Science, Service, Stewardship

Stated Preferences for Size and Bag Limits of Alaska Charter Boat Anglers*

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*The information and results presented here are preliminary. Opinions expressed are those of the authors and do not reflect those of NMFS, NOAA, or the U.S. Department of Commerce.

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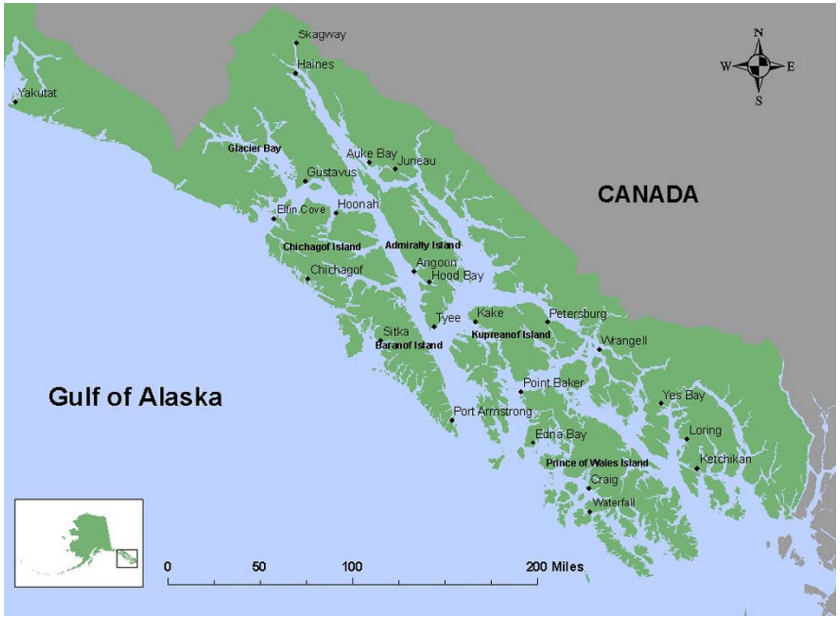
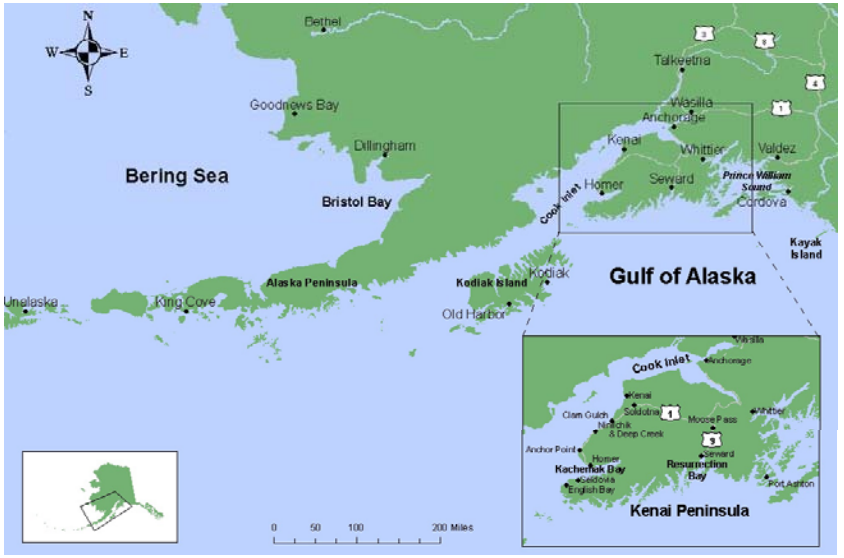
Background

- Primary federal species is Pacific halibut (*Hippoglossus stenolepis*)
- Pacific salmon is frequently caught on saltwater sport fishing trips
- No MRIP/MRFSS survey in Alaska
- AFSC periodically collects primary economic data of recreational fishing behavior and preferences (RP/SP)





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AFSC Alaska Saltwater Sport Fishing Economic Surveys

- Repeated mail surveys conducted in 2007 and 2012
- Collected data on fishing behavior for previous season (2006 and 2011 fishing seasons, respectively)
- Stratified random samples drawn from ADF&G fishing license frame (and PID “senior identification” database)
  - All non-residents (age 16+) and resident anglers (age 16-60) required to have license
  - Residents 60+ can qualify for a PID
- Stratification based on residency
  - 3 populations: Non-residents, resident anglers of Southeast Alaska, and other Alaska resident anglers (different survey versions)
  - Response rates have been about 50%

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Survey Development

Main types of data collected

RP data:

Where did anglers fish?

How often?

What did they harvest?

