

**Draft Economic Analysis**  
**for the**  
**Proposed Designation of Critical Habitat for the Mexico, Central America, and**  
**Western North Pacific Distinct Population Segments of Humpback Whales**  
**(*Megaptera novaeangliae*)**

Peer Review Comments

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We solicited review of the Draft Economic Analysis for the Proposed Designation of Critical Habitat for the Mexico, Central America, and Western North Pacific Distinct Population Segments of Humpback Whales (*Megaptera novaeangliae*) from three peer reviewers.

Reviewers (listed alphabetically):

**Dr. Chris Anderson**

University of Washington  
School of Aquatic and Fishery Science  
Seattle, WA

**Dr. Dave Fluharty**

University of Washington  
School of Marine and Environmental Affairs  
Seattle, WA

**Robert Fonner**

NOAA Fisheries  
Northwest Fisheries Science Center  
Seattle, WA

We received completed reviews from each peer reviewer. Reviewer comments are compiled below. These comments are not presented in the order of the reviewers listed above.

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**General Comments:**

**Reviewer 2:**

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 humpback whales in 19 units of the west coast of the US, from southern California to Washington, and in Alaska.

The analysis concludes that the incremental costs from CHD are small, estimated a present value of approximately \$630,000-\$720,000, 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 humpback whale CHD in the proposed area. Economists ascribe to an action only costs and benefits generated beyond the status quo. In this case, many actions affecting humpbacks and their habitat are already arise from Endangered Species Act (ESA) listings of several distinct population segments (DPS), for which consultation and conservation measures are required with respect to the jeopardy standard. 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 2029.

Most of the analysis focuses on potential costs, reviewing impacts—especially section 7 consultation frequency—on 14 industries or activities. 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 geographic unit, 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.

Readers would have an easier time interpreting the analysis with some additional clarity on how the analysis is to be used. The report covers benefits of exclusion (§19), whereas a different report covers benefits of inclusion. This needs clarification, in two respects. First, whether the benefits of exclusion are just avoided costs, or whether there are other benefits to excluding an area that readers should understand from reading this analysis. Second, the intended spatial scale of exclusion is not clear here (nor in §272): while costs are decomposed to the geographic unit, they may be reduced by excluding areas on a finer scale; the benefits described are difficult to ascribe to even the spatial unit.

One important industry discussed is commercial fisheries, with a particular focus on the CPS fisheries. To a fishery-knowledgeable reviewer not directly involved in these fisheries, two claims in the report seem to raise contradictions. First, §10 states that prey, including especially small pelagic fish, are an essential feature of critical habitat, implying a potentially costly conservation action that could be required is a reduction in harvest of target CPS species. The summary table ES-3 says “the Federal Fisheries Management Plan for the CPS fisheries already accounts for other predators in the system”, however no CPS stocks have explicit accommodations in their biomass targets or harvest limitations to account for whales, and the measures described in §96 are not related to the current target species. If such restrictions on target stocks are unlikely to be considered, then the report should be more explicit about that to resolve this tension. Second, §98 seems to contradict itself: the second sentence argues CHD will shift the standard applied in consultations regarding CPS, while the third sentence says this will not result in a change in the outcome of those consultations. As written, it is not clear how these two claims can be true at the same time.

Beyond the CPS fishery, the analysis would benefit from a deeper treatment of fixed gear fisheries, which are responsible for a significant portion of humpback whale entanglements ([https://www.westcoast.fisheries.noaa.gov/publications/protected\\_species/marine\\_mammals/5.2.2018\\_wcr\\_2018\\_entanglement\\_report\\_508.pdf](https://www.westcoast.fisheries.noaa.gov/publications/protected_species/marine_mammals/5.2.2018_wcr_2018_entanglement_report_508.pdf)). While most humpback entanglements were associated with the state-regulated Dungeness crab fishery, which may lack federal nexus, it does imply a role for vertical lines, which may affect other fisheries and development of anchored offshore aquaculture and energy facilities.

