



North Pacific Cooperative Research Plan Report on Field Work March-June, 2014

Saltwater Inc. was contracted by the Pacific States Marine Fisheries Commission (PSMFC) to assist with the implementation of Track 1 of the North Pacific Cooperative Research Plan (CRP). PSMFC notified Saltwater to “go ahead” with the work on March 25, 2014, and work was completed by June 30, 2014. The following is a summary of activities and lessons learned.

Project Objective (from PSMFC Statement of Work with Saltwater Inc.)

The overall objective is to test the Saltwater Inc. electronic monitoring system on longline halibut and sablefish fishing vessels fishing from or around Homer, Alaska to understand the potential of varying systems being deployed on vessels if EM is implemented.

TASKS

Task 1: Recruiting Vessels

Saltwater will coordinate deployment of Saltwater Inc.’s electronic monitoring system on up to five identified vessels fishing out of or around Homer, Alaska (proposed schedule March 7th through sometime in June).

Results:

The identification of volunteer vessels in Homer for this project proved to be a challenge. Because volunteer vessels had not been identified, Saltwater worked directly with industry and industry representatives to recruit volunteers to carry EM system. By leveraging existing working relationships with the industry, Saltwater successfully identified four vessels willing to participate in Track 1 of the CRP. Much of this recruitment effort had to take place after the halibut season had started, which diminished the pool of available volunteer vessels.

Since November 2013, Saltwater has had a part-time staff member, Stacey Buckelew, based in Homer, working on an ongoing National Fish and Wildlife Foundation (NFWF) grant with the North Pacific Fisheries Association (NPFA). Our work history with NPFA and the relationship that had been established with the fleet proved invaluable when it came time to find vessels to participate in Track 1 of the CRP. This was especially important given the context of considerable frustration among fishermen about what they felt were mixed messages regarding whether carrying an EM system would give them an exemption from carrying an observer.

Task 2: Installation of Equipment

Saltwater Inc. will coordinate deployment including but not limited to: communication with the fishing vessel, scheduling and completion of installations, and servicing. The system will record video imagery, GPS locations, time stamps, as well as any additional information available for the entirety of all trips the vessels complete.

Results:

Four installs were successfully completed between March 25 and April 11, 2014, which allowed for data collection during spring halibut fishing. The installs took place on the F/V Mislead on March 25, the F/V Defender on March 25, F/V Captain Cook on April 4, and the F/V Douglas River on April 11. The window for installing systems for this project was limited since the contract began after the halibut season had begun. Installations and system deployment were limited later in the contract period by fishermen switching gear for the summer salmon fishery.

Two of the vessels (the F/V Mislead and F/V Defender) are stern haulers. This is important because stern haulers have been identified by NMFS as vessels where EM may be particularly appropriate. Because of the setup of the vessel, there is no safe place for an observer to stand where they would be able to see the fish on the line coming out of the water and yet not be in the way of fishing operations. We were able to provide good quality footage from the stern haulers, which had proven difficult in past EM pilot projects.

Equipment installed on all vessels included two digital cameras (one hemispheric camera to provide a deck view and one with a narrower lens to provide a view of the waterline from the hauling station); a GPS sensor; a hydraulic sensor (to activate recording), and a ruggedized control box to provide onboard software and data storage capacity.

Task 3: Field Service of Equipment

Saltwater will be responsible for keeping the equipment maintained and operational for the entirety of the deployment. Vessel operators will be trained by Saltwater on basic operation of the equipment.

Results:

Saltwater provided initial training during installations to all vessel operators about the EM system and their duties of care. We also provided ongoing support to vessel operators during data retrieval. Each time data was retrieved, Saltwater's local coordinator solicited feedback using a standardized reporting form. Further, the coordinator did a coarse review of imagery collected during that trip and made any adjustments necessary to camera angles to ensure full framing of fishing operations. Saltwater staff were on call to troubleshoot and provide technical support as required.

There were technician call-outs on two of the four vessels. The first was required because of a system failure that resulted when a crewmember removed the ground of the plug for the control box and then used a short extension cord to connect the system to shore power. This destroyed the control box and all

data from the trip was lost. The control box and GPS units were replaced and data was successfully collected from subsequent trips.

