Oregon Rocky Habitat Management Strategy Site Designation Proposal: Crook Point-Mack Reef MCA

Note to Readers

A Bibliography, Lists of Figures and Tables, Glossary of Terms and Abbreviations, and Acknowledgements can be found below under Additional information. Figures, Tables, Outreach related materials, Stakeholder Correspondence, an image of the site polygon, and a pdf of the proposal text with formatting are attached as separate files.

Contact Information

Please fill out the following section with primary contact information for this proposal. Contact information will be used to provide proposal review updates and ask for questions relating to this proposal.

Name of Principle Contact*

Who should be contacted with updates and questions regarding this proposal?

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General Proposal Information & Rationale

To the best of your knowledge, fill out the following section with the general site identification and rationale information for your proposed designation.

Proposal Type*

Proposals may outline desired additions, deletions, or alterations to rocky habitat site designations, as outlined in the Territorial Sea Plan: Part Three.

_X_ New Site Designation (addition)
___ Existing Site Removal (deletion)
___ Alteration to Existing Site

What type of rocky habitat designation are you proposing?*

___ Marine Research Area
___ Marine Garden/Education Area
_X_ Marine Conservation Area

Proposal Rationale and Goals*

Please describe the context for why this proposal is being brought forward. a) Please describe the site-specific goals for this proposal. b) What are the outcomes or metrics which could be measured to determine progress toward or achievement of these goals?

This section outlines the context, nested hierarchy of goals and objectives, and related metrics that are the foundation of the proposed Crook Point-Mack Reef Marine Conservation Area (CP-MR MCA) designation: 1. Context, 2. the Rocky Habitat Management Strategy (RHMS) goal and objectives, 3. related state of Oregon coastal conservation management goals, 4. the goal of the proposed Marine Conservation Area (MCA) designation, 5. The Site-Specific Goal and Objectives, and 6. Measurable outcomes or metrics to determine progress toward or achievement of the site-specific goal or objectives.

1. Context

We recognize that Crook Point, Mack Reef and surrounding areas are the ancestral lands of the Confederated Tribes of Siletz Indians.

The context within which this proposal is being advanced includes the following, and their interactions: increased human activity; local to regional manifestations of changing ocean conditions; significant threats and impacts to nearshore marine and other habitats and resources; adequate laws but incomplete implementation or enforcement of them due to agency or management budget and staff capacities that currently, and for the foreseeable future, do not meet resource protection needs, and; an integrated set of non-regulatory management measures (NRMM) in this proposal to support cooperative, community-based, site-specific rocky habitat ecosystem-based management that allows for adaptive and holistic protection, stewardship, education (as a mainstay of compliance enforcement and to interpret site features and rocky habitat and resources values), and citizen science including monitoring, while continuing to allow existing legal human uses, including all fishing, and with no effect on access and activities by members of federally recognized tribes. This proposal is conservation and sustainability oriented to allow, support, and cultivate opportunities for continued fishing and tourism, as well as healthy outdoor activities for local residents in places we love, all key to supporting and sustaining the communities, cultures, environment and economy of the southern Oregon coast region.

In addition, in the context of current and future times, the state territorial sea plan (TSP; https://www.oregon.gov/lcd/OCMP/Pages/Territorial-Sea-Plan.aspx) mandates that nearshore and continental shelf ocean resources be adaptively managed on an ecosystem basis for desired future conditions, while considering the realities of past, present and likely future unprecedented changes in climate driven and other environmental changes and their severe impacts on nearshore rocky habitats and resources. Oregon's economy depends on the sustainable use of marine resources, especially in the context of a changing climate. Oregon's marine ecosystems are experiencing unprecedented changes including marine heatwaves, loss of essential fish habitats and fished stocks, and shifting distributions of marine species, which have profound impacts on fisheries and other marine resources and the coastal communities that rely on them. As such, understanding, predicting, and forecasting these changes in Oregon's marine and coastal environments is vital to ensure that we are able to effectively respond to changing ocean conditions.

