



NOAA FISHERIES

Understanding the human dimensions of recreational fishing is critical to improved stewardship of the Nation's fishery resources. The Economics and Social Sciences program within NOAA Fisheries collects economic data on marine recreational fishing, develops economic models, and conducts analyses to better understand and describe the socio-economic aspects of marine recreational fisheries.

The economic models can:

- provide insights into the distribution of net benefits derived from recreational fisheries
- help NOAA Fisheries to understand and predict the behavior of recreational fisheries participants
- show how alternative management actions, environmental changes, and general economic trends may affect recreational anglers and coastal communities

Regional Economic Impact Models

Regional economic impact models use data on angler expenditures and for-hire costs and earnings to evaluate:

- impacts of changes in fisheries policy actions, environmental conditions, or economic conditions on a region's economy
- contribution of recreational fishing activities to a region's economy
- economic development opportunities

The models provide information on:

- Employment (e.g., the number of full and part-time jobs)
- Output (e.g., sales of goods and services)
- Income
- Value-added to gross domestic product
- Distribution of impacts between industries, consumers, households, and governments

Recent and Upcoming Research

- Arita S, M. Pan, J. Hospital, and P. Leung. 2011. *Contribution, linkages and impacts of the fisheries sector to Hawaii's economy: a social accounting matrix analysis*. Joint Institute for Marine and Atmospheric Research, SOEST Publication 11-01, JIMAR Contribution 11-373. University of Hawaii: Honolulu, HI, 54 p.
- Hilger, J. and S. Lovell. 2014. *The economic contributions of marine angler expenditures in Northern and Southern California*. Working paper, Southwest Fisheries Science Center.
- Leonard, J. 2014. *The role of charter boat operations in fishing communities: a social and economic analysis of the marine charter boat fleets in Oregon and Washington*. Working paper. Northwest Fisheries Science Center.
- Lovell, S., S. Steinback, and J. Hilger. 2013. *Economic contribution of angler expenditures in the United States, 2011*. NOAA Tech. Memo. NMFS-F/SPO-134.
- Seung, C.K. and D.K Lew. 2013. *Accounting for variation in exogenous shocks in economic impact modeling*. Annals of Regional Science, DOI 10.1007/s00168-012-0550-0.

Recreational Economics Models

For-Hire Models

The for-hire sector of recreational fisheries includes charter boats, headboats, and guideboats.

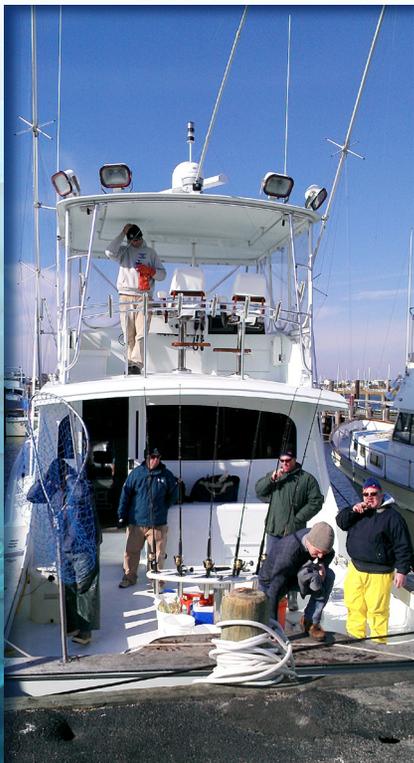
Models of the for-hire sector:

- provide estimates of revenues, costs, profits and employment
- show the contribution of the for-hire sector to a regional economy (e.g., the number of jobs, level of sales)
- estimate the changes in economic benefits accruing to the sector from changes in management policies, natural disasters, or other factors
- estimate the sustainability of the for-hire sector in a given region

