
3. Development of the Survey Instrument

This chapter describes the steps taken to develop the Coral Reef Valuation Study survey instrument. Development included conducting focus groups, designing the survey information, obtaining external peer reviews, obtaining OMB clearances, performing one-on-one interviews, pretesting, and finalizing the survey. Each step is described below. Note that several of these steps were performed multiple times (e.g., one-on-one interviews).

3.1 Focus Groups

Focus groups were used to develop basic survey concepts and refine the Team's understanding of the general population's experience and familiarity with and understanding of coral reefs and issues affecting coral reefs.

Three rounds of structured interviews in a focus group setting – two sessions per round with seven to nine participants per session – at different locations across the United States were conducted between January 2003 and January 2004. For the first round, Team members interviewed 13 people on January 16, 2003, in Honolulu, Hawaii. The second round was held on October 28, 2003, in Madison, Wisconsin, where 21 people were interviewed. Questions were asked to determine participants' perceptions and understandings of coral reefs and what additional information they would like to know about coral reefs. Then, risks to reefs were discussed and participants' views of the threats were elicited. Finally, various options for managing coral reefs were discussed and the value of the management options was explored.

On January 5, 2004, 19 individuals were interviewed in San Diego, California, for the third and final round of focus groups. The purpose of this round was to determine how the mainland public would respond to the following questions:

1. Should a higher priority be placed on restoring overfished ecosystems of the MHI or on protecting pristine ecosystems of the NWHI?¹
2. How important is it to increase the percentage of coral reef ecosystems that will be maintained in no-fishing areas for the NWHI and for the MHI?

1. The Team did not address this research question in the final survey instrument, which was sent to the internet panels in 2009. We were precluded by OMB from including the NWHI as part of the choice questions. In the final survey instrument, the NWHI was used solely as a substitute.

3. How much money should be spent to enforce regulations relating to no-fishing areas?
4. How much money would participants be willing to pay to restore a reef damaged by a shipwreck?

Participants were informed about the composition and importance of coral reef ecosystems in general and of the coral reef ecosystems in Hawaii in particular. Additional questions were asked after this information was presented in order to determine if the information had been communicated successfully. Then, the moderator led a discussion to determine participants' opinions regarding various management options of coral reefs. Concepts of value for management options were then explored.

Based on the findings from these three rounds of focus groups, the Team began development of the full survey instrument.

3.2 June 2004 One-on-One Interviews

We conducted three rounds of one-on-one interviews in Denver, Colorado, and Washington, DC, in June 2004, and interviewed 26 respondents. These interviews were conducted in preparation of the first pretest.² About half of the participants took a self-administered paper and pencil survey; the other half took a verbal protocol survey. Participants were asked to spend about 20 to 30 minutes on the self-administered survey. They were encouraged to put an "X" next to any part of the survey that they felt was unclear or that they did not understand. After the surveys were completed, one-on-one interviews were conducted to debrief each participant on any issues identified with the survey. By enabling respondents to complete the full survey before being interviewed, respondents were able provide immediate and focused feedback. Necessary revisions were made to the survey between rounds of one-on-one interviews.

For the verbal protocol survey, participants were encouraged to read the information out loud and to talk about the survey with the interviewer who wrote down the respondents' comments. After completing the survey, the interviewer asked a series of probing questions to see how the participant felt about the survey and whether certain points were clearly addressed. Again, necessary revisions were made to the survey between rounds of one-on-one interviews.

2. OMB approval for the first three rounds of one-on-one interviews was not required. We conducted these interviews in Denver on June 10, 2004 (interviewed 9 people), and in Washington, DC, on June 17, 2004 (interviewed 9 people), and June 22 and 23, 2004 (interviewed 8 people).

3.3 Initial Design of Survey Information

Based on what we learned from our collaboration with NOAA, other scientists, and stakeholders, as well as from the focus groups and one-on-one interviews, the Team continued with development of the full survey instrument. The instrument was designed to provide sufficient information such that all respondents would be able to answer all questions without any complications and within about 30 minutes.

Because not every respondent was familiar with coral reefs in Hawaii, the Team was careful to include information that would be needed to make informed choices in the valuation exercises and to test this information in the focus groups. The Team also designed the questions needed to generate the data for valuation, including SP questions and questions relating to the variables to be included in the survey.

