

**Draft Economic Analysis for the Revision to the Designation of Critical Habitat for  
Southern Resident Killer Whales – IQA ID402  
Peer Review Report**

We solicited review of the draft report titled “Economic Impacts Associated with the Proposed Expansion of Critical Habitat Designation for the Southern Resident Population of Killer Whales” from three potential reviewers. All agreed and provided reviews. Reviewer comments are compiled below.

**Reviewers (listed alphabetically by last name):**

Christopher M. Anderson, Ph.D.  
Associated Professor of Fisheries Economics  
School of Aquatic and Fishery Sciences  
University of Washington  
Seattle, Washington

David Fluharty, Ph.D.  
Associate Professor WOT  
School of Marine and Environmental Affairs  
University of Washington  
Seattle, Washington

Matt Van Deren  
Project Director  
Earth Economics  
Tacoma, Washington

**Reviewer comments**

All three reviewers provided letters summarizing their comments. Two reviewers structured their comments around the four questions in the Charge to Peer Reviewers. The reviewers’ comments are provided below. An anonymous number identifies each reviewer; they are not in the order of the reviewers listed above.

Reviewer #1

*1. The accuracy, quality, and thoroughness of the information considered, particularly if any additional information exists that was not considered.*

This document provides as thorough a review of the incremental impacts of critical habitat designation as I would deem feasible at this time. It makes reasonable estimates and provides useful perspectives on how each determination was made. Much of the structure for the assessments derives from the parent Draft Biological Report for the Proposed Rule to Designate Critical Habitat for Southern Resident Killer Whales (SRKW). This Biological Report identifies

those activities in critical habitat that are likely to result in additional conservation efforts that would result in increased cost over Section 7 jeopardy consultation (Exhibit ES-2). It finds none. Most of the heavy lifting in this economic study is focused on the incremental administrative costs of having to consult on habitat alterations or impacts that are required when critical habitat is designated on top of existing Section 7 consultation requirements. In order to assess incremental administrative costs this study develops a baseline understanding of the extent to which Section 7 consultations have taken place in the records of each activity in the preceding 10 years. Then that baseline is compared with anticipated actions as shown in reports and most importantly with interviews of competent authorities from each activity.

The report does an excellent job of ferreting out information from a variety of sources and does a great job documenting sources. As with any report that is part of a larger rule making procedure, sometimes circumstances change rapidly so that some of the uncertainties are resolved and others raised. One example of changed circumstances is the announcement this week by the Bureau of Offshore Energy Management that it is going to offer deepwater wind energy lease sales in Central and Northern California. This is anticipated as one of the unpredictable but possible scenarios in the economic report. Similar work presages potential lease sales for oil and gas on the Washington, Oregon and California coasts under pending revision of the BOEM 5-year plan. One area I thought might be necessary to include, i.e., whale entanglements in crab gear, turned out to affect other species of whale with only one killer whale entanglement in over 15 years. Based on the report, if entanglement was an important issue for SRKW it would most likely be handled under Section 7 consultations and would be independent of critical habitat designation. I have challenged the report will all the information I have at my disposal and find nothing lacking.

I found this report to be very direct and to the point. There was no padding with extraneous data lists that do not directly relate to incremental costs of administration or conservation measures as a result of proposed expanded critical habitat designation.

There are a few examples where the report provides information that is not required but relevant to understanding the context of the activities addressed, e.g., salmon harvests and revenues by sector and area. The purpose was to illustrate the kinds of activities and the values that are in play should it be necessary to go beyond Section 7 consultations for conservation measures associated with designation of critical habitat. According to the Draft Biological Report such measures are not necessary as a result of critical habitat designation.

*2. Whether the analysis applies well-accepted and appropriate methods to estimate potentially affected parties and impacts.*

Economic assessment in the context of Endangered Species Act critical habitat is very much constrained by rules and regulations. This report makes a point of identifying the requirements in its discussion of the “framework” for this assessment. I found this explication extremely helpful in disciplining the process and in making this peer review accurately reflect those specifications as opposed to a more free form peer review. I will not restate this framework as it is well documented in this report and the report is highly responsive to the requirements. The

Office of Management and Budget (OMB) guidelines seem to have been followed to the letter. OMB allows two approaches for these economic assessments, i.e., cost benefit analysis or cost effectiveness analysis. In this case the author chose the latter and properly justified the decision to do so based on the available data and the purpose of the assessment.