Travel information

SP data:

Choice experiment questions to evaluate, in part, how counterfactual regulations affect value of fishing experience

Focus groups and interviews

Anchorage

Juneau

Fairbanks

Portland

Seattle

Phoenix

Sacramento

San Francisco Bay Area

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Charter Pacific Halibut Management in Alaska (Areas 3A & 2C)

- In the charter boat sector, regulatory changes have occurred for Pacific halibut in recent years
- Catch sharing plan (CSP) (**NEW in 2014**)
- Regulations on anglers
  - Bag limits
  - Size limits
- Charter boat angler-specific regulations in Area 2C (Southeast)
  - 2007 – 2008: 2 fish, 1 any size, 1 no longer than 32 inches
  - 2009 – 2010: 1 fish, no size limit
  - 2011: 1 fish, no fish longer than 37 inches
  - 2012 – 2013: 1 fish, no fish between 45 and 68 inches (reverse slot)
- Under CSP, these regulations will be evaluated annually for both Area 2C and 3A

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Sample SPCE Question

D4 **Choice A, Choice B, and Choice C are described in the columns below. Below the columns, indicate which of these three choices you like best and which you like second best.**

	Choice A	Choice B	Choice C
Fishing area……	**Southeast**	**Southcentral**	
Number of fishing days……..	**1 day**	**1 day**	
Fish targeted……	**Halibut**	**Halibut**	
Bag (take) limit…….. *Number of fish you can keep each day (and in total)*	2 per day (2 total)	3 per day (3 total)	Do something else in Alaska other than saltwater charter boat fishing
Size restriction…….. *Restricts the size of fish in the per day bag limit (length limits converted to pounds)*	No fish between 35 and 130 lbs.	No fish larger than 35 lbs.	
Fish targeted……	**Silver salmon**	**Silver salmon**	
Bag (take) limit…….. *Number of fish you can keep each day (and in total)*	6 per day (6 total)	3 per day (3 total)	
Cost per person…… **(Fishing-related COSTS only)** *Can include charter/rental fees, transportation, food, and other costs*	$700	$1,000	
	Choice A	**Choice B**	**Choice C**
Which do you like best? *Check one box---------->*	❑	❑	❑
Which do you like second best? *Check one box---------->*	❑	❑	❑

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2012 Survey Implementation: Non-Residents

- Conducted from February-June 2012
- Modified Dillman mail-telephone survey
  - Advance letter
  - Initial mailing w/ $1 incentive
  - Reminder postcard
  - Follow-up telephone call
  - Second full mailing
- Initial mailing sample of 2,080 (1,998 deliverable)
  - 1,073 completed surveys (response rate = 53.7%)
- Stated preference estimation
  - 825 surveys used for estimation
    - Excludes item non-respondents to SPCE questions
    - Drop protest respondents and those not at all confident in responses
  - Discrete choice modeling allowing for preference heterogeneity (different anglers allowed to have different preferences for fishing attributes)

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Willingness to Pay for SE Trips Under Alternative Halibut Restrictions

Scenario	Fishing Trip Description	WTP Estimate	95% Conf. Interval
1	One halibut no size limit	$1,028	($391, $1,712)
2	One halibut no larger than 23 lb*	-$201	(-$743, $301)
3	One halibut no larger than 28 lb	$149	(-$389, $675)
4	One halibut no larger than 35 lb	$666	($73, $1,263)
5	One halibut not between 28 and 130 lb	$318	(-$282, $875)
6	One halibut not between 35 and 130 lb	$820	($219, $1,490)
7	Two halibut limit, no size limit	$1,002	($96, $2,034)
8	Two halibut limit, one fish no larger than 28 lb	$1,683	($904, $2,506)
9	Two halibut limit, one not between 28 and 130 lb	$1,618	($936, $2,258)
10	Two halibut limit, both no larger than 28 lb	$637	($127, $1,135)
11	Two halibut limit, both not between 28 and 130 lb	$1,050	($559, $1,560)

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Discussion

- Welfare estimates and confidence intervals provide insights into halibut bag limit and size regulations
  - Width of confidence intervals suggest no statistical difference between WTP associated with numerous regulations (for 2+ fish in bag limit)
  - The ability to harvest at least one trophy fish seems valuable
  - Conservation ethic is suggested, as size restrictions on 2+ fish are valuable
- Potential policy applications
  - Evaluating effects of changes to bag and size limits (regulatory analyses)
  - Economic impact analysis of fishing regulation changes
    - Lew and Seung (2010, NAJFM): Use SP model to predict changes in fishing participation as a shock in regional economic impact model
- Main issues
  - Periodic implementation due to no dedicated funding
  - OMB approval
  - Timing of surveys, analysis, and final results – implies the need for flexibility of tools

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Some Related Papers

Recreational fishing demand modeling

Lew, Daniel K., and Douglas M. Larson (2011). "A Repeated Mixed Logit Approach to Valuing a Local Sport Fishery: The Case of Southeast Alaska Salmon," *Land Economics*, 87(4): 712-729.

Larson, Douglas M., and Daniel K. Lew (2013). "How Do Harvest Rates Affect Angler Trip Patterns?" *Marine Resource Economics,* 28(2): 155-173.

Stated preference choice experiments

Lew, Daniel K., and Douglas M. Larson (2012). "Economic Values for Saltwater Sport Fishing in Alaska: A Stated Preference Analysis." *North American Journal of Fisheries Management*, 32(4): 745-759.

Lew, Daniel K., and Douglas M. Larson. "Is a Fish in Hand Worth Two in the Sea? Evidence from a Stated Preference Study." **Under review.**

Modeling effects of bag limit changes on economic impacts

Lew, Daniel K., and Chang Seung (2010). "The Economic Impact of Saltwater Sportfishing Harvest Restrictions in Alaska: An Empirical Analysis of Nonresident Anglers." *North American Journal of Fisheries Management,* 30: 538-551.