SCIENTIST SIGN-ON LETTER ON U.S. WEST COAST ESSENTIAL FISH HABITAT CONSERVATION AND MANAGEMENT

October 18, 2016

Mr. Barry Thom, Administrator
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Mr. Herb Pollard, Chair
Pacific Fishery Management Council
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RE: U.S. West Coast Essential Fish Habitat Conservation and Management

Dear Mr. Thom, Mr. Pollard and Council members:

Seafloor habitats are important to the health and biodiversity of our oceans. In order to conserve seafloor habitats, we the undersigned 57 marine scientists and conservation biologists write in support of amending the Pacific Fishery Management Council's (PFMC) Groundfish Fishery Management Plan to designate new and expanded Essential Fish Habitat Conservation Areas off the U.S. West Coast that would be closed to bottom trawling. As you evaluate alternatives to modify existing Essential Fish Habitat (EFH) Conservation Areas closed to bottom trawling, and consider new EFH Conservation Areas, changes to Rockfish Conservation Areas, and the protection of deep-sea habitats, we recommend a comprehensive spatial habitat protection approach designed to protect and conserve ecologically important, sensitive and unique habitats. We caution against opening existing EFH Conservation Areas unless there is compelling scientific information which demonstrates that impacts to the habitats in those areas are minimal.

1. Effects of bottom trawling on seafloor habitats

The substantial harmful effects of bottom trawling on seafloor communities have been well documented in many scientific reviews and empirical studies worldwide (e.g. Auster and Langton 1999, Collie et al. 2000, NRC 2002, Kaiser et al. 2006; Hixon and Tissot, 2007). Specific to the West Coast region, bottom trawls have the greatest impact to seafloor habitats of all gear types used (Morgan and Chuendpagdee 2003 and Whitmire and Clarke 2007). While gear configuration depends on the target species and depth, the distance between trawl doors, which are designed to contact the seafloor and spread the net open, spans anywhere between 34 and 50 meters (112 to 164 feet) for trawls fishing on the continental shelf to 50 to 200 meters (164 to 656 feet) for slope trawls (PFMC 2005). All trawl gear components that contact the seafloor have the potential to ensnare, undercut or topple seafloor habitat structures.

Bottom trawling can cause long-term, adverse impacts to fish habitat. According to findings of the National Academy of Sciences, bottom trawling has direct effects on species and habitat

structure and indirect effects on community structure and ecosystem processes (NRC 2002). The effects of bottom trawling include:

- Changes in physical habitat and biological structure of ecosystems
- Reduced benthic habitat complexity and productivity
- Changes in availability of organic matter for microbial food webs
- Changes in species composition
- Reduced biodiversity
- Increased susceptibility to other stressors.

Even with existing conservation areas, bottom trawling damages other sensitive seafloor habitats. For example, U.S. West Coast groundfish observers on commercial bottom trawl vessels documented nearly 997 kg (2,198 pounds) of coral bycatch and 20,585 kg (45,382 pounds) of sponge bycatch between June 2006 and December 2010, after EFH Conservation Areas were implemented (Clarke et al. 2015). Impacts to sponges have become twice as frequent, with nearly five times the magnitude as before. Bycatch and *in situ* observations of damaged coral and sponges are direct evidence of adverse fishing impacts. These losses are not inconsequential.

2. Ecological importance of seafloor habitats

Marine habitats are fundamental to the health and diversity of marine species. The marine habitats of the West Coast support fish and wildlife at the most basic level by providing the conditions necessary for populations to sustain themselves. Biologically diverse, sensitive and unique habitats off the West Coast include nearshore and offshore reefs, submarine canyons, biogenic habitats (e.g. kelp, corals and sponges), hydrothermal vents, methane seeps and more.