A smaller section of the analysis is devoted to benefits. The value of humpback whale conservation in general is based primarily on nonmarket valuation studies which, while based on still-evolving methods, represent the best available science. The analysis relies primarily on regional and national values for population recovery, which are appropriate measures of benefit for actions that fully recover humpback populations. However, as the analysis explains, it is difficult to ascribe any particular share of the value

of recovery to the incremental effects of CHD. The scale of the benefits of recovery is so large that the 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, no evidence is presented that there will be modest conservation benefits, or a probability of conservation benefits. Unless the humpback whale CHD will actually cause any 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.

The analysis needs to construct a clearer argument that there are benefits. It is argued in §216 that CHD “serves an important role in contributing to the conservation and recovery of the whales.” For this to be the basis of benefits that justify CHD as a policy action that provides net benefits to the nation, the analysis should be clear about the mechanisms through which this will happen. For example, this may create new knowledge, or distribute existing knowledge, which may help prevent unexpected bad outcomes.

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

Please let me know if I can be of further service on this action.

### **Reviewer 3:**

The peer review charge to me asks me to consider the three General Directives below:

General Directives:

1. Please provide comments on the methodology, assumptions, or other means of reaching conclusions within the draft Economic Analysis. If you find that justification is lacking or specific information was applied incorrectly in reaching conclusions, please specify in your comments.
2. Please consider the accuracy, quality, and thoroughness of the information considered. If any additional information exists that was not considered, please specify in your comments.
3. Are uncertainties addressed fairly and clearly, where appropriate? If not, please explain.

I respond to these directives in two ways. First, I provide comments in the text of the Draft Document and second in comments in this separate Peer Review summary. I use paragraph numbers supplied in the text to specify comments. These are referenced as bracketed numbers, e.g., [15]. Comments in this Peer Review summary are authoritative for the review. Some of the comments in text are reading notes or suggested edits [a few typos] and many are subsequently answered or responded to in text. I have added a section termed “Other Comments” to offer suggestions on how to make the Final text more easily read in light of the economic assessment but also more generally.

- 1. Please provide comments on the methodology, assumptions, or other means of reaching conclusions within the draft Economic Analysis. If you find that justification is lacking or specific information was applied incorrectly in reaching conclusions, please specify in your comments.**

### **Methods**

The methods employed were clearly describes and the rational provided for why certain methods were chosen is given. Most importantly, the analysis follows federal guidelines for economic assessment of Critical Habitat designation both in terms of potential additional incremental measures as a result of designation as well as the administrative costs of conducting ESA Section 7 consultations. The

accumulated experience of analysts in performing these assessments is incorporated and in my estimation the assessments contained in this report are extremely competently done using well-accepted methods and best practices. Further, the reader who is inexperienced in the requirements of this type of assessments is provided a very clear – almost textbook --- introduction into the requirements for economic assessments.

One of the common issues in choosing analytical methods in this area of assessment is adequacy of data to support a comprehensive use of the method. The author of this report clearly identifies the data limitations and relates them to choice of methods in a transparent and accurate manner. Further, the reader is informed early in the report that it is limited to best available scientific information and the analyst is not expected to develop new data sets which would require more time and efforts than expected in the scope of this report, i.e., goes beyond the scope of the report.

Apparently the analyst is expected to use the methods/approach specified by the NMFS in its biological opinion [41], i.e., “modified cost-effectiveness analysis to support the designation of critical habitat for humpback whales”. The analyst goes on to accurately describe this method and explain how it is to be applied. It is my understanding that this is a conventional method that is used fairly consistently in economic assessment of critical habitat designation. I have no objections to its use here.

The lengthy discussion of different methods of economic assessments and the choices made for this study provides a primer for the reader and is consistent with standard economic best practice in this arena. I appreciated the concise yet comprehensive of discussion of establishing a baseline for analysis followed by how incremental costs of actions should be assessed.

Through these context setting sections, it becomes apparent to the reader why this review does not further deal with incremental costs other than administrative costs of the proposed actions.[Although it would be useful to review additional cost over baseline to implement measures to reduce entanglement and mortality and to provide that discussion for the reader.

The choice of the time period [10 years] for analysis and the 3% and 7% discount rates to be used is based on OMB recommendations.

