Three Reviews of NOAA Fisheries
2009 Protected Species Valuation Surveys

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Prepared for the Center of Independent Experts

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Summary Report of Three Reviews of NOAA's *Protected Species Valuation Survey*

Prepared for the Center of Independent Experts
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I. Overview of the Review Process

This report is a summary of three reviews of NOAA's *Protected Species Valuation Survey* done by Rob Hicks (RH), John Whitehead (JW), and George Parsons (GP). The *Protected Species Valuation Survey* is a web-based national survey designed to value the protection of eight marine species currently listed as endangered or threatened under the Endangered Species Act. The survey has been under development for four years including design, focus groups, pre-testing, redesign, and outside review.

We received three versions of the survey as Adobe Acrobat (PDF) files and active web-based surveys for review prior to a workshop with NOAA economists Kristy Wallmo and Dan Lew. The three surveys varied by species. The workshop was held on January 28th and 29th. On the first day we listened and reacted to presentations by the Wallmo and Lew on the survey design and proposed method for analyzing the data. It was a free exchange of ideas that explored the broader purpose and intricate workings of the survey. It lasted a full day. The following day we met without the NOAA economists to discuss the survey further, compare notes, and plan a strategy for written reviews. We agreed to submit three separate independent reports. These reports are attached to this summary.

II. Synopsis of Three Panelist Reports

In our meeting the day following the workshop the panel quickly agreed that the survey was of high quality, that it had been designed following widely accepted procedures for survey development in environmental economics, and that it would yield high quality data for valuation estimates. It was clear that none of our recommendations would involve a major overhaul or reworking of the structure of the survey. The foundation is good. I can also report that there was

little or no major disagreement among the panel over any specific recommendations. There were perhaps some differences in emphasis on certain points, but none that generated major disagreement.

Below, I have done my best to collapse the major recommendations provided by the three reviewers into a unified list. I have kept these short and direct. The NOAA team can refer to each reviewer's specific comments for details and differences in emphasis across reviewers. I saw no reason to repeat that here. I hope this helps focus the team in reworking the survey. I would also encourage them to look at the other minor comments and direct markups of the survey made by each reviewer. I believe the whole package provides a strong and balanced assessment.

1. *Add Language to Address Substitute Species.* All three reviewers mentioned the need for providing respondents more information about substitution species. RH suggests some simple wording to deal with this issue. I think this would be a good starting point -- see the end of his section his 3.1.1. In some cases the substitutes may not be other endangered species, in which case, more individualized attention may be necessary. This is probably the case with salmon for example. These issues were discussed at length in workshop. As JW notes, economic theory suggests that substitute information may reduce valuation estimates but the empirical evidence is mixed. For interpreting results and deflecting criticism it is probably best to have dealt with this in some way in the survey.

2. *Increase 'Option A' Range.* Option A is the status quo outcome in your choice experiment. It is now confined to being either endangered or threatened. We recommend that you expand that range to include a category below endangered such as extinct or near extinct. It is likely to be relevant for policy, useful in the econometrics, and add credibility for the respondents. You may also want to expand the ranges for Options B and C. It may be useful for policy to have a finer set of valuations outcomes than just the steps between endangered, threatened, and recovered.

3. *Credibility of the Payment Vehicle.* JW and RH raise several issues concerning the of payment vehicle. Will people accept the connection between an increase in the protection of species and the increase in the prices of goods and services <u>to their own household</u>? It would not be unreasonable for respondents to think that these prices increases might affect others but not themselves. Or, that they could effectively avoid the increases. Also, it is uncommon to finance something like species protection using a national tax in this way. Will people treat it as real? JW also notes a possible credibility issue at the high end of the tax range. If the entire population of US pays $100 in taxes, about $12 billion would be incoming for species protection. This is an unlikely sum to be needed for protection or to actually be raised. If respondents make such rough calculations, and there is some evidence that they do,

there could be further trouble. We have no alternative payment vehicle to offer. We only suggest that you reinforce respondents' need to assume that price and tax increases will indeed occur and that they would affect their households directly. Any way you strengthen that message and fend off the criticism noted here would be useful. Also, debriefing questions targeted specifically at identifying households that may have issues with realism of the price and taxes increases should be added.

4. *Add Participation and Avidity Data.* Consider collecting avidity and participation data that are not available in the Knowledge Networks demographic data. For example, participation in marine recreational fishing and wildlife viewing as well as environmental behavior such recycling and club membership may be useful. It will also be useful to have measures of proximity to the coast – coastal state/county or linear distance to the coast. Be sure to request zip codes (or at least origin state) from Knowledge Networks. These data will allow you to conduct validity checks and perhaps segment your data in the analysis.

5. *Incorporate Split Sample Tests*. Given the size of your sample, it would be unfortunate not to consider some split sample tests. Two suggestions from the panel are (i) Cheap Talk vs. No Cheap Talk and (ii) Different assumptions regarding other endangered species over the next 50 years – stable vs. improving vs. declining. The literature is mixed on the importance of including cheap talk and on the importance of accounting for substitutes in passive use values. You have an opportunity to make a nice contribution along these and maybe other lines.

6. *Spillover Ecosystem Benefits.* Be aware that respondents may view protection of species as naturally coming with a wider set of ecosystem services that make protection possible. If so, they may be valuing a bundle of services that extends beyond the simple protection of species indicated in your survey. Be careful of how you handled this in the survey and how you intend to interpret it once you have results. You may not be able to or even want to isolate simple protection values. See RH section 3.2.1 for more discussion.

7. *Add Follow-up Valuation Questions.* Consider follow-up questions to your choice questions that explore the intensity of preferences and that test convergent validity of your valuation estimates. Simple follow-up questions that ask people to rank choice outcomes in some way can be used fine tune estimates. A follow-up contingent valuation style question would allow for a convergent validity test but admittedly must be weighed against the cost of expanding an already lengthy survey.

8. *Remind Respondents to Reset Their Budget Constraints in the Repeated Choices.* Respondents need to treat each choice as independent and as having a full budget constraint. You may need a reminder in the survey to reinforce this. See RH section 3.3 for an idea.

9. *Include Other Types of Risk/Uncertainty.* When respondents are asked how uncertainty affects their concern about species and presumably their willingness to pay, all attention is on uncertainty over population dynamics. Can the question be expanded to include other types of uncertainty such as uncertainty over the restoration projects?

10. *Consider a Single Species Survey.* GP suggests that a single species survey with substitutes incorporated as an attribute may be worth consideration as a way to reduce the burden on respondents, sharpen provision of information on substitutes, and avoid the potential pitfalls having random pairings of species. We gather from the workshop that this adjustment is probably not feasible at this stage, but thought the idea should still be passed along.

11. *Econometrics for Species Substitution.* RH has provided some econometrics on how you might go about handling the random species triplets data with special attention testing interaction effects. We suggest that you consider his approach in your analysis.

Again, I encourage the NOAA team to look at individual reviewers comments directly for differences in emphasis and for other minor comments and direct markups of the survey.

III. Attachments

There are five attachments to this summary:

(1) Review by John Whitehead
(2) Review by George Parsons
(3) Review by Robert Hicks
(4) Mark Up of Survey by George Parsons
(5) Mark Up of Survey by Robert Hicks

II. Review of NOAA Fisheries *Protected Species Valuation Survey*

John C. Whitehead
APPALACHIAN STATE UNIVERSITY

March 5, 2009

Executive Summary

In this review I make major and minor recommendations for the Protected Species Valuation Survey. Major recommendations include suggestions for a preference intensity follow-up question, collection of specific socioeconomic variables, concern about the payment vehicle, range of endangered outcomes, the cheap talk script, information about substitutes and inclusion of a willingness-to-pay question:

- Respondents are asked about their preferences for alternatives but little additional information is gathered. I suggest adding a preference intensity follow-up question in order to fine tune valuation estimates.
- Socioeconomic information will be obtained from Knowledge Networks. I suggest making sure that some sort of behavioral data is available and, if not, including some additional questions in the survey.
- That taxes and prices may increase significantly for protection of three species may be incredible to some respondents. Including a debriefing question to determine how likely respondents think this would happen might help clarify respondent preferences.
- Increasing the range of endangered outcomes (e.g., including a "near extinction" or "endangered, with declining populations") is likely to improve econometric modeling and results.
- There is mixed evidence concerning the effectiveness of cheap talk. Including a split sample test of the cheap talk script might lead to a contribution to the economic literature.
- Additional information about substitute species, threatened, endangered or not, may be helpful to respondents. Economic theory suggests that this information may reduce valuation estimates but the empirical literature is mixed.
- Inclusion of a willingness-to-pay follow-up question would provide a means of testing the convergent validity of valuation estimates across methods.

The minor recommendations concern clarity of the information provided and survey questions. There are only a few of these, reflecting the extensive focus group and pretesting of previous drafts of the survey instrument.

Introduction

According to the terms of reference I reviewed Version 1, Version 2, and Version 3 of the programmed, online draft survey instruments, participated in a 1.5 day workshop with NOAA economics Dan Lew and Kristy Wallmo and panel members George Parsons and Rob Hicks, and provide a formal review of the draft survey instrument entitled "Your Opinion about Threatened and Endangered Species in the U.S." In the formal review particular attention was paid to the following key areas of the survey: clarity of information about species, clarity of survey questions, clarity of choice task questions, level of cognitive burden the survey places on respondents, payment vehicle for choice task questions, potential for information effects or other types of survey bias, and econometric issues related to attributes and attribute levels in the choice experiment.

In this review I make major and minor recommendations for the Protected Species Valuation Survey. Major recommendations include suggestions for a preference intensity follow-up question, collection of specific socioeconomic variables, concern about the payment vehicle, range of endangered outcomes, the cheap talk script, information about substitutes and inclusion of a willingness-to-pay question.

Explicitly considering the terms of reference, I find that, in general, the information about species, the survey questions, the choice task questions are clear. Given the joint work with Knowledge Networks and their understanding of their panel respondents' capabilities, I feel level of cognitive burden the survey places on respondents reasonable. Below I address my concerns about the payment vehicle for choice task questions, the potential for information effects or other types of survey bias, and econometric issues related to attributes and attribute levels in the choice experiment.

Instrument Review

Major Comments

Preference Intensity Follow-up Question

Respondents are asked if they prefer options A, B, or C, but little data are collected on preference intensity. A follow-up question could be asked after the option is chosen where respondents are asked: "You chose option [insert chosen letter]. Do you strongly prefer or somewhat prefer option [letter] relative to option [other letter]?" These data would allow estimation of alterative models that incorporate preference intensity and may help to fine tune valuation estimates.

Collection of Specific Socioeconomic Variables

The data can be analyzed with various versions of the multinomial model where individual characteristics are likely to be important (e.g., the latent class model). Knowledge Networks will supply a set of characteristics but there are a number of behavioral variables that could be of interest. These include participation and avidity in marine recreational fishing, environmental behaviors (e.g., recycling) and others. The authors should consider including questions such as these if related variables are not available from Knowledge Networks.

Concern about Payment Vehicle

Higher prices and taxes are typical payment vehicles in stated preference surveys. Yet, little is known about how believable these are. In terms of prices, respondents are presented with a number of supply-side reasons why regulatory costs would drive prices up. But, it is not clear the extent to which this actually takes place. In other words, it is unclear if regulations affecting salmon in Washington would drive prices up $20 annually in the rest of the country. Likewise, higher taxes will be used to pay for increased government programs but there is a lack of experience with rising taxes among the U.S. population. Government borrowing is typically used to fund government programs with the higher taxes put off until the future. Respondents are

asked to believe that prices would rise and taxes would rise to pay for these programs so it is very likely that respondents will respond to cost as expected. But, it may be informative to ask a debriefing question to determine how likely respondents think their prices and taxes would actually rise by the amounts presented. These variables might be important in latent class and other additional analyses.

In addition, how were the cost amounts chosen? There may be some realism bias present. For example, some respondents might wonder why prices and taxes would rise by $100 per household over all of the U.S. in order to help only three species. $100 over 150 million households is 15 billion dollars, a significant sum. This might raise a "government waste" red flag and lead to avoidance of that option even if the preference is there. Adding something to the option A follow up question might help identify this type of response.

Range of endangered outcomes

Respondents are asked to value improvements from the endangered and threatened status quo. However, there is no suggestion that species status will worsen if no additional actions are undertaken. The modeling effort might be more interesting and informative if an "extinct," "near extinction," or "endangered, with declining populations" endpoint version is included in the status quo option A.

Cheap talk script

There is much research to suggest that the so-called "cheap talk" script is ineffective in mitigating hypothetical bias of stated preference survey questions outside the laboratory. Therefore, it would be interesting to conduct a split sample test with the cheap talk script in the choice experiment context. One half of respondents could be told that responses to hypothetical questions are not budget constrained and then reminded that the money comes out of their own pocket and this money could be spent on other things. The other half would not be presented this information.

Substitute information

There are three types of substitutes that could be considered in this survey. The survey explicitly considers two of these: substitute goods that respondents could spend their money on and "policy relevant" species (i.e., each of the three species in each survey). It could be important to remind respondents about biological species substitutes (in addition to the short mention of the number of species on the ESA list and ask a agree/disagree question such as: "It is important to protect individual threatened and endangered species even though there are closely related, though genetically different, species than are not threatened or endangered." Economic theory suggests that this information may reduce valuation estimates but the empirical literature is mixed[1].

[1] Matthew J. Kotchen, M. J., and S. D. Reiling. 1999. Do Reminders of Substitutes and Budget Constraints Influence Contingent Valuation Estimates? Another Comment. *Land Economics* 75 (3): 478-482.

Inclusion of a willingness-to-pay question

It might make more sense to rephrase the follow-up confidence in payment question as a behavioral stated preference question. For example, respondents could be asked a referendum CVM question after choosing option B or C: *You chose option B. Suppose this option was put up for a national referendum vote. Would you vote for or against option B compared to the status quo (option A)?* And then another follow-up for those who vote for: *How sure are you that you would vote for option B. Are you definitely sure, probably sure or not sure at all?*

Minor Comments

Respondents are told: "Some protection actions are more costly to implement than others, so the highest cost option does not always represent the one with the greatest improvements." This suggests that there are some clearly inferior or cost ineffective programs in the choice experiment. The phrase "with the greatest improvements" should be rewritten to make clear that it refers to helping the most species and not necessarily the largest improvement for individual species.

Follow-up choice questions: The survey has redundant follow-up questions to the status quo option. It should be sufficient to ask the follow-up to the status quo option A choice only once. Then the survey could ask a preference intensity and/or CVM follow-up and a "why did you choose option B or C" follow-up.

Screen 27 (turtle) and 33 (seal) of salmon, turtle and seal (version 3) survey refers to information "in this handout" which seems to be a holdover from the focus groups.

Respondents are told that "all of the increased cost would occur in the first 10 years …." Some respondents may feel this statement lacks credibility. It might help to add "almost" to the beginning of the phrase.

Sometimes "wild" is capitalized and sometimes it is lower case when referring to the wild Puget Sound Chinook Salmon. In fact, capitalization of species is inconsistent throughout the three versions.

Drop "and the costs they would pay" from the follow-up confidence question so that respondents can focus on their confidence in their selection of choices. With the phrase included the question is actually two questions.

Recommendations

The survey instrument designed by Lew and Wallmo et al. is of high quality reflecting the impressive amount of (1) researcher effort and expertise dedicated to the task and (2) pre-survey focus group and pretest work conducted. I have little doubt that if the survey is fielded as is it would produce high quality data that would inform NOAA Fisheries and other agencies about

noncommercial protected marine species management. That being said, if it is feasible to implement the above suggestions, especially those included in the major comments section, data quality may be significantly improved.

Appendix 1

Attachment A: Statement of Work for Dr. John Whitehead

External Independent Peer Review by the Center for Independent Experts
Panel Review of the Protected Species Valuation Survey Instrument

Project Background

The purpose of this CIE review is to review a draft survey instrument developed by a team of NMFS economists that will be used to value a suite of threatened and endangered marine species.

Protected species valuation studies enable the National Marine Fisheries Service (NMFS) to assess the national benefits derived from threatened and endangered marine species, including fish, sea turtles, marine mammals, and sea birds. Values obtained from such research can also be used to assess the benefits obtained from conservation and recovery efforts, thus providing a useful benchmark for valuing state and federal protected species research and recovery efforts.

Currently there are very few value estimates for marine species over which NMFS has stewardship, and those estimates that do exist are derived primarily from contingent valuation studies typically involving only one species. The goals of this research project are to estimate the value of multiple species over which NMFS has jurisdiction or stewardship responsibilities using a stated preference choice experiment survey approach. This type of approach was selected so that survey respondents are subject not only to a budget constraint, as is typical in a contingent valuation survey, but are also placed in a framework of making implicit tradeoffs among different species.

Due to the complexity of valuing all marine species under the jurisdiction of NMFS, the project was divided into two phases. The goals of Phase 1 are to value eight species using a choice experiment survey format, such that survey respondents must implicitly make choices among at least three different species. Phase 2 will value additional protected species using a similar choice experiment format; however, depending on feedback and results from Phase 1 modifications to the survey or experimental design may be made.

The survey will be implemented online. This will allow for questionnaire skip patterns and other programming complexities that are not available in a mail survey. The survey will be implemented online using an existing web-enabled panel of respondents maintained by a national polling company. The chosen implementation mode, i.e. the use of online survey implementation and web-enabled panel, is not a part of the CIE review.

The development of the survey instrument has been ongoing since the spring of 2005. Initially 22 species were selected for valuation, and during the survey development process eight species were chosen for valuation during Phase 1. The species for Phase 1 are listed below:

1. Smalltooth sawfish
2. North Atlantic right whale
3. North Pacific right whale

4. Upper Willamette River Chinook salmon
5. Puget Sound Chinook salmon
6. Leatherback sea turtle
7. Loggerhead sea turtle
8. Hawaiian monk seal

The development of the draft survey instrument has been facilitated by the following activities:

1. Consultations with biologists and ecologists to develop an information section for each of the eight species that contains general facts, geographic range, and a brief description of the population status and threats to the species.
2. Seven sets of focus groups in locations throughout the U.S. to ensure that information in the survey is presented clearly and respondents understand the survey questions and the choice tasks they are presented with at the end of the survey.
3. Three sets of cognitive interviews conducted online with the programmed survey instrument and three trained interviewers.
4. A small pretest that was designed to determine whether respondents understand the instructions and set up of the choice task, and the choice task tables themselves. The pretest was implemented online using the programmed survey instrument and was given to 50 respondents.

Feedback from all activities was incorporated and ultimately has resulted in the draft survey instrument that is the subject of this review. The basic structure of the survey is as follows:

- Section 1 is an introductory section and briefly discusses threatened and endangered species and the Endangered Species Act.
- Section 2 provides information on three particular species (selected based on an experimental design).
- Section 3 discusses additional actions, above and beyond the current actions, that could be undertaken to help protect the three species discussed in the survey.
- Section 4 includes the choice task questions.

Because the polling firm maintains socio-economic data for all of its panel respondents, there is no need to collect such data in the survey.

The use of a choice experiment approach will require an experimental design, which generates multiple survey versions. While the experimental design is not a part of this CIE review, it is important to note that each survey version will contain information on only three of the eight species, as focus group feedback suggested that any more than three species seemed to be too much information and placed a cognitive burden on the respondent. Therefore, in addition to using an experimental design to combine attribute levels and form the choice task questions, a design will also be used to determine statistically efficient combinations of species.

For this review we have prepared three different survey versions:

- Version 1 includes the smalltooth sawfish, North Atlantic right whale, and Upper Willamette Rive Chinook salmon
- Version 2 includes the loggerhead sea turtle, leatherback sea turtle, and North Pacific right whale.
- Version 3 includes the Hawaiian monk seal, leatherback sea turtle, and Puget Sound Chinook salmon.

Each version has been programmed and is available for review online, as it will appear to survey respondents. In addition, we have provided the reviewers a paper copy of each survey version.

Overview of CIE Peer Review Process:

The National Marine Fisheries Service's (NMFS) Office of Science and Technology coordinates and manages a contract for obtaining external expertise through the Center for Independent Experts (CIE) to conduct independent peer reviews of stock assessments and various scientific research projects. The primary objective of the CIE peer review is to provide an impartial review, evaluation, and recommendations in accordance to the Statement of Work (SoW), including the Terms of Reference (ToR) herein, to ensure the best available science is utilized for the National Marine Fisheries Service management decisions.

The NMFS Office of Science and Technology serves as the liaison with the NMFS Project Contact to establish the SoW which includes the expertise requirements, ToR, statement of tasks for the CIE reviewers, and description of deliverable milestones with dates. The CIE, comprised of a Coordination Team and Steering Committee, reviews the SoW to ensure it meets the CIE standards and selects the most qualified CIE reviewers according to the expertise requirements in the SoW. The CIE selection process also requires that CIE reviewers can conduct an impartial and unbiased peer review without the influence from government managers, the fishing industry, or any other interest group resulting in conflict of interest concerns. Each CIE reviewer is required by the CIE selection process to complete a Lack of Conflict of Interest Statement ensuring no advocacy or funding concerns exist that may adversely affect the perception of impartiality of the CIE peer review. The CIE reviewers conduct the peer review, often participating as a member in a panel review or as a desk review, in accordance with the ToR producing a CIE independent peer review report as a deliverable. At times, the ToR may require a CIE reviewer to produce a CIE summary report. The Office of Science and Technology serves as the COTR for the CIE contract with the responsibilities to review and approve the deliverables for compliance with the SoW and ToR. When the deliverables are approved by the COTR, the Office of Science and Technology has the responsibility for the distribution of the CIE reports to the Project Contact. Further details on the CIE Peer Review Process are provided at http://www.rsmas.miami.edu/groups/cie/

Requirements for CIE Reviewers

CIE shall provide three CIE reviewers to conduct a peer review and produce independent peer review reports, and these tasks shall not exceed 12 days for each reviewer. One of these CIE reviewers shall serve as the Chair and produce a summary report, therefore an additional 3 days shall be provided for producing the summary report. The total days for this contract shall exceed 39 days. For this review, the CIE shall provide a three-person Review Committee (RC) composed of one individual who will serve as the Chair of the RC and two individuals who will serve strictly as Reviewer A and Reviewer B. The CIE reviewers shall have the expertise to conduct the peer review and produce independent peer review reports in accordance to the ToR.

Expertise Required to Serve on the RC

The CIE reviewers shall have the requested expertise necessary to complete an impartial peer review and produce the deliverables in accordance with the SoW and ToR and as stated below:

Chair
The Chair of the RC must be an expert in the use and methodology of stated preference choice experiments as they are applied to natural resource management. The Chair must have a well established record of publication that includes the results from choice experiment surveys as they are applied to natural resource management issues. Experience with threatened and endangered species valuation is preferred. In addition, the Chair must be engaged (currently or in the very recent past) in research that addresses theoretical or methodological advances related to the use of stated preference choice experiments.

Reviewer A
Reviewer A must be well published in the field of environmental economics and must have at least three publications that involve stated preference choice experiments and/or contingent valuation. Random Utility Modeling experience is essential. Experience with threatened and endangered species valuation is preferred.

Reviewer B
Reviewer B must be well-published in the field of survey research, including publications that address issues such as survey design, survey methodology, survey response rate, or attitude/opinion research on public policy. It is essential that this reviewer have at least two publications that focus on public attitudes and opinions toward issues related to the management of natural resources or the environment. The reviewer should be engaged (currently or in the very recent past) in research that advances any of the topics listed above, or other closely related topics. It is preferable but not essential that this reviewer has familiarity with non-market valuation, contingent valuation, and/or stated preference choice experiments.

