

June 3, 2015

Ms. Dorothy Lowman, Chair  
Pacific Fishery Management Council  
7700 NE Ambassador Place, Suite 101  
Portland, OR 97220

**RE: D.6 Groundfish Essential Fish Habitat and Rockfish Conservation Area Update**

Dear Chair Lowman and Council members:

We are pleased to provide an update to the Council on the progress of the Essential Fish Habitat (EFH) collaborative along with our recommendations for next steps going forward. Since we last came before you in April, there have been a number of notable developments:

- We've conducted numerous additional meetings, bringing our total number of port visits to well over twenty.
- In those meetings, we have met with dozens of skippers and permit holders from all three West Coast states, and have discussed more than eighty discrete areas, including twelve possible re-openings of, or modifications to, existing EFH Conservation Areas and twenty-nine new or expanded EFH Conservation Areas.
- We have begun to document these discussions with fishermen in real time using a web hosted mapping program called SeaSketch.

Later this month we plan to share the SeaSketch maps of potential new closures and re-openings with the fleet. This will allow them the opportunity to examine the modifications with their plotter software and provide suggestions and refinement to maximize fishing opportunity while minimizing habitat impacts. Meanwhile, NGOs will analyze the same coordinates to ensure that sensitive high relief, biogenic, and other important habitats are well protected. By mid-July we will conduct a final round of port meetings to gather and synthesize additional input from the fleet and NGOs. At that time, if there is consensus around the package, and we are confident that there will be, we will put together a report and accompanying analysis to submit to the Council for consideration in September.

This update is intended to provide the Council with some of the background for our discussions, our progress to date, and the rationale we have been using when identifying areas for possible closure or re-opening.

**Background**

The Council initiated its five year EFH review in 2010. In late 2014 the collaborative group, composed of industry representatives Brad Pettinger and Tom Libby, and nongovernmental representatives from the Environmental Defense Fund (EDF), Natural Resources Defense Council (NRDC), and Oceana, convened to address modifications and additions to existing EFH areas. At that meeting, we reconfirmed our vision:

- A robust fishing industry that shows steady or improved profitability, for both fishing and processing sectors.

- Stable regulations, with minimal controversy and litigation, so as to allow for long-term planning and innovation by industry.
- Intact groundfish fishing communities along the West Coast, and enough new entrants to keep the industry viable into the next generation.
- Healthy population levels and age structures (including abundant old fish) in target and non-target species.
- Resilient benthic ocean ecosystems, with high biodiversity, functioning food webs, and minimal substrate disturbance or damage to sensitive organisms.

These goals have guided our discussions. Specifically, the collaborative effort has focused on minimizing the socioeconomic impact to the trawl fleet (and in fact improving fishing opportunities) while advocating for additional protection of areas known to contain habitat features that are particularly sensitive to bottom trawl impacts. These features include hard substrate, biogenic habitats (*i.e.*, coral and sponge communities), submarine canyons, ridges, banks, and escarpments. We have also sought to bring fishermen's data and knowledge into the system to help identify and protect previously unknown features, and to carefully modify existing closures so as to increase fishing opportunity without habitat impacts.

Since December 2014, the collaborative group has met with trawl fishermen from Monterey to Astoria, whose knowledge spans the entire West Coast. At the first and second meetings in these ports, we introduced the concept of a collaborative approach to establishing additional EFH Conservation Areas and the re-opening of existing EFH Conservation Areas as well as the Rockfish Conservation Area (RCA). Specifically, we asked fishermen about the areas in which they tow for groundfish or shrimp, and where they fished historically in areas that are now closed. In many cases, fishermen shared plotter data so we could view tow tracks *vis-à-vis* relevant habitat features. We also discussed the accuracy of the habitat data on which we relied in proposing additional EFH Conservation Areas. Where fishing effort overlapped with habitat features, the group discussed areas for compromise. At the third meeting in each of these ports, we documented both proposed additions and re-openings of existing EFH Conservation Areas.

