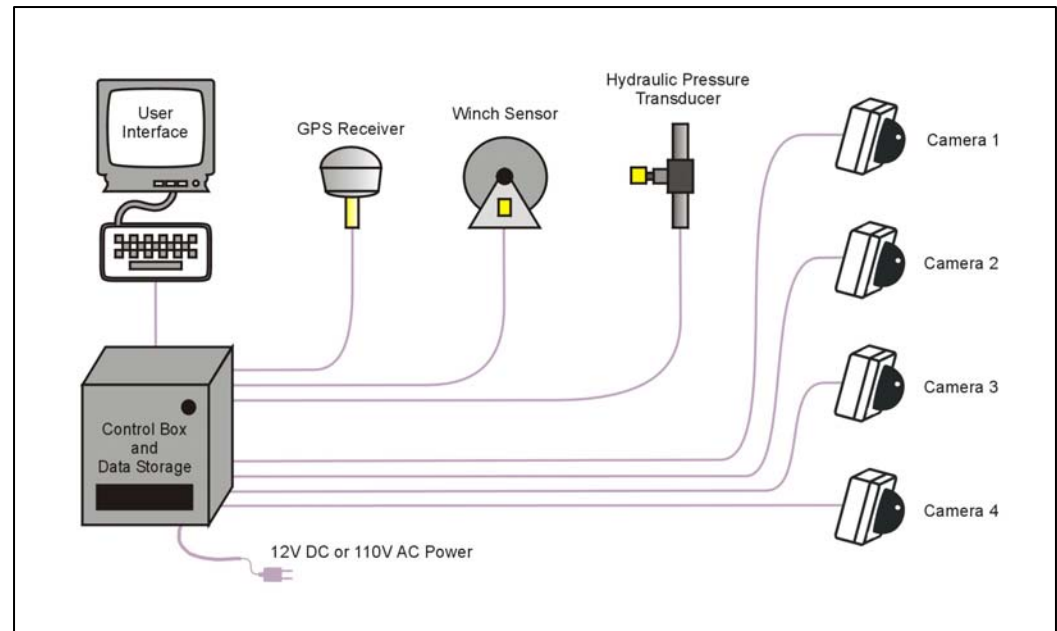
Outline

- **How EM works in general**
- **Our project specifics**

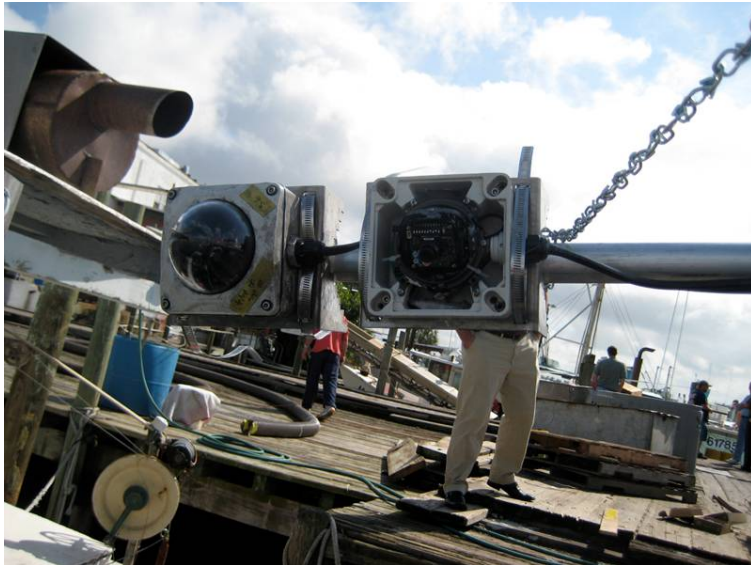


EM system components

- **Service providers electronic video monitoring (EM) system consists of:**
 - 3-4 cameras
 - **GPS**
 - ***Optical / electric switch for bandits**
 - **all connected to a control box and user interface**
 - **12V DC or 110V AC**