In Chapter 5 Economic Benefits an appropriately cautious approach is applied to the specification of benefits. Relevant research is cited but its incompleteness or inapplicability to the present case is recognized other than in a qualitative sense. In this respect, I support the reluctance of the author not to attempt to create estimates of benefit when there is insufficient basis for doing so. This is especially important, from my perspective, in the discussion of indirect cost impacts. I had not fully considered that there could be additional impacts outside of critical habitat but affecting decisions by tribes, local and state governments and private entities that could impose administrative costs. It seems that the author effectively raises and evaluates the incremental impacts of these indirect costs and alerts decision makers about their importance. The author is careful to maintain a qualitative discussion and to note the difficulty of assigning such costs to either incremental conservation efforts or administrative efforts related to critical habitat designation vs. conservation requirements of Section 7 consultation.

As far as the assessment of economic cost of incremental administrative actions goes, it is an area where I lack any significant economic expertise. I have reviewed this report to the best of my ability by testing the reasonableness of the stated methodology. It seems to follow federal guidelines and to use best available cost data for administrative costs and their estimation. My only concern is that the data sources cited seem older than I would have expected to be available. If they are in fact the best available data for a specific period they might be made more applicable by converting them to 2017 dollars. This may make a marginal adjustment but probably not change the overall results significantly, e.g., by an order of magnitude. Similarly, while I trust the author to have done due diligence about the estimate of time increment required for Section 7 consultations as a result of designating critical habitat I do not have a substantive basis for challenging this assessment and I do not have other information that would challenge that assessment. The one consultation with which I have some familiarity is that for the installation of a seabed turbine in Admiralty Inlet that involved assessing the environmental impacts of turbine operations on killer whales. This involved a significant amount of time and effort on the part of the NMFS although the project was never completed for financial reasons. The key element in this case is I am not privy to understanding how much of this effort was in preparation for Section 7 consultations for conservation measures vs. the increment due to the project being located in designated critical habitat. The author of this study properly discusses the difficulty of making this distinction in assignment of these costs. Based on the information presented, I am prepared to support the assessment of administrative costs as best available science but I think no one can be satisfied with the adequacy of the science. At best, the economics are indicative as opposed to definitive.... And this is not a criticism of the work presented.

*3. Whether the assumptions used in the analysis are reasonable and supported by available information.*

Some of the answers to previous questions touch on this topic. As noted, the economic analyst is provided the Draft Biological Report that basically assigns the costs of conservation measures for SRKW to Section 7 consultations rather than to an incremental designation of critical habitat. As an economic analyst, the author of this report is not in a position to second guess the biological determinations. Thus, the author is not asked to assess the impact of limitations on an ocean troll fishery for Chinook salmon or to evaluate routing ship traffic and attendant noise impacts [if any are deemed significant see] to farther offshore. The one topic that does appear for analysis is the administrative cost of adding habitat impacts to Section 7 consultations if critical habitat is designated. Should such measures be indicated [but they are not in the Draft Biological Report] they would be incremental to the costs of Section 7 consultation on conservation actions. Because such habitat impacts are not indicated and are not likely to affect Section 7 consultation it does seem appropriate that the author of this report takes a conservative position with respect to assigning administrative costs.

Given that, the important element is to determine which Section 7 or other consultations would be required for the different activities. It seems that the author has made a systematic and reasonable attempt based on prior experience with Section 7 consultations and interviews with competent staff members to determine which activities might trigger Section 7 consultations involving an element of critical habitat. The list is narrowed considerably but arguably correctly given the nature of the economic assessments required. As noted in question 2, the assumptions about the incremental amount of time required for assessment of habitat in areas covered by critical habitat appear to be based on actual experience. The estimates of employee costs are based on what appears to be best available information [but might need to be updated to 2017 dollars or on federal salary increases. This probably goes beyond what can be expected in this type of analysis].

Chapter 5 which examines impacts on small entities is also an area where I lack personal knowledge and experience. Based on the text, the requirement to evaluate impacts of regulatory actions on small entities is a rather arcane but important issue. I think the author does a credible job of explaining why it is that small entities might be affected in relatively minor ways in proposed designation of critical habitat. And, more importantly, why most of the required actions involve costs that are to be borne by federal or other government entities and not small businesses. It does seem possible that large entities could be affected in the activities of marine renewable energy [e.g., Denmark's Wind Utility or Siemens Corp a major manufacturer of offshore turbines] or oil and gas leasing [Exxon Mobile, Shell, etc.]. However, the reasoning in the text implies that the Washington, Oregon, California coasts in proposed critical habitat are unlikely to be put up for lease over the next decade.

