

Social and Ecological Consequences of Regulatory Change in the Alaska Recreational Halibut Fishery

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Project Overview Our research contributes new information on the impacts of regulatory and environmental changes on the Pacific halibut sport charter fishing industry in Alaska, an important and understudied fishery sector. We are examining patterns of resource use and responses by charter operators to regulatory, environmental, and socioeconomic changes in Alaska halibut fisheries over the last three decades. This study will provide managers and stakeholders with information needed to understand how future changes may affect the sport charter industry and welfare of fishing communities in Southeast and Southcentral Alaska. Our objectives are:

Objective 1. Document changes in patterns of resource use in Southeast and Southcentral Alaska halibut charter fisheries since the late-1970s.

Objective 2. Determine whether charter operators have changed their patterns of resource use in direct response to past regulation changes, species abundance changes, and customer demand.

Objective 3. Determine likely future responses of charter operators to new regulation changes that may be in store for Southeast and Southcentral charter fisheries.



Project Outcomes and Benefits We anticipate the following benefits to fishery stakeholders, managers, and scientists:

- New information on how regulations and environmental change have affected charter businesses in Southeast and Southcentral Alaska
- An improved understanding of how regulation changes translate into changes in fishing behavior, effort, and catch in the Alaska halibut charter fishery
- An improved understanding of the indirect effects of halibut regulation change on *other* commercially valuable species, including rockfishes and salmon
- High quality, published research that is publically available and provided to project participants
- Expanded communication and collaboration between university and agency scientists and sport charter operators

Methods In spring 2014 and 2015, we conducted in-person interviews with 53 charter operators in Sitka, Homer, Ninilchik, and Seward. During the interviews, we asked about operators' fishing practices and patterns of resource use (targeted species and sizes, fishing locations), their background and experience in the fishery, other aspects of their livelihoods, and changes in business strategies. Interview participants were initially identified through charter associations and Charter Halibut Permit databases. We recruited additional participants through snowball sampling, in which each interviewee is asked to refer other potential participants, to reach a total of 25-30 individuals from Southeast and Southcentral regions. Interviews were voluntary and confidential.



This newsletter provides some preliminary results from the study, which will conclude in June 2017.

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Part 1. Changes in Target Species Portfolios

Research Questions

1. Has the portfolio of species targeted on charter trips changed over the past 20-30 years?
2. Are there differences in target species between Southeast and Southcentral regions?
3. How have halibut regulations affected target species portfolios?

In particular, we wanted to understand whether greater restrictions on halibut harvest may have led to increased retention of less-preferred species.

Methods As part of the in-person interviews, we asked participants to list all of the species that they target and/or retain with their customers on a charter trip. We asked each interviewee to rank each species according to customer preference on a charter fishing trip for the “past”—the period when they first started charter fishing—and for the “present”—the most recent fishing season (2013-2014). If there was a change in ranking from past to present, we asked what the reason was for that change.

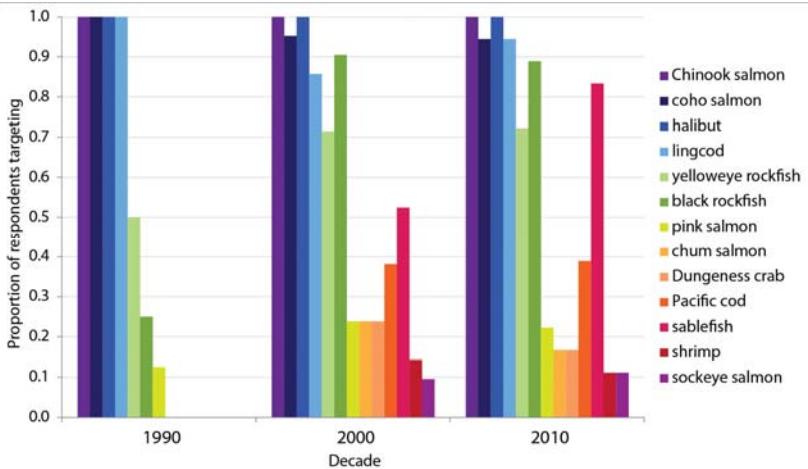
Preliminary Results

- Charter operators in both regions have shown an increase in number of species targeted on charter trips from when they started fishing to the present.
- Interview participants reported greater preference for and increased retention of rockfish, sablefish, and cod over time.
- The majority of participants in Southeast Alaska attributed these changes to more restrictive halibut regulations and the majority in Southcentral attributed changes in target species portfolios to more customer interest in other species (in addition to halibut).



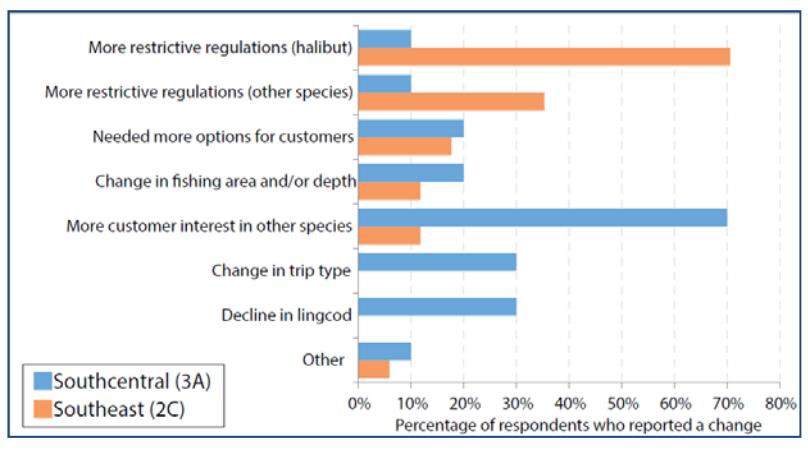
Preliminary Results, cont'd.