3.3.1 Physical/natural science panel

To ensure that the scientific information provided to survey respondents was up-to-date and accurate, the Team reviewed the literature on issues regarding coral reef ecosystem management and drafted issue papers,³ developed questions to identify additional issues and opinions on the scientific issues relating to coral reefs, and convened a panel of scientists⁴ to review all scientific information in the survey. This panel was asked to evaluate the issue papers, identify major issues facing Hawaii's coral reef ecosystems, identify the most important issue(s) affecting coral reefs in Hawaii, provide scientific facts to describe the goods and services from coral reef ecosystems that people would care about (ecosystem services), and, most important, describe how these ecosystem services would change under different policy and management protection scenarios.

This panel also reviewed the 2005 pretest instrument.

3.4 External Peer Reviews

The survey instrument and related materials (e.g., underlying economic theory, experimental design) then underwent three formal rounds of independent peer review.

3. The issue papers presented an overview of coral reefs and their status in Hawaii, as well as information on fishing impacts, natural and artificial reefs, invasive species, pollution, and MPAs.

4. Panel members included Dr. Alan Friedlander (fisheries ecologist, Ocean Institute, Waimanalo, Hawaii), Dr. Richard Grigg (professor of oceanography, University of Hawaii), Dr. Charles Birkeland (biologist, University of Hawaii), and Dr. Paul Jokiel (biologist/coral ecologist, University of Hawaii).

The first NOAA peer review was conducted in November 2004 by Professor Richard Carson of the University of California at San Diego, an expert in the field of nonmarket valuation and survey methods, and Professor Stanley Presser of the University of Michigan, an expert in survey research and cognitive psychology. This review took place after the initial instrument had been developed but before the final instrument was completed to allow for incorporation of comments. Based on comments provided by Drs. Carson and Presser, the survey instrument was revised and tested.

The second NOAA review, also by Drs. Carson and Presser, was conducted prior to finalization of the pretest survey instrument in March 2005. Based on this review, the Team determined that the survey instrument was ready for field testing through a pretest.

Prior to pretesting, as part of the Information Collection Request, OMB performed a comprehensive review of the survey instrument, experimental design, and sampling and analysis plans. OMB made a preliminary request for information from NOAA on the incentive compatibility of a choice experiment. In response, the Team developed a memorandum on the issue for OMB review.

Dr. Jon Krosnick, a social psychologist and survey researcher at Stanford University, evaluated the general readability and clarity of the survey instrument.

3.5 2005 OMB Clearance

In order to conduct the first pretest using KN's established internet panel, we submitted the required paperwork to OMB as required by the Paperwork Reduction Act. We included a discussion of the motivation for the overall survey format, survey question justification, and information placing this survey in the context of similar surveys that had already conducted. OMB then granted approval to conduct the first pretest.⁵

3.6 2005 Pretest

The purpose of a pretest was to test the survey instrument in the field where the main survey would be conducted. The pretest also gave an indication of expected response rates and helped to identify any issues with the survey instrument that had not been revealed during the development and design stages.

KN administered the coral reef pretest from August 10 to August 31, 2006, and produced 216 completed surveys.

5. OMB control number 0648-0531, expired September 1, 2006, ICR Reference Number: 200507-0648-003.

3.7 2008 OMB Clearance

After receiving and analyzing the first pretest results and after considering suggested revisions to the survey instrument from NOAA, an additional pretest was conducted before the full survey was administered to a national sample. A request was submitted to and approved by OMB to conduct a second pretest, several rounds of one-on-one interviews, and the main survey. Approval was conditional on providing OMB with a simplified briefing of pretest results and any proposed changes to the survey instrument or implementation plan.⁶

3.8 April 2009 One-on-One Interviews

Two rounds of one-on-one interviews of 32 individuals were conducted in Denver, Colorado, and Washington, DC, in April 2009. These two rounds were performed in preparation for the second pretest.⁷ Participants were invited to a facility where they took the survey via the cognitive interview process. These intense one-on-one interviews lasted from 30 to 90 minutes.

3.9 2009 Pretest

KN administered the second pretest from April 23 to May 12, 2009. A total of 225 surveys were completed. Results were used to refine the final survey instrument and experimental design.

3.10 Finalization of the Survey Instrument

Based on findings from the 2009 pretest, wording changes were made to the coral reef valuation survey instrument (see Appendix A).

In Chapter 5 we discuss the actual field administration of the survey to representative samples of the U.S. population.

6. OMB control number 0648-0585, expires March 31, 2012, ICR Reference Number: 200903-0648-007.

7. OMB approval was obtained to conduct these last two rounds of one-on-one interviews and to interview up to 32 respondents. These interviews were conducted in Denver on April 1 and April 2, 2009 (interviewed 16 people) and in Washington, DC on April 7 and April 8, 2009 (interviewed 16 people).