

Project #: F2712-00

Title: By-catch characterization in the Pacific halibut fishery: A field-test of electronic monitoring

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PROJECT OVERVIEW

Research Need: The focus of our research is to improve our understanding of the ecosystem impacts of halibut fishing off Alaska through improved monitoring of halibut longline fishery bycatch and to provide data on mortality of bycatch species for input to stock assessments. The majority of vessels operating in this fishery are not required to carry observers; hence, estimates of bycatch are not based on direct observation of the fishery. We are conducting a study comparing and evaluating the relative effectiveness of electronic monitoring (EM) and the currently utilized National Marine Fisheries Service (NMFS) monitoring methods to operate effectively in a commercial longline (hook-and-line) setting. Previous research by one of the partners in this proposal (IPHC) documented successful electronic monitoring of Pacific halibut longline fishing conducted from chartered commercial vessels conducting research surveys. While this work supported the use of EM to monitor bycatch in numbers of fish, the research was not conducted under the complete range of commercial fishing conditions where a broader suite of environmental and physical factors affects the vessel operations.

Goals and Objectives: The goal of this project is to test the ability of EM systems to operate in a commercial setting by comparing best estimates of bycatch based on a “census” of numbers of species hooked, with estimates of bycatch based on review of video monitoring, and estimates based on standard NMFS / NPGOP observer monitoring.

This study has two main objectives as follows:

1. Catch and bycatch estimation using several methods
 - a. Estimation of bycatch and bycatch rates from data collected using EM on commercial longline vessels.
 - b. Estimation of bycatch and bycatch rates from data collected using standard NMFS observer monitoring on commercial longline vessels.
 - c. Hook-by-hook documentation (by a second observer) of fish species on the fishing gear.
 - d. Accounting of retained bycatch based on a census of all bycatch (non-halibut) species landed on the vessel.
2. Evaluations of the relative efficiency, cost, and bias of each of the two bycatch estimation methods (EM, NMFS Observers) relative to a standard (hook-by-hook, and hook-by-hook comparisons with observer) to determine their suitability for use in fisheries management.

In order to meet this goals and associated objectives, there are four main hypotheses that we are interested in testing (Figure 1).

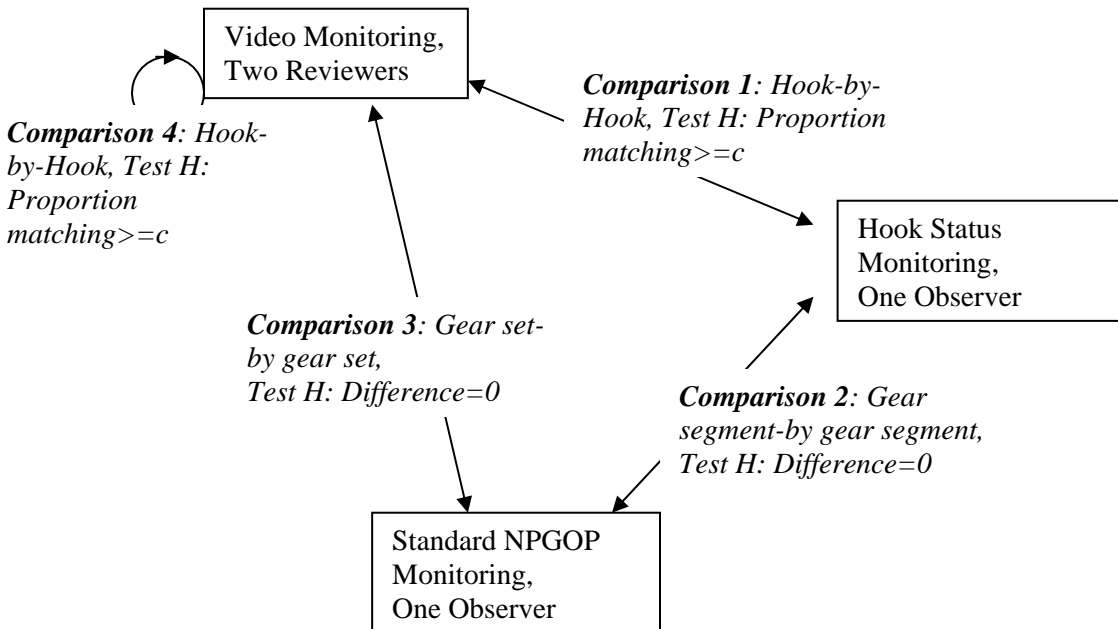


Figure 1: Data sources and comparisons used to assess the viability of video monitoring.