This graph shows the percentage of interview respondents from Sitka who targeted each species during the 1990s, 2000s, and 2010s:



More of the charter operators we interviewed were targeting black rockfish (dark green) and yelloweye rockfish (light green) in the 2000s compared to the 1990s. About half of the Sitka respondents reported no change in the number of species they targeted from when they started charter fishing to the present and about half reported an increase in the number of species targeted. No Sitka respondents reported a decrease in the number of species they targeted over time on charter trips. In Homer, 65% of interview respondents reported no change, 31% reported an increase, and 4% reported a decrease in the number of target species from past to present.

The graph below shows the percentage of interview respondents reporting different reasons for changing the number or species of fish targeted on charter trips (Homer in blue, Sitka in orange):



Part 2. Changes in Charter Fishing Locations

Research Questions

1. How have charter fishing locations changed over time in Homer and Sitka?
2. What drives changes to charter fishing locations?



Methods

During the interviews, we asked each participant to draw the areas where they target halibut, salmon, rockfishes, lingcod, and sablefish on paper maps. If there were changes in fishing locations over time, the participant was asked to mark additional maps to document past locations. A 8km x 8km grid was overlaid onto each paper map so that participants who did not wish to share specific fishing locations could mark grid cells instead; 9% of the participants chose to use the grid system instead of drawing individual fishing locations. To look at trends over time, fishing locations from paper maps were converted into a digital format. Paper maps were scanned and imported into a computer software that processes geographic information. Participants were asked to explain why their charter fishing locations had changed over time (if any). Drivers of change were grouped into themes and reported by percentage of participants.

Data confidentiality

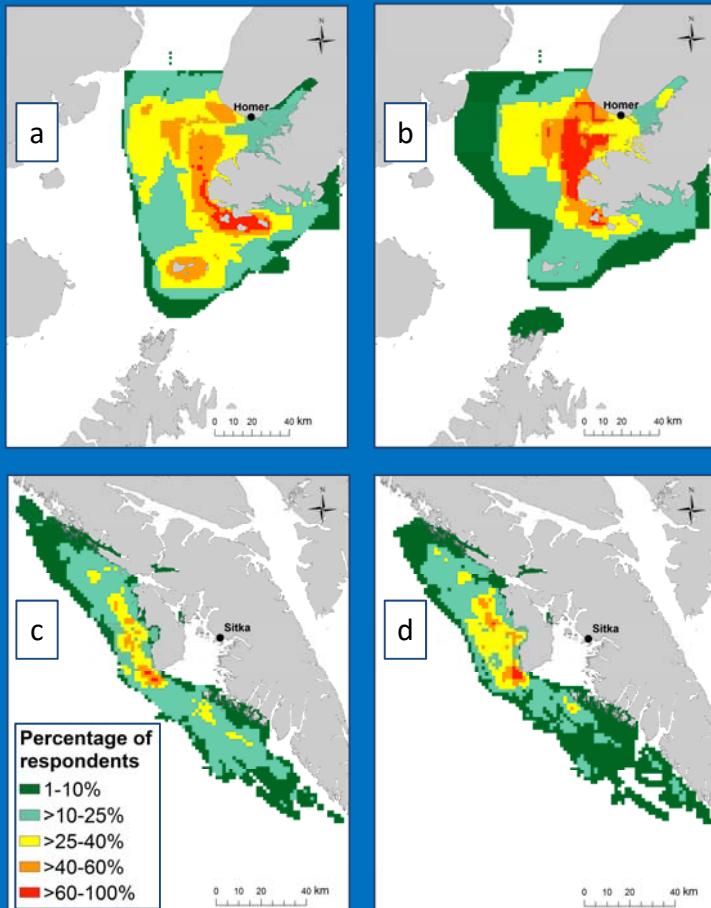
To ensure that participant data remains confidential:

1. Maps never show fishing locations for a single person, instead they show aggregated data for all participants.
2. Maps show fishing locations used by a percentage of participants, never the exact number of people.
3. Maps are shown using a 1.5km x 1.5km grid, to protect exact fishing sites. Each mapped location was assigned to an entire grid cell, thereby representing the location accurately, while protecting specific site information.



Preliminary Results

Halibut fishing locations in Homer for the early 2000s (a) and early 2010s (b) and in Sitka for the early 2000s (c) and early 2010s (d)



Why did halibut fishing locations change?

The table below shows the most frequently cited reasons for changes to halibut fishing locations. Individuals could list more than one reason, therefore percentages do not add up to 100.

Reasons for changes	Homer	Sitka
Trip type (e.g., trip duration)	45%	0%
Price of fuel	45%	0%
Halibut abundance or distribution	36%	24%
Technological upgrades	18%	19%
Halibut regulations	9%	57%

Next steps

The project team will complete the study in 2017. We plan to travel to Homer and Sitka in spring 2017 to present research results.