Living habitat-forming invertebrates such as corals and sponges increase habitat complexity and sustain patterns of biodiversity in ocean ecosystems. By providing structure, corals and sponges increase the areas necessary for fish spawning, feeding, and growth and thus meet the definition of EFH. What is more, coldwater corals can be extremely long-lived and recovery from disturbance may take decades to centuries. Bamboo corals from Davidson Seamount off California, for example, were aged to be greater than 145 years old with growth rates of no more than 0.28 cm/ year (Andrews et al. 2009). Deep-sea corals in other Pacific regions have been aged to over 4,000 years (Roark et al. 2009). While corals and sponges are relatively conspicuous biogenic structures, they generally occur in diverse biological communities with other invertebrates such as crinoids, basket stars, ascidians, annelids, and bryozoans.

Many marine species utilize the vertical and three-dimensional structure provided by corals, sponges and other living seafloor habitats. Managed fish species off the U.S. West Coast have been documented in association with structure-forming invertebrates with some studies finding significantly higher densities of fish in these habitats than in surrounding areas (e.g., PFMC 2005 at 3-6, Tissot et al. 2006, Marliave et al. 2009, Rooper et al. 2007, Rooper and Martin 2012). Based on the levels of information currently available (i.e., presence, density), corals, sponges and other biogenic habitat types should be considered to be components of EFH for multiple fish species managed in the U.S. Pacific Coast groundfish fishery management plan.

Since 2006 much new information has been gathered on the location and extent of seafloor habitats off the West Coast. The NOAA Deep Sea Coral Research and Technology Program released a geo-database of almost 140,000 coral and sponge records identified from trawl surveys and *in situ* observations. NOAA has generated new maps showing the extent and intensity of commercial bottom trawl fishing effort, as well as the bycatch of corals and sponges (NOAA 2014). There is a new predictive deep sea coral habitat suitability model (Guinotte and Davies 2014) as well as new high resolution maps of various reefs, banks and escarpments off Washington, Oregon and California. All combined these new data and maps illustrate areas of interaction between bottom trawls and sensitive seafloor habitats.

3. Precautionary and adaptive management approaches are warranted

Ocean ecosystems face major stressors including fishing impacts, offshore development, marine pollution and the growing changes brought by climate change, in particular ocean acidification. Ocean acidification poses a significant and long-term concern for some coral species. While reducing carbon dioxide emissions is urgently needed, fishery managers can take actions that address direct impacts to ocean habitats. Protecting seafloor habitats from bottom trawling will help these habitats and associated communities remain intact and thus will be more resilient to other stressors and help maintain the ecological functions they provide (Levin and Le Bris 2015).

As you evaluate and consider the range of alternatives before you to modify EFH and Rockfish Conservation Areas and to protect deep-water habitats, we urge a precautionary approach that maximizes habitat protection across a range of habitat types, biogeographic regions and depth zones. Best practices include approaches to freeze the bottom trawl footprint thus limiting future bottom trawling to previously trawled areas, area closures for sensitive and representative habitat features, gear modification and effort reduction (Hourigan 2009, NRC 2002). A precautionary approach is paramount, especially where the data are poor and unclear, where recovery times are long (e.g. corals and sponges) and where habitat impacts are high even when the abundance of managed fish species is above overfished levels.

Protecting seafloor habitats from bottom trawling will help limit and prevent direct disturbance, reduce cumulative stresses, and help ecological communities be more resilient to change. While comprehensive information may not be available on the location of all habitat types and species-habitat associations, there is much new and existing data that can be used in combination with a precautionary approach to continue to protect diverse seafloor habitats from bottom trawl impacts.

Sincerely,

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February 7, 2018

Phil Anderson, Chair Pacific Fishery Management Council
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RE: Agenda Item B.1: Open Comment – Amendment 28 EFH/RCA Heceta Bank

Dear Chair Anderson:

We are marine scientists with interests in Heceta Bank. Some of us have studied Heceta Bank first hand from submersible dives; others have conducted research on the bank and its relation to the California Current ecosystem and nearshore areas. We submit these comments as a proposal related to the Council's efforts to remove Rockfish Conservation Areas (RCAs) and reconfigure some Essential Fish Habitat Conservation Areas (EFHCAs) on Heceta Bank.