The primary purpose of the workshop is to enable the Review Committee to discuss the draft survey instrument with the NMFS economists who developed the survey. In addition, there is time during the workshop for the RC members to begin drafting their independent peer review reports and to assist the chair in integrating individual reviews into a Summary Report. An agenda for the workshop is presented in Annex 1.

The Chair of the RC will deliver a Summary Report which includes the RC's formal reviews of the programmed, online draft survey instrument. The RC is not tasked with (a) reviewing the survey implementation mode, or (b) reviewing the survey experimental design.

Statement of Tasks for CIE Reviewers:

The CIE reviewers shall conduct necessary preparations prior to the peer review, conduct the peer review, and complete the deliverables in accordance with the ToR and milestone dates as specified in the Schedule section.

Prior to the Peer Review: The CIE shall provide the CIE reviewers contact information (name, affiliation, address, email, and phone) to the Office of Science and Technology COTR no later than the date as specified in the SoW, and this information will be forwarded to the Project Contact.

Pre-review Documents: Approximately two weeks before the peer review, the Project Contact will send the CIE reviewers the necessary documents for the peer review, including supplementary documents for background information. The CIE reviewers shall read the pre-review documents in preparation for the peer review.

List of Documents to be Provided:

1. URL that links to the programmed Version 1 of the survey, which the smalltooth sawfish, North Atlantic right whale, and Upper Willamette Rive Chinook salmon.
2. URL that links to the programmed Version 2 of the survey, which includes the loggerhead sea turtle, leatherback sea turtle, and North Pacific right whale.
3. URL that links to the programmed Version 3 of the survey, which includes the Hawaiian monk seal, leatherback sea turtle, and Puget Sound Chinook salmon.
4. Paper copy of Survey Version 1
5. Paper copy of Survey Version 2
6. Paper copy of Survey Version 3

This list of pre-review documents may be updated up to two weeks before the peer review. Any delays in submission of pre-review documents for the CIE peer review will result in delays with the CIE peer review process. Furthermore, the CIE reviewers are responsible for only the pre-review documents that are delivered to them in accordance to the SoW scheduled deadlines specified herein.

The primary role of the CIE reviewer is to conduct an impartial peer review in accordance to the Terms of Reference (ToR) herein, to ensure the best available science is utilized for the National Marine Fisheries Service (NMFS) management decisions (refer to the ToR in Annex 2).

Terms of Reference: The Terms of Reference (ToR) for the CIE peer review is attached to the SoW as Annex 2. Up to two weeks before the peer review, the ToR may be updated with minor

modifications as long as the role and ability of the CIE reviewers to complete the SoW deliverable in accordance with the ToR are not adversely impacted.

Review Committee (RC) meeting: The Review Committee team, comprised of the Chair and reviewers, shall attend a two-day workshop to be held in Silver Spring, MD, from January 28-29, 2009, to learn about the review from NMFS economists, to address the review ToR, and to draft their reviews in support of the development of the independent peer review reports and the Summary Report.

CIE Peer Review Reports and the Chair's Summary Report: No later than February 14, 2009, each CIE reviewer shall complete and submit an independent peer review report in accordance with the ToR, which shall be formatted as specified in Annex 3, to Dr. David Sampson, CIE regional coordinator, at david.sampson@oregonstate.edu, and Manoj Shivlani, CIE lead coordinator, at shivlanim@bellsouth.net. Reviewers A and B will also submit their independent peer review reports to the Chair, who will use these reports and the Chair's own independent peer review report to write a Summary Report.

No later than February 19, 2009, the Chair shall submit the Summary Report, as specified in Annex 4, to Dr. David Sampson, CIE regional coordinator, at david.sampson@oregonstate.edu, and Manoj Shivlani, CIE lead coordinator, at shivlanim@bellsouth.net.

Schedule of Milestones and Deliverables
The CIE Review Committee shall participate in a two-day workshop in Silver Spring, Maryland on January 28 - 29, 2009.

Jan 5, 2008	CIE shall provide the COTR with the CIE reviewer contact information, which will then be sent to the Project Contact
Jan. 12, 2009	The Project Contact will send the CIE Reviewers the pre-review documents
Jan. 28 – 29, 2009	CIE Reviewers will meet for a two-day workshop. Reviewers will begin drafting their reviews at this workshop and assisting the Chair in the development of the Summary Report
Feb. 14, 2009	Reviewers submit independent reviews to Chair and to the CIE, with the Chair providing an independent review to the CIE
Feb. 19, 2009	Chair submits CIE Summary Report to COTR. Summary Report must integrate all independent reviews into one report
Feb. 25, 2009	CIE will submit final CIE Summary Report to the COTRs
March 4, 2009	The COTRs will distribute the final CIE Summary Report to the Project Contact

Acceptance of Deliverables:

Each CIE reviewer shall complete and submit an independent CIE peer review report in accordance with the ToR, and the Chair will complete and submit a summary report, which shall

be formatted as specified in Annex 3 and Annex 4, respectively, to Dr. David Sampson, CIE regional coordinator, at david.sampson@oregonstate.edu, and Manoj Shivlani, CIE lead coordinator, at shivlanim@bellsouth.net. Upon review and acceptance of the CIE reports and the summary report by the CIE Coordination and Steering Committees, the CIE shall send via e-mail the CIE reports to the COTRs (William Michaels William.Michaels@noaa.gov and Stephen K. Brown Stephen.K.Brown@noaa.gov) at the NMFS Office of Science and Technology by the date in the Schedule of Milestones and Deliverables. The COTRs will review the CIE reports to ensure compliance with the SoW and ToR herein, and have the responsibility of approval and acceptance of the deliverables. Upon notification of acceptance, CIE shall send via e-mail the final CIE report in *.PDF format to the COTRs. The COTRs at the Office of Science and Technology have the responsibility for the distribution of the final CIE reports to the Project Contacts.

Key Personnel:

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Silver Spring, MD 20910
Kristy.Wallmo@noaa.gov Phone: 301-713-2328 x 129

Request for Changes:

Requests for changes shall be submitted to the Contracting Officer at least 15 working days prior to making any permanent substitutions. The Contracting Officer will notify the Contractor within 10 working days after receipt of all required information of the decision on substitutions. The contract will be modified to reflect any approved changes. The Terms of Reference (ToR) and list of pre-review documents herein may be updated without contract modification as long as the role and ability of the CIE reviewers to complete the SoW deliverable in accordance with the ToR are not adversely impacted.

Annex 1

Tentative Workshop Agenda

Jan 28, 2009

Morning

9:00 – 10:30	Presentation of survey and survey development process
10:30 – 12:00	Q & A and open discussion among RC and NMFS economists
12:00 – 1:30	Lunch

Afternoon

1:30 – 2:30	Continued Q & A/morning discussion
3:00 – 5:00	RC meeting/begin drafting reviews

Jan. 29, 2009

Morning

9:00 – 12:00	RC meeting/continue drafting reviews
12:00	Workshop adjourned

ANNEX 2

Terms of Reference

For the Panel Review of the Protected Species Valuation Survey Instrument

1. Provide formal review of the draft survey instrument entitled "Your Opinion about Threatened and Endangered Species in the U.S."
2. Review will include Version 1, Version 2, and Version 3 of the programmed, online draft survey instruments.
3. The review should include, at minimum, attention to the following key areas of the survey:
    a. Clarity of information about species
    b. Clarity of survey questions
    c. Clarity of choice task questions
    d. Level of cognitive burden the survey places on respondents
    e. Payment vehicle for choice task questions
    f. Potential for information effects or other types of survey bias
    g. Econometric issues related to attributes and attribute levels in the choice experiment
    h. Any other issues the RC finds necessary to address
4. The review should include strengths and weakness of the draft instrument, in particular in relation to the key areas listed above
5. The review should include recommendations for improvements to the draft survey instrument
6. Paper copies of each of the survey versions will be provided as a convenience only; the Review Committee is not charged with reviewing the paper copies of the survey instrument, as they do not preserve the online formatting and question programming.
7. The Review Committee is not charged with reviewing the survey implementation mode.
8. The Review Committee is not charged with reviewing the survey experimental design.

ANNEX 3

Format and Contents of CIE Independent Peer Review Reports

1. The report should include a formal review of the draft survey instruments and should include an Executive Summary, Introduction, Instrument Review, and Recommendations.

2. The Introduction of the report should include:
    a. Terms of Reference
    b. Panel Membership
    c. Description of Review Activities

3. The Instrument Review should include the formal review of the draft survey instruments, in accordance to the Terms of Reference, and should be presented as the main body of the report.

4. The Recommendations should be clearly stated after the Instrument Review.

5. Appendix for the Bibliography of Materials used prior and during the peer review, if necessary.

6. Appendix for the Statement of Work

7. Appendix for other pertinent information for the CIE peer review.

ANNEX 4

Summary Report Generation and Process

1. The summary report shall include an overview of the review process.

2. The summary report shall provide a synopsis of the three panelist reports.

3. Points of agreement and disagreement among the panelists shall be documented.

The summary report shall also include as separate appendices copies of each of the panelists' report.

III. Review of NOAA Fisheries *Protected Species Valuation Survey*

George Parsons
UNIVERSITY OF DELAWARE

March 9, 2009

Review of NOAA Fisheries *Protected Species Valuation Survey*
Prepared for the Center of Independent Experts
George R. Parsons, University of Delaware
gparsons@udel.edu
March 9, 2009

I. Executive Summary

This report is a review of NOAA Fisheries *Protected Species Valuation Survey PSVS.* The *PSVS* is a web-based national survey designed to value improving the status of eight marine species currently in endangered or threatened status under the Endangered Species Act. The survey has been under development for four years including design, focus groups, pre-testing, redesign, and outside review. I think the survey as it is *currently designed* would yield a defensible set of valuation estimates for the species with results that would be publishable for their importance to policy as well as method. Even so, I believe there is room for improvement. I make several recommendations below. Three of these stand out as most important: (i) the status quo option used in the survey should be expanded to include 'extinction', (ii) more attention should be given to the treatment of substitutes, and (iii) single or double species versions of the survey should be given consideration to reduce length and some pitfalls.

Regarding the terms of reference noted in point 3 of Annex 2, I found the clarity of the survey questions, choice task, and description of the species to be excellent. The level of cognitive burden concerned me somewhat. As noted above, I have recommended a one or two species survey to reduce that burden but have also noted that the survey worked fine in the pretests and focus groups and the Knowledge Networks sample is able to handle a somewhat larger burden than most samples. I have no issue with the payment vehicle. Other surveys have used taxes and price increases successfully. I believe there is some potential for information effects or bias if substitute species are not brought into the survey directly. I elaborate below. I detected no special econometric issues. All other concerns are noted in the discussion below.

This report is outlined as follows: Introduction, Instrument Review, Recommendations, and Note on Attachments. The Introduction outlines terms of agreement in this contact. The Instrument Review is divided into three parts: (i) a short overall assessment judging the quality

of the survey in terms of the current state of the art, (ii) a specific set of comments/recommendations for improving the survey, and (iii) a marked-up version of the survey to address wording and details. There is some overlap between my specific comments/recommendations and the comments on marked-up survey.

II. Introduction

This report is a review of NOAA's *Protected Species Valuation Survey*. It is based in part on a comments and interactions during a 1.5 day workshop with NOAA economists Dan Lew and Kristy Wallmo and panel members Rob Hicks and John Whitehead. I commented on the survey at that meeting based on an earlier review of the survey. The comments here repeat some of those same points and add a few more from further reading of the survey.

For this review I was asked to pay close attention to "…clarity of information about species, clarity of survey questions, clarity of choice task questions, level of cognitive burden the survey places on respondents, payment vehicle for choice task questions, potential for information effects or other types of survey bias, and econometric issues related to attributes and attribute levels in the choice experiment…" and to " …discuss the weaknesses and strengths of the survey…" along these lines. Section III of this review addresses all of these points. I was also asked to make specific recommendations. Based on my comments in the Instrument Review section, I make three specific recommendations in the section following that Review.

III. Instrument Review

A. Overall Assessment

In general the *Protected Species Valuation Survey* is quite well designed. I am impressed by the background work done on compiling the representative list of species, describing each of the selected species, focus groups, and pre-testing of the survey. The survey structure is typical of that seen in questionnaires used in studies published in the environmental economics literature. The authors have dealt with many of the nuances of modern stated preference surveys

– breaking up text with short questions, budget reminders, debriefing questions, limited alternatives, scientific experimental design, clear and direct descriptions of resources to be valued, cheap talk, reasonable payment vehicle with pretest of the relevant range of values, and so forth. The Knowledge Networks sample is also the best there is for internet-based surveys in terms of its representativeness of the population. Indeed, it may be the best available for any survey method. The sample size is also more than adequate for the goals of the project. The experimental design methodology that connects species across different surveys is an innovation that is likely to be applied in other settings. So, on the whole, I have a favorable review. I think the survey as it is *currently designed* would yield a defensible set of valuation estimates for the species with results that would be publishable for their importance to policy as well as method.

Below is a list of specific comments for improving the survey. Most of these were discussed in our meeting last month. None of these is a show-stopper for going forward with the version in its current form but all are worth consideration. I also recognize that the cost adjusting the current form of the survey (more pretests?) to accommodate some of my recommendations may exceed the benefits. The research team will have to make that calculation.

B. Specific Comments/Recommendations

1. Incorporate 'extinction' as one of your levels for the condition of the species in 50 years (Option A). The value of the step from extinction to endangered is apt to be large and important for policy. If resources are being devoted to prevent extinction, it is important to know the value of that step. Also, if people view species as being in the state of endangered for 50 years as your survey does, don't you risk the chance that they may not find a long run steady state of endangered (or threatened) as not such a bad outcome – the species is never lost. For credibility sake almost, the survey needs to show some species being lost in the foreseeable future if no additional action is taken.

   Along these same lines, I don't think you should restrict the Option A level of a species to be its current level. If a species is now threatened, in 50 years it may be endangered and it would be useful to know the value of that step as well. If you want to keep the starting status for each species constant within a given survey, you could vary it across

surveys. So some people would see the right whale as extinct in 50 years if nothing beyond current actions are taken and others would see them as endangered.

2. I am somewhat concerned that offering the species in random triplets may be inviting trouble. In principle, the value of a species should not depend on which other species it happens to be lined-up with in a survey. But, it might. I fear that the values for any species might be different when it is paired along side a whale versus say a salmon. If the values do vary in this way then using the results for policy may be compromised. Perhaps the model could be constrained in estimation to avoid the inconsistency, but you are likely to be asked to test for the plausibility of this constraint.

3. The handling of substitutes needs attention. It would be useful to identify close substitutes for each species and incorporate their condition into the survey somehow, even if it is just briefly. Also, to give perspective and to have a firm handle on your baseline, providing information on the number of endangered marine species and what respondents are to assume about their condition going forward over the same time period as the species in the choice question would be helpful. It would be nice if this was close to the choice question. (I am likely to have a higher value for a species if I believe other marine species will be in worse shape in the future than they are today.)

   Even if you found this information of little interest to people in the focus groups, I think it is important to be able to claim that you have accounted for this when reporting your results. Given what you know from the focus groups it can probably be handled with a small amount of text. Display 5 in the survey is good but something describing what people are to assume going forward – that the list is stable, growing, shrinking because some go extinct, or shrinking because some are saved – seems important to me.

4. The volume of text is large. I worry about how long respondents will hang on and how long they will give thoughtful answers. A serious effort to deleted unwanted material and questions is still warranted. I know you have come a long way already, but my impression is that you can still find some questions you do not really need. You have two

things working in your favor in this regard: (i) the Knowledge Networks population is special and is accustom to handling complicated survey material and (ii) it pre-tested well. Still, from my experience, there is a lot there for each person to take on. I have a few ideas below and in the marked-up survey.

5. One way to handle points 2, 3, and 4 is to construct single species surveys. I mentioned this in our meeting and want to offer it again as an alternative. If the choice questions center around a single species the descriptions of two species could be dropped. That is a lot of material. There would be more room for dealing with the species substitute issue described in point 3. One might even introduce the condition of substitute species (broadly defined like 'mostly stable', 'mostly in decline' or maybe percentages declining) as an attribute into the choice question to replace the two specific species. This would also avoid the potential for inconsistent values noted in point 2. Also, since the choice experiment would only have two attributes one may be able to offer four alternatives on each choice occasion. Given the size of the sample, I think this would be feasible. This basically uses the method and descriptions but trims down the survey and adds some more information on substitute species. It does not clearly dominate the current design, but I think it is worth consideration. If one species it too extreme, consider two. It does not avoid the problem in point 2, but it does help on the other two points.

6. I found the terminology 'distinct population groups' a bit confusing and awkward. Can you think of a simpler terminology that is more descriptive? I am tempted to use 'subpopulation' or 'subgroup'.

7. Avoid asking the debriefing question more than once. It is annoying and may disrupt respondents while working through the choice questions. Can it debrief only once? There could be three different forms – one for those who answer A in all cases, one for those who answer B or C in all cases, and a third from folks who answered A, B, & C. The survey would be designed to pipe people into the correct question form.

8. In the choice questions there is no explicit tie between a project and an improvement in the status of a species. For example, a respondent may be looking for what *more* action is actually taken to move a species from endangered to recovered versus endangered to threatened. There is no difference stated. In fact, if a person clicks "Additional Protection Plans" below Option B and Option C, there is simply a generic statement of what could be done. I think the survey would be improved by making explicit ties between projects and status outcomes – bigger more expansive projects and regulations get you a higher status outcome.

9. I thought the tutorial for the choice question was a bit excessive. I think that this could be reduced to one 'Sample Choice Question' with a box at the bottom checked and a statement like "you would check this box if you preferred Option B over Options A & C." I have never seen such an extensive tutorial for a choice question. The choice question is nicely designed, simple to understand, and really not in need of this much practice. Any shortening of the survey would help.

C. Marked-Up Version of Survey

See attached file titled "Parsons Mark Up of Protected Valuation Survey 2009 02 15" for a marked-up version of the survey.

IV. Major Recommendations for Improving the Survey

As I noted in my overall assessment, I think the survey as it is *currently designed* would yield a defensible set of valuation estimates for the species with results that would be publishable for their importance to policy as well as method. Below are three specific recommendations drawn from the list above for improving the survey that I consider to be the most important. The first two are modifications that can be made to the existing design. The last is a more serious design adjustment that may involve new pretests.

1. Incorporate 'extinction' as one of the Option A levels. Also, allow the Option A to be different from what is actually observed for a species. For example, a currently

threatened species could be characterized as becoming endangered under status quo conditions in 50 years.

2. Give more attention to the treatment of substitutes and what respondents are supposed to assume about the status of other marine species going forward into the future. This could be handled across surveys with different treatments. Alternatively it might be asked what respondents think will be happening to marine species going forward over the next 50 years.

3. Consider single or double species versions of the survey to reduce length and some other pitfalls.

In addition to these recommendations, there are a number of comments on the marked-up version of the survey and comments noted in the previous section that the authors may like to incorporate in final version of the survey.

Appendix A: Statement of Work for Dr. George Parsons

External Independent Peer Review by the Center for Independent Experts
Panel Review of the Protected Species Valuation Survey Instrument

Project Background

The purpose of this CIE review is to review a draft survey instrument developed by a team of NMFS economists that will be used to value a suite of threatened and endangered marine species.

Protected species valuation studies enable the National Marine Fisheries Service (NMFS) to assess the national benefits derived from threatened and endangered marine species, including fish, sea turtles, marine mammals, and sea birds. Values obtained from such research can also be used to assess the benefits obtained from conservation and recovery efforts, thus providing a useful benchmark for valuing state and federal protected species research and recovery efforts.

Currently there are very few value estimates for marine species over which NMFS has stewardship, and those estimates that do exist are derived primarily from contingent valuation studies typically involving only one species. The goals of this research project are to estimate the value of multiple species over which NMFS has jurisdiction or stewardship responsibilities using a stated preference choice experiment survey approach. This type of approach was selected so that survey respondents are subject not only to a budget constraint, as is typical in a contingent valuation survey, but are also placed in a framework of making implicit tradeoffs among different species.

Due to the complexity of valuing all marine species under the jurisdiction of NMFS, the project was divided into two phases. The goals of Phase 1 are to value eight species using a choice experiment survey format, such that survey respondents must implicitly make choices among at least three different species. Phase 2 will value additional protected species using a similar choice experiment format; however, depending on feedback and results from Phase 1 modifications to the survey or experimental design may be made.

The survey will be implemented online. This will allow for questionnaire skip patterns and other programming complexities that are not available in a mail survey. The survey will be implemented online using an existing web-enabled panel of respondents maintained by a national polling company. **The chosen implementation mode, i.e. the use of online survey implementation and web-enabled panel, is not a part of the CIE review.**

The development of the survey instrument has been ongoing since the spring of 2005. Initially 22 species were selected for valuation, and during the survey development process eight species were chosen for valuation during Phase 1. The species for Phase 1 are listed below:

1. Smalltooth sawfish
2. North Atlantic right whale
3. North Pacific right whale
4. Upper Willamette River Chinook salmon
5. Puget Sound Chinook salmon
6. Leatherback sea turtle
7. Loggerhead sea turtle
8. Hawaiian monk seal

The development of the draft survey instrument has been facilitated by the following activities:

1. Consultations with biologists and ecologists to develop an information section for each of the eight species that contains general facts, geographic range, and a brief description of the population status and threats to the species.
2. Seven sets of focus groups in locations throughout the U.S. to ensure that information in the survey is presented clearly and respondents understand the survey questions and the choice tasks they are presented with at the end of the survey.
3. Three sets of cognitive interviews conducted online with the programmed survey instrument and three trained interviewers.
4. A small pretest that was designed to determine whether respondents understand the instructions and set up of the choice task, and the choice task tables themselves. The pretest was implemented online using the programmed survey instrument and was given to 50 respondents.

Feedback from all activities was incorporated and ultimately has resulted in the draft survey instrument that is the subject of this review. The basic structure of the survey is as follows:

- Section 1 is an introductory section and briefly discusses threatened and endangered species and the Endangered Species Act.
- Section 2 provides information on three particular species (selected based on an experimental design).
- Section 3 discusses additional actions, above and beyond the current actions, that could be undertaken to help protect the three species discussed in the survey.
- Section 4 includes the choice task questions.

Because the polling firm maintains socio-economic data for all of its panel respondents, there is no need to collect such data in the survey.

The use of a choice experiment approach will require an experimental design, which generates multiple survey versions. While the experimental design is not a part of this CIE review, it is important to note that each survey version will contain information on only three of the eight species, as focus group feedback suggested that any more than three species seemed to be too much information and placed a cognitive burden on the respondent. Therefore, in addition to using an experimental design to combine attribute levels and form the choice task questions, a design will also be used to determine statistically efficient combinations of species.

For this review we have prepared three different survey versions:

- Version 1 includes the smalltooth sawfish, North Atlantic right whale, and Upper Willamette Rive Chinook salmon
- Version 2 includes the loggerhead sea turtle, leatherback sea turtle, and North Pacific right whale.
- Version 3 includes the Hawaiian monk seal, leatherback sea turtle, and Puget Sound Chinook salmon.

Each version has been programmed and is available for review online, as it will appear to survey respondents. In addition, we have provided the reviewers a paper copy of each survey version.