We are using SeaSketch to capture proposed additions and re-openings in real time during port meetings. SeaSketch is a mapping tool that allows users to share views of maps, post file uploads to discussion forums, and provide explanatory text.<sup>1</sup> It also allows users to highlight specific base layers, such as nautical charts, as well as tailored data layers, such as existing EFH Conservation Areas, RCA, coral and sponge hotspots and fishing effort.

### **The Role of the Collaborative Effort in Future Council Action**

At the April 2015 meeting, the Council decided on the scope of actions, subject areas, and management measures to be included in a Fishery Management Plan or regulatory amendment for matters related to EFH and fishing area modifications. The scope includes further evaluation of potential adverse effects of fishing activities, and minimization of those effects to the extent practicable. It also includes comprehensive trawl RCA adjustments.

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<sup>1</sup> See <http://www.seasketch.org/home.html>.

In June we will share the latitude and longitude coordinates captured through SeaSketch, along with descriptions of port discussions leading to those proposed closures or re-openings, with the trawl fleet. These coordinates represent twelve possible re-openings of, or boundary modifications to, existing EFH Conservation Areas, and twenty-nine possible new or expanded EFH Conservation Areas. In mid-July we will meet again with industry representatives in all five northern ports to synthesize feedback from both the trawl fleet and conservation groups. We will finalize our proposed package for submission to the Council by the advanced briefing book deadline for the September meeting.

The final package that we plan to submit to the Council should be considered as a stand-alone alternative, rather than as the raw material for the creation of different alternatives. This is important not only to achieve the goals developed by the collaborative group, but also because it reduces the amount of pre-analysis required from the Project Team before the September meeting. Furthermore, this approach is consistent with the April Council action which instructed the Project Team to leave a placeholder for the collaborative package in its draft range of alternatives.

We look forward to sharing our progress and continuing to work with the Council.

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From: [tithonia65@gmail.com](mailto:tithonia65@gmail.com) <[tithonia65@gmail.com](mailto:tithonia65@gmail.com)>  
Date: Sat, May 30, 2015 at 8:45 AM  
Subject: Protect pacific groundfish and deepwater ocean habitat  
To: [pmmc.comments@noaa.gov](mailto:pmmc.comments@noaa.gov)

Dear Chair Loman and Council Members,

As an American citizen who loves sea life and will soon move to the West Coast. Thank you for your past work to protect ocean habitat, including the recently concluded five-year review of Essential Fish Habitat for groundfish. The Council is now well positioned to find many win-win possibilities for habitat protection and the fishing economy, thanks to a stakeholder-driven process in the five-year review along with ongoing collaborative discussions between fishermen and conservation advocates.

In considering the upcoming amendment to the management plan for groundfish, I urge the Council to advance the following:

- Closure to bottom trawling of the deepwater areas (beyond 3,500 meters) off California south of the Mendocino Ridge.
- A coastwide scope for potential changes to the groundfish management plan.
- Potential designation of new Essential Fish Habitat (EFH).
- Potential creation of new EFH Conservation Areas or adjustment of current EFH Conservation Areas.
- Inclusion of all remaining stakeholder proposals as potential alternatives.
- Adjustment of area-based management measures such as the Rockfish Conservation Area to improve fishing while also protecting habitat.
- Measures to address bottom contact by midwater trawl fishing gear.
- Designation of key prey species of groundfish.

Healthy marine habitats ensure a sustainable supply of fish for commercial and recreational fisheries. But these essential places—which contain deep-sea corals, sponges, and seamounts—can be damaged by fishing gear such as bottom trawls. I urge the Council to move habitat protection forward and seek a broad set of solutions for fishing communities and a healthy ocean.

Thank you for your time,

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June 3, 2015

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Pacific Fishery Management Council  
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**RE: Agenda Item D.6 (Groundfish Essential Fish Habitat and Rockfish Conservation Area Update)**

Dear Chair Lowman and Council Members,

We write in response to the Pacific Fishery Management Council's (Council) April motion regarding groundfish essential fish habitat (EFH) and area modifications. Specifically, we would like to offer comments on Magnuson Stevens Fishery Conservation and Management Act (MSA) authority for enacting protections for areas beyond 3,500 meters in depth as addressed in item 3 of the Council's April motion.<sup>1</sup> For this meeting, we request the Council confirm that the scope of this comprehensive action will include alternatives for a bottom trawl closure for waters beyond 3,500 meters in depth. Further, we request the Council direct the Plan Amendment Team to develop alternatives utilizing appropriate MSA authorities as outlined below, for consideration in September when the range of alternatives is scheduled to be selected.