Along with the above, the National Marine Fisheries Service (NMFS) has designated Oregon's rocky reefs, canopy-forming kelp forests, sea grass beds, and estuaries as "Habitat Areas of Particular Concern" (HAPC) (NMFS 2006). HAPCs are a special category of Essential Fish Habitat (EFH) identified because of the importance of the ecological function of the habitat, or the sensitivity, vulnerability, or rarity of the habitat type. However, no management measures are associated with this HAPC designation. This points to the critical need to enact the proposed RHMS MCA designation for Crook Point-Mack Reef, because these HAPCs are now of much more serious and urgent concern in the recent and current contexts of the multiple, interacting, and complex events, phenomena, or factors that have led to significant reductions in: areas of canopy forming kelp beds; the ecological resiliency of these and other nearshore rocky habitats, and; other impacts to these and other HAPCs. These impacts are synergistic or interactive and cumulative and include: the blob and marine heat waves that both began in 2013; hypoxia; ocean acidification; significant declines: in kelps and kelp forests, sea star populations (due to epidemic sea star wasting syndrome [SSWS] which has changed the structure of rocky intertidal and subtidal habitats), and abalone stocks, and; strong recruitment of sea urchin larvae starting in 2013-2014, resulting population explosions of purple sea urchins, and their forcing of the shift from lush kelp forests to urchin barren grounds.

All of these phenomena have combined into a "Perfect Storm" where climate change effects have become locally to regionally manifested as the marine heat wave and changing nearshore ocean conditions, including the "Calamity in the Kelp Forests" due to recent widespread disruptions of ecological dynamics in subtidal rocky habitats continue to occur along the Oregon coast and elsewhere on the Pacific coast of North America (Laffoley and Baxter 2016, Rogers-Bennett and Catton 2019; Rumrill 2020a, b). Examples of the effects of the marine heatwave and other changes in nearshore ocean conditions include: higher temperatures resulting in physiological stress and shifts in species' geographic ranges (including the first documented occurrences of marine invasive and non-native species along the exposed outer coast of Oregon), along with changes in species depth distributions, behaviors, reproductive timing, mortality schedules, and widespread alteration of nearshore ecosystem composition and structure; uncertainty regarding the timing and intensity of upwelling in the California Current Large Marine Ecosystem off the Oregon coast resulting in regional impacts to nutrient availability, biological productivity and food web structure and function; increased Ocean Acidification causing animals' shells and skeletons to dissolve, leading to susceptibility of embryos and larvae – critical and sensitive early life stages of most marine invertebrates and fishes -- and adults of shellfish and fishes, including economically valued target fisheries or aquaculture species, and; combined, interacting, and cumulative effects of these and other phenomena causing changes in nearshore ecosystem structure, function, resilience, and availability of ecological goods and services, including local fisheries, and their values with respect to food security and as important regional economic drivers. All of these convergent conditions present a critical ecological situation and a complicated management problem (Rumrill 2020a).

Further, two species of abalone, *Haliotis rufescens* (Red Abalone) and *H. walallensis* (Flat Abalone) were targeted in commercial and sport fisheries, which were closed from 2018-2020. ODFW has requested to extend the abalone fishery closure through 2023, and has developed the Oregon Abalone Conservation and Fishery Management Plan or a *de minimus* no-effect fishery (Rumrill 2020b). Due to declining harvest trends, low fisheries-independent survey densities, impacts of the epidemic withering foot syndrome, decreased availability of kelp and other algal foods, increased competition for food from increased purple sea urchin populations, absence of urchin predators due to Sea Star Wasting Syndrome (SSWS), and the other impacts mentioned, abalone in Oregon are very likely to be locally or ecologically extinct or, at best, extremely rare throughout their geographic range, particularly on the southern Oregon coast. Abalone in this region likely occur as non-reproductive low density pseudopopulations due to large nearest neighbor distances of adult abalone that exceed the ability of their free-spawned gametes to mix in the water column, leading to extremely low fertilization success and therefore, low reproductive potential (Basch, personal observations 1988-2020, Hart et al. 2020). It is critical to manage nearshore rocky habitats per state and federal mandates and the precautionary principle, to minimize further impacts, and to maximize ecological resiliency in order for these habitats to recover and survive. While we do not support new regulations or

restrictions on fishing at this site, we also are keenly aware of the saying “No habitat, no fish.” In response, the non-regulatory management measures (NRMM) we propose will provide adaptive, ecosystem-based approaches which, together with the precautionary principle, can lead to increased rocky habitat resiliency, restored/recovered and protected habitats, and sustained delivery of their ecological goods and services.