Overview of CIE Peer Review Process:

The National Marine Fisheries Service's (NMFS) Office of Science and Technology coordinates and manages a contract for obtaining external expertise through the Center for Independent Experts (CIE) to conduct independent peer reviews of stock assessments and various scientific research projects. The primary objective of the CIE peer review is to provide an impartial review, evaluation, and recommendations in accordance to the Statement of Work (SoW), including the Terms of Reference (ToR) herein, to ensure the best available science is utilized for the National Marine Fisheries Service management decisions.

The NMFS Office of Science and Technology serves as the liaison with the NMFS Project Contact to establish the SoW which includes the expertise requirements, ToR, statement of tasks for the CIE reviewers, and description of deliverable milestones with dates. The CIE, comprised of a Coordination Team and Steering Committee, reviews the SoW to ensure it meets the CIE standards and selects the most qualified CIE reviewers according to the expertise requirements in the SoW. The CIE selection process also requires that CIE reviewers can conduct an impartial and unbiased peer review without the influence from government managers, the fishing industry, or any other interest group resulting in conflict of interest concerns. Each CIE reviewer is required by the CIE selection process to complete a Lack of Conflict of Interest Statement ensuring no advocacy or funding concerns exist that may adversely affect the perception of impartiality of the CIE peer review. The CIE reviewers conduct the peer review, often

participating as a member in a panel review or as a desk review, in accordance with the ToR producing a CIE independent peer review report as a deliverable. At times, the ToR may require a CIE reviewer to produce a CIE summary report. The Office of Science and Technology serves as the COTR for the CIE contract with the responsibilities to review and approve the deliverables for compliance with the SoW and ToR. When the deliverables are approved by the COTR, the Office of Science and Technology has the responsibility for the distribution of the CIE reports to the Project Contact. Further details on the CIE Peer Review Process are provided at http://www.rsmas.miami.edu/groups/cie/

Requirements for CIE Reviewers

CIE shall provide three CIE reviewers to conduct a peer review and produce independent peer review reports, and these tasks shall not exceed 12 days for each reviewer. One of these CIE reviewers shall serve as the Chair and produce a summary report, therefore an additional 3 days shall be provided for producing the summary report. The total days for this contract shall exceed 39 days. For this review, the CIE shall provide a three-person Review Committee (RC) composed of one individual who will serve as the Chair of the RC and two individuals who will serve strictly as Reviewer A and Reviewer B. The CIE reviewers shall have the expertise to conduct the peer review and produce independent peer review reports in accordance to the ToR.

Expertise Required to Serve on the RC

The CIE reviewers shall have the requested expertise necessary to complete an impartial peer review and produce the deliverables in accordance with the SoW and ToR and as stated below:

Chair
The Chair of the RC must be an expert in the use and methodology of stated preference choice experiments as they are applied to natural resource management. The Chair must have a well established record of publication that includes the results from choice experiment surveys as they are applied to natural resource management issues. Experience with threatened and endangered species valuation is preferred. In addition, the Chair must be engaged (currently or in the very recent past) in research that addresses theoretical or methodological advances related to the use of stated preference choice experiments.

Reviewer A
Reviewer A must be well published in the field of environmental economics and must have at least three publications that involve stated preference choice experiments and/or contingent valuation. Random Utility Modeling experience is essential. Experience with threatened and endangered species valuation is preferred.

Reviewer B
Reviewer B must be well-published in the field of survey research, including publications that address issues such as survey design, survey methodology, survey response rate, or attitude/opinion research on public policy. It is essential that this reviewer have at least two publications that focus on public attitudes and opinions toward issues related to the management of natural resources or the environment. The reviewer should be engaged (currently or in the

very recent past) in research that advances any of the topics listed above, or other closely related topics. It is preferable but not essential that this reviewer has familiarity with non-market valuation, contingent valuation, and/or stated preference choice experiments.

The primary purpose of the workshop is to enable the Review Committee to discuss the draft survey instrument with the NMFS economists who developed the survey. In addition, there is time during the workshop for the RC members to begin drafting their independent peer review reports and to assist the chair in integrating individual reviews into a Summary Report. An agenda for the workshop is presented in Annex 1.

The Chair of the RC will deliver a Summary Report which includes the RC's formal reviews of the programmed, online draft survey instrument. The RC is not tasked with (a) reviewing the survey implementation mode, or (b) reviewing the survey experimental design.

Statement of Tasks for CIE Reviewers:

The CIE reviewers shall conduct necessary preparations prior to the peer review, conduct the peer review, and complete the deliverables in accordance with the ToR and milestone dates as specified in the Schedule section.

Prior to the Peer Review: The CIE shall provide the CIE reviewers contact information (name, affiliation, address, email, and phone) to the Office of Science and Technology COTR no later than the date as specified in the SoW, and this information will be forwarded to the Project Contact.

Pre-review Documents: Approximately two weeks before the peer review, the Project Contact will send the CIE reviewers the necessary documents for the peer review, including supplementary documents for background information. The CIE reviewers shall read the pre-review documents in preparation for the peer review.

List of Documents to be Provided:

1. URL that links to the programmed Version 1 of the survey, which the smalltooth sawfish, North Atlantic right whale, and Upper Willamette Rive Chinook salmon.
2. URL that links to the programmed Version 2 of the survey, which includes the loggerhead sea turtle, leatherback sea turtle, and North Pacific right whale.
3. URL that links to the programmed Version 3 of the survey, which includes the Hawaiian monk seal, leatherback sea turtle, and Puget Sound Chinook salmon.
4. Paper copy of Survey Version 1
5. Paper copy of Survey Version 2
6. Paper copy of Survey Version 3

This list of pre-review documents may be updated up to two weeks before the peer review. Any delays in submission of pre-review documents for the CIE peer review will result in delays with

the CIE peer review process. Furthermore, the CIE reviewers are responsible for only the pre-review documents that are delivered to them in accordance to the SoW scheduled deadlines specified herein.

The primary role of the CIE reviewer is to conduct an impartial peer review in accordance to the Terms of Reference (ToR) herein, to ensure the best available science is utilized for the National Marine Fisheries Service (NMFS) management decisions (refer to the ToR in Annex 2).

Terms of Reference: The Terms of Reference (ToR) for the CIE peer review is attached to the SoW as Annex 2. Up to two weeks before the peer review, the ToR may be updated with minor modifications as long as the role and ability of the CIE reviewers to complete the SoW deliverable in accordance with the ToR are not adversely impacted.

Review Committee (RC) meeting: The Review Committee team, comprised of the Chair and reviewers, shall attend a two-day workshop to be held in Silver Spring, MD, from January 28-29, 2009, to learn about the review from NMFS economists, to address the review ToR, and to draft their reviews in support of the development of the independent peer review reports and the Summary Report.

CIE Peer Review Reports and the Chair's Summary Report: No later than February 14, 2009, each CIE reviewer shall complete and submit an independent peer review report in accordance with the ToR, which shall be formatted as specified in Annex 3, to Dr. David Sampson, CIE regional coordinator, at david.sampson@oregonstate.edu, and Manoj Shivlani, CIE lead coordinator, at shivlanim@bellsouth.net. Reviewers A and B will also submit their independent peer review reports to the Chair, who will use these reports and the Chair's own independent peer review report to write a Summary Report.

No later than February 19, 2009, the Chair shall submit the Summary Report, as specified in Annex 4, to Dr. David Sampson, CIE regional coordinator, at david.sampson@oregonstate.edu, and Manoj Shivlani, CIE lead coordinator, at shivlanim@bellsouth.net.

Schedule of Milestones and Deliverables

The CIE Review Committee shall participate in a two-day workshop in Silver Spring, Maryland on January 28 - 29, 2009.

Jan 5, 2008	CIE shall provide the COTR with the CIE reviewer contact information, which will then be sent to the Project Contact
Jan. 12, 2009	The Project Contact will send the CIE Reviewers the pre-review documents
Jan. 28 – 29, 2009	CIE Reviewers will meet for a two-day workshop. Reviewers will begin drafting their reviews at this workshop and assisting the Chair in the development of the Summary Report
Feb. 14, 2009	Reviewers submit independent reviews to Chair and to the CIE, with the Chair providing an independent review to the CIE
Feb. 19, 2009	Chair submits CIE Summary Report to COTR. Summary Report must integrate all independent reviews into one report
Feb. 25, 2009	CIE will submit final CIE Summary Report to the COTRs
March 4, 2009	The COTRs will distribute the final CIE Summary Report to the Project Contact

Acceptance of Deliverables:

Each CIE reviewer shall complete and submit an independent CIE peer review report in accordance with the ToR, and the Chair will complete and submit a summary report, which shall be formatted as specified in Annex 3 and Annex 4, respectively, to Dr. David Sampson, CIE regional coordinator, at david.sampson@oregonstate.edu, and Manoj Shivlani, CIE lead coordinator, at shivlanim@bellsouth.net. Upon review and acceptance of the CIE reports and the summary report by the CIE Coordination and Steering Committees, the CIE shall send via e-mail the CIE reports to the COTRs (William Michaels William.Michaels@noaa.gov and Stephen K. Brown Stephen.K.Brown@noaa.gov) at the NMFS Office of Science and Technology by the date in the Schedule of Milestones and Deliverables. The COTRs will review the CIE reports to ensure compliance with the SoW and ToR herein, and have the responsibility of approval and acceptance of the deliverables. Upon notification of acceptance, CIE shall send via e-mail the final CIE report in *.PDF format to the COTRs. The COTRs at the Office of Science and Technology have the responsibility for the distribution of the final CIE reports to the Project Contacts.

Key Personnel:

Contracting Officer's Technical Representative (COTR):
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NMFS Office of Science and Technology
1315 East West Hwy, SSMC3, F/ST4, Silver Spring, MD 20910
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Contractor Contacts:
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Project Contact:
Kristy Wallmo, Economist
1315 East-West Hwy
SSMC III, F/ST5
Silver Spring, MD 20910
Kristy.Wallmo@noaa.gov Phone: 301-713-2328 x 129

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Annex 1

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Jan 28, 2009

Morning

9:00 – 10:30	Presentation of survey and survey development process
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12:00 – 1:30	Lunch

Afternoon

1:30 – 2:30	Continued Q & A/morning discussion
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Jan. 29, 2009

Morning

9:00 – 12:00	RC meeting/continue drafting reviews
12:00	Workshop adjourned

ANNEX 2

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1. Provide formal review of the draft survey instrument entitled "Your Opinion about Threatened and Endangered Species in the U.S."
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3. The review should include, at minimum, attention to the following key areas of the survey:
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    b. Clarity of survey questions
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    d. Level of cognitive burden the survey places on respondents
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    f. Potential for information effects or other types of survey bias
    g. Econometric issues related to attributes and attribute levels in the choice experiment
    h. Any other issues the RC finds necessary to address
4. The review should include strengths and weakness of the draft instrument, in particular in relation to the key areas listed above
5. The review should include recommendations for improvements to the draft survey instrument
6. Paper copies of each of the survey versions will be provided as a convenience only; the Review Committee is not charged with reviewing the paper copies of the survey instrument, as they do not preserve the online formatting and question programming.
7. The Review Committee is not charged with reviewing the survey implementation mode.
8. The Review Committee is not charged with reviewing the survey experimental design.

ANNEX 3

Format and Contents of CIE Independent Peer Review Reports

1. The report should include a formal review of the draft survey instruments and should include an Executive Summary, Introduction, Instrument Review, and Recommendations.

2. The Introduction of the report should include:
    a. Terms of Reference
    b. Panel Membership
    c. Description of Review Activities

3. The Instrument Review should include the formal review of the draft survey instruments, in accordance to the Terms of Reference, and should be presented as the main body of the report.

4. The Recommendations should be clearly stated after the Instrument Review.

5. Appendix for the Bibliography of Materials used prior and during the peer review, if necessary.

6. Appendix for the Statement of Work

7. Appendix for other pertinent information for the CIE peer review.

ANNEX 4

Summary Report Generation and Process

1. The summary report shall include an overview of the review process.

2. The summary report shall provide a synopsis of the three panelist reports.

3. Points of agreement and disagreement among the panelists shall be documented.

4. The summary report shall also include as separate appendices copies of each of the panelists' report.

IV. Review of NOAA Fisheries *Protected Species Valuation Survey*

Robert L. Hicks
COLLEGE OF WILLIAM AND MARY

March 3, 2009

1 Executive Summary

This Marine Protected Species Survey is already a complete and well designed survey. Scientific information on species is very clearly presented, the choice experiment is quite straightforward given the complexity associated with valuing multiple species, and overall I found the survey to be not too cumbersome for respondents. The survey I reviewed could be implemented today and would undoubtedly provide useful information on the public's preferences for NOAA protected species.

In this report, I outline specific recommendations for improving the survey and none involve large-scale changes to the approach I examined as part of this review. These recommendations center on a few key wording changes for the lead-up and content of the choice questions (in Sections 3.2.1, 3.3.1, 3.4 and 3.3.2), specific econometric recommendations (in Section 3.2.1), and some specific wording and editorial suggestions for the survey in Section 4.

2 Introduction

The survey is quite polished, very well conceived, and if implemented as-is would yield scientifically defensible and policy relevant information for the agency. The amount of thought, pretesting, and care that the team has devoted to this effort is laudable and it is quite evident that the development of this survey instrument and modeling methodology has followed standards set out in the economics valuation and survey design literature.

Having said that, I do have some specific comments that I believe would improve the survey. My suggestions are organized as follows. In the next section, I provide a formal review of the survey instrument, outline a few key issues, and suggest approaches for dealing with them. Next, I discuss in detail the survey instrument and suggest editorial changes that, in my view, would improve the survey instrument. I conclude with summary recommendations.

2.1 Terms of Reference

As required, here are the Terms of Reference for the Panel Review of the Protected Species Valuation Survey Instrument

1. Provide formal review of the draft survey instrument entitled "Your Opinion about Threatened and Endangered Species in the U.S."
2. Review will include Version 1, Version 2, and Version 3 of the programmed, online draft survey instruments.
3. The review should include, at minimum, attention to the following key areas of the survey:
   (a) Clarity of information about species (see sections 3.3.2 and 3.3.1)
   (b) Clarity of survey questions (see sections 3.3.2,4, 3.4 and 3.3.1)
   (c) Clarity of choice task questions (see section 3.1)
   (d) Level of cognitive burden the survey places on respondents (see comments about training and debriefing in section 4)
   (e) Payment vehicle for choice task questions (see section 3.4)
   (f) Potential for information effects or other types of survey bias (see discussions in sections 3.3.2, 3.4 and 3.3.1)
   (g) Econometric issues related to attributes and attribute levels in the choice experiment (see section 3.2.1)
   (h) Any other issues the RC finds necessary to address (in various sections of this report)

4. The review should include strengths and weakness of the draft instrument, in particular in relation to the key areas listed above

5. The review should include recommendations for improvements to the draft survey instrument (see section 5)

6. Paper copies of each of the survey versions will be provided as a convenience only; the Review Committee is not charged with reviewing the paper copies of the survey instrument, as they do not preserve the online formatting and question programming.

7. The Review Committee is not charged with reviewing the survey implementation mode.

8. The Review Committee is not charged with reviewing the survey experimental design.

2.2 Panel Membership

In reviewing the Protected Resources Survey, I served as part of a panel consisting of two additional members: the Chair (Dr. George Parsons) and Dr. John Whitehead (Reviewer B). As Reviewer A, my expertise is in in the field of environmental economics and in stated preference choice experiments. I also bring extensive experience with Random Utility Modeling.

2.3 Description of Review Activities

In conducting this review, I examined the provided versions of the survey, and drew upon my experience in survey design and question wording to provide recommendations. Additionally, I spent a significant amount of time thinking about the Random Utility Model one might estimate with data from a survey like this, and what this model, in turn, might suggest for survey content. I have provided detailed suggestions on question wording, information content, and econometric modeling.

3 Instrument Review

3.1 Clarity of Choice Task Questions

I found the choice task to be a fairly straightforward exercise and appreciate the work done by the team to reduce the task to three species rather than the complete set.

3.2 Species Substitution

Before going into the substantive points on this section, I introduce some notation to make the discussion a bit more concrete. By "Intraspecies Substitution", I mean substition among the eight endangered species considered in this study, denote by the notation S^P. "Interspecies substitution" refers to substitution across a broader set of species than that considered in the survey, consisting of other ESA policy relevant species pertinent to the agency that are not included in the study (S^N), other terrestrial based species listed under the ESA (S^T), and a set of related species that are similar to the species in the survey S^R. It is important to note that only S^P is included in the study.

More generally, we can say that a person's utility is dependent upon all of these things *and* a numeraire good capturing all other goods and services the consumer values (X).

$$U(X, S^P, S^N, S^T, S^R) \tag{1}$$

Admittedly, developing a stated preference survey instrument to estimate the complete set of preferences in equation (1) is an unrealistically high bar that no studies in the literature address for a variety of good reasons. Typically, studies invoke separability to examine a subset of potential environmental goods. In either SP or RP studies of goods having use value, the type of use typically dictates attributes that are a part of a bundled goood (e.g. a recreation trip). In most of these studies, separability is assumed for other types of recreation goods *and* rarely do econometric results explore interaction effects in systematic ways.

In a study of existence values, it is not at all clear what the relevant substitutes are. If defined by potential policy interventions, then a reasonable approach may be to focus on the subset of ESA species that are relevant for the agency and invoke separability across terrestrial-based ESA species. However, given that a major thrust of the current effort is to examine how species interactions impact the existence value of species, the current setup is investigating a very specific type of substitution that imposes separability across other endangered or threatened species (even ones that are policy relevant to the agency) and similar or related species that are not necessarily endangered. The structure of the choice experiment itself raises questions about why separability is assumed in some cases and explicitly designed to test for in others.

I don't point these issues out to say that the current instrument is flawed. However, to successfully measure the WTP of the eight NMFS policy relevant species *and* test for species interactions, in my opinion requires some relatively minor tweaking of the survey instrument and careful econometric specification to properly measure the effects. In discussions with the NMFS staff, it is apparent that they have thought about these issues, but I feel it is important to provide detail for clear direction on how I recommend proceeding.

3.2.1 An econometric approach for intraspecies substitution

An important innovation in this study is the desire to econometrically test to see if the WTP for the improved ESA status of one of the policy species is dependent on the status of the other seven policy species considered in the survey. Consequently, an important issue worth thinking about is the implication of separability assumptions in econometrically identifying preferences. Specifically, the desire is to test to see if

$$\frac{\partial^2 U}{\partial S_i^P \partial S_j^P} = 0 \quad \forall i \neq j \tag{2}$$

A feature of the current approach is that of the *eight* policy relevant species, only *three* are presented at any given time. Consequently, the setup provides an interesting test of separability when even assumed relevant species are *not* included in the survey instrument for a given respondent and the full set of policy species are considered by assumption to be the relevant substitutes.

To make the estimation problem more concrete let β_{ij} denote the matrix of species parameters to be estimated the model. With 64 total parameters to estimate (ignoring scale parameters), there are 8 main effects and 56 interaction effects, which may be reduced to 28 by imposing symmetry[1] Denote this full set of parameters to be estimated (excluding higher order effects, for brevity) as

$$\beta^F = \begin{bmatrix} \beta_1 & \beta_{12} & \beta_{13} & \beta_{14} & \beta_{15} & \beta_{16} & \beta_{17} & \beta_{18} \\ \dots & \beta_2 & \beta_{23} & \beta_{24} & \beta_{25} & \beta_{26} & \beta_{27} & \beta_{28} \\ \dots & \dots & \beta_3 & \beta_{34} & \beta_{35} & \beta_{36} & \beta_{37} & \beta_{38} \\ \dots & \dots & \dots & \beta_4 & \beta_{45} & \beta_{46} & \beta_{47} & \beta_{48} \\ \dots & \dots & \dots & \dots & \beta_5 & \beta_{56} & \beta_{57} & \beta_{58} \\ \dots & \dots & \dots & \dots & \dots & \beta_6 & \beta_{67} & \beta_{68} \\ \dots & \dots & \dots & \dots & \dots & \dots & \beta_7 & \beta_{78} \\ \dots & \dots & \dots & \dots & \dots & \dots & \dots & \beta_8 \end{bmatrix} \tag{3}$$

When thinking about these interaction effects in the context of the choice experiment (where only three species are shown to any given respondent), there are sub-experiments when the interaction effect is explicitly designed for, and for other sub-experiments they are not[2]. Consider the estimated indirect utility function for an example experiment focusing on species 1, 2, and 3

$$U = \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \sum_{i=1}^{8} \sum_{j=1, j\neq i}^{8} \beta_{ij} X_i X_j$$

[1] The argument put forward here applies whether one wants to impose symmetry or not.

[2] I am assuming that in this case, the status quo level of the other five species are used econometrically to identify the interaction effects between the 3 species in the experiment and the other five omitted species.

In this experiment, of the β_{ij} interaction parameters, only three are explicitly designed for- $\beta_{12}, \beta_{13}, \beta_{23}$. The other twenty five can be recovered in one of two ways[3]:

1. Dropping the twenty five additional interaction effects, and estimating the three main effects and three interaction effects from each sub experiment. From the grand model, the complete set of interaction effects can be recovered.
2. When combining data across sub-experiments, include the actual levels for the five omitted species and use to identify a larger subset of interaction effects than under the first method.

Given the complete set of three species experiments the full set of interaction parameters can be estimated using either method, but I believe the second method is the correct way to proceed for two important reasons: (1) Your maintained assumption is that preferences are a function of all eight species, and following from that (2) the potential for missing variable bias.

In the example above, interaction terms from sets of species that are not changing due to the design of a sub-experiment drop from estimation because of the differencing inherent with logit specifications (for example, the interaction parameter β_{56} would drop). However, one could identify these parameters for this experiment's collective contribution to the likelihood function:

$$\beta^{1,2,3} = \begin{bmatrix} \beta_1 & \beta_{12} & \beta_{13} & \beta_{14} & \beta_{15} & \beta_{16} & \beta_{17} & \beta_{18} \\ \dots & \beta_2 & \beta_{23} & \beta_{24} & \beta_{25} & \beta_{26} & \beta_{27} & \beta_{28} \\ \dots & \dots & \beta_3 & \beta_{34} & \beta_{35} & \beta_{36} & \beta_{37} & \beta_{38} \end{bmatrix} \tag{4}$$

This does introduce potential collinearity in the design, since only some interaction effects are designed for (e.g. $\beta_{12}, \beta_{13}, \beta_{23}$). In estimation, one may want to differentiate these parameters with the larger set that are not explicitly part of the sub-experimental design (denoted by $\tilde{\beta}_{ij}$) and test for differences using the grand design. Explicitly, one may want to estimate for this experiment,

$$\beta^{1,2,3} = \begin{bmatrix} \beta_1 & \beta_{12} & \beta_{13} & \tilde{\beta}_{14} & \tilde{\beta}_{15} & \tilde{\beta}_{16} & \tilde{\beta}_{17} & \tilde{\beta}_{18} \\ \dots & \beta_2 & \beta_{23} & \tilde{\beta}_{24} & \tilde{\beta}_{25} & \tilde{\beta}_{26} & \tilde{\beta}_{27} & \tilde{\beta}_{28} \\ \dots & \dots & \beta_3 & \tilde{\beta}_{34} & \tilde{\beta}_{35} & \tilde{\beta}_{36} & \tilde{\beta}_{37} & \tilde{\beta}_{38} \end{bmatrix} \tag{5}$$

[3]In this discussion, I am thinking of the grand model, that was discussed during our question and answer period.