#### *4. Whether uncertainties in the information are reasonably identified and characterized.*

Again, some of the responses from questions above touch on this topic. I think that Chapter 6 clearly characterizes and identifies the uncertainties related to economic assessment of incremental cost of designation of critical habitat for SRKW. These uncertainties lie less with the economic data that with the potential shifts in federal policies that could trigger Section 7 consultations and which might be considered to alter critical habitat significantly, e.g., BOEM

leases for wind and oil and gas installations and cables or pipelines. Most likely Section 7 consultations would require conservation measures with respect to jeopardy but not likely that critical habitat would be significant based on the analysis. The Chapter 6 review systematically tackles these issues and candidly reports the assumptions made about the future based on past practice and interviews with knowledgeable staff. The direction of potential bias is stated and the significance with respect to estimated impacts is assessed. I have carefully reviewed these and find them to be internally consistent and supported in the rest of the report and reasonable with respect to the uncertain future. It seems that this assessment provides those who might be charged with deciding how to proceed with the proposed designation of critical habitat a coherent set of assessments on which to base decision-making. It is unfortunate that there is limited ability to assign these determinations precisely to specific habitat units but that really is the state of knowledge. Still, I feel that the author has done a very competent job of taking advantage of existing knowledge and applying it to the context of proposed designation of expanded critical habitat for SRKW.

### *Conclusion*

Overall, I consider this a very competent response to the request to assess the incremental economic costs of potential administrative and conservation measures associated with expanded designation of critical habitat for SRKW. It posits a framework for the assessment that is consistent with federal requirements. It addresses the framework to the extent that data are available. It makes reasonable assumptions and assessments against a very uncertain future. Finally, it provides what I consider to be the best available science in a well-documented and defensible manner. A decision maker using this report could be confident of relying on its content but may still be limited in the ability to make trade-offs among areas to include or exclude from critical habitat designations. For all intents and purposes, it leads me to understand that designation of expanded critical habitat for SRKW along the West Coast of the United States could be accomplished without significant incremental economic cost except for possible administrative cost for adding critical habitat determinations to Section 7 consultations. I would emphasize that this finding, in itself, is an important determination especially given the added value of awareness of the extent of habitat concerns for SRKW.

### Reviewer #2

#### *General*

In general, I believe the report employs the best available data for its analysis, and in areas where data is unavailable, the report authors make logical, transparent assumptions in order to conduct a robust and holistic analysis. The conclusions, assumptions, and directional impacts of any potential bias are all reported clearly and with a high level of thoroughness. I support the report's conclusion regarding the annualized administrative costs of consultation under Section 7 of the Endangered Species Act resulting from an expansion of critical habitat.

After multiple reviews of the report, my recommendations are limited to suggestions that I believe would improve the data visualizations or presentation of results. I have no recommendations regarding the content, analysis, and methodologies used in the report.

*1. The accuracy, quality, and thoroughness of the information considered, particularly if any additional information exists that was not considered.*

The report considers a wide range of potential impacts and explores these possibilities in detail. Even in cases where impacts are negligible, or unexpected, the report is thorough and detailed. To the best of my knowledge, there are no significant sources of information relevant to the potential economic impacts or costs of consultation resulting from critical habitat expansion not considered in the report.

*2. Whether the analysis applies well-accepted and appropriate methods to estimate potentially affected parties and impacts.*

The report does apply well-accepted and appropriate methods to estimate the potential economic impacts of critical habitat expansion. In addition, the methods used throughout the report are explored in detail, to the benefit of the reader. For example, Section 4.1.1 Economic Valuation Methods for Species and Habitat Conservation Methods.

*3. Whether the assumptions used in the analysis are reasonable and supported by available information.*

The assumptions used in the analysis, and the directional impacts of any potential bias, are all presented in unison in the first section of the report. These assumptions are reasonable and highly informed by the best available information. I could not find an instance where I disagreed with a principal assumption needed to conduct the analysis.

*4. Whether uncertainties in the information are reasonably identified and characterized.*

The report is clear to identify uncertainties in the information it provides, the most important of which are presented in the first section of the report. While the majority of uncertainties are minor, the report is detailed and thorough in its identification, explanation, and characterization of them.