Recent and Upcoming Research

- Hilger, J. 2014. *A Characterization of the Economics of the California Commercial Passenger Fishing Vessel Fleet: 2013 Cost and Earnings Data Collection*. In Preparation. NOAA Fisheries, Southwest Fisheries Science Center.
- Hospital J and C. Beavers. 2012. *Economic and social characteristics of bottomfish fishing in the main Hawaiian Islands*. Pacific Islands Fisheries Science Center Administrative Report H-12-01, 43 p. + Appendix.
- Lew, D., A. Himes-Cornell, and J. Lee. 2014. *Weighting and Imputation for Missing Data in Fisheries Economic and Social Surveys*. Working paper, Alaska Fisheries Science Center.
- Liese, C. and D. W. Carter. 2011. *Collecting Economic Data from the For-Hire Fishing Sector: Lessons from a Cost and Earnings Survey of the Southeast U.S. Charter Boat Industry*. 14 p. In Beard, T. D., Jr., A. J. Loftus, and R. Arlinghaus (editors). *The Angler and the Environment*. American Fisheries Society, Bethesda, MD.
- Malloy, S. 2014/2015. *Cost Earnings survey of Hawaii small boat fishing*. Upcoming survey and analysis. Pacific Islands Fisheries Science Center.
- Steinback, S. and A. Brinson. 2013. *The economics of the recreational for-hire fishing industry in the Northeast United States*. US Department of Commerce, Northeast Fisheries Science Center, Reference Document. 13-03.

The Magnuson-Stevens Fishery Conservation and Management Act (MSA) is the primary law which provides statutory authority to NOAA Fisheries to collect economic data on fisheries. Others include the Endangered Species Act (ESA), the National Environmental Policy Act, Executive Order 12866, and the Regulatory Flexibility Act.



Revealed Preference Models

Revealed preference models provide insights into recreational behavior and the economic value of recreational trips. They are based on the assumption that price of a trip reflects the monetary and nonmonetary value of recreational participation.

Model results can be used to:

- evaluate fishery management policies (e.g., changes in bag limits, season lengths, size limits)
- benefit-cost analysis for proposed projects affecting fisheries (e.g., benefits of dam removal)
- natural resource damage assessments (e.g., oil spills)
- ecosystem management (including non-fishery recreation)

Recent and Upcoming Research

- Carter, D.W. and C. Liese. 2010. Hedonic valuation of sportfishing harvest. *Marine Resource Economics* 25(4): 391-407.
- Kuriyama, K., J. Hilger, and W. M. Hanemann. 2013. A random parameter model with onsite sampling for recreation site choice: an application to Southern California shoreline sportfishing. *Environmental and Resource Economics* 56: 481-497.
- Larson, D.M. and D.K. Lew. 2013. How do harvest rates affect angler trip patterns? *Marine Resource Economics* 28(2): 155-173.
- Lovell, S. and D. Carter. 2013. Incorporating survey sampling weights in recreational site choice models. Submitted to *Fishery Bulletin*. In review.
- Thomson, C. 2014. Potential recreational fishery benefits of Central Valley habitat restoration. Upcoming survey and analysis, Southwest Fisheries Science Center.

Stated Preference Models

Stated preference models are used to elicit consumer consumption behaviors.

The models:

- are based on surveys where individuals are asked to choose between a series of hypothetical alternative attributes related to a fishing resource
- provide an estimated value for the fishery resource under study
- are typically used when there are no natural sources of variation in the attribute under study

Applications of stated preference models include:

- benefit-cost analysis (e.g., providing estimated values for fish or angling trips)
- predicting reactions to management and stock changes
- understanding how anglers view trade-offs between species
- evaluation of large-scale environmental issues or policies

Recent and Upcoming Research

- Anderson, L. E. and S. T. Lee. 2013. *Untangling the recreational value of wild and hatchery salmon*. *Marine Resource Economics* 28(2): 175-197.
- Carter, D.W. and C. Liese. 2012. *The economic value of catching and keeping or releasing saltwater sport fish in the Southeast USA*. *North American Journal of Fisheries Management* 32(4): 613-25.
- Duffield J, C. Neher, S. Allen, D. Patterson, and B. Gentner. 2012. *Modeling the behavior of marlin anglers in the Western Pacific*. *Marine Resource Economics* 27(4): 343-357.
- Lew, D.K. and D.M. Larson. 2014. *Is a fish in hand worth two in the sea? Evidence from a Stated Preference Study*. In review.
- Steinback, S., K. Wallmo, S. Lovell, and E. Thunberg. 2014. *Separating truth from fiction: comparing real and hypothetical nonmarket valuation responses of recreational fishermen*. Working paper. Northeast Fisheries Science Center.
- Thomson, C. and R. Kosaka. 2014. *Species preferences and regulatory effects in California's recreational groundfish fishery*. Upcoming survey and analysis, Southwest Fisheries Science Center.