The discussion of the nature of indirect effects and then the application in Chapter 3 seems to me to be thoughtful and well done. There is very little in the economics literature to guide how this is done – especially with the indirect effects being qualitative rather than quantitative assessments. I would judge the common-sense approach and the effort to think comprehensively about these indirect effects by region to supply a more than adequate review.

In Chapter 4 where the economic benefits of designation of critical habitat were assessed, I think it telling that the author found that there were insufficient data or studies to support much quantification. The straightforward conclusion is an accurate summation of the status, i.e., “Absent information on the incremental change in humpback whale populations or recovery potential associated with these conservation measures, this analysis is unable to apply the available literature to quantify or monetize associated incremental use and non-use economic benefits. This literature demonstrates, however, that humpback whales have value to people nationally and serve as an economic engine regionally.”

### **Assumptions**

It seems that the analyst is largely bound by the determinations in the Draft Biological Opinion 2019 made by National Marine Fisheries Service (NMFS) for its assessment of potentially affected activities [38]. NMFS apparently compiled this list based on other critical habitat designation reviews for the West Coast and Alaska waters. The economic analyst did due diligence in reviewing each sector in discussions with the potentially affected agencies. However, the commercial fisheries do not include

Dungeness crab or pink shrimp fisheries that have recently been implicated in a rise of entanglements and mortality of large whales including humpback whales. I question this omission, especially with the recent court challenge in California which resulted in a Settlement Agreement that requires significant change in management. It is possible that NMFS expects to be able to manage the entanglement and whale mortality using ESA Section 7 consultations and/or provisions of the Marine Mammal Protection Act [take permits based on Potential Biological Removals]. It seems prudent to mention these issues as relevant in the potential impacts on commercial fisheries.

Another activity that seems not to figure into the NMFS purview is whale watching. Humpbacks are observed in the West Coast area occupied by the DPS as well as SE Alaska for humpbacks especially. It may be that no new regulations from the base case are indicated, however, it would seem useful to affirm that issue. Should management actions be required (as some propose) under the MMPA or under Section 7 consultations this would require an increase in baseline management costs but not as a result of critical habitat designation. It seems strange that the benefits of whale watching are discussed [Section 4.1.2] but there is not recognition of potential cost.

I find the reference to US Forest Service activities to be far too generally stated. It seems from the text that waterborne timber transport is only of significance in Alaska and it is unclear what the role of the USFS is in managing that activity. I don't think that the economic assessment is altered in any respect relative to designation of critical habitat but the activity in question needs to be better specified in terms of nexus to humpback whales and location.

### **Other Means of Reaching Conclusions**

I feel the assessment of indirect effects is one area where other means of reaching conclusions were applied. See notes above.

Due to my lack of knowledge of the way that Regulatory Flexibility is assessed I am unable to independently assess the methods being applied. I read with interest the assessment made by the author and found it to be very plausible and understandable. I did feel that the reader, like me, would benefit with earlier definition of what constitutes a small entity [248]. It seems like that section could be moved up closer to [230] with good effect for comprehension

### **2. Please consider the accuracy, quality, and thoroughness of the information considered. If any additional information exists that was not considered, please specify in your comments.**

As noted above, it is unclear why the category commercial fisheries does not include Dungeness crab and shrimp pot fisheries. Further, there are questions about the specific activities managed by the USFS and about Whale Watching generally.

In Chapter 2 Commercial fisheries are not listed [80] whereas they are fully discussed in the rest of the chapters and in Exhibits 2-1 and 2-2. Note that entanglements, ship strikes and acoustical impacts on whales are included in the Biological Opinion but not noted with respect to Commercial Fisheries until late in the discussion [103]. The discussion at this point could definitely be expanded to accommodate earlier comments above but more importantly, if these are outstanding Section 7 or MMPA questions they probably should be addressed earlier for consistency.

This Chapter starts with an important conclusion, [80]. "NMFS identifies that the following activities may affect humpback whales or their critical habitat and therefore potentially require section 7 consultation, but as unlikely to result in additional conservation recommendations." The author of this economic analysis critically assesses the bases for NMFS conclusions as outlined in reviews of each of the activities listed. I am satisfied by these investigations that there is a sufficient substantive basis for agreeing with the NMFS assessment.