In its April motion, the Council specified a set of issues to be retained in the scope of action for a future fishery management plan (FMP) amendment addressing groundfish EFH, area modifications, and related habitat matters. According to the motion, protection of waters beyond 3,500 meters is included in the set of issues to be considered by the Council as it develops its range of alternatives for this action. Also in its motion, the Council requested that NOAA Fisheries identify appropriate authorities for promulgation of regulations to implement the various conservation and management measures to be included in this action, and report back on those authorities during the June meeting.

Below we provide detailed comments regarding protection of waters deeper than 3,500 meters, including:

- The Council's longstanding authority and mandate to protect the marine ecosystem.
- Other potential MSA authorities available for protection of the deep.
- Prior Council and National Oceanic and Atmospheric Administration Fisheries Service (NOAA Fisheries) action relative to protection of the deep.
- Rationale and justification for protection of the deep.

The Council deserves credit for its willingness to look beyond simply fulfilling existing legal mandates through this habitat amendment and to seek proactive, precautionary, and ecosystem-based habitat protections, such as its past efforts to prohibit bottom trawling in areas that had not

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<sup>1</sup> PFMC. April 2015. [Motion regarding Groundfish EFH and Area Modifications.](#)

been previously fished.<sup>2</sup> Through the current EFH review process, the Council’s deliberative, stakeholder-driven approach to conserving ecologically sensitive habitat presents another opportunity to make significant strides in this direction. Extending the bottom trawl closure to the boundary of the Exclusive Economic Zone (EEZ) is important not just for the protection of deep sea corals (DSC) and other structure forming invertebrates beyond 3,500 meters in depth, but to ensure that the full range of potential impacts to these unexplored and pristine habitats are analyzed prior to the Council authorizing bottom trawl activity in the area.

### **Longstanding MSA Authority**

The statutory authority for enacting habitat protections and related conservation measures in this fragile portion of the ecosystem has long been available in the MSA. Specifically, the “conservation and management” called for in the very title of the law is defined broadly to include measures to “rebuild, restore, or maintain...any fishery resource *and the marine environment*” (emphasis added) and is intended to assure that adverse effects are avoided.<sup>3</sup> Furthermore, the “fishery resources” referred to in the definition of conservation and management are also defined in the MSA to include “any species of fish, and *any habitat of fish*” (emphasis added).<sup>4</sup>

Through the MSA’s clear and explicit definition of the terms “conservation and management” and “fishery resources,” Councils are given the unequivocal authority to enact precautionary conservation measures for unfished areas such as waters beyond 3,500 meters. Indeed, not only are Councils given the authority to do so, but conservation and management of U.S. fishery resources is the first and primary purpose of the MSA itself.<sup>5</sup>

### **Other non-EFH Authorities**

In addition to the existing prior authority contained in the MSA at the time of Amendment 19 to the Groundfish FMP, each of the following non-EFH authorities could also be utilized to protect waters beyond 3,500 meters in depth by extending the trawl closure to the boundary of the EEZ. At this time we do not have a specific recommendation on which authority is most appropriate, but rather provide our comments regarding the applicability of each.

### **Section 303(b)(2)(A)**

This section of the MSA explicitly states that Councils have the authority to:

*“designate zones where, and periods when, fishing shall be limited, or shall not be permitted, or shall be permitted only by specified types of fishing vessels or with specified types and quantities of fishing gear”*

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<sup>2</sup> See PFMC, [Amendment 19 Final EIS](#), December 2005, page ix

<sup>3</sup> 16 U.S.C. § 1802 (5)

<sup>4</sup> 16 U.S.C. § 1802 (15)

<sup>5</sup> 16 U.S.C. § 1801 (b)(1)

Of the three authorities discussed here, this section of the MSA most concisely describes what this proposed conservation measure is intended to do: designate a zone (waters deeper than 3,500 meters) where a certain gear type (bottom trawl) is not permitted. Closures enacted under this section of the MSA need not relate specifically to the protection of DSC, as in Section 303(b)(2)(B). As to the purpose and need for taking such an action, we suggest that it is linked directly to the primary purpose of the MSA; “to conserve and manage the fishery resources found off the coasts of the United States.”<sup>6</sup> Rather than linking this action to the protection of DSC specifically, this authority can be used to implement a precautionary approach to waters beyond 3,500 meters to ensure that the potential impacts of any proposed bottom trawl activities in the area is fully analyzed prior to being authorized.