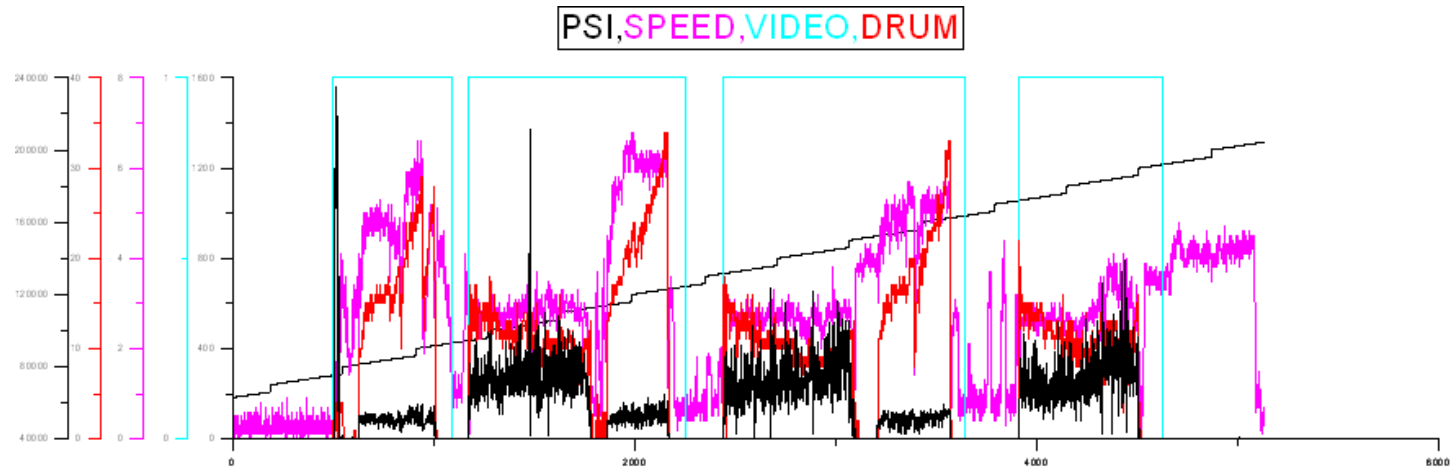
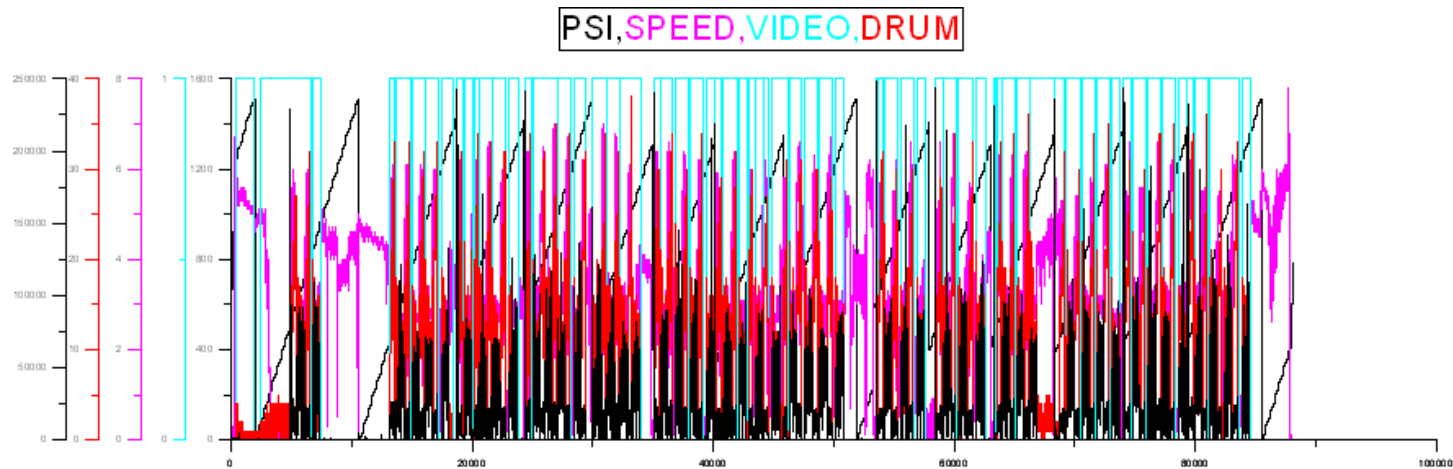
EM systems