While in agreement with the overall assessments for all listed activities, I feel that more attention needs to be given to the write up so that it is clear if a particular assessments applies to both the Western North Pacific DPS and the Central America DPS or to just one area. I don't think that this necessarily affects the underlying analysis but how it is expressed sometimes suffers in terms of clarity to location.

Sometimes the author uses the term "significant" in ways that make it sound like this result is "statistically significant". Given the qualitative nature of this work and the lack of statistical analysis it is probably advised to not use the term to avoid any misunderstanding. [Am I getting too picky here?].

Originally, I had thought that this assessment should focus on the recent re-starting of the federal offshore oil and gas leasing program [dismissing the Obama 2016-2021 5-year plan and substituting the Trump administration more ambitious leasing schedule]. However, I feel the author of this assessment has provided ample justification for staying the course [e.g., the Trump 5-year plan is not yet completed and will surely be challenged in court and probably not attractive to the oil and gas industry at this time given the high costs compared with onshore oil plays].

I have very little to comment on the assignment of administrative costs for Section 7 consultations. The author has set forth what seems to be a reasonable and systematic way of anticipating the frequency of such consultation and has applied a consistent [OMB recommended] cost to that level of effort for each of the activities. There is an effort to assign these activities to each of the DPS which seems reasonable although I lack independent knowledge of each area and estimate. There is a question in my mind over the way DPS 10 is assigned only to Mexico as this is not a point made throughout the analysis [Exhibits 3-1, 3-2, 3-3, etc.]. If DPS 10 is only Mexico then why is it not singled out in the foregoing analysis and discussion? This is, I suspect, an artifact of the Biological Opinion. In terms of the economic assessment, I don't feel like I understand it's positioning. Are humpbacks from Mexico the only population found in DPS 10? Do all the others in the Western North Pacific come from the Western Pacific and Hawaiian Islands? I need assistance to understand the "stand alone" nature of that particular segment in the economic analysis.

I have not independently traced the data presented back to their source but I have confidence that the author has properly represented the best available data and information. As noted earlier, this economic assessment was not required to generate new data or to fill data gaps. cursory tests of data consistency and proper calculations demonstrated that spread sheets and other data manipulation forms far exceed any challenge that I can mount to electronic accuracy. I did not find any examples where I felt costs were obviously over or under-stated.

### **3. Are uncertainties addressed fairly and clearly, where appropriate? If not, please explain.**

While uncertainties are addressed throughout the document, the summary in Chapter 6 provides a useful access point for peer review. The author states "This analysis relies on the best available information from NMFS describing the likelihood of incremental conservation recommendations for each activity." However, I do not think that this gives full credit to the assessments performed in this study. The author has critically examined the determination of the NMFS through review of other documentation and interviews with knowledgeable persons in many of the ocean activities that are potentially affected by critical habitat determination. I believe the effort to establish the basis for addressing uncertainties was fair and clear. I believe as well that the assessments of uncertainty and their effects on statement of cost [over or under estimates] are reliable given our state of knowledge and that intelligent determinations have been made. I did not find that I had any quibbles with the assessments – especially when keeping in mind that the relevant period for analysis is limited to 10 years out. In practical terms, the uncertainties are more a result of potential changes in government policies than in the economic estimates.

## Other Comments

Geographic Clarity It is fairly easy to track [8] the Distinct Population Segments (DPS) termed Western North Pacific and Central America. They are shown on Exhibits ES- 1 and ES-2. However, the Mexico DPS is not described or illustrated which I am assuming follows the 2019 Draft Biological Report. Only later does one learn that the Mexico DPS overlaps the two others [30]. Further confounding reader confusion is Exhibit 1-1 that shows the Mexico DPS as occupying segment 10 of the Western North Pacific DPS. These issues seem to derive from the Draft Biological Opinion 2019 document and not from the economic analysis.