### **Section 303(b)(2)(B)**

This section of the MSA is a subset of Section 303(b)(2)(A) discussed above, and gives Councils the authority to:

*“designate such zones in areas where deep sea corals are identified under section 408, to protect deep sea corals from physical damage from fishing gear or to prevent loss or damage to such fishing gear from interactions with deep sea corals, after considering long-term sustainable uses of fishery resources in such areas”*

This authority is specific to the protection of DSC, and requires that DSC areas be identified through Section 408 of the MSA, the Deep Sea Coral Research and Technology Program (DSCRTP).<sup>7</sup> Moreover, and consistent with the specifics of the area in question here, NOAA Fisheries guidance to regional councils outlines that “DSC zones and protective measures may be adopted even if there are no vessels currently fishing at or near the areas...,” and also that areas identified for protective measures should be identified on a case-by-case basis considering among other things “the likelihood of occurrence of DSC in un-surveyed areas based on the results of coral habitat suitability models....”<sup>8</sup> Indeed, DSC have been determined to likely occur within waters beyond 3,500 meters in depth according to a recent peer-reviewed habitat suitability model.<sup>9</sup> DSC have also been identified in the area according to the most recent report to Congress of the DSCRTP.<sup>10</sup>

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<sup>6</sup> 16 U.S.C. § 1801 (b)(1)

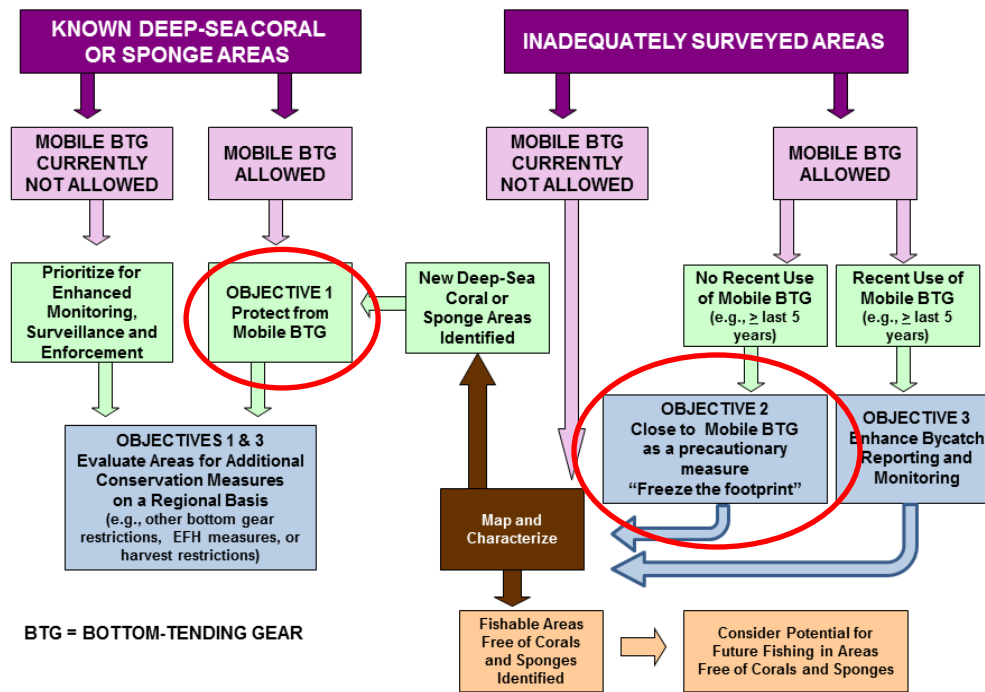
<sup>7</sup> 16 U.S.C. § 1884

<sup>8</sup> NOAA Fisheries. 2014. [Memorandum from the Office of Habitat Conservation to Regional Fishery Management Councils regarding the MSA Deep Sea Coral Discretionary Authority](#)