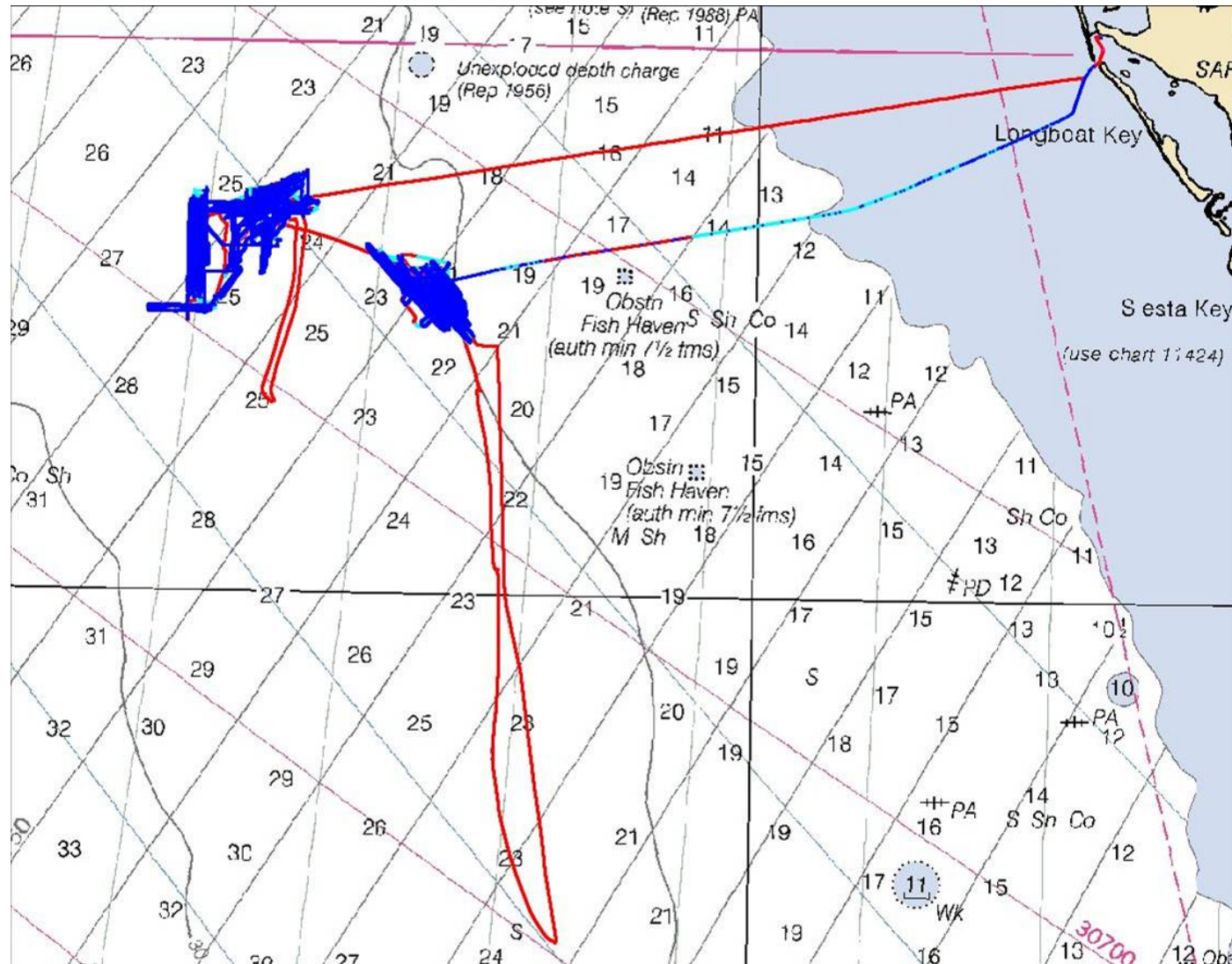
EM Software Screenshot



EM Sensor Data for Longline F/V



F/V track line



EM Video #1



EM Video #2



EM Video #3



EM Video #4



Camera Placement on Bandit F/Vs

EM systems will be placed on 6 F/V in early 2010 (~March) with data collection to occur March-December 2010.