The second call-out was in response to failure of the deck camera. The technician was able to determine that the failure was due to a corroded PoE switch on the control box, which likely resulted from saltwater entering the cabin via the camera cable. This did not occur until the end of the program, so the system was removed, not replaced.

Task 4: Data Retrieval

Saltwater will be responsible for data retrieval from participating vessels and data delivery to PSMFC every two weeks or as often as the fishing vessel returns to port if the vessel's trip length is expected to exceed two weeks.

Results:

Saltwater's local coordinator successfully coordinated data retrievals from all participating vessels and regularly submitted the data to PSMFC. Data retrieval included collecting hard drives of video imagery, fishing effort logs, and daily function logs completed by the skipper. During data retrieval, she solicited feedback from vessel operators, which was used to inform technicians of any issues or concerns.

Task 5: Initial Data Review

Carrying out an initial review of data to assess system function (e.g. completeness, general quality) and to identify any needed modifications to the installation. Work with the PSMFC staff to ensure the most useful and informative data are captured using efficient methods.

Results:

When data was retrieved from the vessels, copies of all datasets were given to Saltwater's data reviewers at the same time they were sent to PSMFC. Saltwater's initial review of the CRP data included a scan of entire video data to verify all reported hauls were recorded and mapping the GPS data to help locate the precise timing of each haul. Information from this initial review, specifically about haul times, was shared with PSMFC to facilitate their review of the video data.

Saltwater's reviewer also collected data from the first five minutes of each haul on video quality, species composition, catch retention, and halibut discard conditions. The results were summarized in a Trip Summary Report, which was shared with the skipper of the vessel after each trip. Sharing results with the skippers helped them better understand how the data collected on their vessels was being reviewed, similar to skippers seeing the data collected by human observers onboard their vessels.

A significant value of Saltwater's initial review was that it allowed Saltwater staff to identify, in a timely manner, any system performance issues, like camera placement or function, and make adjustments throughout the season as needed. We received feedback on collected data from PSMFC reviewers from one trip, but the in-house preliminary review allowed us to quickly respond to any system performance problems.

Task 6: Provide Trip Data to PSMFC

Provide raw video footage and trip data from each vessel to PSMFC.

Results:

Saltwater’s local coordinator retrieved video and trip data from the four vessels and provided it to PSMFC. The data included video from two cameras of all hauls and GPS logs for the duration of the trip.

The following table summarizes the data collected from the four volunteer vessels fishing from Homer, AK:

| | Days | Trips | Days/Trip | Hauls | Hauls/Day | Dockside |
|----------|------|-------|-----------|-------|-----------|----------|
| Vessel 1 | 21 | 6 | 3.5 | 53 | 2.52 | 4 |
| Vessel 2 | 11 | 2 | 5.5 | 29 | 2.64 | 2 |
| Vessel 3 | 7 | 2 | 3.5 | 20 | 2.86 | 1 |
| Vessel 4 | 7 | 2 | 3.5 | 12 | 1.71 | 0 |

One of the things this table illustrates is the variation in fishing activity between vessels. Because this was an opportunistic sample, there was no minimum activity level set, so relatively little data was collected from some of the participants. When trying to assess the costs of deploying EM, this is a factor that needs to be taken into account. For future research efforts, it may be useful to have clear criteria for vessel selection to allow for more cost efficiency.

In addition to the data collected on board the vessel, Saltwater was tasked with arranging for dockside monitoring of retained rockfish to allow for comparison to data captured by EM. The requirement to provide dockside monitoring was outside the original SOW and was initially made known to Saltwater by Dan Falvey, an industry representative, at a chance meeting at the North Pacific Fisheries Management Council in April. Thankfully, because our local coordinator was aware of the dockside monitoring activities of the Alaska Department of Fish & Game (ADF&G), she was able to arrange for collection of this additional information and provide it to PSMFC in a timely manner. Adding this requirement mid-stream did get some negative reactions from volunteers because the expectation for the information they were required to provide changed without notification from NMFS.

Task 7: Skipper Feedback

Saltwater will provide feedback to vessel operators when data is retrieved. The purpose of the feedback is to inform the skippers on issues like changes to fishing behaviors, equipment functionality and maintenance that are needed to allow for better video review.

Results:

Saltwater's local coordinator provided feedback to vessel owners, and collected feedback from them, whenever data was retrieved. She developed a standardized survey that she used at each encounter. The post-trip vessel surveys were submitted to PSMFC via Survey Monkey together with the data.