<sup>9</sup> Guinotte, J.M. and A.J. Davies (2012), [Predicted deep-sea coral habitat suitability for the U.S. West Coast](#), Report to NOAA-NMFS. P. 46 (which documents *Scleractinian* corals at approximately 4,000 meters in waters near Davidson Seamount)

<sup>10</sup> NOAA Fisheries. April 2014. [Deep Sea Coral Research & Technology Program 2014 Report to Congress](#), p. 36

## Managing bottom-tending gear impacts



**Figure 1: NOAA Fisheries decision flow chart illustrating “NOAA’s precautionary approach to manage bottom-tending gear, especially mobile bottom-tending gear and other adverse impacts of fishing on deep-sea coral and sponge ecosystems, as described in NOAA’s Strategic Plan for Deep-Sea Coral and Sponge Ecosystems.”<sup>11</sup> (Emphasis Added)**

In its guidance to Councils regarding the protection of DSC and the “precautionary approach to manage bottom-tending gear”, NOAA Fisheries outlines a decision flow chart (see Figure 1 above) that illustrates how to appropriately protect “inadequately surveyed areas.” As can be seen in Figure 1, for inadequately surveyed areas where bottom tending gear is allowed, but has not been used, NOAA Fisheries recommends that Councils close such areas to bottom tending gear as a precautionary measure to “freeze the footprint.”<sup>12</sup>

This provision clearly gives Councils the authority to protect DSC as identified through the DSCRTP, as well as habitat suitable to DSC as identified through peer-reviewed models, along with adequate buffers to cover adjacent areas. So regardless of whether the Council and NOAA Fisheries consider those waters deeper than 3,500 meters to be adequately or inadequately surveyed with respect to the presence/absence of DSC, the policy guidance remains the same: establish protections from mobile bottom tending gear such as bottom trawls.

<sup>11</sup> NOAA Fisheries. 2014. [Memorandum from the Office of Habitat Conservation to Regional Fishery Management Councils regarding the MSA Deep Sea Coral Discretionary Authority](#)

<sup>12</sup> Ibid



## **Section 303(b)(12)**

This section of the MSA authorizes fishery management plans to:

*“include management measures in the plan to conserve target and non-target species and habitats, considering the variety of ecological factors affecting fishery populations”*

This authority enables Councils to take actions to conserve the broader ecosystem, and is not specific to temporal and/or spatial management measures, nor is it specific to the conservation of DSC. Because this authority is broadly defined to include conservation of the larger marine ecosystem, it is consistent with the precautionary nature of extending the existing bottom trawl closure to the boundary of the EEZ. We know that there are sensitive and ecologically important benthic habitats at depths greater than 3,500 meters, and we know that there are “fish<sup>13</sup>” at those depths, including both DSC and grenadier, an ecosystem component species in the Council’s groundfish FMP. Clearly the Council is authorized, through this provision of the MSA, to proactively ensure that fishing activity, and specifically bottom trawling, does not negatively impact these marine resources.

### **Prior Council Action**

The Council’s intent in Amendment 19 to the Groundfish FMP was to include water beyond 3,500 meters in depth in a bottom trawl closure extending from the 700 fathom line to the edge of the EEZ.<sup>14</sup> Unfortunately NOAA Fisheries did not implement this closure beyond the seaward depth limit of groundfish EFH (3,500 meters calculated based on the deepest observation of groundfish at 3,400 meters plus a precautionary 100 meter buffer).<sup>15</sup>

NOAA Fisheries’ primary justification for not implementing the trawl closure beyond the 3500 meters depth contour was that in the view of the agency the Council’s intent to protect areas not identified as EFH - but to do so under EFH authority - was not consistent with the MSA.<sup>16</sup> The agency also stated their interpretation that there were no other MSA authorities available at that time appropriate for protecting this as yet untrawled area.<sup>17</sup> As discussed above, we disagree with this finding and believe the authority has always been available.