Conversely, for another sub-experiment, for example, one focusing on species 1, 2, and 4, we could estimate these parameters:

$$\beta^{1,2,4} = \begin{bmatrix} \beta_1 & \beta_{12} & \tilde{\beta}_{13} & \beta_{14} & \tilde{\beta}_{15} & \tilde{\beta}_{16} & \tilde{\beta}_{17} & \tilde{\beta}_{18} \\ \dots & \beta_2 & \tilde{\beta}_{23} & \beta_{24} & \tilde{\beta}_{25} & \tilde{\beta}_{26} & \tilde{\beta}_{27} & \tilde{\beta}_{28} \\ \dots & \dots & \tilde{\beta}_{34} & \beta_4 & \tilde{\beta}_{45} & \tilde{\beta}_{46} & \tilde{\beta}_{47} & \tilde{\beta}_{48} \end{bmatrix} \tag{6}$$

By collecting the full set of these interaction parameters, it would be very interesting to test to see if $\beta_{ij} = \tilde{\beta}_{ij}$ and, further, to investigate whether $\beta_{ij} \neq 0$ and $\tilde{\beta}_{ij} = 0$.

This approach does beg the question of why only these eight endangered species enter the utility function and not the additional species that are policy relevant for the agency yet not considered in the survey for tractability and budget reasons.

To successfully implement this approach, it is important to tell the respondents what to assume about species that are not explicitly mentioned in the choice experiments, since the econometric approach outlined above makes assumptions about how respondents evaluate them for estimation purposes. Specifically, in the run-up to the stated preference experiments, I would add the following information:

> For other endangered or threatened species, please assume that for the next fifty years their status will remain unchanged from their current condition and that increased conservation expenditures presented in the next set of questions will not impact the conservation efforts on other species.

It may also be advisable to explicitly list all protected resources and their current status.

3.2.2 Interspecies substitution

Another closely related issue is related species or close substitutes that may matter as respondents ponder what to do about the three species they are considering in your choice experiments. In your focus groups, one of these closely related species mattered- hatchery salmon. It mattered enough to include detailed information in the species discussion.

We discussed these issues in depth at our meetings and I think if your research focuses on species interactions in the preference function, you do open yourself up to questions like this. One important response was offered by John Whitehead- that what matters are the policy-relevant species. Given this argument, I think it is doubly important to follow the suggestion offered in the preceding section and, in estimation, treat the set of eight species in a consistent way that tells a story about preferences over the set of species considered here.

3.3 Clarity of information about species

I was very impressed with the degree and clarity of information on the species of interest. Scientific detail was conveyed using simple language and information content was very even. I did have a couple of specific comments related to species information.

3.3.1 Ecosystem-wide benefits

One issue I didn't ask about, but meant to: how species preservation may be lead to spillover benefits throughout the ecosystem. When comparing your choice experiment to a more simple single-species stated choice setting, respondents may be more inclined to view these scenarios as delivering broader benefits since the program they are choosing yields benefits to more than one species.

If this is the case, I worry about whether you are valuing species preservation, or species values bundled with willingness to pay for improved habitat/ecosystem services in a broader sense. I do not believe that your survey instrument is overtly leading respondents to think this way. Rather, since the avenue of providing increased preservation is relatively vague, some respondents may systematically be thinking this way.

I suppose my advice is to think about this potential criticism and what you know from the focus groups and perhaps address the criticism by including wording such as

> Scientist feel that the preservation efforts employed to protect these three species will largely only impact the population of these species themselves.

Of course, this may not be factually correct, or you may not be worried about this distinction. Maybe part of the value you want to capture for policy purposes are spill-over benefits.

3.3.2 Treatment of Risk

I found the discussion of uncertainty to be a bit too focused on the uncertainty associated with the population dynamics and ignored other potential ways that uncertainty might matter for people's willingness to pay for species preservation. In the presentation of each choice occasion, each scenario is equally likely to happen. I worry that respondents who see movements away from really bad outcomes to good ones (e.g. endangered to recovered), may not believe that the recovery is possible and therefore vote no, and not necessarily because they don't value the species itself.

I realize that a significant amount of the focus group time was spent on this issue, so be convinced from focus group evidence that these concerns are unwarranted. Think of how you would add a footnote to a paper to address this concern.

3.4 Payment Vehicle and Budget Constraints

The payment vehicle mixes taxes and increased costs of goods and services. The team has been very careful at the focus group and pretest stage to see how respondents react to this type of payment vehicle. My initial reaction was that it may introduce in the respondents' minds the possibility of substituting away from the private costs related to species preservation. If a respondent believes they can avoid purchasing products and services whose costs increase due to species preservation, then they might be able to avoid these costs and still get preservation by altering their purchase bundle.

A related issue is repeated choices and budget constraints. I think it is important that respondents understand that each choice is independent and that the full budget constraint is available when making the subsequent choice. I would add this wording somewhere on slide Display40a that says something like this (actually, the wording for this is rather difficult)

> You will be asked to make several choices about the types of species preservation you prefer. For each choice, assume that the three options are the only options available for society to undertake.

Actually, I am not crazy about this wording. In the next section, I offer alternative wording to consider.

4 Editorial Comments

Accompanying this narrative, please find the attached pdf which contains comments (sometimes rough) on the slides handed out to the panel. In many cases, it may be more convenient to read the comments directly on the slides. In some cases, I ignore my on-slide comments in this section. You may ignore these particular comments as well.

Q3 Do you need to be explicit about who "we" is? Is it Total government spending, US government only? Public and private sectors?

Q1a In several places, you have 'select one answer only'. Is this redundant, given that your web-based survey probably limits to one answer anyway?

Q1a Consider cutting jargon in the leading paragraph. From focus groups, are these all familiar terms?

Display8 Add categories for risk of intervention not leading to preservation, and general scientific uncertainty.

Display10 The two bullet points are redundant. Doesn't one imply the other?

Display23 Consider asking about chinook sub population in the context of chinook in general.

Display24 Really seems like 4 useful categorizations, and this slide only focuses on two of them: chinook wild, chinook hatchery, Willamette Chinook wild, Willamette hatchery. Lots of substitution possibilities potentially.

QW Following from previous comment, I don't believe this question is getting at the full range of substition possibilities you may want to know about.

Many Slides Consider the use of visuals like maps.

Display26 Again, ignoring the uncertainty associated with likelihood of successful restoration.

Q6_will While not completely measuring the same thing, the concern scales seem to run in opposite direction from Q4, for example.

Display20 Change second bullet to "Smalltooth sawfish eat fish they catch with their long saw or dig up small fish, crab and mussels from the ocean floor...."

Q6_saw In version 2 (q6_pac) you say "after reading this information" different from this slide. Check for wording consistency across versions.

Q6a_saw This is a valid question, but it is not clear to me why you focus on this for sawfish when, in my mind, the biggest source of uncertainty likely affecting willingness to pay is the probability of successful preservation.

Q11_will Does the average respondent know what the term "land use change" is?

Display40a Do you need to tell people that costs are incremental? The status quo really isn't free, since we are doing something for these species. I think you are presenting additional costs.

Qe1 Find some way to shorten the training.

Qe1 When training finds an error, why not highlite cell?

Qc1 Consider visual cues to align eye along columns to coincide with choices.

Qc2 What am I to assume about my budget constraint from the first choice. I find the wording "Remember that any money you spend on these options is money that could be spent on other things", to really make me question whether this money I am spending is additive across choice occasions (of course, I know it isn't but I fear a respondent might, since the word options doesn't resonate with them as a potential choice). Perhaps you could phrase as "Remember that money you spend on your chosen option is money that could be spent on other things"

Debrief Debrief only once if the status quo option is chosen. Only one of the debriefing responses varies by question.

Q16 Change insure to ensure.

5 Summary of Recommendations

To summarize, this survey can be implemented as-is and yield scientifically valid and defensible estimates of economic value for the agency. The team has obviously been very careful and have already thought about many of the issues I raise in this report. However, as with any survey design effort, improvements can always be made and my recommendations suggest only minor tweaks of the actual survey instrument itself.

Here are my summary recommendations:

1. Add some language to the survey to deal with the problem of potential substitutes not included in a sub-version of the experiment. Specific language can be found in section 3.2.1.
2. Follow the suggestions on model specification outlined in section 3.2.1 and potentially test to see if interaction effects that are specifically designed for are statistically equivalent to those that are not.
3. Review what you know from the focus groups and consider adding some language about spill-over ecosystem benefits that preservation programs may provide. Specific example language is included in section 3.3.1.
4. Consider finding asking respondents about other types of risk (e.g. restoration uncertainty) beyond scientific uncertainty related to population dynamics. I believe I suggest a place for this in section 4.
5. Clarify the time horizon of choice and the implications for the budget constraint for responendents. I provide two suggestions (you probably don't need both) in sections 3.4 and 4.

6. Clean up various small editorial problems such as wording, inconsistency of presentation, etc., that I outline in section 4.

I would like to thank the CIEE and NOAA Fisheries for allowing me the opportunity to learn about this research project. I look forward to reading about the survey results. If you need further clarification on any of the points I raise, please contact me.

Appendix 1

Statement of Work for Dr. Robert Hicks

External Independent Peer Review by the Center for Independent Experts
Panel Review of the Protected Species Valuation Survey Instrument

Project Background

The purpose of this CIE review is to review a draft survey instrument developed by a team of NMFS economists that will be used to value a suite of threatened and endangered marine species.

Protected species valuation studies enable the National Marine Fisheries Service (NMFS) to assess the national benefits derived from threatened and endangered marine species, including fish, sea turtles, marine mammals, and sea birds. Values obtained from such research can also be used to assess the benefits obtained from conservation and recovery efforts, thus providing a useful benchmark for valuing state and federal protected species research and recovery efforts.

Currently there are very few value estimates for marine species over which NMFS has stewardship, and those estimates that do exist are derived primarily from contingent valuation studies typically involving only one species. The goals of this research project are to estimate the value of multiple species over which NMFS has jurisdiction or stewardship responsibilities using a stated preference choice experiment survey approach. This type of approach was selected so that survey respondents are subject not only to a budget constraint, as is typical in a contingent valuation survey, but are also placed in a framework of making implicit tradeoffs among different species.

Due to the complexity of valuing all marine species under the jurisdiction of NMFS, the project was divided into two phases. The goals of Phase 1 are to value eight species using a choice experiment survey format, such that survey respondents must implicitly make choices among at least three different species. Phase 2 will value additional protected species using a similar choice experiment format; however, depending on feedback and results from Phase 1 modifications to the survey or experimental design may be made.

The survey will be implemented online. This will allow for questionnaire skip patterns and other programming complexities that are not available in a mail survey. The survey will be implemented online using an existing web-enabled panel of respondents maintained by a national polling company. The chosen implementation mode, i.e. the use of online survey implementation and web-enabled panel, is not a part of the CIE review.

The development of the survey instrument has been ongoing since the spring of 2005. Initially 22 species were selected for valuation, and during the survey development process eight species were chosen for valuation during Phase 1. The species for Phase 1 are listed below:

1. Smalltooth sawfish
2. North Atlantic right whale
3. North Pacific right whale
4. Upper Willamette River Chinook salmon
5. Puget Sound Chinook salmon
6. Leatherback sea turtle
7. Loggerhead sea turtle
8. Hawaiian monk seal

The development of the draft survey instrument has been facilitated by the following activities:

1. Consultations with biologists and ecologists to develop an information section for each of the eight species that contains general facts, geographic range, and a brief description of the population status and threats to the species.
2. Seven sets of focus groups in locations throughout the U.S. to ensure that information in the survey is presented clearly and respondents understand the survey questions and the choice tasks they are presented with at the end of the survey.
3. Three sets of cognitive interviews conducted online with the programmed survey instrument and three trained interviewers.
4. A small pretest that was designed to determine whether respondents understand the instructions and set up of the choice task, and the choice task tables themselves. The pretest was implemented online using the programmed survey instrument and was given to 50 respondents.

Feedback from all activities was incorporated and ultimately has resulted in the draft survey instrument that is the subject of this review. The basic structure of the survey is as follows:

- Section 1 is an introductory section and briefly discusses threatened and endangered species and the Endangered Species Act.
- Section 2 provides information on three particular species (selected based on an experimental design).
- Section 3 discusses additional actions, above and beyond the current actions, that could be undertaken to help protect the three species discussed in the survey.
- Section 4 includes the choice task questions.

Because the polling firm maintains socio-economic data for all of its panel respondents, there is no need to collect such data in the survey.

The use of a choice experiment approach will require an experimental design, which generates multiple survey versions. While the experimental design is not a part of this CIE review, it is important to note that each survey version will contain information on only three of the eight species, as focus group feedback suggested that any more than three species seemed to be too much information and placed a cognitive burden on the respondent. Therefore, in addition to using an experimental design to combine attribute levels and form the choice task questions, a design will also be used to determine statistically efficient combinations of species.

For this review we have prepared three different survey versions:

- Version 1 includes the smalltooth sawfish, North Atlantic right whale, and Upper Willamette Rive Chinook salmon
- Version 2 includes the loggerhead sea turtle, leatherback sea turtle, and North Pacific right whale.
- Version 3 includes the Hawaiian monk seal, leatherback sea turtle, and Puget Sound Chinook salmon.

Each version has been programmed and is available for review online, as it will appear to survey respondents. In addition, we have provided the reviewers a paper copy of each survey version.

Overview of CIE Peer Review Process:

The National Marine Fisheries Service's (NMFS) Office of Science and Technology coordinates and manages a contract for obtaining external expertise through the Center for Independent Experts (CIE) to conduct independent peer reviews of stock assessments and various scientific research projects. The primary objective of the CIE peer review is to provide an impartial review, evaluation, and recommendations in accordance to the Statement of Work (SoW), including the Terms of Reference (ToR) herein, to ensure the best available science is utilized for the National Marine Fisheries Service management decisions.

The NMFS Office of Science and Technology serves as the liaison with the NMFS Project Contact to establish the SoW which includes the expertise requirements, ToR, statement of tasks for the CIE reviewers, and description of deliverable milestones with dates. The CIE, comprised of a Coordination Team and Steering Committee, reviews the SoW to ensure it meets the CIE standards and selects the most qualified CIE reviewers according to the expertise requirements in the SoW. The CIE selection process also requires that CIE reviewers can conduct an impartial and unbiased peer review without the influence from government managers, the fishing industry, or any other interest group resulting in conflict of interest concerns. Each CIE reviewer is required by the CIE selection process to complete a Lack of Conflict of Interest Statement ensuring no advocacy or funding concerns exist that may adversely affect the perception of

impartiality of the CIE peer review. The CIE reviewers conduct the peer review, often participating as a member in a panel review or as a desk review, in accordance with the ToR producing a CIE independent peer review report as a deliverable. At times, the ToR may require a CIE reviewer to produce a CIE summary report. The Office of Science and Technology serves as the COTR for the CIE contract with the responsibilities to review and approve the deliverables for compliance with the SoW and ToR. When the deliverables are approved by the COTR, the Office of Science and Technology has the responsibility for the distribution of the CIE reports to the Project Contact. Further details on the CIE Peer Review Process are provided at http://www.rsmas.miami.edu/groups/cie/

Requirements for CIE Reviewers

CIE shall provide three CIE reviewers to conduct a peer review and produce independent peer review reports, and these tasks shall not exceed 12 days for each reviewer. One of these CIE reviewers shall serve as the Chair and produce a summary report, therefore an additional 3 days shall be provided for producing the summary report. The total days for this contract shall exceed 39 days. For this review, the CIE shall provide a three-person Review Committee (RC) composed of one individual who will serve as the Chair of the RC and two individuals who will serve strictly as Reviewer A and Reviewer B. The CIE reviewers shall have the expertise to conduct the peer review and produce independent peer review reports in accordance to the ToR.

Expertise Required to Serve on the RC

The CIE reviewers shall have the requested expertise necessary to complete an impartial peer review and produce the deliverables in accordance with the SoW and ToR and as stated below:

Chair
The Chair of the RC must be an expert in the use and methodology of stated preference choice experiments as they are applied to natural resource management. The Chair must have a well established record of publication that includes the results from choice experiment surveys as they are applied to natural resource management issues. Experience with threatened and endangered species valuation is preferred. In addition, the Chair must be engaged (currently or in the very recent past) in research that addresses theoretical or methodological advances related to the use of stated preference choice experiments.

Reviewer A
Reviewer A must be well published in the field of environmental economics and must have at least three publications that involve stated preference choice experiments and/or contingent valuation. Random Utility Modeling experience is essential. Experience with threatened and endangered species valuation is preferred.

Reviewer B
Reviewer B must be well-published in the field of survey research, including publications that address issues such as survey design, survey methodology, survey response rate, or attitude/opinion research on public policy. It is essential that this reviewer have at least two publications that focus on public attitudes and opinions toward issues related to the management

of natural resources or the environment. The reviewer should be engaged (currently or in the very recent past) in research that advances any of the topics listed above, or other closely related topics. It is preferable but not essential that this reviewer has familiarity with non-market valuation, contingent valuation, and/or stated preference choice experiments.

The primary purpose of the workshop is to enable the Review Committee to discuss the draft survey instrument with the NMFS economists who developed the survey. In addition, there is time during the workshop for the RC members to begin drafting their independent peer review reports and to assist the chair in integrating individual reviews into a Summary Report. An agenda for the workshop is presented in Annex 1.

The Chair of the RC will deliver a Summary Report which includes the RC's formal reviews of the programmed, online draft survey instrument. The RC is not tasked with (a) reviewing the survey implementation mode, or (b) reviewing the survey experimental design.

Statement of Tasks for CIE Reviewers:

The CIE reviewers shall conduct necessary preparations prior to the peer review, conduct the peer review, and complete the deliverables in accordance with the ToR and milestone dates as specified in the Schedule section.

Prior to the Peer Review: The CIE shall provide the CIE reviewers contact information (name, affiliation, address, email, and phone) to the Office of Science and Technology COTR no later than the date as specified in the SoW, and this information will be forwarded to the Project Contact.

Pre-review Documents: Approximately two weeks before the peer review, the Project Contact will send the CIE reviewers the necessary documents for the peer review, including supplementary documents for background information. The CIE reviewers shall read the pre-review documents in preparation for the peer review.

List of Documents to be Provided:

1. URL that links to the programmed Version 1 of the survey, which the smalltooth sawfish, North Atlantic right whale, and Upper Willamette Rive Chinook salmon.
2. URL that links to the programmed Version 2 of the survey, which includes the loggerhead sea turtle, leatherback sea turtle, and North Pacific right whale.
3. URL that links to the programmed Version 3 of the survey, which includes the Hawaiian monk seal, leatherback sea turtle, and Puget Sound Chinook salmon.
4. Paper copy of Survey Version 1
5. Paper copy of Survey Version 2
6. Paper copy of Survey Version 3

This list of pre-review documents may be updated up to two weeks before the peer review. Any delays in submission of pre-review documents for the CIE peer review will result in delays with the CIE peer review process. Furthermore, the CIE reviewers are responsible for only the pre-review documents that are delivered to them in accordance to the SoW scheduled deadlines specified herein.

The primary role of the CIE reviewer is to conduct an impartial peer review in accordance to the Terms of Reference (ToR) herein, to ensure the best available science is utilized for the National Marine Fisheries Service (NMFS) management decisions (refer to the ToR in Annex 2).

Terms of Reference: The Terms of Reference (ToR) for the CIE peer review is attached to the SoW as Annex 2. Up to two weeks before the peer review, the ToR may be updated with minor modifications as long as the role and ability of the CIE reviewers to complete the SoW deliverable in accordance with the ToR are not adversely impacted.

Review Committee (RC) meeting: The Review Committee team, comprised of the Chair and reviewers, shall attend a two-day workshop to be held in Silver Spring, MD, from January 28-29, 2009, to learn about the review from NMFS economists, to address the review ToR, and to draft their reviews in support of the development of the independent peer review reports and the Summary Report.

CIE Peer Review Reports and the Chair's Summary Report: No later than February 14, 2009, each CIE reviewer shall complete and submit an independent peer review report in accordance with the ToR, which shall be formatted as specified in Annex 3, to Dr. David Sampson, CIE regional coordinator, at david.sampson@oregonstate.edu, and Manoj Shivlani, CIE lead coordinator, at shivlanim@bellsouth.net. Reviewers A and B will also submit their independent peer review reports to the Chair, who will use these reports and the Chair's own independent peer review report to write a Summary Report.

No later than February 19, 2009, the Chair shall submit the Summary Report, as specified in Annex 4, to Dr. David Die, CIE regional coordinator, at ddie@rsmas.miami.edu, and Manoj Shivlani, CIE lead coordinator, at shivlanim@bellsouth.net.

Schedule of Milestones and Deliverables

The CIE Review Committee shall participate in a two-day workshop in Silver Spring, Maryland on January 28 - 29, 2009.

Jan 5, 2008	CIE shall provide the COTR with the CIE reviewer contact information, which will then be sent to the Project Contact
Jan. 12, 2009	The Project Contact will send the CIE Reviewers the pre-review documents
Jan. 28 – 29, 2009	CIE Reviewers will meet for a two-day workshop. Reviewers will begin drafting their reviews at this workshop and assisting the Chair in the development of the Summary Report
Feb. 14, 2009	Reviewers submit independent reviews to Chair and to the CIE, with the Chair providing an independent review to the CIE
Feb. 19, 2009	Chair submits CIE Summary Report to COTR. Summary Report must integrate all independent reviews into one report
Feb. 25, 2009	CIE will submit final CIE Summary Report to the COTRs
March 4, 2009	The COTRs will distribute the final CIE Summary Report to the Project Contact

Acceptance of Deliverables:

Each CIE reviewer shall complete and submit an independent CIE peer review report in accordance with the ToR, and the Chair will complete and submit a summary report, which shall be formatted as specified in Annex 3 and Annex 4, respectively, to Dr. David Sampson, CIE regional coordinator, at ddie@rsmas.miami.edu, and Manoj Shivlani, CIE lead coordinator, at shivlanim@bellsouth.net. Upon review and acceptance of the CIE reports and the summary report by the CIE Coordination and Steering Committees, the CIE shall send via e-mail the CIE reports to the COTRs (William Michaels William.Michaels@noaa.gov and Stephen K. Brown Stephen.K.Brown@noaa.gov) at the NMFS Office of Science and Technology by the date in the Schedule of Milestones and Deliverables. The COTRs will review the CIE reports to ensure compliance with the SoW and ToR herein, and have the responsibility of approval and acceptance of the deliverables. Upon notification of acceptance, CIE shall send via e-mail the final CIE report in *.PDF format to the COTRs. The COTRs at the Office of Science and Technology have the responsibility for the distribution of the final CIE reports to the Project Contacts.

Key Personnel:

Contracting Officer's Technical Representative (COTR):
William Michaels
NMFS Office of Science and Technology
1315 East West Hwy, SSMC3, F/ST4, Silver Spring, MD 20910
William.Michaels@noaa.gov Phone: 301-713-2363 ext 136

Contractor Contacts:
Manoj Shivlani, CIE Lead Coordinator
10600 SW 131 Court
Miami, FL 33186
shivlanim@bellsouth.net Phone: 305-968-7136

Project Contact:
Kristy Wallmo, Economist
1315 East-West Hwy
SSMC III, F/ST5
Silver Spring, MD 20910
Kristy.Wallmo@noaa.gov Phone: 301-713-2328 x 129

Request for Changes:

Requests for changes shall be submitted to the Contracting Officer at least 15 working days prior to making any permanent substitutions. The Contracting Officer will notify the Contractor within 10 working days after receipt of all required information of the decision on substitutions. The contract will be modified to reflect any approved changes. The Terms of Reference (ToR) and list of pre-review documents herein may be updated without contract modification as long as the role and ability of the CIE reviewers to complete the SoW deliverable in accordance with the ToR are not adversely impacted.