2. The site-specific goal and objectives align with the goal and objectives of the RHMS and TSP as a whole.

RHMS GOAL**:** "This strategy aims to be a coordination and adaptive planning framework focused on the long-term protection of ecological resources and coastal biodiversity within and among Oregon's marine rocky habitats, while allowing appropriate use."

OBJECTIVES (from page 1 of the RHMS):

1. To maintain, protect, or restore rocky habitats and biological communities;
2. To implement a holistic management program through site designations and management recommendations that allows for enjoyment and use of Oregon's rocky habitats while protecting them from degradation and loss;
3. To enhance appreciation and foster personal stewardship of Oregon’s rocky habitats through education, interpretation, and outreach;
4. To improve our knowledge and understanding of rocky habitat ecosystems by fostering research and monitoring efforts;
5. To facilitate cooperation and coordination among local, state, and federal resource management agencies, and tribal governments, to ensure that marine resources and habitats are holistically managed.

3. In addition to the RHMS, there are other, complimentary state of Oregon conservation goals that must apply. These include the overall State Conservation Management Goals that set the priorities for the Oregon Department of Land Conservation and Development (ODLCD) Coastal Management Program and provide context for the TSP and the RHMS. Oregon’s Statewide Land Use Planning Goals, Goal 17 pertains to Rocky Habitat. Goal 17 sets out planning and management requirements for lands bordering estuaries as well lands bordering the ocean shore and coastal lakes.

Goal 17: "To conserve, protect, where appropriate, develop and where appropriate restore the resources and benefits of all coastal shorelands, recognizing their value for protection and maintenance of water quality, fish and wildlife habitat, water-dependent uses, economic resources and recreation and aesthetics. The management of these shoreland areas shall be compatible with the characteristics of the adjacent coastal waters”; and “To reduce the hazard to human life and property, and the adverse effects upon water quality and fish and wildlife habitat, resulting from the use and enjoyment of Oregon’s coastal shorelands." (https://www.oregon.gov/lcd/OCMP/Pages/Coastal-Goals.aspx)
It is important to note that the proposed CP-MR MCA site designation and related management recommendations (= measures) align with and support several elements of the above policies and plans and the OPRD Ocean Shore Management Plan (https://www.oregon.gov/oprd/PRP/Documents/PRP_PLA_OS_FinalOceanShoresMP052305.pdf).

In addition, the ODFW has a Nearshore Strategy that frames agency management goals which are complementary with the goals and objectives stated above, and those of the proposed CP-MR MCA designation and site-specific goals and objectives below. The Nearshore Strategy is part of the Oregon Conservation Strategy. The "Mission" of the Nearshore Strategy is "To promote actions that will conserve ecological functions and nearshore marine resources to provide long-term ecological, economic, and social benefits for current and future generations of Oregonians.” The "Vision" of the Nearshore Strategy is

"Oregon's nearshore marine resources are thriving in a healthy, functioning ecosystem due to cooperative efforts and support by current and future generations of Oregonians."
[Source https://oregonconservationstrategy.org/oregon-nearshore-strategy/

4. This proposal's site-specific goal and objectives align closely with the goal of the proposed RHMS MCA designation to **"**Conserve the natural system to the highest degree possible by limiting adverse impacts to habitat and wildlife." The MCA designation is appropriate for a "relatively intact system with high ecological value" in that it allows for "variable management based on site needs - This designation allows for different types of management prescriptions (= measures, actions) based on site conservation goals and needs." (RHMS, November 2020, p. 31).

5. Site-Specific Goal and Objectives

Goal

In cooperation and coordination with, and in support of appropriate land or resource management and law enforcement agencies, Tribes, communities, organizations, and stakeholders, educate, monitor, and apply adaptive, ecosystem-based management to conserve the ecological structure, function, and resiliency of nearshore rocky habitats and species populations facing effects of changing climate, to allow for continued legal sustainable human uses of their goods, services, and resources including fisheries, using non-regulatory management measures, to provide long-term ecological, economic, and social benefits for current and future generations on Oregon's south coast.