In terms of the economic analysis it would be helpful if the author would provide a very clear statement on how the overlap of the Mexico DPS is treated in the analysis of the Western North Pacific and Central America DPS. (See [38] for example). I believe that the present economic analysis includes any assessment of the Mexico DPS as part and parcel of the Western North Pacific and Central America DPS. The Mexico DPS humpbacks are subsumed in the analysis of the other two. The write up of the analysis does not make separate statements about the Mexico DPS thus it is imperative to explain why there is not a separate analysis and/or to explain why it is not possible to separate north migrating humpbacks from the Mexico DPS from those in the Central America and Western North Pacific DPS. The closest statement to this effect is [72] “Due to the broad geographic coverage of certain activities and difficulty of assigning a specific portion of a consultation to each individual unit, the economic impacts of activities that span all critical habitat units are presented collectively.”

I believe it would also assist the reader if the author makes clear that Alaska is used as shorthand for Western North Pacific DPS and West Coast is used as shorthand for Central America DPS. These substitute terms make a whole lot more sense to me than the odd way the Biological Opinion names these DPS. West Coast should be capitalized when used in this fashion to indicate a specific meaning.

**Endangered Species Act** – Terminology I believe it would be preferred form to refer to Section 7 Consultations in capital letters to indicate the specific meaning. This draft is inconsistent in referencing – sometimes using the preferred form and sometimes not, e.g., section 7.

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## Specific Comments (by section):

### Executive Summary

**Reviewer 1:** *RE: Exhibit ES-3. Summary Findings by Activity – Vessel Traffic - Unlikely that section 7 consultations will result in additional conservation recommendations due to baseline protections associated with the ESA-listing status of the humpback whales.*

Consider adding sentence explaining why.

**Reviewer 1:** *RE: Exhibit ES-3. Summary Findings by Activity – Water Quality Management - Aquatic and marine species...*

Change marine to coastal?

**Reviewer 3:** *RE: 1. “Mexico DPS”*

It would help if these names were used consistently. Compare this with the names of regions in Exhibits 1-2 below. Note that there is no indication of a Mexico DPS shown in these exhibits despite the mention here that this occurs in US waters.

In point 13 the Mexico DPS is listed as unit 10 on Exhibit 1. This seems very strange as it is in AK not Central America DPS

**Reviewer 3: RE: 1.**

Delete the word “draft” in last sentence.

**Reviewer 3: RE: 7. “These threats, however, are not well understood:”**

Check to see if NMFS has now listed humpback whale entanglement in fishing gear as a potential threat, i.e., an adverse modification of habitat. The CBD suit and Settlement Agreement with CA Dept of Fish and Wildlife.

**Reviewer 3: RE: Exhibit ES-1.**

Change title location to “Western North America” from “Alaska”

**Reviewer 3: RE: Exhibit ES-2.**

Change title location to “Central America” from “West Coast”

Where is Mexico DPS shown?

**Reviewer 3: RE: 10. “Absent critical habitat designation, NMFS is already required to consult on these types of activities to consider the potential for jeopardy to the listed humpback whales and makes conservation recommendations accordingly. NMFS...”**

Does this include NMFS consulting with itself on humpback entanglements in fishing gear under ESA – or MMPA implementation?

**Reviewer 3: RE: 10. “Additionally, the protection of the prey essential feature of critical habitat is also important to avoid jeopardy and is therefore relevant to consider as part of consultations on the humpback whales outside of the need to consider adverse modification of critical habitat.”**

Does conflict with fishing gear meet the definition of “adverse modification of habitat”?

**Reviewer 3: RE: Exhibit ES-3. Summary Findings by Activity – Commercial Fishing**

Isn't the target sardine fishery closed the last few years?

**Reviewer 3: RE: Exhibit ES-3. Summary Findings by Activity – Oil and Gas Activities and Seismic Surveys**

Should the nature of this uncertainty be expressed? While on the BOEM revised 5-year plan, the governors of the three west coast states have requested permanent elimination. Plan is challenged in court suit. AK wants leasing.

**Reviewer 3: RE: Exhibit ES-3. Summary Findings by Activity – Alternative Energy**

Should the nature of this uncertainty be expressed? WA /OR/ AK. SoCal some activity.

**Reviewer 3: RE: Exhibit ES-3. Summary Findings by Activity – Vessel Traffic**

Uncertainty with respect to oil port development WA/OR and shipping through great circle route off AK. Effect of increased oil exports from W. Canada?