Annex 1

Tentative Workshop Agenda

Jan 28, 2009

Morning

9:00 – 10:30	Presentation of survey and survey development process
10:30 – 12:00	Q & A and open discussion among RC and NMFS economists
12:00 – 1:30	Lunch

Afternoon

1:30 – 2:30	Continued Q & A/morning discussion
3:00 – 5:00	RC meeting/begin drafting reviews

Jan. 29, 2009

Morning

9:00 – 12:00	RC meeting/continue drafting reviews
12:00	Workshop adjourned

ANNEX 2

Terms of Reference

For the Panel Review of the Protected Species Valuation Survey Instrument

1. Provide formal review of the draft survey instrument entitled "Your Opinion about Threatened and Endangered Species in the U.S."
2. Review will include Version 1, Version 2, and Version 3 of the programmed, online draft survey instruments.
3. The review should include, at minimum, attention to the following key areas of the survey:
    a. Clarity of information about species
    b. Clarity of survey questions
    c. Clarity of choice task questions
    d. Level of cognitive burden the survey places on respondents
    e. Payment vehicle for choice task questions
    f. Potential for information effects or other types of survey bias
    g. Econometric issues related to attributes and attribute levels in the choice experiment
    h. Any other issues the RC finds necessary to address
4. The review should include strengths and weakness of the draft instrument, in particular in relation to the key areas listed above
5. The review should include recommendations for improvements to the draft survey instrument
6. Paper copies of each of the survey versions will be provided as a convenience only; the Review Committee is not charged with reviewing the paper copies of the survey instrument, as they do not preserve the online formatting and question programming.
7. The Review Committee is not charged with reviewing the survey implementation mode.
8. The Review Committee is not charged with reviewing the survey experimental design.

ANNEX 3

Format and Contents of CIE Independent Peer Review Reports

1. The report should include a formal review of the draft survey instruments and should include an Executive Summary, Introduction, Instrument Review, and Recommendations.

2. The Introduction of the report should include:
    a. Terms of Reference
    b. Panel Membership
    c. Description of Review Activities

3. The Instrument Review should include the formal review of the draft survey instruments, in accordance to the Terms of Reference, and should be presented as the main body of the report.

4. The Recommendations should be clearly stated after the Instrument Review.

5. Appendix for the Bibliography of Materials used prior and during the peer review, if necessary.

6. Appendix for the Statement of Work

7. Appendix for other pertinent information for the CIE peer review.

ANNEX 4

Summary Report Generation and Process

1. The summary report shall include an overview of the review process.

2. The summary report shall provide a synopsis of the three panelist reports.

3. Points of agreement and disagreement among the panelists shall be documented.

4. The summary report shall also include as separate appendices copies of each of the panelists' report.

V. Mark-up of Survey by George Parsons, University of Delaware, February 15, 2009

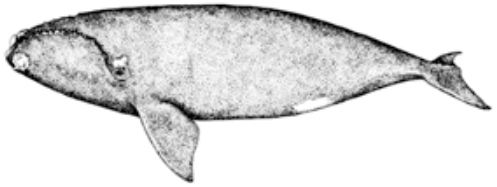
Display1

The National Oceanic and Atmospheric Administration (NOAA), a U.S. government agency, has management responsibilities for several threatened and endangered species. NOAA is sponsoring a study that collects information on public attitudes and opinions about these species through several surveys that each ask about different species. This particular survey focuses on the following three species: **the Wild Upper Willamette River Chinook salmon, the smalltooth sawfish, and the North Atlantic right whale**.

I think you can drop the text after the colon since the pictures with captions have all the same information. Less is better.

Wild Upper Willamette River Chinook salmon

Smalltooth sawfish



North Atlantic right whale

Display2

Responses to questions in this survey will help us understand public attitudes and opinions about threatened and endangered species, in particular the Wild Upper Willamette River Chinook salmon, the smalltooth sawfish, and the North Atlantic right whale.

There are four main sections in the survey:

- **Section 1** introduces the U.S. law designed to protect threatened and endangered species - the Endangered Species Act (often called the ESA)
- **Section 2** provides information about each of the three species and what is currently being done to protect them
- **Section 3** is about additional actions, above and beyond the current actions, that could be undertaken to help protect these species
- **Section 4** asks you to compare alternative management options that provide additional protection actions and select the option you most prefer

Q3

Before beginning Section 1, please answer the following question:

Protecting threatened and endangered species is just one of many issues facing the U.S. Below is a list of some issues, none of which can be solved easily or inexpensively. For each one, please indicate if you think we are spending too much money on it, about the right amount, or too little on it.

For each issue, check the one box that best represents your opinion.

	We are spending ...		
	Too much	About the right amount	Too little
Space exploration	○	○	○
The environment	○	○	○
Health	○	○	○
Assistance to big cities	○	○	○
Law enforcement	○	○	○
Drug rehabilitation	○	○	○
Education	○	○	○

Display3

Section 1: Protecting Species in the U.S.

In this section we provide you with some general information about threatened and endangered species and how they are protected in the U.S.

The Endangered Species Act (ESA) is a U.S. law that helps protect animal and plant species. According to the ESA:

- An endangered species is a plant or animal that is in danger of becoming extinct in the areas where it normally lives (its *habitat*).
- A threatened species is a plant or animal that is at risk of becoming endangered in the areas where it normally lives (its *habitat*).

Change color of text for words 'endangered' and 'threatened'. You want to be sure that respondents' eye goes to this material.

Display5

You might want a sentence on how many of these are marine species.

There currently are 84 mammals, 90 birds, 138 fish, 744 plants, and 298 other species such as reptiles and insects in the U.S. listed as threatened or endangered.

The federal government is required to take actions to protect these species by:

- Restricting human activities like hunting, fishing, commercial activities, and land development or use.
- Protecting or improving the habitat where these species live.

Q1

Before today, had you heard of the Endangered Species Act?

Select one answer only

- Yes
- No

Drop this question.

Q1a

The Endangered Species Act protects either the entire species, or one or more distinct population groups within a species. Distinct population groups are different from the rest of the species because of physical, genetic, ecological, or behavioral characteristics.

Before today, were you aware t
Act sometimes protects distinct
an entire species population?

I would prefer a different label than 'distinct population groups'. How about just 'subspecies'? Then give a simple easy to understand example of a species and a subspecies.

Select one answer only

- Yes
- No

Display6

Many other countries have laws or acts similar to the Endangered Species Act. These laws help protect species that live within those countries, as well as species that migrate and spend time in more than one country.

Display7

Some people are interested in protecting threatened or endangered species because these species:

- Are a source of enjoyment and learning for people now and in the future.
- May help to maintain a healthy ecosystem.
- May provide medicines and other helpful substances for humans someday, even if we don't yet know what these uses are.
- Have a right to exist and should not be endangered by human actions.

Display8

Some people are concerned about protecting threatened or endangered species because protection activities:

- May place restrictions
  limiting recreation, lan
  commercial and sport
- May increase the cost
  such as food, lumber,
  transportation, which i

ve i
the

- Use government funds
  to address other impo

Might want to also include "could mean higher taxes to pay for protection". This would enforce your upcoming payment vehicle.

I would delete the first bullet because it runs the risk of muddying the species values. I think the cost side of things should be consistent with your payment vehicle. Othewise you are changing the product that is being valued somewhat and getting a net value for the species. For example, suppose my wtp to protect salmon is $100, but if I value lost space for recreation opportunities needed to protect them at $90. In principle I would give you a $10 value if I heeded the wording in this bullet. I think you want the $100. As we noted in the meeting, respondents may do this anyway, but I would not encourage their thinking along these lines.

Q2

How much do you agree or disagree with the following statements?

For each statement, check the one box that best represents your opinion.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Protecting endangered species is important to me	○	○	○	○	○
Protecting threatened species is important to me	○	○	○	○	○

Display9

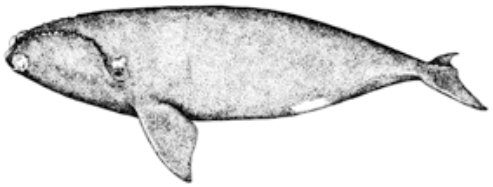
Section 2: Three Threatened or Endangered Species

In this section we provide you with information on the Wild Upper Willamette River Chinook salmon, the smalltooth sawfish, and the North Atlantic right whale.

Again delete species names here since they show up below the pictures.

Wild Upper Willamette River Chinook salmon (threatened)

Smalltooth sawfish (endangered)



North Atlantic right whale (endangered)

Q4

How familiar are you with each of these species (based on what you may know about them from the media, school, personal experience, or other sources of information)?

Check one box for each species.

	Very familiar	Somewhat familiar	Not very familiar	Not at all familiar
Wild Upper Willamette River Chinook salmon	○	○	○	○
Smalltooth sawfish	○	○	○	○
North Atlantic right whale	○	○	○	○

Show a small version of all three species pictures? Maybe you can even embed them in the first column of the table.

Display10

The information you will read on the following screens is based on the best available science, and is drawn from reports and publications by academic and government institutions. The amount of information presented to you may vary depending on the species.

- Some species have abundant information because they have been studied for a long time, or because they are easy to observe.
- Other species have less information because they have not been studied for very long, or because they are difficult to observe.

Have you thought of including pictures or clip art to liven up the pages?

Display23

1 of 2

Wild Upper Willamette River Chinook salmon

The wild Upper Willamette River Chinook (king) salmon has been listed as threatened under the Endangered Species Act since 1999.

GENERAL INFORMATION ABOUT WILD UPPER WILLAMETTE RIVER CHINOOK SALMON

"Subspecies"?

- Wild Upper Willamette River Chinook salmon are a distinct population group of Chinook salmon.
- They are very different from other Chinook salmon in terms of their genetics, when and where they reproduce, and where they travel in the ocean. They also have adapted characteristics that allow them to live in the Upper Willamette River system.

Display23

2 of 2

- Adults are typically between 2 and 4 feet long, and weigh between 10 and 35 pounds.
- Young salmon feed on insects and small fish. As adults, they eat smaller fish, shrimp and squid.
- Young salmon are eaten by other fish, birds and snakes. In the ocean, they are eaten by whales, dolphins, seals, sea lions, and other fish.
- Like most salmon, wild Upper Willamette River Chinook salmon migrate. They are born in freshwater rivers, migrate to the ocean, and several years later return to the river where they were born to *spawn*, or reproduce. Salmon adults die after spawning.

This last bulleted item could go on slide 19 (about the range) which I think should follow this slide.

How about repeating the picture of the salmon on each page that deals with salmon. It might help provide continutiy, point of reference, and is something other than words on the page. Maybe it could be put in the corner. Follow the same convention with other species.

Display24

There are two sources of Chinook salmon:

- Wild salmon spawn on their own
- Hatchery salmon are spawned and released from a hatchery, with a fin clipped so they can be identified as "hatchery fish"

About 20% of adult Upper Willamette River Chinook are wild, while 80% are from hatcheries. Only wild populations are counted when evaluating the ESA listing status. Click here for more information on the differences between wild and hatchery salmon.

QW

How much do you agree or disagree with the following statement?

Check the one box that best represents your opinion.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
It is important to have wild Upper Willamette River Chinook salmon populations, even though there are hatchery salmon	●	●	●	●	●

This slide could be deleted.

Display25

WILD UPPER WILLAMETTE RIVER CHINOOK SALMON RANGE

- Wild Upper Willamette River Chinook salmon are found in Oregon's Upper Willamette River system and in the Pacific Ocean.

How about a map here highlighting the area.

I think this slide should come sooner -- following slide #16 .

Q5_will

Have you personally observed wild Upper Willamette River Chinook salmon in nature (outside of zoos and aquariums)?

Check one box.

- Yes
- No
- I am unsure

I would delete "(outside of zoos and aquariums)".

Display26

WILD UPPER WILLAMETTE RIVER CHINOOK SALMON POPULATION

- The decline of the wild Upper Willamette River Chinook salmon has been primarily caused by:
  - Dams and other obstacles preventing salmon from returning to spawn
  - The decline of spawning habitat from forestry, agriculture, and development
  - Commercial and recreational fishing
  - Pollution and decreased water quality in rivers where spawning occurs
- Currently, about 20,000 wild Upper Willamette River Chinook salmon return to spawn. Only a small percentage of the population is considered self-sustaining in the long-run.
- To protect wild Upper Willamette River Chinook salmon, federal, state, and local governments have increased restrictions on forestry, agriculture, and development around rivers and streams that are used for spawning.
- In addition, commercial fishermen and recreational anglers are not allowed to fish for wild Upper Willamette River Chinook salmon. They can fish for hatchery fish which are identified by clips on their fins.
- Despite these efforts, scientists believe the wild Upper Willamette River Chinook salmon will remain threatened in the foreseeable future.

Too many words on one page.

Q6_will

After reading this information, how concerned are you, if at all, about the wild Upper Willamette River Chinook salmon?

Check the one box that best represents your opinion.

Not at all concerned	A little concerned	Somewhat concerned	Very concerned	Extremely concerned
○	○	○	○	○

Display20

Smalltooth sawfish

The smalltooth sawfish has been listed as endangered under the Endangered Species Act since 2003.

GENERAL INFORMATION ABOUT SMALLTOOTH SAWFISH

- Adult smalltooth sawfish can grow to 18 feet long. They can live up to 60 years.
- Smalltooth sawfish eat fish they catch with their long saw or small fish, crab, and mussels they dig up from the ocean floor. It is not known what species, if any, eat smalltooth sawfish.
- The smalltooth sawfish gets its name from its long snout that looks like a narrow saw blade with teeth along both sides. The saw is used to locate food buried in the sand and as a tool for catching fish.

Display21

SMALLTOOTH SAWFISH RANGE

- Smalltooth sawfish live in shallow coastal areas and at the mouths of rivers. In the U.S. they are now only regularly found around south Florida.
- Outside the U.S., populations of smalltooth sawfish have existed from Brazil through the Caribbean. It is unknown whether these populations still exist, and most scientists believe that the worldwide population of smalltooth sawfish is very small.

A map would be nice. Everyone knows where Florida is but I still think the image with the area in a circle helps folks remember and sets it apart from the other species.

Q5_saw

Have you personally observed smalltooth sawfish in nature (outside of zoos and aquariums)?

Check the one box that best represents your answer.

- Yes
- No
- I am unsure

Again drop "(...zoos ...)".

Display22

1 of 2

U.S. SMALLTOOTH SAWFISH POPULATION

- Historically smalltooth sawfish were found from New York to Texas.
- Although not targeted by commercial fisherman, one of the primary reasons for the smalltooth sawfish decline in the past has been their entanglement in fishing gear.
- Some recreational fishermen used to target smalltooth sawfish for their saws to keep as trophies.
- More recently, coastal development along the East and Gulf Coasts of the U.S. has decreased smalltooth sawfish habitat and contributed to the population decline.
- Currently scientists do not have enough information to estimate the exact size of the smalltooth sawfish population. However, most scientists believe the U.S. population is less than 5% of what it once was.

Display22

2 of 2

- Despite not knowing the exact numbers of U.S. smalltooth sawfish, their disappearance from many of the areas where they were once abundant suggests that they have declined considerably.
- Most scientists believe that preserving the U.S. population of smalltooth sawfish is important for the overall protection of the species.

- Efforts to protect the smalltooth sawfish include public education programs that inform the public of how to avoid harming them, and research and monitoring of the species by scientists.
- Despite these efforts, scientists believe the U.S. population of smalltooth sawfish will remain endangered in the foreseeable future.

Not sure why bullet items have different indentations here.

Q6_saw

After looking at the information in this handout, how concerned are you, if at all, about the smalltooth sawfish?

Check the one box that best represents your opinion.

Not at all concerned	A little concerned	Somewhat concerned	Very concerned	Extremely concerned
○	○	○	○	○

Q6a_saw

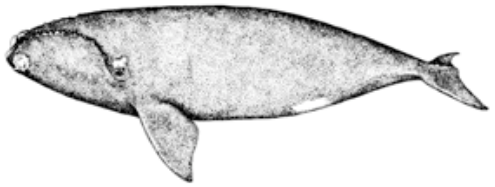
How does the scientific uncertainty about how many smalltooth sawfish there are affect your level of concern, if at all?

The fact that scientists do not know how many smalltooth sawfish there are...

Check the one box that best represents your opinion.

- Makes me more concerned about smalltooth sawfish
- Makes me no more or less concerned about smalltooth sawfish
- Makes me less concerned about smalltooth sawfish

Display27



North Atlantic right whale

The North Atlantic right whale has been listed as endangered under the Endangered Species Act since 1970.

GENERAL INFORMATION ABOUT NORTH ATLANTIC RIGHT WHALES

- Adults are typically between 43 and 60 feet long, and weigh between 50 and 100 tons.
- They generally live 70 years or longer.
- Right whales do not have teeth and feed almost exclusively on small marine organisms.
- Killer whales sometimes prey on young right whales.
- Adults migrate about 2,000 to 3,000 miles in the Atlantic Ocean. After giving birth in the southeastern U.S., they migrate to waters off the northeastern U.S. and Canada to feed and mate.

Display28

NORTH ATLANTIC RIGHT WHALE RANGE

- The North Atlantic right whale is found in the Atlantic Ocean, mainly off the East Coast of the U.S. and Canada.

Q5_atl

Have you personally observed North Atlantic right whales in nature (outside of zoos and aquariums)?

Check the one box that best represents your answer.

- Yes
- No
- I am unsure

Display29

1 of 2

NORTH ATLANTIC RIGHT WHALE POPULATION

- Prior to 1935, North Atlantic right whales were hunted nearly to extinction by commercial whalers. An international ban on hunting right whales was adopted in 1935. Since then there has been no evidence of illegal hunting of North Atlantic right whales.
- Currently the primary threats to the North Atlantic right whale include the following:
    - Collisions with ships
    - Entanglement in commercial fishing gear
    - Habitat destruction from undersea drilling and dredging operations.
- Scientists believe about 350 North Atlantic right whales exist off the East coast of North America, and only a few are thought to remain in other areas.

Display29

2 of 2

- To protect North Atlantic right whales federal, state, and local governments have taken a number of actions that include:
    - Reducing ship strikes by advising boat captains about alternate routes and vessel speeds, developing warning systems to alert boat captains that right whales are nearby, and developing educational programs for marine vessel crews
    - Reducing entanglements by strengthening commercial fishing regulations
- In addition to efforts in the U.S., the International Whaling Commission prohibits hunting of all right whales anywhere in the world. North Atlantic right whales are also protected under Canada's 'Species At Risk' Act, a law similar to the Endangered Species Act.
- Despite these actions, there has been no apparent population increase in the last 15 years, and North Atlantic right whales are likely to remain endangered in the foreseeable future.

Q6_atl

After looking at the information in this handout, how concerned are you, if at all, about the North Atlantic Right Whale?

Check the one box that best represents your opinion.

Not at all concerned	A little concerned	Somewhat concerned	Very concerned	Extremely concerned
○	○	○	○	○

Display37

Section 3: Additional Protection for Threatened and Endangered Species

In this section we describe additional protection actions for each of the three species you have read about.

Display38

In addition to current protection activities, federal, state, and local governments could further protect the Wild Upper Willamette River Chinook salmon, the smalltooth sawfish, and the North Atlantic right whale.

Undertaking additional protection actions is expected to stabilize or increase the population sizes of these species. As the populations stabilize or increase, their ESA status may improve, and the species may even *recover*.

- The term *recover* means that the population increases enough so that it can be removed from the list of threatened and endangered species.
- Generally, improvements in ESA status from endangered to threatened, or threatened to recovered, are made only after in-depth scientific review shows evidence of the following:
    - The population size in key habitat areas has stabilized or appears to be on a path to a stable or sustainable size
    - Most, if not all, of the factors believed to contribute to the species' decline or endangerment have been eliminated or controlled enough to no longer be a concern
- The exact requirements to improve a species' ESA status are specific to each species.

Too many words on one page.

Q11NEW

Based on your knowledge and your own personal preferences for **the Wild Upper Willamette River Chinook salmon, the smalltooth sawfish, and the North Atlantic right whale**, please indicate how important you believe it is to undertake additional protection actions for these species if additional funding was available to help protect these species.

Select one answer from each row in the grid

	Not at all important	A little important	Somewhat important	Very important	Extremely important
Wild Upper Willamette River Chinook salmon	○	○	○	○	○
Smalltooth sawfish	○	○	○	○	○
North Atlantic right whale	○	○	○	○	○

This question is redundant with the 'concern' quesiton following each species. I like this one better.

Q11_will

Below are several types of protection actions that may be undertaken to further protect the Wild Upper Willamette River Chinook salmon. In your opinion, for each type of protection, do you believe you and your household would be positively affected, negatively affected, or not at all affected?

Check one box for each action.

	Positively affected	Not at all affected	Negatively affected	Don't know
Land use changes that increase protection of rivers where Upper Willamette River Chinook salmon spawn	○	○	○	○
Additional restrictions on agricultural pesticide and fertilizer use in areas around spawning rivers to reduce pollution in these rivers	○	○	○	○
Better management of water released from dams to ensure sufficient water is available for salmon to swim upstream	○	○	○	○

Q11_saw

Below are several types of protection actions that may be undertaken to further protect the smalltooth sawfish. In your opinion, for each type of protection, do you believe you and your household would be positively affected, negatively affected, or not at all affected?

Check one box for each action.

	Positively affected	Not at all affected	Negatively affected	Don't know
Increased restrictions on fishing gear that entangle smalltooth sawfish	○	○	○	○
Increased restrictions on coastal land use activities that harm sawfish habitat	○	○	○	○
Establishment of new wildlife refuges that protect the areas where they mate and give birth	○	○	○	○

Q11_atl

Below are several types of protection actions that may be undertaken to further protect the North Atlantic right whale. In your opinion, for each type of protection, do you believe you and your household would be positively affected, negatively affected, or not at all affected?

Check one box for each action.

	Positively affected	Not at all affected	Negatively affected	Don't know
Increased restrictions on commercial ocean fishing activities in U.S. waters	○	○	○	○
Increased restrictions on ocean vessel traffic in U.S. waters	○	○	○	○

Display39

The actions described in the previous questions will require additional spending by governments, and increase the costs of running certain types of businesses. Undertaking these actions will also cost U.S. households more money through:

- Higher prices for products and services affected by the protection actions
- Increases in taxes

All of the increased cost will occur in the first 10 years when new regulations and restrictions are put into place, government funds are spent on research and purchases like land for wildlife refuges, and those directly affected by restrictions adjust to the changes.

Q14

I would drop this question. It begs the question (how much?) and goes to the core of the SP question anyway.

How much do you agree or disagree with the following statements?

Check the one box that best represents your opinion.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I am willing to pay higher prices for products for additional protection for these three threatened or endangered species	○	○	○	○	○
I am willing to pay higher taxes for additional protection for these three threatened or endangered species	○	○	○	○	○

Display40

Section 4: Alternative Management Options for Additional Protection

In this section, we ask you several questions to get your opinion about possible alternative management options for the Wild Upper Willamette River Chinook salmon, the smalltooth sawfish, and the North Atlantic right whale.