LESSONS & RECOMMENDATIONS

- Recruiting volunteer participation in the EM pilot programs is an ongoing challenge.
- *Advance planning prior to fishing the season is needed to allow sufficient lead time to recruit volunteers, coordinate scheduling, and install EM systems before the start of the fishery.*
- The number of vessels interested in participating in this pilot program without incentive for observer exemption is limited.
- *Implementing observer exemptions for vessel participating in pilot programs is likely to increase volunteer vessel participation.*
- There is considerable variation in this fleet (eg. number of days fished, season fished, gear type, etc.) that will not be captured with an opportunistic sampling design.
- *The research design should consider criteria for vessel selection that maximizes the amount of data collected and gets representation from key sectors of the fleet (e.g. stern haulers)*
- Despite voluntary participation, there is still lingering skepticism among fishermen about the program and the data being collected. Saltwater developed written materials, which outlined the program, objectives, and expectations for participation. These proved useful in addressing the skepticism.
- *A succinct standardized written summary of the research plan, data to be collected, and expectations of volunteers should be provided by NMFS via the EM service providers and/or industry representatives at the onset of the program. The data needs should be more clearly defined and include a disclaimer that the requirements may change. Standardized data collection forms should be used in all ports and shared with vessel operators at the outset of the project. These may include: effort logs, checker measurements, bycatch retained, system performance, post-trip surveys, dockside monitoring reports, etc.*

- Fishermen may become frustrated with additional information requests that are not clearly explained and/or vary from the expectations set during the time of installation. For example, not all fishermen willingly participated in dockside sampling.
- *NMFS should have a clear communication plan to inform participants of any changes in research direction or information requirements. EM service providers are uniquely positioned to provide information from NMFS to vessel operators about the program and to collect and pass on feedback to NMFS. Developing systematic/standardized approaches to this communication is recommended.*
- Data confidentiality is a significant issue among the fleet. Saltwater Inc. developed a confidentiality agreement for vessel owners, which was important in allaying concerns.
- *Standardized data confidentiality forms need to be signed by vessel owners, service providers, and the agenc(ies) carrying out data review. A clear data custody process should be established by NMFS and explained to participants.*
- Industry “buy-in” is vital to the success of an EM program. A tight feedback loop about the program and the data collected is an important element of this. Saltwater developed Trip Summary Reports for skippers, which described the data collected from their boat after each trip. These reports went a long way in reducing fishermen’s concerns about the information being collected. They also increased the willingness of skippers to share information about their experience with the EM system and fishing practices.
- *Vessel operators should receive timely reports on the data collected from their vessels. Preliminary reviews by service providers make this possible and allow for timely in-season adjustments to EM systems (camera position, etc.). Service providers must have access to data for this to occur.*
- Vessels in this fishery have very unpredictable schedules, which makes scheduling installations and data retrievals challenging. Vessels in this fishery do not always deliver to the same port, which further complicates data retrieval.
- *EM service providers should be included on the “Prior Notification of Landing” list to give advance notification of a landing. This would help with arranging data retrieval and provide the lead time needed to coordinate dockside monitoring. This is only one example of the infrastructure needs that will be critical to the successful operationalization of an EM program in Alaska .*
- Vessels may deliver to distant ports, which precludes the opportunity for dockside sampling.
- *Vessel selection should consider this variable where dockside monitoring is a requirement.*

- Fishermen were uncomfortable with continuous recording and/or delayed power down of cameras. This was perceived as an invasion of privacy, particularly when needing to urinate. This was especially pronounced for vessels with an aft deck cover. In these cases, fishermen altered their fishing practice by removing their gear and entering the cabin to use the head, which was a hindrance to efficient fishing operations. On another vessel, the system was turned off when the vessel owner was fishing someone else's quota, who was not willing to be monitored. The issue of privacy was the single biggest complaint received from fishermen carrying EM systems.
- *Privacy concerns need to be addressed. Efforts should be made by NMFS to define data collection strategies and EM system configurations that do not require continuous recording.*
- The cost of EM program implementation is a concern among fishermen.
- *The pilot program design should include solid strategies to assess the cost of making EM an operational program, as well as a focused effort to identify strategies to reduce those costs. The long-term strategy to cover those costs should be discussed early and often.*