

Non-market valuation of private recreational boating in the Channel Islands National Marine Sanctuary



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Who Visits the Sanctuary?

Each year, over 60,000 people travel to the Channel Islands National Marine Sanctuary, which encompasses the waters around five of the Channel Islands. Those who come often visit multiple sites and participate in activities that fall into two categories:



- Consumptive - involve the "take" of marine resources (i.e. fishing, lobster diving)
- Non-consumptive - are "no take" activities (i.e. SCUBA diving, kayaking)



The Mission



Currently, there is a lack of information on non-consumptive use of the Sanctuary, specifically by private recreational boaters. This study aims to address this data gap by answering the following:

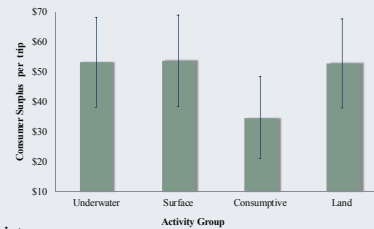
1. What value do boaters receive from a trip to the Sanctuary and what is the total annual value of all boat trips?
2. What biological and physical characteristics affect boaters' decisions when choosing a site, and what are the values of these attributes?

How do Private Boaters Value the Sanctuary?

Consumer Surplus per Trip and per Year

Activity Group	Consumer Surplus per Trip
Underwater non-consumptive	\$53.21
Surface non-consumptive	\$53.69
Consumptive	\$34.72
Land-based	\$52.86

- The consumer surplus of a trip to the Sanctuary for all activity groups was positive and ranged from about \$34 - \$53 per boat.
- There were 1,621 non-consumptive trips taken in 2007. Therefore, the total annual value for non-consumptive private boating is about \$86,323.

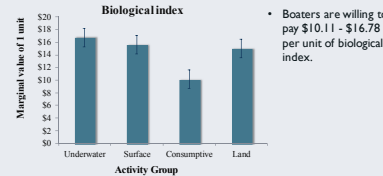


Key Points:

- The non-market value of private recreational boating can be considered when evaluating policies that affect this stakeholder group.
- \$86,323 should be considered a conservative estimate due to limitations of the data and the model.

Importance and Value of Site Characteristics

Attribute	Relationship	Result
Biological Index	+	Boaters prefer sites with higher biological quality
Exposure	-	Boaters avoid sites facing NW winds
Kelp % Cover	Not statistically significant	No effect
Travel Cost	-	Boaters prefer closer (less costly) sites



Key Point:

- This study demonstrates a monetary link between private boaters and biological quality.

How Can This be Used in Management?

Thought Experiment: What would happen to the total value of boater trips if we doubled fish abundance in a popular site?



1. We multiply the change in biological index by the number of annual visitors
2. Arrive at an increase of \$33,011 in annual consumer surplus
3. Therefore, management actions that increase or decrease biological quality can affect the value held by private boaters.

Relevance of Findings

- The results may be used for coastal and marine recreation worldwide to determine how changes in biological quality result in changes in value.
- Our research highlights data gaps that, when addressed, will improve the design of future studies of this nature.

Recommendations for Future Research

- Incorporate additional site attributes (i.e. congestion, scenic view)
- Test alternative activity hierarchies to see if results change
- Determine the effect of boaters expenditures on the local economy

Modeling Boater Decisions

Step 1: Individual Choice of Site and Activity

- 110 private boaters were surveyed at Santa Cruz Island in May - October of 2006 and 2007.
- Passengers reported visiting various sites around Anacapa, Santa Cruz, and Santa Rosa islands. For the model, we defined boundaries for these sites as seen below:



- Boaters also identified participation in 15 different activities. We categorized these into a hierarchy of 4 activity groups:



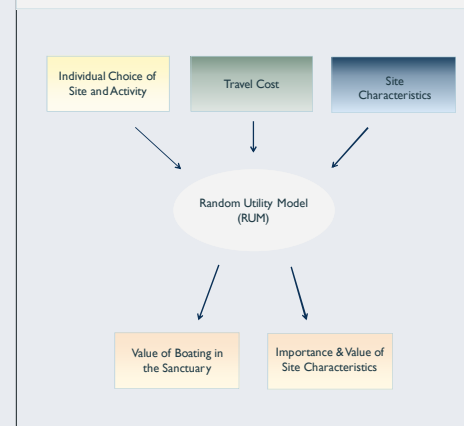
Step 2: Cost of Traveling to the Sanctuary

- Boaters reported fuel costs and time/effort spent traveling to the Sanctuary
- Time and expenses were monetized into one value per trip for each respondent. This is referred to as the travel cost.

Step 3: Site Characteristics

- Boaters' decisions about where to go and what activity to do are often shaped by different attributes associated with a site.
- Attributes included in the model are:
 - Biological index (fish and invertebrate richness and abundance)
 - Exposure to wind and swell
 - Distance/cost to site
 - Kelp % cover

Step 4: Random Utility Model (RUM)



Step 5: Model Outputs

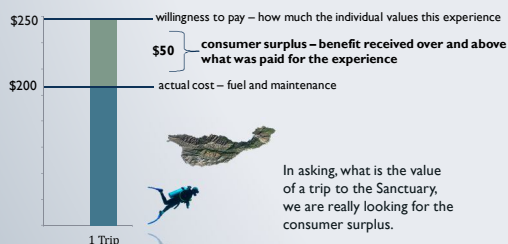
- Value of Boating in the Sanctuary: Consumer Surplus per Trip and per Year
 - The per trip value is the consumer surplus received from one trip to the Sanctuary.
 - Multiplying this number by the total number of trips taken per year, we can obtain the total annual consumer surplus of non-consumptive boating in the Sanctuary.
- Importance and Value of Site Characteristics
 - The RUM can determine which characteristics have a positive or negative effect on boater decisions, as well as which ones have no effect.
 - The value of a site characteristic is the benefit boaters receive from an additional amount/unit of that particular attribute.

Non-market Valuation

Private boaters spend a lot of effort to get to the Channel Islands. Considering the cost of buying a boat, slip fees, etc., they must receive some sort of benefit from this pastime. To quantify this benefit, we used non-market valuation.

Non-market valuation - quantifies the value of goods/services not bought or sold in the market

Example: Boater decides to go SCUBA diving on Santa Cruz Island



In asking, what is the value of a trip to the Sanctuary, we are really looking for the consumer surplus.

Acknowledgements

We extend our gratitude to our advisors and clients: Matt Potoski, Bob Leeworthy, Sean Hastings, and Kristi Birney for the resources and support they provided us. We acknowledge the Environmental Defense Center and the James S. Bower Foundation for their financial contributions. We also thank the CINMS, the Bren School, and all others who provided us with data and technical assistance.