Display40A

On the following screens you will see tables that show the expected ESA status (endangered, threatened, or recovered) of each species in 50 years under alternative management options:

- Option A represents the current protection actions that are planned or already underway.
- Options B and C represent additional protection actions such as those described in the previous section that do more to help species stabilize or recover but also cost more. The cost per year of these additional actions would be added to your household through higher prices on consumer products and increased taxes. Some protection actions are more costly to implement than others, so the highest cost option does not always represent the one with the greatest improvements.
- The cost per year for Options B and C are expected to occur in the first 10 years when new regulations and restrictions are put into place, government funds are spent on research and purchases like land for wildlife refuges, and those directly affected by restrictions adjust to the changes.

After comparing Options A, B, and C you will be asked to select which option you prefer.

Display42

I think this example page with choice boxes shown below is enough tutorial. You could have one of the boxes checked and say "for example if you preferred option B you would check here'. The upcoming 'tests' are uncommon and not really needed.

This is an EXAMPLE of a table you will see that describes the alternative management options.

EXAMPLE	**Expected result in 50 years for each option**		
	Option A No additional protection actions	**Option B** Additional protection actions	**Option C** Additional protection actions
Wild Upper Willamette River Chinook salmon **ESA status**	Threatened	Threatened	Threatened
Smalltooth sawfish **ESA status**	Endangered	Threatened	Recovered
North Atlantic right whale **ESA status**	Endangered	Threatened	Endangered
Cost per year Added cost to your household each year for 10 years	$0	$40	$20

To ensure everyone interprets the EXAMPLE table and the questions that follow the same way, the next questions will ask you to answer questions about the EXAMPLE table.

QE1

EXAMPLE **Expected result in 50 years for each option**

	Option A No additional protection actions	**Option B** Additional protection actions	**Option C** Additional protection actions
Wild Upper Willamette River Chinook salmon ESA status	Threatened	Threatened	Threatened
Smalltooth sawfish ESA status	Endangered	Threatened	Recovered
North Atlantic right whale ESA status	Endangered	Threatened	Endangered
Cost per year Added cost to your household each year for 10 years	$0	$40	$20

Please refer to the example table to answer the next few questions. Which Option leads to one or more species being recovered after 50 years?

Select all answers that apply

- ☐ Option A
- ☐ Option B
- ☐ Option C

If QE1 = Option C is selected:

Correct

That's correct!

EXAMPLE	Expected result in 50 years for each option		
	Option A No additional protection actions	**Option B** Additional protection actions	**Option C** Additional protection actions
Wild Upper Willamette River Chinook salmon **ESA status**	Threatened	Threatened	Threatened
Smalltooth sawfish **ESA status**	Endangered	Threatened	Recovered
North Atlantic right whale **ESA status**	Endangered	Threatened	Endangered
Cost per year Added cost to your household each year for 10 years	$0	$40	$20

If QE1 = Option A or B is selected:
Incorrect_1

The answer is actually Option C. Under Option C the smalltooth sawfish would be recovered after 50 years.

EXAMPLE	**Expected result in 50 years for each option**		
	Option A No additional protection actions	**Option B** Additional protection actions	**Option C** Additional protection actions
Wild Upper Willamette River Chinook salmon ESA status	Threatened	Threatened	Threatened
Smalltooth sawfish ESA status	Endangered	Threatened	Recovered
North Atlantic right whale ESA status	Endangered	Threatened	Endangered
Cost per year Added cost to your household each year for 10 years	$0	$40	$20

QE2

EXAMPLE	Expected result in 50 years for each option		
	Option A No additional protection actions	**Option B** Additional protection actions	**Option C** Additional protection actions
Wild Upper Willamette River Chinook salmon **ESA status**	Threatened	Threatened	Threatened
Smalltooth sawfish **ESA status**	Endangered	Threatened	Recovered
North Atlantic right whale **ESA status**	Endangered	Threatened	Endangered
Cost per year Added cost to your household each year for 10 years	$0	$40	$20

In the example table, what will the ESA status of the Wild Upper Willamette River Chinook salmon be in 50 years if no additional protection actions are undertaken?

Select one answer only

- Threatened
- Endangered
- Recovered

If QE2 = Threatened is selected:
Correct

That's correct!

EXAMPLE	Expected result in 50 years for each option		
	Option A No additional protection actions	**Option B** Additional protection actions	**Option C** Additional protection actions
Wild Upper Willamette River Chinook salmon **ESA status**	Threatened	Threatened	Threatened
Smalltooth sawfish **ESA status**	Endangered	Threatened	Recovered
North Atlantic right whale **ESA status**	Endangered	Threatened	Endangered
Cost per year Added cost to your household each year for 10 years	$0	$40	$20

If QE2 = Threatened is not selected:
Incorrect_2

The answer is actually threatened. This information is provided under Option A in the example table.

EXAMPLE	**Expected result in 50 years for each option**		
	Option A No additional protection actions	**Option B** Additional protection actions	**Option C** Additional protection actions
Wild Upper Willamette River Chinook salmon **ESA status**	Threatened	Threatened	Threatened
Smalltooth sawfish **ESA status**	Endangered	Threatened	Recovered
North Atlantic right whale **ESA status**	Endangered	Threatened	Endangered
Cost per year Added cost to your household each year for 10 years	$0	$40	$20

QE3

EXAMPLE	**Expected result in 50 years for each option**		
	Option A No additional protection actions	**Option B** Additional protection actions	**Option C** Additional protection actions
Wild Upper Willamette River Chinook salmon **ESA status**	Threatened	Threatened	Threatened
Smalltooth sawfish **ESA status**	Endangered	Threatened	Recovered
North Atlantic right whale **ESA status**	Endangered	Threatened	Endangered
Cost per year Added cost to your household each year for 10 years	$0	$40	$20

In the example table, which species will not have an improved ESA status in 50 years under any of the options?

Select one answer only

- the Wild Upper Willamette River Chinook salmon
- the smalltooth sawfish
- the North Atlantic right whale

If the QE3 = Wild Upper Willamette River Chinook salmon is selected:

Correct

That's correct!

EXAMPLE	Expected result in 50 years for each option		
	Option A No additional protection actions	**Option B** Additional protection actions	**Option C** Additional protection actions
Wild Upper Willamette River Chinook salmon **ESA status**	Threatened	Threatened	Threatened
Smalltooth sawfish **ESA status**	Endangered	Threatened	Recovered
North Atlantic right whale **ESA status**	Endangered	Threatened	Endangered
Cost per year Added cost to your household each year for 10 years	$0	$40	$20

If the QE3 = Wild Upper Willamette River Chinook salmon is not selected:

Incorrect_3

The answer is the Wild Upper Willamette River Chinook salmon. It will remain threatened under Options A, B, and C in the example table.

EXAMPLE	**Expected result in 50 years for each option**		
	Option A No additional protection actions	**Option B** Additional protection actions	**Option C** Additional protection actions
Wild Upper Willamette River Chinook salmon ESA status	Threatened	Threatened	Threatened
Smalltooth sawfish ESA status	Endangered	Threatened	Recovered
North Atlantic right whale ESA status	Endangered	Threatened	Endangered
Cost per year Added cost to your household each year for 10 years	$0	$40	$20

Display_Cheap

On the following screens you will be asked several questions about which management options you prefer.

For hypothetical questions like these, studies have shown that many people say they are willing to pay more for protecting threatened and endangered species than they actually would pay out of their pockets. We believe this happens because people do not really consider how big an impact an extra cost actually has to their family's budget when answering these types of questions. It is easy to be generous when you do not really need to open your wallet.

To avoid this, as you consider each question, please imagine your household actually paying the cost of the choice you select out of your household's budget.

QC1

The table below is similar to the EXAMPLE you just saw. For this question, please compare Options A, B, and C in this table and select the Option you most prefer.

Remember that any money you spend on these options is money that could be spent on other things.

Expected result in 50 years for each option

	Option A No additional protection actions	**Option B** Additional protection actions	**Option C** Additional protection actions
Wild Upper Willamette River Chinook salmon **ESA status**	Threatened	Threatened	Recovered
Smalltooth sawfish **ESA status**	Endangered	Threatened	Threatened
North Atlantic right whale **ESA status**	Endangered	Endangered	Endangered
Cost per year Added cost to your household each year for 10 years	$0	$50	$60
Which option do you prefer?	○	○	○

If QC1= Option A is selected:

QC1a

Why did you choose Option A (continue current protections)?

Check all boxes that apply.

- ☐ The annual costs of Options B or C are too expensive
- ☐ Protecting threatened and endangered species places too many restrictions on industries or private landowners
- ☐ I did not feel it is my responsibility to pay for protecting these species
- ☐ I don't trust the government to run the program
- ☐ I should not have to pay more taxes for any reason
- ☐ I need more information to make a choice
- ☐ I am too unsure about how I feel about threatened and endangered species
- ☐ I do not think the programs will be effective
- ☐ More research to understand one or more species needs to be done before I would pay for additional protection options
- ☐ Other (please explain) _____

If QC1= Option B or C is selected:

QC1bc

Please write a comment that helps us understand how you made your choice in the previous question.

Type in the answer

QC2

As in the previous question, please compare Options A, B, and C in this table and select the option you most prefer.

Remember that any money you spend on these options is money that could be spent on other things.

Expected result in 50 years for each option

	Option A No additional protection actions	**Option B** Additional protection actions	**Option C** Additional protection actions
Wild Upper Willamette River Chinook salmon **ESA status**	Threatened	Recovered	Threatened
Smalltooth sawfish **ESA status**	Endangered	Recovered	Endangered
North Atlantic right whale **ESA status**	Endangered	Threatened	Recovered
Cost per year Added cost to your household each year for 10 years	$0	$100	$20
Which option do you prefer?	○	○	○

If QC2= Option A is selected:

QC2a

Why did you choose Option A (continue current protections)?

Check all boxes that apply.

- ☐ The annual costs of Options B or C are too expensive
- ☐ Protecting threatened and endangered species places too many restrictions on industries or private landowners
- ☐ I did not feel it is my responsibility to pay for protecting these species
- ☐ I don't trust the government to run the program
- ☐ I should not have to pay more taxes for any reason
- ☐ I need more information to make a choice
- ☐ I am too unsure about how I feel about threatened and endangered species
- ☐ I do not think the programs will be effective
- ☐ More research to understand one or more species needs to be done before I would pay for additional protection options
- ☐ Other (please explain) _____

QC3

As in the previous questions, please compare Options A, B, and C in this table and select the option you most prefer.

Remember that any money you spend on these options is money that could be spent on other things.

Expected result in 50 years for each option

	Option A No additional protection actions	**Option B** Additional protection actions	**Option C** Additional protection actions
Wild Upper Willamette River Chinook salmon **ESA status**	Threatened	Recovered	Threatened
Smalltooth sawfish **ESA status**	Endangered	Endangered	Recovered
North Atlantic right whale **ESA status**	Endangered	Threatened	Recovered
Cost per year Added cost to your household each year for 10 years	$0	$30	$60
Which option do you prefer?	○	○	○

If QC3= Option A is selected:

QC3a

Why did you choose Option A (continue current protections)?

Check all boxes that apply.

- [ ] The annual costs of Options B or C are too expensive
- [ ] Protecting threatened and endangered species places too many restrictions on industries or private landowners
- [ ] I did not feel it is my responsibility to pay for protecting these species
- [ ] I don't trust the government to run the program
- [ ] I should not have to pay more taxes for any reason
- [ ] I need more information to make a choice
- [ ] I am too unsure about how I feel about threatened and endangered species
- [ ] I do not think the programs will be effective
- [ ] More research to understand one or more species needs to be done before I would pay for additional protection options
- [ ] Other (please explain) _____

If Options B or C are selected on QC1, QC2 or QC3

QC_BC

To help us understand why you chose Option B or Option C in the previous questions, please answer the following:

For each statement check the one box that best represents your opinion.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I would be willing to pay the same amount of money to protect any three threatened or endangered species	●	●	●	●	●
I am willing to contribute to causes I believe are worthy whenever I can afford it	●	●	●	●	●
The added cost I was willing to pay was to protect the environment in general and not just to protect these three species	●	●	●	●	●

If Options B or C are selected on QC1, QC2 or QC3 - Continued
QC_BC2

Continued from the previous question.

To help us understand why you chose Option B or Option C in the previous questions, please answer the following:

For each statement check the one box that best represents your opinion.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I chose Option B or Option C because I think it is important to do something to protect the environment	●	●	●	●	●
I feel that the added cost I was willing to pay will protect other species in addition to the three in the table	●	●	●	●	●

Q15

These questions were asked to obtain public input for decision makers to consider along with information from scientists and planners. People feel differently about how confident they are with their selection of choices and the costs they would pay.

How confident are you that your answers in the previous questions accurately reflect how you feel about protecting **the Wild Upper Willamette River Chinook salmon, the smalltooth sawfish, and the North Atlantic right whale**.

Check the one box that best represents your opinion.

Not at all confident	Slightly confident	Somewhat confident	Very confident	Extremely confident
○	○	○	○	○

Q16

Listed below are statements about the relationship between humans and the environment. For each statement please indicate how much you agree or disagree by checking the appropriate box.

Select one answer from each row in the grid

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
We are approaching the limit of the number of people the earth can support	●	●	●	●	●
Humans have the right to modify the natural environment to suit their needs	●	●	●	●	●
When humans interfere with nature it often produces disastrous consequences	●	●	●	●	●
Human ingenuity will insure that we do not make the earth unlivable	●	●	●	●	●
Humans are abusing the environment	●	●	●	●	●

Q16_2

1 of 2

Continued from the previous question.

Listed below are statements about the relationship between humans and the environment. For each statement please indicate how much you agree or disagree by checking the appropriate box.

Select one answer from each row in the grid

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
The earth has plenty of natural resources if we just learn how to develop them	●	●	●	●	●
Plants and animals have as much right as humans to exist	●	●	●	●	●
The balance of nature is strong enough to cope with the impacts of modern industrial nations	●	●	●	●	●

Q16_2

2 of 2

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Humans will eventually learn enough about how nature works to be able to control it	○	○	○	○	○
If things continue on their present course we will soon experience an environmental catastrophe	○	○	○	○	○

Last

Thank you for taking the time to complete this survey. Please provide any additional comments you have about the survey in the box below.

Type in the answer

Thank you for completing this survey. We have successfully received your responses.

Appendix

An endangered species is a plant or animal that is in danger of becoming extinct in the areas where it normally lives (its *habitat*).

A threatened species is a plant or animal that is at risk of becoming endangered in the areas where it normally lives (its *habitat*).

Appendix

Distinct population groups are different from the rest of the species because of physical, genetic, ecological, or behavioral characteristics.

Appendix

What are some differences between wild and hatchery salmon?

- Although hatchery salmon were originally derived from wild populations, years of raising salmon under artificial conditions have resulted in adaptations in hatchery fish. For example, hatchery fish typically rely on hand-feeding whereas wild fish must hunt for food.
- Fish hatcheries provide artificial shelter for fish versus the natural shelter found in a stream.
- Wild fish are usually more successful than hatchery fish at surviving in the natural environment long enough to reproduce.
- Fewer than 1% of the fish released from the hatchery return to spawn.

This information was adapted from the U.S. Fish and Wildlife Service

http://www.fws.gov/salmonofthewest/Wild.htm

Appendix
Wild Upper Willamette River Chinook Salmon
1 of 3

Wild Upper Willamette River Chinook salmon

The wild Upper Willamette River Chinook (king) salmon has been listed as threatened under the Endangered Species Act since 1999.

GENERAL INFORMATION ABOUT WILD UPPER WILLAMETTE RIVER CHINOOK SALMON

- Wild Upper Willamette River Chinook salmon are a distinct population group of Chinook salmon.
- They are very different from other Chinook salmon in terms of their genetics, when and where they reproduce, and where they travel in the ocean. They also have adapted characteristics that allow them to live in the Upper Willamette River system.
- Adults are typically between 2 and 4 feet long, and weigh between 10 and 35 pounds.
- Young salmon feed on insects and small fish. As adults, they eat smaller fish, shrimp and squid.
- Young salmon are eaten by other fish, birds and snakes. In the ocean, they are eaten by whales, dolphins, seals, sea lions, and other fish.
- Like most salmon, wild Upper Willamette River Chinook salmon migrate. They are born in freshwater rivers, migrate to the ocean, and several years later return to the river where they were born to *spawn*, or reproduce. Salmon adults die after spawning.

Appendix
Wild Upper Willamette River Chinook Salmon
2 of 3

There are two sources of Chinook salmon:

- Wild salmon spawn on their own
- Hatchery salmon are spawned and released from a hatchery, with a fin clipped so they can be identified as "hatchery fish"

About 20% of adult Upper Willamette River Chinook are wild, while 80% are from hatcheries. Only wild populations are counted when evaluating the ESA listing status.

WILD UPPER WILLAMETTE RIVER CHINOOK SALMON RANGE

- Wild Upper Willamette River Chinook salmon are found in Oregon's Upper Willamette River system and in the Pacific Ocean.

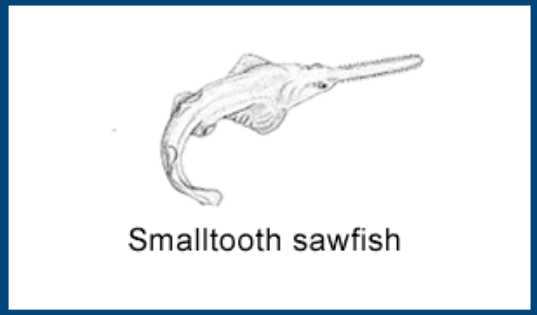
WILD UPPER WILLAMETTE RIVER CHINOOK SALMON POPULATION

- The decline of the wild Upper Willamette River Chinook salmon has been primarily caused by:
  - Dams and other obstacles preventing salmon from returning to spawn
  - The decline of spawning habitat from forestry, agriculture, and development
  - Commercial and recreational fishing
  - Pollution and decreased water quality in rivers where spawning occurs

Appendix
Wild Upper Willamette River Chinook Salmon
3 of 3

- Currently, about 20,000 wild Upper Willamette River Chinook salmon return to spawn. Only a small percentage of the population is considered self-sustaining in the long-run.
- To protect wild Upper Willamette River Chinook salmon, federal, state, and local governments have increased restrictions on forestry, agriculture, and development around rivers and streams that are used for spawning.
- In addition, commercial fishermen and recreational anglers are not allowed to fish for wild Upper Willamette River Chinook salmon. They can fish for hatchery fish which are identified by clips on their fins.
- Despite these efforts, scientists believe the wild Upper Willamette River Chinook salmon will remain threatened in the foreseeable future.

Appendix
Smalltooth sawfish
1 of 3



The smalltooth sawfish has been listed as endangered under the Endangered Species Act since 2003.

GENERAL INFORMATION ABOUT SMALLTOOTH SAWFISH

- Adult smalltooth sawfish can grow to 18 feet long. They can live up to 60 years.
- Smalltooth sawfish eat fish they catch with their long saw or small fish, crab, and mussels they dig up from the ocean floor. It is not known what species, if any, eat smalltooth sawfish.
- The smalltooth sawfish gets its name from its long snout that looks like a narrow saw blade with teeth along both sides. The saw is used to locate food buried in the sand and as a tool for catching fish.

Appendix
Smalltooth sawfish
2 of 3

SMALLTOOTH SAWFISH RANGE

- Smalltooth sawfish live in shallow coastal areas and at the mouths of rivers. In the U.S. they are now only regularly found around south Florida.
- Outside the U.S., populations of smalltooth sawfish have existed from Brazil through the Caribbean. It is unknown whether these populations still exist, and most scientists believe that the worldwide population of smalltooth sawfish is very small.

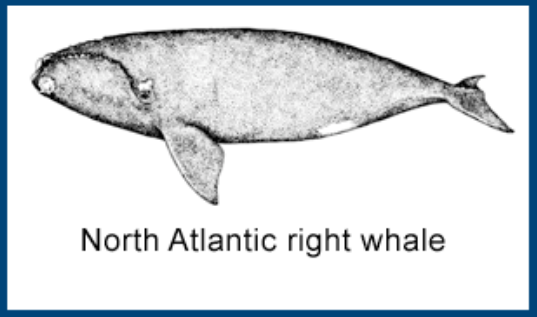
U.S. SMALLTOOTH SAWFISH POPULATION

- Historically smalltooth sawfish were found from New York to Texas.
- Although not targeted by commercial fisherman, one of the primary reasons for the smalltooth sawfish decline in the past has been their entanglement in fishing gear.
- Some recreational fishermen used to target smalltooth sawfish for their saws to keep as trophies.

Appendix
Smalltooth sawfish
3 of 3

- More recently, coastal development along the East and Gulf Coasts of the U.S. has decreased smalltooth sawfish habitat and contributed to the population decline.
- Currently scientists do not have enough information to estimate the exact size of the smalltooth sawfish population. However, most scientists believe the U.S. population is less than 5% of what it once was.
    - Despite not knowing the exact numbers of U.S. smalltooth sawfish, their disappearance from many of the areas where they were once abundant suggests that they have declined considerably.
    - Most scientists believe that preserving the U.S. population of smalltooth sawfish is important for the overall protection of the species.
- Efforts to protect the smalltooth sawfish include public education programs that inform the public of how to avoid harming them, and research and monitoring of the species by scientists.
- Despite these efforts, scientists believe the U.S. population of smalltooth sawfish will remain endangered in the foreseeable future.

Appendix
North Atlantic right whale
1 of 3



North Atlantic right whale

The North Atlantic right whale has been listed as endangered under the Endangered Species Act since 1970.

GENERAL INFORMATION ABOUT NORTH ATLANTIC RIGHT WHALES

- Adults are typically between 43 and 60 feet long, and weigh between 50 and 100 tons.
- They generally live 70 years or longer.
- Right whales do not have teeth and feed almost exclusively on small marine organisms.
- Killer whales sometimes prey on young right whales.
- Adults migrate about 2,000 to 3,000 miles in the Atlantic Ocean. After giving birth in the southeastern U.S., they migrate to waters off the northeastern U.S. and Canada to feed and mate.

Appendix
North Atlantic right whale
2 of 3

NORTH ATLANTIC RIGHT WHALE RANGE

- The North Atlantic right whale is found in the Atlantic Ocean, mainly off the East Coast of the U.S. and Canada.

NORTH ATLANTIC RIGHT WHALE POPULATION

- Prior to 1935, North Atlantic right whales were hunted nearly to extinction by commercial whalers. An international ban on hunting right whales was adopted in 1935. Since then there has been no evidence of illegal hunting of North Atlantic right whales.
- Currently the primary threats to the North Atlantic right whale include the following:
    - Collisions with ships
    - Entanglement in commercial fishing gear
    - Habitat destruction from undersea drilling and dredging operations.
- Scientists believe about 350 North Atlantic right whales exist off the East coast of North America, and only a few are thought to remain in other areas.

Appendix
North Atlantic right whale
3 of 3

- To protect North Atlantic right whales federal, state, and local governments have taken a number of actions that include:
    - Reducing ship strikes by advising boat captains about alternate routes and vessel speeds, developing warning systems to alert boat captains that right whales are nearby, and developing educational programs for marine vessel crews
    - Reducing entanglements by strengthening commercial fishing regulations
- In addition to efforts in the U.S., the International Whaling Commission prohibits hunting of all right whales anywhere in the world. North Atlantic right whales are also protected under Canada's 'Species At Risk' Act, a law similar to the Endangered Species Act.
- Despite these actions, there has been no apparent population increase in the last 15 years, and North Atlantic right whales are likely to remain endangered in the foreseeable future.

Appendix

Additional Protection for Threatened and Endangered Species

In this section we describe additional protection actions for each of the three species you have read about.