In so doing, we applaud the recovery of many groundfish stocks as a result of very difficult decisions made by the Council in the early 2000s to regulate harvest to restore those stocks. We also acknowledge the dedicated, thoughtful work of the Council, the Habitat Committee, the Groundfish EFH/RCA Team, Council staff, and many others to address complex issues to amend these regulations across a vast and varied ecological region. We appreciate the hard work of winnowing options for these changes.

Our proposal is based on nearly 40 years of studying the attributes of Heceta Bank, the largest contiguous rocky reef complex in the U.S. EEZ north of Cape Mendocino and one of the most productive areas on the Pacific Coast. It is an area that should be protected from offshore energy production, pollution, benthic disturbance, and fishing activities to ensure that it continues to serve as a key source habitat for commercial fish species and biodiversity.

Heceta Bank is essential to many species of groundfish during all life stages, including overfished yelloweye rockfish, invertebrates, seabirds and marine mammals such as the threatened and endangered distinct population segments of the eastern North Pacific humpback whale stocks. Heceta Bank provides a reserve for the production of rockfish juveniles, which are a critical forage resource for many predators in the northern California Current; research shows that these predators switch to sardines, anchovy, and more economically valuable species such as juvenile salmon, if juveniles are not available. In that regard, the topographic configuration and location of Heceta Bank and its connection to the shallower Stonewall Bank region amplify its intrinsic habitat values and create significant ecological and oceanographic effects on areas and fisheries inshore along the Oregon coast and southward beyond Cape Blanco.

Since 2006, a core area of Heceta Bank has been designated Essential Fish Habitat Conservation Area (EFHCA) while other areas on the Bank lie within sections of the trawl Rockfish Conservation Area (RCA) also designated by the Council. As you know, Heceta Bank is a

Priority Habitat area as defined in Amendment 19 of the Pacific Coast Groundfish Management Plan.

We request that as the Council reduces or removes the RCA designations on Heceta Bank, it expand the existing EFHCA designation to encompass additional rugged hard and mixed rocky reef habitat to the west and to the north. Both areas are predominately located on the continental shelf at depths less than 200 m; however, the western area drops to roughly 500 m in one spot. The western side includes newly identified reef habitat mapped with high resolution sonar.

Within the range of alternatives, Alternative 1.b (as it is now designated) would achieve this expansion. Alternative 1.c would provide some additional protection to the north but not the western area. Thus, we urge the Council to be as expansive as possible for Heceta Bank by approving Alternative 1.b. Expanding the EFHCA designations to these areas aligns with the Council's mission to effectively and sustainably manage groundfish and would meet the Habitat Objectives articulated in Amendment 19 to:

1. Protect a diverse array of habitat types across latitude ranges and within biogeographic zones that occur in the project area.

2. Protect the full range of benthic habitat to account for each managed species.

3. Prioritize pristine or sensitive habitats and the gear types most likely to have the highest impact.

As scientists, we believe expansion of the EFHCA designation on Heceta Bank would support the Council's Habitat Committee to "allow for the development of studies to simultaneously examine the importance of both fishery closures and habitat recovery and…result in an unprecedented opportunity to facilitate applied research that addresses whether habitat protections improve EFH and conditions for groundfish."

In addition to research on Heceta Bank itself, the proximity of Heceta Bank to nearshore protected areas within state waters provides opportunities for long-term study of fishery and ecological linkages between nearshore and offshore areas and for long term research on the effects of climate change on habitats across the shelf. We also point out that Heceta Bank is geographically close to the marine research capacities of Oregon State University, NOAA Fisheries, and the Oregon Department of Fish and Wildlife in Newport, Oregon, as well as opportunities to collaborate on research with fishermen who know this area well.

We believe that this is an unprecedented opportunity for the Council to extend its commitment to research to support sustainable management of groundfish on the West Coast. We urge that these two additional areas of Heceta Bank be designated as EFHCA.

Thank you for the opportunity to comment.

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