This proposal recommends no changes to existing human legal uses through application of proposed non-regulatory management measures (NRMM) in a balanced approach to maximize both human uses and conservation of rocky habitats and resources. A major element of proposed NRMM is the development, training and implementation of a site-based volunteer stewardship program to assist and support USFWS, OPRD, and other agencies in carrying out management activities on site into the future (e.g., visitor engagement; public education and interpretation; notifying visitors about compliance and safety issues; cooperation and communication with law enforcement as a last action after all other visitor compliance measures have been exhausted; monitoring, trail maintenance).

Site-Specific Process Objectives / Recommended Actions

An objective is defined here as a measurable action to achieve a management goal, hence in this proposal the terms objective, recommended action, or management recommendation have the same meaning.

a. Foster cooperation and coordination among local, state, and federal land, resource management, and law enforcement agencies, Tribal Nations, communities and individual stakeholders to ensure ecosystem based management principles guide management and protection of marine resources, wildlife, and rocky habitat at the Crook Point-Mack Reef MCA.

b. Engage a wide range of partners and stakeholders to support USFWS, OPRD and other agencies in adaptive management of the CP-MR MCA to achieve the designation goal and objectives and related non-regulatory management measures.

c. Enhance public appreciation, awareness, and understanding of rocky habitats and resources within the CP-MR MCA by: fostering personal stewardship behaviors, a sense of personal responsibility and advocacy or "ownership" of rocky coasts; providing training for stewards, citizen scientists and other volunteers to fill

gaps in service to the public (e.g., education, interpretation, outreach, monitoring, enforcement reporting, maintenance) in support of agencies with site or resource management responsibilities.

d. Identify knowledge and management gaps for fully achieving site designation goals and implement monitoring, research including citizen science, or other actions to fill those gaps (e.g., invasive species identification and control, tracking trends in sea star wasting disease, trampling, etc.). Research and monitoring needs are initially defined in the Oregon Nearshore Strategy; those needs for nearshore rocky habitats occurring within the CP-MR MCA should be prioritized.

e. Use public education as the primary enforcement mechanism to achieve visitor compliance with existing site and coastwide policies, rules and regulations, only requesting resources protection or law enforcement personnel support when education efforts do not result in compliance, or in cases involving risks to human safety, damage to resources, or emergency conditions.

f. Monitor and maintain existing beach access to rocky habitats, and cooperatively design and install signage.

Site-Specific Resource Objectives / Recommended Actions

a. Prevent or reduce onsite human caused disturbances, threats, or impacts to marine resources within the CP-MR MCA - whether directly by people, from drones, or from uncontrollable off leash dogs - of pinnipeds, other marine wildlife, seabird breeding colonies, Black Oystercatchers, other sea- and shore-birds utilizing rocky habitats, especially during nesting season (April - August), or from trampling rocky intertidal organisms, overharvest, or other disturbances.

b. Encourage and support appropriate government agencies, land owners, and stakeholders to coordinate and collaborate specifically to identify, develop and implement solutions to any land use practices outside of the CP-MR MCA that may impact nearshore rocky habitats and resources within them.

c. Maintain the spatial area of canopy-forming kelp beds within the mid-upper range of natural interannual variability.

d. Maintain, improve, restore, or allow conditions for recovery of the structure, functions, ecological integrity, resilience, and ecological goods and services of kelp forests and other CP-MR MCA rocky coast habitats impacted by changing ocean-climate conditions, as measured by changes in habitat complexity, biodiversity, and population structure of dominant, keystone, biogenic habitat forming, Nearshore Strategy, or other species of concern.

e. Provide public engagement, education, and interpretation about: CP-MR MCA natural and cultural resources; appropriate behaviors and activities to protect these, and; rules, safety, and compliance enforcement through friendly peer-to-peer educational encounters. Develop public awareness to build a community sense of ownership of place and a public stewardship ethic.