**Reviewer 3: RE: Exhibit ES-3. Summary Findings by Activity – Liquefied Natural Gas Facilities**

Increase in shipping?

**Reviewer 3: RE: Exhibit ES-3. Summary Findings by Activity – Space Vehicle and Missile Launches**

Seems strange to single out EFH for this use [why not Military?]

**Reviewer 3:** *RE: Exhibit ES-3. Summary Findings by Activity – U.S. Forest Service Activities*

Check this USFS does not directly manage this activity to the extent that it occurs. Is export of timber from federal lands [outside of SEAK] permitted? My understanding is that this export has been banned?

**Reviewer 3:** *RE: Exhibit ES-7. Assumptions and Uncertainties – Critical habitat designation is unlikely to change fishery management recommendations.*

The CBD Suit and Settlement Agreement over Whale Entanglement in Fishing Gear with CA DFG since this analysis was completed would alter this conclusion.

**Reviewer 3:** *RE: Exhibit ES-7. Assumptions and Uncertainties – The frequency of new seismic survey consultations is generally constant and is comparable to the average rate of consultations in recent years.*

Change “However, associated changes in regional offshore oil and gas development are significantly uncertain.” to “highly uncertain”

### 1.2.1 Humpback Whales and Habitat Features

**Reviewer 3:** *RE: 30.*

This is the description of the Mexican DPS I have been waiting for.

**Reviewer 3:** *RE: 33.*

They seem to have missed entanglement.

**Reviewer 3:** *RE: Exhibit 1-1.*

Alaska – not same as DPS - Does not match description of Mexico DPS in paragraph 30.

**Reviewer 3:** *RE: Exhibit 1-2.*

Add “Includes Mexico Feeding DPS”

### 1.2.2 Economic Activities and Other Habitat Threats

**Reviewer 3:** *RE: 38. – Commercial fishing*

Does this include Dungeness crab? Shrimp? Potential entanglement issues with pot gear?

**Reviewer 3:** *RE: 38.*

Add bullet – Recreational Fishing

**Reviewer 3:** *RE: 39.*

Bold font - Water Quality Management, Pesticide Registration, Establishment of Water Quality Standards, and CWA General Permits.

**Reviewer 3:** *RE: 39. - U.S. Forest Service (USFS) Activities*

State and private forest lands management?

### 1.3.1 Benefit-Cost Analysis and Cost-Effectiveness Analysis

**Reviewer 1:** *RE: 46.*

Why is [the] bracketed?

**Reviewer 1:** RE: 47. *“Different configurations of critical habitat could be gauged by both metrics, with the cost-effectiveness (ratio of units of biological benefits to monetized and unquantified cost impacts) evaluated in each case.”*

Clarify this language...why are costa “unquantified”?

**Reviewer 1:** RE: 47. *“If alternatives have the same level of biological benefits, the most cost-effective is the one with the lowest cost.”*

I don’t find this sentence in line with the spirit of CEA. Instead, perhaps consider: “If a set of alternatives all achieve some target level of biological benefits, the cost effective alternative is the alternative that achieves the target at the lowest possible cost”

**Reviewer 1:** RE: 48. *“given the state of the science, to quantify benefits reliably with a single biological metric.”*

Explain why.

**Reviewer 1:** RE: 49. *“in a framework that essentially adopts that of CEA.”*

A framework that adopts what of CEA? Clarify.

### 1.3.2 Process for 4(B)(2) Exclusion Decisions

**Reviewer 3:** RE: 51. – *“The Secretary may exclude any area from critical habitat if he determines that the benefits of such exclusion outweigh the benefits of specifying such area as part of the critical habitat, unless he determines, based on the best scientific and commercial data available, that the failure to designate such area as critical habitat will result in the extinction of the species concerned.”*

Interesting that this statement adds “commercial data” to the regular BASI approach.

#### 1.3.3.1 Identifying Baseline Impacts

**Reviewer 3:** RE: 59. *“Enforcement actions taken in response to violations of the ESA are not included in this analysis.”*

Can a short explanation of why this is the case be provided? Cannot estimate nature of violations, frequency of violation, mitigating factors in legal proceedings? Etc. Or is there a formal proscription of including these costs?