### Reviewer #3

This message is in response to your office's request that I provide an independent peer review of the draft economic report (RIR/PA/IRFA) on the proposed rule of an expansion of the critical habitat designation (CHD) for the southern resident population of killer whales to include the Pacific coast.

The analysis concludes that the costs from CHD are small, and estimates a present value of approximately \$600,000, arising entirely from costs associated with increased section 7 consultations. The analysis does not anticipate that any new conservation recommendations, which would impose non-administrative costs, will arise from the CHD.

Two key factors contribute to why projected costs and benefits are so small, and they are important to understanding this report. First, the action being considered is the addition of killer whale CHD in the proposed area, most of which already under CHD for the killer whale's primary prey, salmon. Economists ascribe to an action only costs and benefits generated *beyond*

*the status quo*. In this case, actions affecting killer whales and their habitat are already governed by the CHD and ESA listing for salmon, for which consultation and conservation measures are required. Second, this analysis considers only costs and benefits that may accrue in the next ten years. Because many of the industries which are potentially affected are in the developmental stage, such as marine energy and offshore aquaculture, it is unlikely that considerable costs will be incurred by these industries before 2028.

Most of the analysis focuses on potential costs, reviewing impacts—especially section 7 consultation frequency—on eleven industries. These assessments are generally based on the best available information of which I am aware, and arrive at reasonable results. The results are clearly broken out by region, industry, and consultation formality. The basis for the cost of these consultations is clearly explained, and potential asymmetric errors in characterizing costs are clearly explained.

The only omitted activity with which I am familiar is the ongoing shift toward pot gear in the West Coast groundfish fishery. Pot gear is marked and hauled with vertical lines in which whales, including killer whales, become entangled (one killer whale entanglement per year in 2015 and 2016,

[https://www.westcoast.fisheries.noaa.gov/publications/protected\\_species/marine\\_mammals/cetaceans/wcr\\_2016\\_whale\\_entanglements\\_3-26-17\\_final.pdf](https://www.westcoast.fisheries.noaa.gov/publications/protected_species/marine_mammals/cetaceans/wcr_2016_whale_entanglements_3-26-17_final.pdf)). A federal nexus may exist as some of this shift is in the federal trawl IFQ program, where trawl permit holders are deploying pots to catch their sablefish quota, and some exempted fishing permit applications have been prepared to more effectively target other species such as lingcod with pots. The fisheries analysis focuses on the effect on salmon fisheries, where the ESA listing is sufficiently restrictive that there will be no additional conservation measures as a result of killer whale CHD. However, fixed gear entanglement will affect killer whales but not salmon, and thus killer whale CHD may add an incremental cost to federal fishermen seeking to increase the use of fixed gear.

A smaller section of the analysis is devoted to benefits. The value of killer whale conservation is based primarily on nonmarket valuation studies which, while based on still-evolving methods, represent the best available science. However, there are several issues with presented benefits that make this section less than persuasive. First, willingness-to-pay values for whale watching are difficult to decompose into components for marginal conservation of one whale population, and the method for doing so is not transparent, credible ( §165). Second, economic impact estimates are presented alongside cost-benefit estimates ( §162, §166, §168), and the two are not comparable as impact methods treat expenditures as benefits and do not control for opportunity costs; they should not be included in this analysis. The valuation of whale recovery estimates are directly applicable, and reader is left to believe that even if there are modest conservation benefits, or a relatively small probability of conservation benefits, the expected benefits of killer whale CHD would exceed the projected costs. However, a third issue in the analysis is that no evidence is presented that there will be modest conservation benefits, or a probability of conservation benefits. Unless the killer whale CHD will actually cause any killer whales to be conserved, the values of conservation and recovery presented are scaled by zero. In fact, the

analysis argues specifically that there will be no new conservation measures, which implies that there should be no new conservation, and therefore no new benefits.

Section 4.2.1 argues, vaguely, that consultations themselves provide “useful information on the biological needs of the species and the quality of and threats to the essential features of its critical habitat.” However, this is offered as a blanket statement, without calibration, qualification, or presentation of a mechanism through which the information would create value. Would this ever not be true? Why do we think these benefits will be additional, and accrue in the next ten years? Given the value associated with recovery, the bar here is probably not very high, but more evidence is needed that these benefits are plausible. A possible source of information would be from consultations on other, similar critical habitat designations.

This analysis presents a persuasive case that the costs of killer whale CHD will be small, but needs to provide more evidence about likely benefits to provide guidance on the value of the rule.