Protection Actions for Upper Willamette River Chinook salmon

Land use changes that increase protection of rivers where Upper Willamette River Chinook salmon spawn

Additional restrictions on agricultural pesticide and fertilizer use in areas around spawning rivers to reduce pollution in these rivers

Better management of water released from dams to ensure sufficient water is available for salmon to swim upstream

Protection Actions for Smalltooth Sawfish

Increased restrictions on fishing gear that entangle smalltooth sawfish

Increased restrictions on coastal land use activities that harm sawfish habitat

Establishment of new wildlife refuges that protect the areas where they mate and give birth

Protection Actions for North Atlantic right whale

Increased restrictions on commercial ocean fishing activities in U.S. waters

Increased restrictions on ocean vessel traffic in U.S. waters

Appendix

Cost per year

The actions described earlier in the survey will require additional spending by governments, and increase the costs of running certain types of businesses. Undertaking these actions will also cost U.S. households more money through:

- Higher prices for products and services affected by the protection actions
- Increases in taxes

All of the increased cost will occur in the first 10 years when new regulations and restrictions are put into place, government funds are spent on research and purchases like land for wildlife refuges, and those directly affected by restrictions adjust to the changes.

VI. Mark-up of Survey by Rob Hicks, William and Mary, February 14, 2009

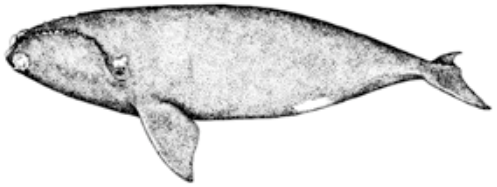
Display1

The National Oceanic and Atmospheric Administration (NOAA), a U.S. government agency, has management responsibilities for several threatened and endangered species. NOAA is sponsoring a study that collects information on public attitudes and opinions about these species through several surveys that each ask about different species. This particular survey focuses on the following three species: **the Wild Upper Willamette River Chinook salmon, the smalltooth sawfish, and the North Atlantic right whale**.

What is the sample frame? By focusing on these species will it send red flags up on others?

Wild Upper Willamette River Chinook salmon

Smalltooth sawfish



North Atlantic right whale

Display2

What about partial responses? Encourage to finish anyway? Tell them how long it takes? Why is your response so important- respondent (buy in)- don't need because of the buy-in is already achieved.

Responses to questions in this survey will help us understand public attitudes and opinions about threatened and endangered species, in particular the Wild Upper Willamette River Chinook salmon, the smalltooth sawfish, and the North Atlantic right whale.

There are four main sections in the survey:

- **Section 1** introduces the U.S. law designed to protect threatened and endangered species - the Endangered Species Act (often called the ESA)
- **Section 2** provides information about each of the three species and what is currently being done to protect them
- **Section 3** is about additional actions, above and beyond the current actions, that could be undertaken to help protect these species
- **Section 4** asks you to compare alternative management options that provide additional protection actions and select the option you most prefer

Q3

Before beginning Section 1, please answer the following question:

Protecting threatened and endangered species is just one of many issues facing the U.S. Below is a list of some issues, none of which can be solved easily or inexpensively. For each one, please indicate if you think we are spending too much money on it, about the right amount, or too little on it.

For each issue, check the one box that best represents your opinion.

	We are spending ...		
	Too much	About the right amount	Too little
Space exploration	○	○	○
The environment	○	○	○
Health	○	○	○
Assistance to big cities	○	○	○
Law enforcement	○	○	○
Drug rehabilitation	○	○	○
Education	○	○	○

Do you need to be explicit about who "we" is? Is it total govt spending? US? Or total Spending in all US sectors?

Display3

Section 1: Protecting Species in the U.S.

In this section we provide you with some general information about threatened and endangered species and how they are protected in the U.S.

The Endangered Species Act (ESA) is a U.S. law that helps protect animal and plant species. According to the ESA:

- An endangered species is a plant or animal that is in danger of becoming extinct in the areas where it normally lives (its *habitat*).
- A threatened species is a plant or animal that is at risk of becoming endangered in the areas where it normally lives (its *habitat*).

Display5

There currently are 84 mammals, 90 birds, 138 fish, 744 plants, and 298 other species such as reptiles and insects in the U.S. listed as threatened or endangered.

The federal government is required to take actions to protect these species by:

- Restricting human activities like hunting, fishing, commercial activities, and land development or use.
- Protecting or improving the habitat where these species live.

Q1

Before today, had you heard of the Endangered Species Act?

Select one answer only

- Yes
- No

Q1a

Unless there is a reason to keep the jargon, I would rephrase into location, genetic and tell the average respondent what ecological or havioral characteristics are. Is the select one answer only redundant here?

The Endangered Species Act protects either the entire species, or one or more distinct population groups within a species. Distinct population groups are different from the rest of the species because of physical, genetic, ecological, or behavioral characteristics.

Before today, were you aware that the Endangered Species Act sometimes protects distinct population groups rather than an entire species population?

Select one answer only

- ○ Yes
- ◉ No

This is additional to Version 1?? Is this due to the Western ?? Chinook?

Display6

Many other countries have laws or acts similar to the Endangered Species Act. These laws help protect species that live within those countries, as well as species that migrate and spend time in more than one country.

Display7

Some people are interested in protecting threatened or endangered species because these species:

- Are a source of enjoyment and learning for people now and in the future.
- May help to maintain a healthy ecosystem.
- May provide medicines and other helpful substances for humans someday, even if we don't yet know what these uses are.
- Have a right to exist and should not be endangered by human actions.

Display8

Want to add a category for: 1) risk of extinction is independent of action 2) scientific uncertainty

Some people are concerned about protecting threatened or endangered species because protection activities:

- May place restrictions on what people can do, such as limiting recreation, land development and use, forestry, commercial and sport fishing, and hunting.
- May increase the cost of producing and providing goods such as food, lumber, electricity, housing, and transportation, which increases some of the prices consumers pay.
- May not be effective if the decline of the species is due to causes beyond the control of humans.
- Use government funds and resources that could be used to address other important issues.

Q2

How much do you agree or disagree with the following statements?

For each statement, check the one box that best represents your opinion.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Protecting endangered species is important to me	○	○	○	○	○
Protecting threatened species is important to me	○	○	○	○	○

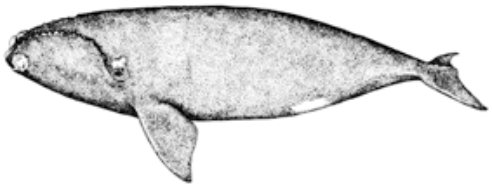
Display9

Section 2: Three Threatened or Endangered Species

In this section we provide you with information on the Wild Upper Willamette River Chinook salmon, the smalltooth sawfish, and the North Atlantic right whale.

Wild Upper Willamette River Chinook salmon (threatened)

Smalltooth sawfish (endangered)



North Atlantic right whale (endangered)

Q4

First fish seems distinctly different from others in that it is a sub-population. Perhaps easier to substitute out of. Do you want to know about Chinook in general and then this sub-class?

How familiar are you with each of these species (based on what you may know about them from the media, school, personal experience, or other sources of information)?

Check one box for each species.

	Very familiar	Somewhat familiar	Not very familiar	Not at all familiar
Wild Upper Willamette River Chinook salmon	○	○	○	○
Smalltooth sawfish	○	○	○	○
North Atlantic right whale	○	○	○	○

Display10

The information you will read on the following screens is based on the best available science, and is drawn from reports and publications by academic and government institutions. The amount of information presented to you may vary depending on the species.

- Some species have abundant information because they have been studied for a long time, or because they are easy to observe.
- Other species have less information because they have not been studied for very long, or because they are difficult to observe.

change vary depending on the species to May vary by species. This list seems redundant to me.

Display23

1 of 2

Wild Upper Willamette River Chinook salmon

The wild Upper Willamette River Chinook (king) salmon has been listed as threatened under the Endangered Species Act since 1999.

GENERAL INFORMATION ABOUT WILD UPPER WILLAMETTE RIVER CHINOOK SALMON

- Wild Upper Willamette River Chinook salmon are a distinct population group of Chinook salmon.
- They are very different from other Chinook salmon in terms of their genetics, when and where they reproduce, and where they travel in the ocean. They also have adapted characteristics that allow them to live in the Upper Willamette River system.

Maybe after this ask about this sub-population versus chinook in general

Display23

2 of 2

- Adults are typically between 2 and 4 feet long, and weigh between 10 and 35 pounds.
- Young salmon feed on insects and small fish. As adults, they eat smaller fish, shrimp and squid.
- Young salmon are eaten by other fish, birds and snakes. In the ocean, they are eaten by whales, dolphins, seals, sea lions, and other fish.
- Like most salmon, wild Upper Willamette River Chinook salmon migrate. They are born in freshwater rivers, migrate to the ocean, and several years later return to the river where they were born to *spawn*, or reproduce. Salmon adults die after spawning.

Display24

There are two sources of Chinook salmon:

- Wild salmon spawn on their own
- Hatchery salmon are spawned and released from a hatchery, with a fin clipped so they can be identified as "hatchery fish"

About 20% of adult Upper Willamette River Chinook are wild, while 80% are from hatcheries. Only wild populations are counted when evaluating the ESA listing status. Click here for more information on the differences between wild and hatchery salmon.

Seems like 4 useful distinctions: 1. chinook wild, 2. chinook hatchery, 3. UW Wild, 4. UW Hatchery. ESA pertains to 3 only. Lots of substitution possibilities

QW

How much do you agree or disagree with the following statement?

Check the one box that best represents your opinion.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
It is important to have wild Upper Willamette River Chinook salmon populations, even though there are hatchery salmon	●	●	●	●	●

I don't believe this question is fully getting at the potential substition effects that might be going on.

Display25

WILD UPPER WILLAMETTE RIVER CHINOOK SALMON RANGE

- Wild Upper Willamette River Chinook salmon are found in Oregon's Upper Willamette River system and in the Pacific Ocean.

Why aren't we showing a visual here?

Q5_will

Have you personally observed wild Upper Willamette River Chinook salmon in nature (outside of zoos and aquariums)?

Check one box.

- ○ Yes
- ○ No
- ○ I am unsure

Display26

WILD UPPER WILLAMETTE RIVER CHINOOK SALMON POPULATION

- The decline of the wild Upper Willamette River Chinook salmon has been primarily caused by:
  - Dams and other obstacles preventing salmon from returning to spawn
  - The decline of spawning habitat from forestry, agriculture, and development
  - Commercial and recreational fishing
  - Pollution and decreased water quality in rivers where spawning occurs
- Currently, about 20,000 wild Upper Willamette River Chinook salmon return to spawn. Only a small percentage of the population is considered self-sustaining in the long-run.
- To protect wild Upper Willamette River Chinook salmon, federal, state, and local governments have increased restrictions on forestry, agriculture, and development around rivers and streams that are used for spawning.
- In addition, commercial fishermen and recreational anglers are not allowed to fish for wild Upper Willamette River Chinook salmon. They can fish for hatchery fish which are identified by clips on their fins.
- Despite these efforts, scientists believe the wild Upper Willamette River Chinook salmon will remain threatened in the foreseeable future.

How are you dealing with restoration uncertainty?

Q6_will

After reading this information, how concerned are you, if at all, about the wild Upper Willamette River Chinook salmon?

Check the one box that best represents your opinion.

Not at all concerned	A little concerned	Somewhat concerned	Very concerned	Extremely concerned
○	○	○	○	○

Concern scales are running in opposite directions from scale in q4 for example.

Display20

Smalltooth sawfish

The smalltooth sawfish has been listed as endangered under the Endangered Species Act since 2003.

GENERAL INFORMATION ABOUT SMALLTOOTH SAWFISH

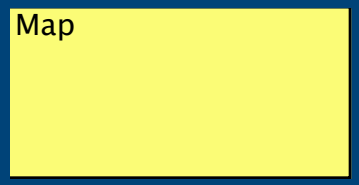
- Adult smalltooth sawfish can grow to 18 feet long. They can live up to 60 years.
- Smalltooth sawfish eat fish they catch with their long saw or small fish, crab, and mussels they dig up from the ocean floor. It is not known what species, if any, eat smalltooth sawfish.
- The smalltooth sawfish gets its name from its long snout that looks like a narrow saw blade with teeth along both sides. The saw is used to locate food buried in the sand and as a tool for catching fish.

Awkward

Display21

SMALLTOOTH SAWFISH RANGE

- Smalltooth sawfish live in shallow coastal areas and at the mouths of rivers. In the U.S. they are now only regularly found around south Florida.
- Outside the U.S., populations of smalltooth sawfish have existed from Brazil through the Caribbean. It is unknown whether these populations still exist, and most scientists believe that the worldwide population of smalltooth sawfish is very small.



Q5_saw

Have you personally observed smalltooth sawfish in nature (outside of zoos and aquariums)?

Check the one box that best represents your answer.

- ● Yes
- ● No
- ● I am unsure

Display22

1 of 2

I think a map showing the historic versus current range would be very useful

U.S. SMALLTOOTH SAWFISH POPULATION

- Historically smalltooth sawfish were found from New York to Texas.
- Although not targeted by commercial fisherman, one of the primary reasons for the smalltooth sawfish decline in the past has been their entanglement in fishing gear.
- Some recreational fishermen used to target smalltooth sawfish for their saws to keep as trophies.
- More recently, coastal development along the East and Gulf Coasts of the U.S. has decreased smalltooth sawfish habitat and contributed to the population decline.
- Currently scientists do not have enough information to estimate the exact size of the smalltooth sawfish population. However, most scientists believe the U.S. population is less than 5% of what it once was.

Display22

2 of 2

- Despite not knowing the exact numbers of U.S. smalltooth sawfish, their disappearance from many of the areas where they were once abundant suggests that they have declined considerably.
- Most scientists believe that preserving the U.S. population of smalltooth sawfish is important for the overall protection of the species.

- Efforts to protect the smalltooth sawfish include public education programs that inform the public of how to avoid harming them, and research and monitoring of the species by scientists.
- Despite these efforts, scientists believe the U.S. population of smalltooth sawfish will remain endangered in the foreseeable future.

Q6_saw

In version 2 (q6_Pac), you say after reading this information-> check for consistency.

After looking at the information in this handout, how concerned are you, if at all, about the smalltooth sawfish?

Check the one box that best represents your opinion.

Not at all concerned	A little concerned	Somewhat concerned	Very concerned	Extremely concerned
●	●	●	●	●

Q6a_saw

How does the scientific uncertainty about how many smalltooth sawfish there are affect your level of concern, if at all?

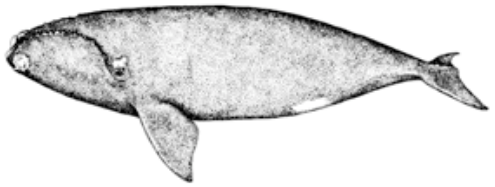
The fact that scientists do not know how many smalltooth sawfish there are...

Check the one box that best represents your opinion.

- Makes me more concerned about smalltooth sawfish
- Makes me no more or less concerned about smalltooth sawfish
- Makes me less concerned about smalltooth sawfish

Here the uncertainty is what is the historic population levels compared to current- whereas in previous example, the issue was uncertainty regarding success about restoration

Display27



North Atlantic right whale

The North Atlantic right whale has been listed as endangered under the Endangered Species Act since 1970.

GENERAL INFORMATION ABOUT NORTH ATLANTIC RIGHT WHALES

- Adults are typically between 43 and 60 feet long, and weigh between 50 and 100 tons.
- They generally live 70 years or longer.
- Right whales do not have teeth and feed almost exclusively on small marine organisms.
- Killer whales sometimes prey on young right whales.
- Adults migrate about 2,000 to 3,000 miles in the Atlantic Ocean. After giving birth in the southeastern U.S., they migrate to waters off the northeastern U.S. and Canada to feed and mate.

Display28

NORTH ATLANTIC RIGHT WHALE RANGE

- The North Atlantic right whale is found in the Atlantic Ocean, mainly off the East Coast of the U.S. and Canada.

Map

Q5_atl

Have you personally observed North Atlantic right whales in nature (outside of zoos and aquariums)?

Check the one box that best represents your answer.

- Yes
- No
- I am unsure

Display29

1 of 2

NORTH ATLANTIC RIGHT WHALE POPULATION

- Prior to 1935, North Atlantic right whales were hunted nearly to extinction by commercial whalers. An international ban on hunting right whales was adopted in 1935. Since then there has been no evidence of illegal hunting of North Atlantic right whales.
- Currently the primary threats to the North Atlantic right whale include the following:
    - Collisions with ships
    - Entanglement in commercial fishing gear
    - Habitat destruction from undersea drilling and dredging operations.
- Scientists believe about 350 North Atlantic right whales exist off the East coast of North America, and only a few are thought to remain in other areas.

Display29

2 of 2

- To protect North Atlantic right whales federal, state, and local governments have taken a number of actions that include:
  - Reducing ship strikes by advising boat captains about alternate routes and vessel speeds, developing warning systems to alert boat captains that right whales are nearby, and developing educational programs for marine vessel crews
  - Reducing entanglements by strengthening commercial fishing regulations
- In addition to efforts in the U.S., the International Whaling Commission prohibits hunting of all right whales anywhere in the world. North Atlantic right whales are also protected under Canada's 'Species At Risk' Act, a law similar to the Endangered Species Act.
- Despite these actions, there has been no apparent population increase in the last 15 years, and North Atlantic right whales are likely to remain endangered in the foreseeable future.

Restoration Uncertainty

Q6_atl

After looking at the information in this handout, how concerned are you, if at all, about the North Atlantic Right Whale?

Check the one box that best represents your opinion.

Not at all concerned	A little concerned	Somewhat concerned	Very concerned	Extremely concerned
○	○	○	○	○

Display37

Section 3: Additional Protection for Threatened and Endangered Species

In this section we describe additional protection actions for each of the three species you have read about.

Display38

In addition to current protection activities, federal, state, and local governments could further protect the Wild Upper Willamette River Chinook salmon, the smalltooth sawfish, and the North Atlantic right whale.

Undertaking additional protection actions is expected to stabilize or increase the population sizes of these species. As the populations stabilize or increase, their ESA status may improve, and the species may even *recover*.

- The term *recover* means that the population increases enough so that it can be removed from the list of threatened and endangered species.
- Generally, improvements in ESA status from endangered to threatened, or threatened to recovered, are made only after in-depth scientific review shows evidence of the following:
    - The population size in key habitat areas has stabilized or appears to be on a path to a stable or sustainable size
    - Most, if not all, of the factors believed to contribute to the species' decline or endangerment have been eliminated or controlled enough to no longer be a concern
- The exact requirements to improve a species' ESA status are specific to each species.

Q11NEW

Based on your knowledge and your own personal preferences for **the Wild Upper Willamette River Chinook salmon, the smalltooth sawfish, and the North Atlantic right whale**, please indicate how important you believe it is to undertake additional protection actions for these species if additional funding was available to help protect these species.

Select one answer from each row in the grid

	Not at all important	A little important	Somewhat important	Very important	Extremely important
Wild Upper Willamette River Chinook salmon	○	○	○	○	○
Smalltooth sawfish	○	○	○	○	○
North Atlantic right whale	○	○	○	○	○

Q11_will

Below are several types of protection actions that may be undertaken to further protect the Wild Upper Willamette River Chinook salmon. In your opinion, for each type of protection, do you believe you and your household would be positively affected, negatively affected, or not at all affected?

Check one box for each action.

	Positively affected	Not at all affected	Negatively affected	Don't know
Land use changes that increase protection of rivers where Upper Willamette River Chinook salmon spawn	○	○	○	○
Additional restrictions on agricultural pesticide and fertilizer use in areas around spawning rivers to reduce pollution in these rivers	○	○	○	○
Better management of water released from dams to ensure sufficient water is available for salmon to swim upstream	○	○	○	○

Does the average respondent know what the term "Land Use Changes" means?

Q11_saw

Below are several types of protection actions that may be undertaken to further protect the smalltooth sawfish. In your opinion, for each type of protection, do you believe you and your household would be positively affected, negatively affected, or not at all affected?

Check one box for each action.

	Positively affected	Not at all affected	Negatively affected	Don't know
Increased restrictions on fishing gear that entangle smalltooth sawfish	○	○	○	○
Increased restrictions on coastal land use activities that harm sawfish habitat	○	○	○	○
Establishment of new wildlife refuges that protect the areas where they mate and give birth	○	○	○	○

Q11_atl

Below are several types of protection actions that may be undertaken to further protect the North Atlantic right whale. In your opinion, for each type of protection, do you believe you and your household would be positively affected, negatively affected, or not at all affected?

Check one box for each action.

	Positively affected	Not at all affected	Negatively affected	Don't know
Increased restrictions on commercial ocean fishing activities in U.S. waters	○	○	○	○
Increased restrictions on ocean vessel traffic in U.S. waters	○	○	○	○

Display39

The actions described in the previous questions will require additional spending by governments, and increase the costs of running certain types of businesses. Undertaking these actions will also cost U.S. households more money through:

- Higher prices for products and services affected by the protection actions
- Increases in taxes

All of the increased cost will occur in the first 10 years when new regulations and restrictions are put into place, government funds are spent on research and purchases like land for wildlife refuges, and those directly affected by restrictions adjust to the changes.

Q14

How much do you agree or disagree with the following statements?

Check the one box that best represents your opinion.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I am willing to pay higher prices for products for additional protection for these three threatened or endangered species	●	●	●	●	●
I am willing to pay higher taxes for additional protection for these three threatened or endangered species	●	●	●	●	●

Display40

Section 4: Alternative Management Options for Additional Protection

In this section, we ask you several questions to get your opinion about possible alternative management options for the Wild Upper Willamette River Chinook salmon, the smalltooth sawfish, and the North Atlantic right whale.

Display40A

On the following screens you will see tables that show the expected ESA status (endangered, threatened, or recovered) of each species in 50 years under alternative management options:

- Option A represents the current protection actions that are planned or already underway.
- Options B and C represent additional protection actions such as those described in the previous section that do more to help species stabilize or recover but also cost more. The cost per year of these additional actions would be added to your household through higher prices on consumer products and increased taxes. Some protection actions are more costly to implement than others, so the highest cost option does not always represent the one with the greatest improvements.
- The cost per year for Options B and C are expected to occur in the first 10 years when new regulations and restrictions are put into place, government funds are spent on research and purchases like land for wildlife refuges, and those directly affected by restrictions adjust to the changes.

What about costs for A: are cost B and C incremental?

After comparing Options A, B, and C you will be asked to select which option you prefer.

Display42

This is an EXAMPLE of a table you will see that describes the alternative management options.

EXAMPLE	**Expected result in 50 years for each option**		
	Option A No additional protection actions	**Option B** Additional protection actions	**Option C** Additional protection actions
Wild Upper Willamette River Chinook salmon **ESA status**	Threatened	Threatened	Threatened
Smalltooth sawfish **ESA status**	Endangered	Threatened	Recovered
North Atlantic right whale **ESA status**	Endangered	Threatened	Endangered
Cost per year Added cost to your household each year for 10 years	$0	$40	$20

To ensure everyone interprets the EXAMPLE table and the questions that follow the same way, the next questions will ask you to answer questions about the EXAMPLE table.

QE1

EXAMPLE **Expected result in 50 years for each option**

	Option A No additional protection actions	**Option B** Additional protection actions	**Option C** Additional protection actions
Wild Upper Willamette River Chinook salmon ESA status	Threatened	Threatened	Threatened
Smalltooth sawfish ESA status	Endangered	Threatened	Recovered
North Atlantic right whale ESA status	Endangered	Threatened	Endangered
Cost per year Added cost to your household each year for 10 years	$0	$40	$20

This is already a long survey- might you piss people off with questions like this? Also, why not array response format to be under table columns?