#### 1.3.3.8 Discounting Impacts over Time

**Reviewer 1:** RE: 75.

So  $t_0$  equals 2018, right? If so probably best to use just  $t_0$  in the formula (to keep it general) then note in text that  $t_0=2018$

### 1.3.4 Summary

**Reviewer 1:** RE: 77. *“The economic framework applied in this report sums project-level impacts to estimate the total economic impact of designating particular areas as critical habitat.”*

Change “sums” to “aggregates”

## 2.1 Overview of Economic Activities that may Affect Critical Habitat

**Reviewer 3:** RE: 80.

Add bullet – Commercial and Recreational fisheries

Did NMFS fail to identify any fishing activities affecting humpbacks or was it left out inadvertently. As noted elsewhere, NMFS may have to re-examine the issue of entanglement of humpback whales in fishing gear – at least for California. While this is not as a result of designation of Critical Habitat it may rightfully be considered as part of the baseline case of existing MMPA measures and so need not be seen as incremental but it is not known what protective measures might be taken. Thus, it would be prudent to note this issue.

## 2.2 Summary of Findings

**Reviewer 3:** *RE: Exhibit 2-2. Summary of Findings by Activity – Commercial Fishing*

Are there similar measures in the GOA and BSAI? – the Western North Pacific DPS

**Reviewer 3:** *RE: Exhibit 2-2. Summary of Findings by Activity – Aquaculture*

Permitting of offshore [federal waters] aquaculture?

**Reviewer 3:** *RE: Exhibit 2-2. Summary of Findings by Activity – Space Vehicle and Missile Launches*

PFMC and NPFMC define EFH as all the waters under US federal jurisdiction. The Habitat Areas of Particular Concern that are designated as a subset of EFH may be what receives additional protection. The krill measures in the PFMC region and forage fish in NPFMC region are not taken under EFH provisions.

**Reviewer 3:** *RE: Exhibit 2-2. Summary of Findings by Activity – U.S. Forest Service Activities*

See earlier comment relative to USFS Activities. Timber exports are not regulated by USFS -- Ports and Harbor entities deal with this/ Coast Guard? In Central DPS -- Maybe in AK there is a USFS role?

## 2.3 Commercial Fishing

**Reviewer 3:** *RE: 88. “, is the activity that most directly affects critical habitat by specifically reducing prey abundance.”*

Krill? Central DPS?

**Reviewer 3:** *RE: 88.*

Change “fish through purse seines,” to “fish with purse seines,”

### 2.3.1 Alaskan Fisheries

**Reviewer 3:** *RE: 90.*

Add “Note NPFMC ban on fishing for forage species in federal waters.”

### 2.3.2 West Coast Fisheries

**Reviewer 3:** *RE: 94.*

Add “Through co-managed fisheries” in front of “in Puget Sound, Washington”

#### 2.3.2.1 Coastal Pelagic Species

**Reviewer 3:** *RE: 96.*

Please check to see if krill measures are really undertaken as EFH? Does not sound correct. This probably does not affect the economic assessment of CHD one way or another.

**Reviewer 3:** *RE: 100. Change “significant” to “high”*

In this context “significant” might be seen as statistical significance but the data are clearly lacking to warrant a statistically significant level of uncertainty.

### 2.3.2.2 Groundfish

**Reviewer 3:** RE: 103.

Change “A 2012” to “The 2012”

Change “the species” to “humpback whales”

**Reviewer 3:** RE: 103. – “entanglement, ship strikes, and acoustic disturbance.”

Not mentioned earlier

### 2.5 Alternative Energy Development

**Reviewer 3:** RE: 122.

Change “Biablo Canyon” to “Diablo Canyon”

**Reviewer 3:** RE: 123.

Capitalize the W and C in West Coast

### 2.13 Forest Service Activities

**Reviewer 3:** RE: 152.

The lack of specificity about where timber transport is taking place, i.e., AK and not West Coast leads to questions. What role does USFS actually have over timber transport? Does it permit the activity? “Nexus”

### 3.3 Indirect Effects

**Reviewer 1:** RE: 193. “Section 1.2.3,”

I don’t see this section do you mean 1.3.3.5?