6. Measurable Outcomes or Metrics to Determine Progress Toward or Achievement of the Site-Specific Goal and Objectives

The goal and objectives for the CP-MR MCA designation can be met through implementation of the recommended site-specific management measures contained in this proposal as well as related policies stated in the RHMS and other state policy (including that mentioned above). Each of the site-specific objectives (= management recommendations, or recommended actions) included in this proposal include specific metrics

for evaluation of progress toward or achievement of objectives. These evaluation metrics are summarized by category.

a. Cooperation, Collaboration and Partnerships Metrics

Within 1-2 years of site designation, identify potential new partners, stakeholders, funders, volunteers, and site stewards; hold public meetings or workshops to develop, prioritize, and implement major elements of the proposed site-specific non-regulatory management measures, including the stewardship program; number and diversity of stakeholders actively participating; number of community and online meetings or workshops held; numbers and types of program elements funded and implemented; number of new informational, interpretive, and user guidance signs installed and related materials distributed to visitors; identification, feasibility assessment, and pursuit of external funding sources to support proposed non-regulatory management measures.

Community and stakeholder engagement, cooperation and collaboration is an essential component of ecosystem based management and related monitoring and is evident in several objectives of this designation. A main factor for the success of protected areas is community engagement (Andrade and Rhodes 2012). Key community engagement actions identified in this proposal include (but are not limited to): development of a volunteer stewardship program, creation of curricula and digital media content for K-12 and public education, and hosting a biennial symposium on the State of the Crook Point-Mack Reef MCA. This meeting presents an ideal opportunity to foster and further coordination and collaboration among communities, agencies, the Confederated Tribes of Siletz Indians, other Tribal Nations as appropriate, and other interested organizations and individuals to periodically evaluate progress toward achieving the site specific and MCA designation goals and objectives for adaptive ecosystem based management.

b. Education Metrics

Within 1-2 years of site designation: engage an Oregon Sea Grant Fellow, the education and coastal training programs of the South Slough National Estuarine Research Reserve (SSNERR), the Charleston Marine Life Center (CMLC), the Oregon Institute of Marine Biology (OIMB), Oregon Coast Aquarium, or other local and regional outdoor/environmental/marine education specialist(s) to cooperatively and collaboratively develop public education, K-12, and steward training curricula and materials based on existing ones from partner organizations (e.g., Coastwatch (CW), Sea Education for Awareness (SEA), Haystack Rock Awareness Program (HRAP), Northwest Association of Marine Educators (NAME), etc.), focused on coastwide and site-specific rocky coast features and issues, for delivery by trained site stewards to students and other visitors. These and other programs have a proven record of commitment to coastal marine education through well-established local educators networks, effective curricula, and multimedia messaging and materials. Reach out and attempt to engage interested students and teachers at the nearby Gold Beach High School (13 miles) and Brookings-Harbor High School (16 miles) to become site stewards or engage in other volunteer educational, monitoring or maintenance opportunities with stewards; document number of local residents and visitors engaged, number of teachers engaged and trained, number of students engaged for education or interpretation opportunities, or trained and participating in monitoring or maintenance activities on site, number of school field trips, number of interpretive encounters or programs presented;

number of active volunteer site stewards trained and mobilized; new educational and interpretive materials created; number of public visits to social media and other digital information sources, e.g., the South Coast Rocky Shores Group Facebook page (https://m.facebook.com/southcoastrockyshores/posts/?ref=page_internal&mt_nav=0), CoastWatch program website (https://oregonshores.org/coastwatch); publish at least one article per year in, e.g., the Oregon Shores Newsletter focused on natural resources, uses and enjoyment of this site; host a biennial symposium on the state of the CP-MR MCA, or a coastwide symposium including all designated rocky habitat sites (and designation types); number of students, visitors, and citizen science participants involved and hours engaged in resources monitoring, bioblitz inventories, invasive species search and control efforts, and site maintenance; number of additional rocky habitat species documented on site via iNaturalist and other means; number of participants in public contests and events for, e.g., best documented wildlife or nature observations at the CP-MR MCA, best photographs, most effective steward, most active steward, etc.; number of participants in independent "Junior Steward" activities or group events; design and placement of signage and related informational brochures and materials; identify and obtain external funding support.