Revised Timeline and Milestones:

We have had to adjust our sample design and time lines in response to lower than anticipated vessel participation rates. These changes do not affect the overall study design or overall goals of the research. We have worked with the NPRB (Dr. Wiese) and received approval for these changes (see correspondence August 13, 2007 and July 15, 2008). In addition, our project was recently granted an extension, extending our timeframe to February 2010 (December 2008). A revised timeline for this study is presented in Table 1.

Table 1: Summary of proposed study activities, accomplishments, and deliverable products.

	<i>Time Period</i>	<i>Activity / Accomplishment</i>	<i>Deliverable</i>	<i>Status</i>
1	Dec 07 – Jan 08	Outreach to Halibut Fleet to solicit vessel participation. This outreach will be conducted in collaboration with the Fishing Vessel Owners Association.	Participating vessels	Complete
2	Feb – Mar 08	Prepare database, Contract for Observer and EM coverage	Database established; contractors available	Complete
3	Apr – Sep 08	Conduct field activities	Data Collection	Complete for 4 vessels
4	May 08 – Feb 09	Data entry and editing	Mid-study data set	Ongoing
5	Dec 08 – Mar 09	Additional outreach and solicitation of vessels	Participating vessels	Ongoing
6	Jan – May 09	Analysis of available data, preparation of preliminary findings	Mid-study synopsis of results	
7	Mar – May 09	Conduct additional field activities	Data Collection	
8	Jun – Jul 09	Data entry and editing	Final data set	
9	Jul – Nov 09	Analysis of results; Preparation of final report		
10	Dec 2009	Completion of final report; Presentation of findings to fishing groups, North Pacific Fishery Management Council, SSC	Published Report; Presentation of study results	

We commenced work in the 2008 season (April through September) and will continue field activities in the spring of 2009.

A mid-study synopsis summarizing the results of the first phase and any changes to the sampling design will be written in early 2009. A final report will be written in the fall of 2009, available by December, 2009. Study results will also be presented at North Pacific Fishery Management Council (NPFMC) meetings, NPFMC Scientific and Statistical Committee meetings, and to the various commercial fishery industry groups (such as the Fishing Vessel Owners Association).

In addition to the presentations to be given in 2009 and our solicitation of the halibut fleet for study participation, our outreach and education includes development of a web page with a description of the study and results as they become available.

PROGRESS SUMMARY

Report Period Progress:

In this reporting period, we focused on data collection activities relative to Objective 1.a, 1.c, and 1.d. We recruited two additional vessels to the study during this reporting period and have collected EM and observer data for 8 trips and 187 hauls. This brings the 2008 data total to 13 trips and over 200 monitored longline sets. The EM video has been reviewed and those data are ready for analysis. The data collected by observers are currently undergoing a thorough QA/QC and editing process. Once final data sets from the two sources (observer and EM) are available, they will be compared to determine the efficiency of the two sample methods. We expect to complete the comparison of the data collected to date via EM and that collected by observers in the next couple of months, prior to commencing our 2009 field activities.

We have completed timeline item #3 this reporting period, and have started work on items #4 and #5. These will be completed in the next reporting period.

The data collected for the 2008 season are summarized below.

F/V Gretchen S (37ft LOA)¹

- Captain Dan Hull, Observer Mel Kahn, home port Cordova, AK
- 1 trip in April, July, and August (3 total) with a total of 19 hauls and 13 fishing days in Area 3A
- EM data for 13 and observer data for 17 sets.