NOAA Fisheries did recognize the merits of the Council’s proposal by acknowledging that the seafloor beyond 3,500 meters in depth includes “hard bottom areas with biogenic habitats such as deep sea corals” and that “all or most of the deep sea environments are likely to be highly sensitive to impact, including very low levels of fishing effort (e.g., a single trawl).”<sup>18</sup>

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<sup>13</sup> See 16 U.S.C. § 1802 (12). The MSA defines “fish” as finfish, mollusks, crustaceans and all other forms of marine animal and plant life other than marine mammals and birds.

<sup>14</sup> See [Amendment 19 Final EIS](#), December 2005, page ix

<sup>15</sup> See NOAA Fisheries, [Amendment 19 Record of Decision](#), March 2006, pp. 24-25

<sup>16</sup> Ibid, at pp. 24-26

<sup>17</sup> Ibid, at pp. 24-26

<sup>18</sup> Ibid, at p. 25

In its Record of Decision, NOAA Fisheries indicated it was supportive of the type of ecosystem-based and precautionary action the Council sought for waters beyond 3,500 meters deep.<sup>19</sup> NOAA Fisheries also stated their view that given appropriate authority it would authorize the measures, referring specifically to MSA re-authorization proposals submitted by the agency in 2005 which contained new authorities for “conservation and management measures applicable to fishery resources throughout the fishery ecosystem.”<sup>20</sup>

We again point out that in fact sufficient and appropriate MSA authority already existed at the time of Amendment 19, including section 303(b)(2)(A), formerly 303(b)(2). Additionally, the other two provisions discussed above are consistent with the proposals detailed in the Record of Decision, and provide exactly the type of authority the agency indicated was needed in order to enact precautionary regulations relative to bottom trawl activity in the area.

### **Rationale and Justification**

We understand this agenda item is intended to identify appropriate MSA authorities for rulemaking relative to this comprehensive habitat amendment. However, we feel it is appropriate at this time to highlight some of the rationale and justification for the Council taking this precautionary action. We ask that the Council and the Plan Amendment Team include deepwater protections in the draft statements of purpose and need that will be prepared for the September meeting and that the information below will prove useful in that endeavor.

Almost twenty years ago, in its report to Congress, the Ecosystem Principles Advisory Panel (EPAP) articulated basic policies for implementing EBFM that included two key suggestions the Council can fulfill with the proposed expansion of bottom trawling closures beyond 3,500 meters deep: (1) proactively evaluate the effects of potential new fisheries in advance and (2) apply the precautionary approach.<sup>21</sup> Closing these areas to bottom trawling now will allow the Council the ability to carefully review any future use of that gear type in the area before it begins. Additionally, the EPAP further articulates the importance of habitat protection in its report for both target and non-target species.<sup>22</sup>

This action is also consistent with national priorities and strategies articulated by NOAA Fisheries calling for increased protection of ocean habitat. The NOAA “Habitat Blueprint” includes a guiding principle that calls for managers to “Anticipate and address changes to coastal and ocean habitats due to environmental change; including development, climate, and other pressures.”<sup>23</sup> Leading NOAA habitat scientists, in a briefing paper presented at the May 2013 Managing Our Nation’s Fisheries conference, presented additional detail on a precautionary and ecosystem-based NOAA Fisheries vision for habitat protection that drew in part on this Habitat Blueprint:

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<sup>19</sup> Ibid, at p. 26

<sup>20</sup> Ibid, at p. 26

<sup>21</sup> See NOAA FISHERIES, “*ECOSYSTEM-BASED FISHERY MANAGEMENT: A Report to Congress by the Ecosystem Principles Advisory Panel*”, 1998, p. 1

<sup>22</sup> Ibid, at p. 3

<sup>23</sup> See NOAA 2012, “NOAA Habitat Blueprint”, fact sheet, available at [http://www.habitat.noaa.gov/habitatblueprint/pdf/habitat\\_blueprint\\_factsheet.pdf](http://www.habitat.noaa.gov/habitatblueprint/pdf/habitat_blueprint_factsheet.pdf)