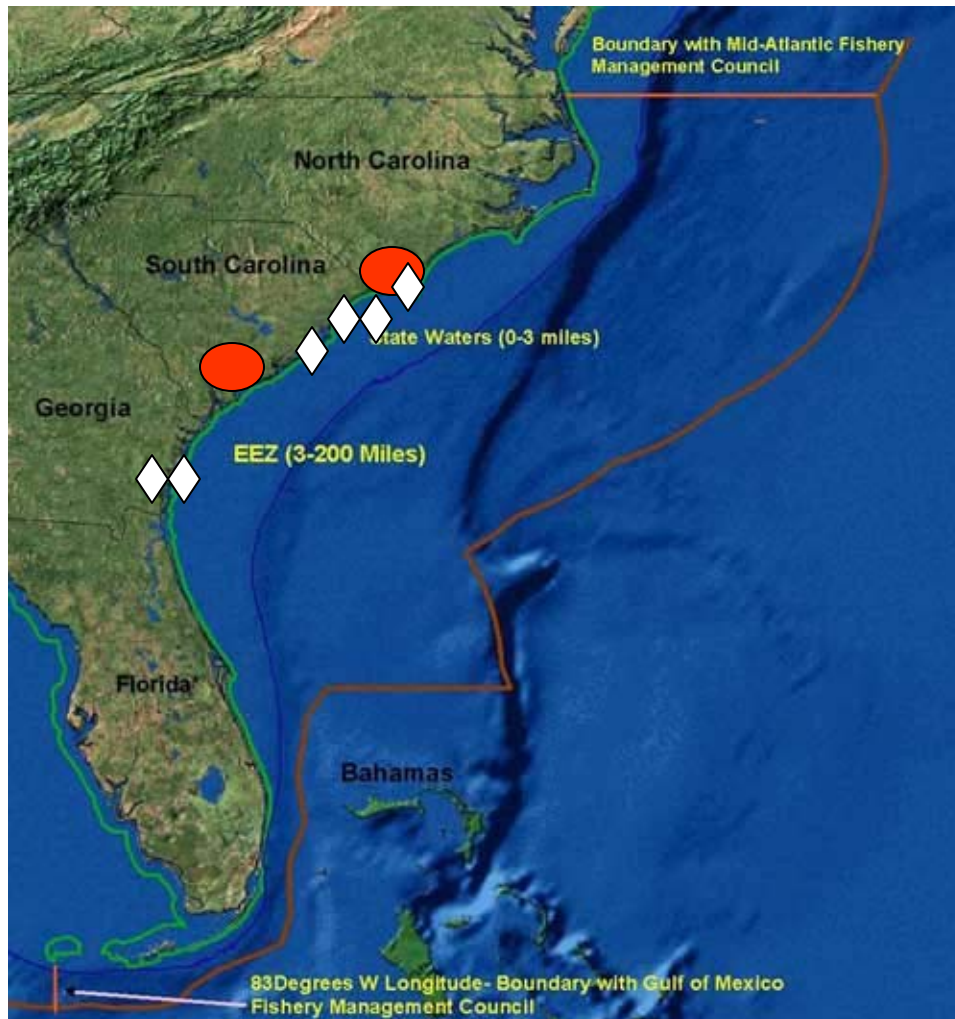


EM Installation and Maintenance

- **Project PI's (SB and AVH) will assist service provider's technician in installation and setup of EM systems on specific vessels.**
- **Considerations for setup**
 - Camera locations
 - Detect bandit movement
 - Proper power sources
 - Cable and sensor locations
 - Location for control box
- *****PI's will maintain EM systems after initial set-up by service provider.*****



Project Area



◇ 6 F/Vs located in:
Southport, NC;
Little River, SC; Murrells
Inlet, SC;
Townsend, GA