F/V Sherrie Marie (65ft LOA)¹

- Captain Norm Pillen, Observers Paula Hartzell and Suzie Hanlan, home port Sitka, AK
- 2 trips in June with a total of 43 hauls and 15 fishing days in Area 3A and 3B
- EM data for 10 and observer data for 41 sets

F/V Kristiana (69ft LOA)

- Captain Bill Sauer, Observer Mike Cox, home port Seattle, WA
- 2 trips in August with 19 hauls in 14 fishing days in Area 3A and 3B
- EM for 14 and observer data for 18 sets.

F/V Lisa Marie (78ft LOA)

- Captain Jay Hebert, Observer Melany Haggard, home port Dutch Harbor, AK
- 6 trips in July through September with 168 hauls in 51 fishing days in Areas 3B, 4A, and 4D
- EM data for the 140 sets requested and observer data for 141 sets.

We did not experience any EM system failures in this reporting period, and all trips were successfully monitored by both EM and observers.

¹ Reported in January – June 2008 Progress Report

As in the previous reporting period, we were unable to place more than one observer on any vessel, and hence have focused our efforts on conducting a census (hook-status data) of the catch. These data are most readily compared with the EM data and will allow the greatest flexibility during data analysis. However, collecting only census data will prevent us from making direct comparisons of the observer-based catch estimates with the census, and EM-based estimates with observer-based estimates. These comparisons will be accomplished by sampling the census data to simulate observer data collection methods. While the latter is not a direct comparison between EM and the usual and more restricted observer estimation, the subsample of the census data will employ the same sample selection protocols as normal observer sampling and hence will provide a valid comparison of these two estimation methods. We will be able to make direct comparisons of the EM-based estimates with the catch census, which is in keeping with the primary objective of the project.

The vessels participating in this reporting period fished in the GOA and BSAI, allowing a potential area comparison. Vessel participation in the study is voluntary, and therefore, does not necessarily conform to the original sample design. As a result, it does not appear that vessels will be paired by size (observed and unobserved), area, or month as originally planned. However, we will have data from a broad range of vessels fishing in different areas, and we will have data from both observed (>60ft) and unobserved (<=60ft) vessels. Again, this meets the original intent of our design, and we discussed these departures from the study design with Dr. Wiese.

Progress on Objective 2 will begin once data are analyzed and Objective 1 has been completed.

Preliminary Results:

Preliminary results are not available for this project at this time. We have completed the first season of data collection and are in the process of completing the data editing and finalization phase.

Project Progress Concerns:

As with any field-based research, we faced many challenges during the implementation phase. We have made adjustments to our study plan in response to vessel availability. As a result, our ability to compare results between fishing areas and seasons may be limited. Additionally, due to limited vessel accommodations resulting in deployment of single observers on each vessel, we made changes to our sampling protocols. In each case, we have communicated these changes to the NPRB (Dr. Wiese) and he has concurred with our revised study design and timeframes.

For this reporting period, we have not had any additional problems.

Education and Outreach:

In accordance with our outreach plan, we have maintained the Bycatch Characterization of the Halibut Fishery Study web page (http://www.psmfc.org/alaska_halibut/). This web page has been updated as the study has progressed.

PROJECT STATUS

Overall, we have made significant progress on this project. It appears that we will be able to meet the project goals, especially if we are successful in soliciting additional vessels to participate in the study in early 2009. In spite of several (approved) adjustments to the study design and time lines, we are currently on target for completing the research in December 2009.

During the next six-month period, we will complete the data collection phase of this research. We will be collecting additional data in March, April, and May of 2009 from vessels actively engaged in the halibut longline fishery. We hope to collect data for smaller vessels, preferably under 60ft fishing in the Bering Sea/Aleutian Islands or in the Gulf of Alaska. We anticipate sampling for an additional 50 to 70 days.

We anticipate some preliminary results to be available during the next reporting period. Those analyses will be based on the data collected in 2008. We will have presented the project and progress to date at the Alaska Marine Symposium in January 2009 (poster).