*“In 2005, the U.S. Commission on Ocean Policy recommended that NOAA Fisheries change the designation of essential fish habitat from a species-by-species to a multispecies approach and, ultimately, to an ecosystem-based approach that includes consideration of ecologically valuable species that are not necessarily commercially important...there is already scientific and societal consensus on the importance of certain habitat types based on their contributions as fish habitat, biodiversity and ecosystem services. These include...deep-sea coral communities.”*<sup>24</sup>

It is helpful to briefly consider just how valuable and special this vast area of largely unexplored seafloor is, and some of the emerging new information about it. New research shows that the deep sea is critically important to our global environment and must be carefully stewarded and studied. For instance, it serves as an important carbon sink in a time when carbon is increasingly a pollutant of global concern.<sup>25</sup> It harbors half of all marine biomass.<sup>26</sup> It is far from the lifeless and static mud it was previously thought to be. Instead, we now know that it and the life it harbors can change swiftly, including in response to human-induced change in the shallow oceans found shoreward of it.<sup>27</sup> These remote ocean depths are also by no means immune to the effects of climate change and ocean acidification.<sup>28</sup>

Finally, we note that significant analysis has already been conducted on the application of a trawl closure in this area in the Amendment 19 Final Environmental Impact Statement, and much of it remains applicable.<sup>29</sup> This should reduce the analytical and record-building burdens associated with alternatives for this portion of the amendment, with commensurate savings in staff time and other resources.

## **Conclusion**

The Council has long had the authority, through the MSA, to protect waters deeper than 3,500 meters by expanding bottom trawl closures all the way to the boundary of the EEZ. This prior authority was bolstered during the most recent MSA reauthorization by the two of the three explicit provisions discussed above, which give the Council the authority NOAA Fisheries indicated was needed to protect those waters in its record of decision for Amendment 19. Closing this area to bottom trawling is consistent with NOAA Fisheries strategic plans for advancing EBFM as well as for protecting fish habitat and DSC. For these reasons we request that the

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<sup>24</sup> See Sutter et. al, “Integrating Habitat in Ecosystem-Based Fishery Management”, MONF III Session 2 speaker papers, Session 2.3 Integrating Habitat considerations, Sutter et. al. page 7, available at [http://www.managingfisheries.org/2013%20documents/All\\_Session\\_2\\_papers.pdf](http://www.managingfisheries.org/2013%20documents/All_Session_2_papers.pdf)

<sup>25</sup> R. Thurber, A. K. Sweetman, B. E. Narayanaswamy, D. O. B. Jones, J. Ingels, R. L. Hansman. *Ecosystem function and services provided by the deep sea*. Biogeosciences Discussions, 2013; 10 (11): 18193 DOI: 10.5194/bgd-10-18193-2013, pp. 3941, 3945

<sup>26</sup> Ibid, at p. 3947

<sup>27</sup> Linda A. Kuhnz, Henry A. Ruhl, Christine L. Huffard, Kenneth L. Smith Jr. *Rapid changes and long-term cycles in the benthic megafaunal community observed over 24 years in the abyssal northeast Pacific*. Progress in Oceanography, 2014; 124 (2014) 1-11, p.1

<sup>28</sup> R. Thurber, A. K. Sweetman, B. E. Narayanaswamy, D. O. B. Jones, J. Ingels, R. L. Hansman. *Ecosystem function and services provided by the deep sea*. Biogeosciences Discussions, 2013; 10 (11): 18193 DOI: 10.5194/bgd-10-18193-2013, pp. 3953

<sup>29</sup> See for example PFMC, [Amendment 19 Final EIS](#), December 2005, pp. 4-26 to 4-28

Council confirm inclusion of protection for waters beyond 3,500 meters deep in its scoping for this comprehensive habitat amendment package, such that alternatives for this can be considered in September as a step toward ultimately establishing precautionary protections for this unexplored and pristine habitat.

Thank you for your time and consideration. We greatly appreciate the opportunity to continue to work with you to maintain sustainable fisheries and healthy ocean ecosystems.

Sincerely,



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