#### 3.3.3 California

**Reviewer 1:** Consider including discussion of commercial fisheries given recent spike in Humpback entanglements on US West Coast. Perhaps briefly address the issue and explain why entanglements are not expected to cause incremental costs associated with the proposed CHD.

### 4.1 Economic Benefits of Humpback Whales

**Reviewer 1:** RE: Exhibit 4-1. *Components of Total Economic Value of Species*

Change “Non-Market Value” to “Non-Market use Value”

**Reviewer 3:** RE: Exhibit 4-1. *Components of Total Economic Value of Species*

Source?

#### 4.1.2 Whale Watching Values and Impacts

**Reviewer 3:** RE: 225.

Capitalize the W and C in West Coast

**Reviewer 3:** RE: 226.

Capitalize the W and C in West Coast

#### 4.1.3 Values for Recovery of Humpback Whales

**Reviewer 1:** RE: 228. *Richardson and Loomis (2009)*

This article contains several errors and is not the best reference in my opinion.

**Reviewer 3:** RE: 227.

Capitalize the W and C in West Coast

**Reviewer 3:** RE: 228.

Change "(Samples & Hollyer 1989)" to "(Samples and Hollyer 1989)"

#### 4.2 Ancillary Benefits

**Reviewer 3:** RE: 229.

Capitalize the "S" in "section 7"

#### 5.1 Initial Regulatory Flexibility Analysis

**Reviewer 3:** RE: 232.

It would be useful to have an in text definition of what constitutes a small entity. See p. 14, SBA 2012, A Guide for Government Agencies: How to Comply with the Regulatory Flexibility Act.

##### 5.1.1 Summary of Findings

**Reviewer 3:** Doesn't a summary of findings usually come after the findings have been presented? In this case, I find it difficult to evaluate the summary without having certain terms defined. This is not a deal breaker if this presentation format is dictated by a desire to provide an EXEC SUMMARY but I find it out of order.

**Reviewer 3:** RE: 238. *"average annual revenues for an individual small entity."*

What is definition of small entity in terms of annual revenue? Source?

**Reviewer 3:** RE: 239.

Change "effected" to "affected"

##### 5.1.2 IRFA Requirements

**Reviewer 3:** RE: 241. – *"(i.e., small businesses, small organizations, and small government jurisdictions)"*

What constitutes small? Quantitative / Qualitative?

##### 5.1.4 Description and Estimate of the Number of Small Entities to which the rule applies

**Reviewer 3:** It seems like paragraph 248 belongs earlier in this chapter

**Reviewer 3:** RE: 260. – *"critical habitat Unit 10."*

If this is not yet designated a Critical Habitat shouldn't it be a unit of the Western Pacific DPS?

**Reviewer 3:** RE: 263. – *"Hoovers."*

Make sure this source is cited fully in fn 315

**Reviewer 3:** RE: 263.

Change "incudes" to "includes"

### 5.1.6 A Description of Alternatives to the Proposed Rule Which Accomplish the Objectives and Which Minimize Impacts on Small Entities

**Reviewer 3: RE: 267.**

Add “designation of any” after “Without”

**Reviewer 3: RE: 269.**

Add “as critical habitat”

**Reviewer 3: RE: 271.**

Add “as critical habitat”

### 6 Assumptions and Uncertainties

**Reviewer 3: RE: 276.**

Change “This section reviews the key assumptions that underlie the analysis and the likely significance of these assumptions with respect to estimated impacts.” to “This section reviews the key assumptions that underlie the foregoing analysis and the likely significance of these assumptions with respect to estimated impacts.

**Reviewer 3: RE: Exhibit 6-1. - Critical habitat designation is unlikely to change fishery management recommendations.**

Entanglement seems to be a new issue that could require spatial closures or other measures that may have costs.

**Reviewer 3: RE: Exhibit 6-1. - This analysis forecasts future oil and gas exploration and production activities under the assumption that the existing 5- Year Leasing Program remains in place.**

A lot depends on the scale approved for WOC and the response of the oil and gas industry.