Also, why not probe on costs?

Please refer to the example table to answer the next few questions. Which Option leads to one or more species being recovered after 50 years?

Select all answers that apply

- ☐ Option A
- ☐ Option B
- ☐ Option C

If QE1 = Option C is selected:

Correct

That's correct!

EXAMPLE	Expected result in 50 years for each option		
	Option A No additional protection actions	**Option B** Additional protection actions	**Option C** Additional protection actions
Wild Upper Willamette River Chinook salmon ESA status	Threatened	Threatened	Threatened
Smalltooth sawfish ESA status	Endangered	Threatened	Recovered
North Atlantic right whale ESA status	Endangered	Threatened	Endangered
Cost per year Added cost to your household each year for 10 years	$0	$40	$20

If you are going to do this, why not highlite the recovered cell and have arrows pointing to Column C.

If QE1 = Option A or B is selected:
Incorrect_1

The answer is actually Option C. Under Option C the smalltooth sawfish would be recovered after 50 years.

EXAMPLE	Expected result in 50 years for each option		
	Option A No additional protection actions	**Option B** Additional protection actions	**Option C** Additional protection actions
Wild Upper Willamette River Chinook salmon ESA status	Threatened	Threatened	Threatened
Smalltooth sawfish ESA status	Endangered	Threatened	Recovered
North Atlantic right whale ESA status	Endangered	Threatened	Endangered
Cost per year Added cost to your household each year for 10 years	$0	$40	$20

Again, visual cues to highlite column C

QE2

EXAMPLE	Expected result in 50 years for each option		
	Option A No additional protection actions	**Option B** Additional protection actions	**Option C** Additional protection actions
Wild Upper Willamette River Chinook salmon **ESA status**	Threatened	Threatened	Threatened
Smalltooth sawfish **ESA status**	Endangered	Threatened	Recovered
North Atlantic right whale **ESA status**	Endangered	Threatened	Endangered
Cost per year Added cost to your household each year for 10 years	$0	$40	$20

In the example table, what will the ESA status of the Wild Upper Willamette River Chinook salmon be in 50 years if no additional protection actions are undertaken?

Select one answer only

- Threatened
- Endangered
- Recovered

If QE2 = Threatened is selected:
Correct

That's correct!

EXAMPLE	Expected result in 50 years for each option		
	Option A No additional protection actions	**Option B** Additional protection actions	**Option C** Additional protection actions
Wild Upper Willamette River Chinook salmon **ESA status**	Threatened	Threatened	Threatened
Smalltooth sawfish **ESA status**	Endangered	Threatened	Recovered
North Atlantic right whale **ESA status**	Endangered	Threatened	Endangered
Cost per year Added cost to your household each year for 10 years	$0	$40	$20

If QE2 = Threatened is not selected:
Incorrect_2

The answer is actually threatened. This information is provided under Option A in the example table.

EXAMPLE	**Expected result in 50 years for each option**		
	Option A No additional protection actions	**Option B** Additional protection actions	**Option C** Additional protection actions
Wild Upper Willamette River Chinook salmon **ESA status**	Threatened	Threatened	Threatened
Smalltooth sawfish **ESA status**	Endangered	Threatened	Recovered
North Atlantic right whale **ESA status**	Endangered	Threatened	Endangered
Cost per year Added cost to your household each year for 10 years	$0	$40	$20

QE3

EXAMPLE	**Expected result in 50 years for each option**		
	Option A No additional protection actions	**Option B** Additional protection actions	**Option C** Additional protection actions
Wild Upper Willamette River Chinook salmon **ESA status**	Threatened	Threatened	Threatened
Smalltooth sawfish **ESA status**	Endangered	Threatened	Recovered
North Atlantic right whale **ESA status**	Endangered	Threatened	Endangered
Cost per year Added cost to your household each year for 10 years	$0	$40	$20

In the example table, which species will not have an improved ESA status in 50 years under any of the options?

Select one answer only

- the Wild Upper Willamette River Chinook salmon
- the smalltooth sawfish
- the North Atlantic right whale

If the QE3 = Wild Upper Willamette River Chinook salmon is selected:

Correct

That's correct!

EXAMPLE	Expected result in 50 years for each option		
	Option A No additional protection actions	**Option B** Additional protection actions	**Option C** Additional protection actions
Wild Upper Willamette River Chinook salmon ESA status	Threatened	Threatened	Threatened
Smalltooth sawfish ESA status	Endangered	Threatened	Recovered
North Atlantic right whale ESA status	Endangered	Threatened	Endangered
Cost per year Added cost to your household each year for 10 years	$0	$40	$20

If the QE3 = Wild Upper Willamette River Chinook salmon is not selected:

Incorrect_3

The answer is the Wild Upper Willamette River Chinook salmon. It will remain threatened under Options A, B, and C in the example table.

EXAMPLE	**Expected result in 50 years for each option**		
	Option A No additional protection actions	**Option B** Additional protection actions	**Option C** Additional protection actions
Wild Upper Willamette River Chinook salmon ESA status	Threatened	Threatened	Threatened
Smalltooth sawfish ESA status	Endangered	Threatened	Recovered
North Atlantic right whale ESA status	Endangered	Threatened	Endangered
Cost per year Added cost to your household each year for 10 years	$0	$40	$20

Display_Cheap

On the following screens you will be asked several questions about which management options you prefer.

For hypothetical questions like these, studies have shown that many people say they are willing to pay more for protecting threatened and endangered species than they actually would pay out of their pockets. We believe this happens because people do not really consider how big an impact an extra cost actually has to their family's budget when answering these types of questions. It is easy to be generous when you do not really need to open your wallet.

To avoid this, as you consider each question, please imagine your household actually paying the cost of the choice you select out of your household's budget.

QC1

The table below is similar to the EXAMPLE you just saw. For this question, please compare Options A, B, and C in this table and select the Option you most prefer.

Remember that any money you spend on these options is money that could be spent on other things.

Expected result in 50 years for each option

	Option A No additional protection actions	**Option B** Additional protection actions	**Option C** Additional protection actions
Wild Upper Willamette River Chinook salmon **ESA status**	Threatened	Threatened	Recovered
Smalltooth sawfish **ESA status**	Endangered	Threatened	Threatened
North Atlantic right whale **ESA status**	Endangered	Endangered	Endangered
Cost per year Added cost to your household each year for 10 years	$0	$50	$60
Which option do you prefer?	○	○	○

I prefer spacing to denote rows and lines aligning attention to columns as choices

When clicking an option why not include cues and arrows that say you prefer option X?

If QC1= Option A is selected:

QC1a

Why did you choose Option A (continue current protections)?

Check all boxes that apply.

- ☐ The annual costs of Options B or C are too expensive
- ☐ Protecting threatened and endangered species places too many restrictions on industries or private landowners
- ☐ I did not feel it is my responsibility to pay for protecting these species
- ☐ I don't trust the government to run the program
- ☐ I should not have to pay more taxes for any reason
- ☐ I need more information to make a choice
- ☐ I am too unsure about how I feel about threatened and endangered species
- ☐ I do not think the programs will be effective
- ☐ More research to understand one or more species needs to be done before I would pay for additional protection options
- ☐ Other (please explain) _____

If QC1= Option B or C is selected:

QC1bc

Please write a comment that helps us understand how you made your choice in the previous question.

Type in the answer

QC2

As in the previous question, please compare Options A, B, and C in this table and select the option you most prefer.

Remember that any money you spend on these options is money that could be spent on other things.

What am I to assume about my budget constraint from the first choice?

Expected result in 50 years for each option

	Option A No additional protection actions	**Option B** Additional protection actions	**Option C** Additional protection actions
Wild Upper Willamette River Chinook salmon ESA status	Threatened	Recovered	Threatened
Smalltooth sawfish ESA status	Endangered	Recovered	Endangered
North Atlantic right whale ESA status	Endangered	Threatened	Recovered
Cost per year Added cost to your household each year for 10 years	$0	$100	$20
Which option do you prefer?	○	○	○

If QC2= Option A is selected:

QC2a

Why did you choose Option A (continue current protections)?

Check all boxes that apply.

- ☐ The annual costs of Options B or C are too expensive
- ☐ Protecting threatened and endangered species places too many restrictions on industries or private landowners
- ☐ I did not feel it is my responsibility to pay for protecting these species
- ☐ I don't trust the government to run the program
- ☐ I should not have to pay more taxes for any reason
- ☐ I need more information to make a choice
- ☐ I am too unsure about how I feel about threatened and endangered species
- ☐ I do not think the programs will be effective
- ☐ More research to understand one or more species needs to be done before I would pay for additional protection options
- ☐ Other (please explain) _____

QC3

As in the previous questions, please compare Options A, B, and C in this table and select the option you most prefer.

Remember that any money you spend on these options is money that could be spent on other things.

Expected result in 50 years for each option

	Option A No additional protection actions	**Option B** Additional protection actions	**Option C** Additional protection actions
Wild Upper Willamette River Chinook salmon **ESA status**	Threatened	Recovered	Threatened
Smalltooth sawfish **ESA status**	Endangered	Endangered	Recovered
North Atlantic right whale **ESA status**	Endangered	Threatened	Recovered
Cost per year Added cost to your household each year for 10 years	$0	$30	$60
Which option do you prefer?	○	○	○

If QC3= Option A is selected:

QC3a

Why did you choose Option A (continue current protections)?

Why asking this after each and the B,C debrief after ALL answered?

Check all boxes that apply.

- [ ] The annual costs of Options B or C are too expensive
- [ ] Protecting threatened and endangered species places too many restrictions on industries or private landowners
- [ ] I did not feel it is my responsibility to pay for protecting these species
- [ ] I don't trust the government to run the program
- [ ] I should not have to pay more taxes for any reason
- [ ] I need more information to make a choice
- [ ] I am too unsure about how I feel about threatened and endangered species
- [ ] I do not think the programs will be effective
- [ ] More research to understand one or more species needs to be done before I would pay for additional protection options
- [ ] Other (please explain) _____

If Options B or C are selected on QC1, QC2 or QC3

QC_BC

Do you want to have one probing on cost/ benefit tradeoff?

To help us understand why you chose Option B or Option C in the previous questions, please answer the following:

For each statement check the one box that best represents your opinion.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I would be willing to pay the same amount of money to protect any three threatened or endangered species	●	●	●	●	●
I am willing to contribute to causes I believe are worthy whenever I can afford it	●	●	●	●	●
The added cost I was willing to pay was to protect the environment in general and not just to protect these three species	●	●	●	●	●

If Options B or C are selected on QC1, QC2 or QC3 - Continued
QC_BC2

Continued from the previous question.

To help us understand why you chose Option B or Option C in the previous questions, please answer the following:

For each statement check the one box that best represents your opinion.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I chose Option B or Option C because I think it is important to do something to protect the environment	○	○	○	○	○
I feel that the added cost I was willing to pay will protect other species in addition to the three in the table	○	○	○	○	○

Q15

These questions were asked to obtain public input for decision makers to consider along with information from scientists and planners. People feel differently about how confident they are with their selection of choices and the costs they would pay.

How confident are you that your answers in the previous questions accurately reflect how you feel about protecting **the Wild Upper Willamette River Chinook salmon, the smalltooth sawfish, and the North Atlantic right whale**.

Check the one box that best represents your opinion.

Not at all confident	Slightly confident	Somewhat confident	Very confident	Extremely confident
○	○	○	○	○

Q16

Listed below are statements about the relationship between humans and the environment. For each statement please indicate how much you agree or disagree by checking the appropriate box.

Select one answer from each row in the grid

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
We are approaching the limit of the number of people the earth can support	●	●	●	●	●
Humans have the right to modify the natural environment to suit their needs	●	●	●	●	●
When humans interfere with nature it often produces disastrous consequences	●	●	●	●	●
Human ingenuity will insure that we do not make the earth unlivable	●	●	●	●	●
Humans are abusing the environment	●	●	●	●	●

ensure

Q16_2

1 of 2

Continued from the previous question.

Listed below are statements about the relationship between humans and the environment. For each statement please indicate how much you agree or disagree by checking the appropriate box.

Select one answer from each row in the grid

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
The earth has plenty of natural resources if we just learn how to develop them	○	○	○	○	○
Plants and animals have as much right as humans to exist	○	○	○	○	○
The balance of nature is strong enough to cope with the impacts of modern industrial nations	○	○	○	○	○

Q16_2

2 of 2

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Humans will eventually learn enough about how nature works to be able to control it	○	○	○	○	○
If things continue on their present course we will soon experience an environmental catastrophe	○	○	○	○	○

Last

Thank you for taking the time to complete this survey. Please provide any additional comments you have about the survey in the box below.

Type in the answer

Thank you for completing this survey. We have successfully received your responses.

Appendix

An endangered species is a plant or animal that is in danger of becoming extinct in the areas where it normally lives (its *habitat*).

A threatened species is a plant or animal that is at risk of becoming endangered in the areas where it normally lives (its *habitat*).

Appendix

Distinct population groups are different from the rest of the species because of physical, genetic, ecological, or behavioral characteristics.

Appendix

What are some differences between wild and hatchery salmon?

- Although hatchery salmon were originally derived from wild populations, years of raising salmon under artificial conditions have resulted in adaptations in hatchery fish. For example, hatchery fish typically rely on hand-feeding whereas wild fish must hunt for food.
- Fish hatcheries provide artificial shelter for fish versus the natural shelter found in a stream.
- Wild fish are usually more successful than hatchery fish at surviving in the natural environment long enough to reproduce.
- Fewer than 1% of the fish released from the hatchery return to spawn.

This information was adapted from the U.S. Fish and Wildlife Service

http://www.fws.gov/salmonofthewest/Wild.htm

Appendix
Wild Upper Willamette River Chinook Salmon
1 of 3

Wild Upper Willamette River Chinook salmon

The wild Upper Willamette River Chinook (king) salmon has been listed as threatened under the Endangered Species Act since 1999.

GENERAL INFORMATION ABOUT WILD UPPER WILLAMETTE RIVER CHINOOK SALMON

- Wild Upper Willamette River Chinook salmon are a distinct population group of Chinook salmon.
- They are very different from other Chinook salmon in terms of their genetics, when and where they reproduce, and where they travel in the ocean. They also have adapted characteristics that allow them to live in the Upper Willamette River system.
- Adults are typically between 2 and 4 feet long, and weigh between 10 and 35 pounds.
- Young salmon feed on insects and small fish. As adults, they eat smaller fish, shrimp and squid.
- Young salmon are eaten by other fish, birds and snakes. In the ocean, they are eaten by whales, dolphins, seals, sea lions, and other fish.
- Like most salmon, wild Upper Willamette River Chinook salmon migrate. They are born in freshwater rivers, migrate to the ocean, and several years later return to the river where they were born to *spawn*, or reproduce. Salmon adults die after spawning.

Appendix
Wild Upper Willamette River Chinook Salmon
2 of 3

There are two sources of Chinook salmon:

- Wild salmon spawn on their own
- Hatchery salmon are spawned and released from a hatchery, with a fin clipped so they can be identified as "hatchery fish"

About 20% of adult Upper Willamette River Chinook are wild, while 80% are from hatcheries. Only wild populations are counted when evaluating the ESA listing status.

WILD UPPER WILLAMETTE RIVER CHINOOK SALMON RANGE

- Wild Upper Willamette River Chinook salmon are found in Oregon's Upper Willamette River system and in the Pacific Ocean.

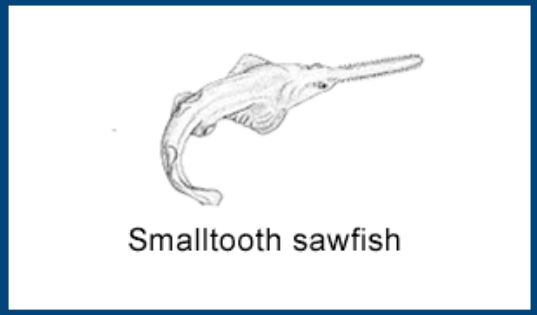
WILD UPPER WILLAMETTE RIVER CHINOOK SALMON POPULATION

- The decline of the wild Upper Willamette River Chinook salmon has been primarily caused by:
    - Dams and other obstacles preventing salmon from returning to spawn
    - The decline of spawning habitat from forestry, agriculture, and development
    - Commercial and recreational fishing
    - Pollution and decreased water quality in rivers where spawning occurs

Appendix
Wild Upper Willamette River Chinook Salmon
3 of 3

- Currently, about 20,000 wild Upper Willamette River Chinook salmon return to spawn. Only a small percentage of the population is considered self-sustaining in the long-run.
- To protect wild Upper Willamette River Chinook salmon, federal, state, and local governments have increased restrictions on forestry, agriculture, and development around rivers and streams that are used for spawning.
- In addition, commercial fishermen and recreational anglers are not allowed to fish for wild Upper Willamette River Chinook salmon. They can fish for hatchery fish which are identified by clips on their fins.
- Despite these efforts, scientists believe the wild Upper Willamette River Chinook salmon will remain threatened in the foreseeable future.

Appendix
Smalltooth sawfish
1 of 3



The smalltooth sawfish has been listed as endangered under the Endangered Species Act since 2003.

GENERAL INFORMATION ABOUT SMALLTOOTH SAWFISH

- Adult smalltooth sawfish can grow to 18 feet long. They can live up to 60 years.
- Smalltooth sawfish eat fish they catch with their long saw or small fish, crab, and mussels they dig up from the ocean floor. It is not known what species, if any, eat smalltooth sawfish.
- The smalltooth sawfish gets its name from its long snout that looks like a narrow saw blade with teeth along both sides. The saw is used to locate food buried in the sand and as a tool for catching fish.

Appendix
Smalltooth sawfish
2 of 3

SMALLTOOTH SAWFISH RANGE

- Smalltooth sawfish live in shallow coastal areas and at the mouths of rivers. In the U.S. they are now only regularly found around south Florida.
- Outside the U.S., populations of smalltooth sawfish have existed from Brazil through the Caribbean. It is unknown whether these populations still exist, and most scientists believe that the worldwide population of smalltooth sawfish is very small.

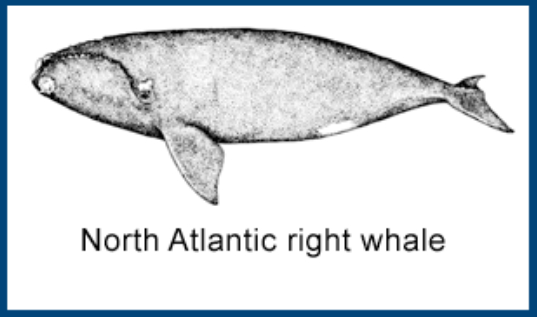
U.S. SMALLTOOTH SAWFISH POPULATION

- Historically smalltooth sawfish were found from New York to Texas.
- Although not targeted by commercial fisherman, one of the primary reasons for the smalltooth sawfish decline in the past has been their entanglement in fishing gear.
- Some recreational fishermen used to target smalltooth sawfish for their saws to keep as trophies.

Appendix
Smalltooth sawfish
3 of 3

- More recently, coastal development along the East and Gulf Coasts of the U.S. has decreased smalltooth sawfish habitat and contributed to the population decline.
- Currently scientists do not have enough information to estimate the exact size of the smalltooth sawfish population. However, most scientists believe the U.S. population is less than 5% of what it once was.
    - Despite not knowing the exact numbers of U.S. smalltooth sawfish, their disappearance from many of the areas where they were once abundant suggests that they have declined considerably.
    - Most scientists believe that preserving the U.S. population of smalltooth sawfish is important for the overall protection of the species.
- Efforts to protect the smalltooth sawfish include public education programs that inform the public of how to avoid harming them, and research and monitoring of the species by scientists.
- Despite these efforts, scientists believe the U.S. population of smalltooth sawfish will remain endangered in the foreseeable future.

Appendix
North Atlantic right whale
1 of 3



North Atlantic right whale

The North Atlantic right whale has been listed as endangered under the Endangered Species Act since 1970.

GENERAL INFORMATION ABOUT NORTH ATLANTIC RIGHT WHALES

- Adults are typically between 43 and 60 feet long, and weigh between 50 and 100 tons.
- They generally live 70 years or longer.
- Right whales do not have teeth and feed almost exclusively on small marine organisms.
- Killer whales sometimes prey on young right whales.
- Adults migrate about 2,000 to 3,000 miles in the Atlantic Ocean. After giving birth in the southeastern U.S., they migrate to waters off the northeastern U.S. and Canada to feed and mate.

Appendix
North Atlantic right whale
2 of 3

NORTH ATLANTIC RIGHT WHALE RANGE

- The North Atlantic right whale is found in the Atlantic Ocean, mainly off the East Coast of the U.S. and Canada.

NORTH ATLANTIC RIGHT WHALE POPULATION

- Prior to 1935, North Atlantic right whales were hunted nearly to extinction by commercial whalers. An international ban on hunting right whales was adopted in 1935. Since then there has been no evidence of illegal hunting of North Atlantic right whales.
- Currently the primary threats to the North Atlantic right whale include the following:
  - Collisions with ships
  - Entanglement in commercial fishing gear
  - Habitat destruction from undersea drilling and dredging operations.
- Scientists believe about 350 North Atlantic right whales exist off the East coast of North America, and only a few are thought to remain in other areas.

Appendix
North Atlantic right whale
3 of 3

- To protect North Atlantic right whales federal, state, and local governments have taken a number of actions that include:
  - Reducing ship strikes by advising boat captains about alternate routes and vessel speeds, developing warning systems to alert boat captains that right whales are nearby, and developing educational programs for marine vessel crews
  - Reducing entanglements by strengthening commercial fishing regulations
- In addition to efforts in the U.S., the International Whaling Commission prohibits hunting of all right whales anywhere in the world. North Atlantic right whales are also protected under Canada's 'Species At Risk' Act, a law similar to the Endangered Species Act.
- Despite these actions, there has been no apparent population increase in the last 15 years, and North Atlantic right whales are likely to remain endangered in the foreseeable future.

Appendix

Additional Protection for Threatened and Endangered Species

In this section we describe additional protection actions for each of the three species you have read about.

Seems like alot of material in the appendices are verbatim from survey.

Protection Actions for Upper Willamette River Chinook salmon

Land use changes that increase protection of rivers where Upper Willamette River Chinook salmon spawn

Additional restrictions on agricultural pesticide and fertilizer use in areas around spawning rivers to reduce pollution in these rivers

Better management of water released from dams to ensure sufficient water is available for salmon to swim upstream

Protection Actions for Smalltooth Sawfish

Increased restrictions on fishing gear that entangle smalltooth sawfish

Increased restrictions on coastal land use activities that harm sawfish habitat

Establishment of new wildlife refuges that protect the areas where they mate and give birth

Protection Actions for North Atlantic right whale

Increased restrictions on commercial ocean fishing activities in U.S. waters

Increased restrictions on ocean vessel traffic in U.S. waters

Appendix

Cost per year

The actions described earlier in the survey will require additional spending by governments, and increase the costs of running certain types of businesses. Undertaking these actions will also cost U.S. households more money through:

- Higher prices for products and services affected by the protection actions
- Increases in taxes

All of the increased cost will occur in the first 10 years when new regulations and restrictions are put into place, government funds are spent on research and purchases like land for wildlife refuges, and those directly affected by restrictions adjust to the changes.