● EM service based in:
Wilmington, SC;
Beaufort, SC

EM analysis based in:
British Columbia, Canada

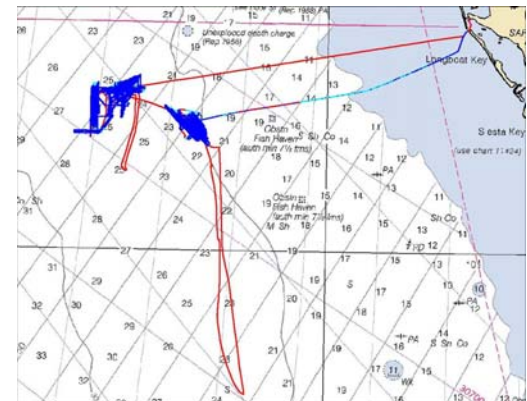
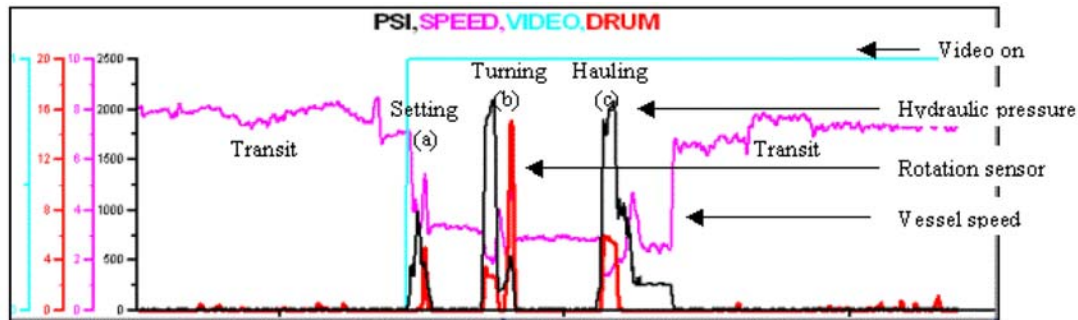
Proposed EM Data Analysis

- **66 trips or 528 days at sea (~8 days per trip) anticipated.**
- **Fishing trips will be subjected to varying degrees of EM review and analysis. Note – sensor analysis on all trips.**
 - Observer accompanied trips (4 trips, 32 days)
 - Expanded Data Collection trips (50 trips, 400 days)
 - Std logbook reporting (12 trips, 96 days)

	Month									
Vessel	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1-NC	I	E	E,N	O	E	E	E,N	E	E	E
2-SC	I	E	E	E	E,N	E	E	E,N	O	E
3-SC	I	E,N	E	E	E	O	E	E	E,N	E
4-SC	I	E	E,N	E	E	E,N	E	E	E	E
5-GA	I	E	O	E	E,N	E	E	E	E	E,N
6-GA	I	E,N	E	E,N	E	E	E	E	E	E

Primary (Sensor) Data Processing

- The raw sensor data will be analyzed in order to:
 - Assess the quality and completeness of the sensor data set,
 - Annotate the data record with fishing locations and other key activities, and
 - Identify vessel compliance with time and location restrictions (if any).



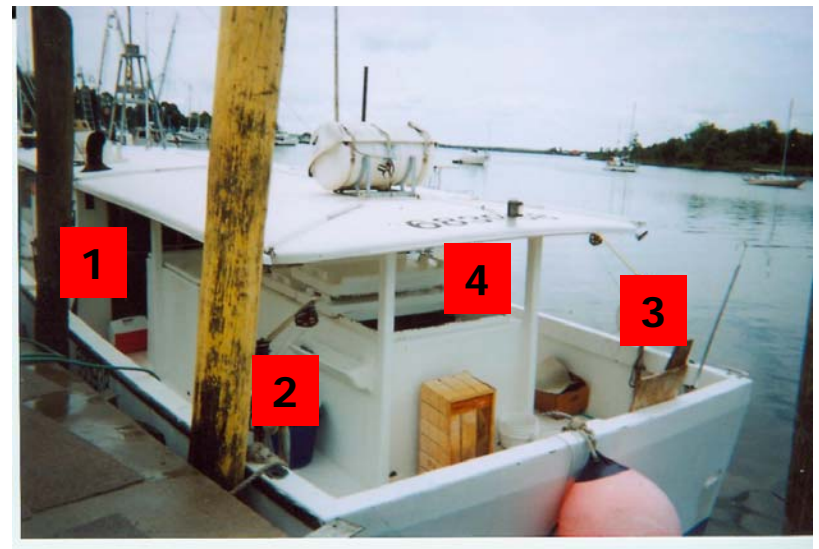
Secondary (Video) Data Processing

- **The raw image data from a fishing trip will be sampled to support the audit-based analysis. The sample image set will be examined to assess and record a range of operational events including:**
 - **Access overall quality of imagery,**
 - **Access the effects of weather and ambient light levels on the imagery,**
 - **Determine if camera views are appropriate for the monitoring issues of interest,**
 - **Identify all catch species and determine if kept or discarded,**
 - **Identify anomalous or unusual events,**
 - **Compliance with regulations.**



Role of Observer

- The purpose of dual monitoring is to create paired observations to compare the two methods of data collection, with particular attention to count and species identification.
- Needs to be specific about which stations are observed and during what time interval in order to perform EM comparisons.



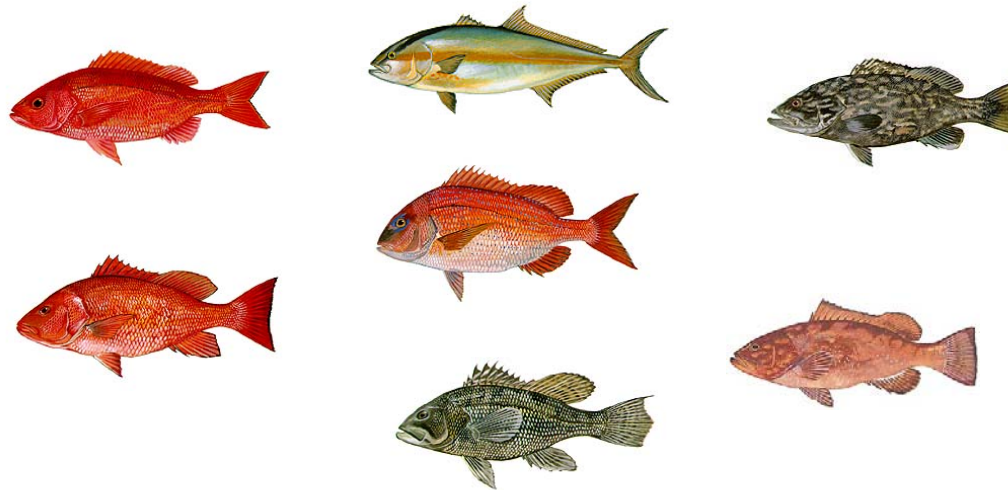
Industry Role

- **Monitor EM equipment and maintain contact with project PIs to schedule servicing / data offloads.**
- **Maintain fed logbooks as well as new logsheet developed to document discards in relation to time / depth for EM comparison.**
- **Accommodate observers if requested.**
- **Retain and store discards prior to being sampled.**



Bycatch / Discard Sampling

- Fishermen will be retaining up to 300 samples of the most commonly discarded species in the complex. Our EFP list 7 species:



- Pls will be collecting biological materials (lengths, weights, sex, otoliths) and sending to NOAA Fisheries Beaufort for processing.

Risks

- **The success of this project will be dependent upon many factors, particularly cooperation of the fishing industry.**
 - **Onsite installations require onboard crew support.**
 - **System tampering, misuse or neglect could result in data loss.**
 - **Data loss due to vessel specific technical difficulties.**
 - **Data collection schedules may be shortened due to factors such as the premature termination of the fishing season or departure of vessels from the fishery.**
 - **PIs ability to service / troubleshoot EM equipment in a timely manner.**
 - **Access to fish!**

Evaluation of Feasibility

- **Comparison of Observer and EM system:**
 - Level of species identification
 - Overall totals by species
 - Discards (species, size, disposition)
 - Catch by hook
 - Time and location of fishing activities
 - Fishing depth
- **Reliability of EM (failure rate, # events recorded)**
- **Timeliness of data delivery**
- **Cost Issues**
- **Fleet support for EM based monitoring**
- **Fleet suitability**

Extension of Results

- **After data analysis has been completed, we plan to host a symposium in conjunction with a future SAFMC / AP meeting.**
- **Provide a venue to discuss all completed pilot projects to date and what steps should be taken next if any.**
- **Other studies: GSAFF observer studies (2 CRPs); NOAA Gulf longline pilot (2008); GFA longline obs / EM comparison (ongoing).**

Key Project Activities and Dates

- **Statement of work accepted and contract completed (September, 2009)**
- **Install EM systems (March, 2010)**
- **Duration of monitored vessels (March, 2010 to December, 2010)**
- **Data analysis (May, 2010 to April, 2011),**
- **Project completion (April, 2011).**