An informed, aware public is more inclined and capable of being both better stewards and advocates for external and government funding to support agencies in implementing necessary management actions to achieve RHMS and site-specific goals and objectives. While public access to beaches and rocky shores remains an iconic value for Oregonians, some rocky coast habitats and their inhabitants are being "loved to death" by uninformed, unintentional, or irresponsible human activities. Education needs to emphasize proper tidepool etiquette, appropriate human behaviors, low impact fishing practices, and related measures to protect marine wildlife and resources at the CP-MR MCA.

c. Protection Metrics

Within 1-2 years of site designation, document: number and types of observed or documented human caused disturbances, threats or impacts to rocky habitats and resources; nesting success of Black Oystercatchers (long term baseline information is available from the Oregon Black Oystercatcher Project, https://audubonportland.org/get-involved/community-science/black-oystercatcher/), other shore- and seabirds at or near the CP-MR MCA; evidence of trampling intertidal resources, overharvest, poaching, or other illegal activities; amount of notes, photographs or videos that document potential inappropriate or illegal human behaviors or actions; number of visitor "education for enforcement compliance" encounters concerning (in)appropriate human behaviors and activities, to protect visitor safety and site resources; number of calls to resource protection or law enforcement agencies after visitor compliance education attempts; number of warnings or citations given by enforcement officers for documented illegal activities; number and effectiveness of invasive species detection, prevention, or control efforts in response to monitoring; incidences of trail damage, littering, human waste, or unpermitted camping; design and installation of signage near shore at north boundary of USFWS refuge; identify and obtain external funding support.

d. Stewardship Metrics

Within 1-2 years of site designation, document: number of active volunteer stewards trained and deployed; training records for stewards; number of steward hours on site by activity type (e.g., interpretation, compliance, monitoring, maintenance, citizen science, etc.); number of steward patrols; patrol logs and other records and documented observations; number of local residents and visitors observed by activity type; number of public education encounters with visitors; number of education for enforcement compliance encounters with visitors; outcomes from reported enforcement support requests after attempting visitor compliance encounters; participation levels and success of community citizen science efforts; length of trail sections monitored and maintained; number of individuals and hours conducting monitoring efforts; number of invasive species detection and control (removal) attempts; cooperatively identify and obtain sustainable external funding support, and with this, initiate development of: a coastwide rocky shores stewardship program network and, nested within this, a site-specific stewardship program for this and other designated rocky habitat areas; establish related uniform standards and practices for volunteer recruitment, training, and curricula (for K-12 and public education and interpretation) focused on the ecology, threats and impacts, and effective stewardship actions for the public at this and other designated sites. CoastWatch has well established protocols and a data management system to support coastal stewardship that can be incorporated, modified or used as a model for a rocky shores stewardship program.

e. Climate Change and Resiliency Metrics

The metrics for evaluation of site specific and regional efforts to build climate change considerations and ecological resiliency to related impacts into stewardship, education, and monitoring efforts will rely on concepts and measures identified in the Oregon Climate Change Adaptation Framework (https://www.oregon.gov/lcd/CL/Pages/Adaptation-Framework.aspx). The Climate Change Adaptation Framework provides metrics and processes for evaluating responses to climate change. Many currently used natural resource management tools do not explicitly incorporate climate change information; at best, some management tools include methods for addressing some scientific uncertainty (e.g. harvest quota estimates), which may indirectly account for some degree of climate change uncertainty, but not all of it. Decisions made today on natural resource issues – made in a vacuum relative to climate change adaptation information – likely will not stand the test of time. Poor decisions today would likely lead to further destabilization of marine resources, and the businesses and local economies that rely on resource availability for harvest, tourism or food security.

Within 1-2 years of site designation, as part of developing educational curricula, incorporate current information on scientifically documented regional and local disturbances, threats, or impacts to rocky habitats, their causes and consequences for the resiliency, maintenance, recovery, or restoration of rocky habitats and resources, and for local communities and economies, for messaging to the public and K-12 school students, including the necessity of fully implementing the site designation and associated management measures as soon as possible, as a precaution, in order to maximize the action space and available management options for protection of currently compromised resources (e.g., kelp forests) in uncertain, potentially continuing deleterious future conditions; using this information and on site observations determine what impacts from changing ocean-climate conditions are readily observable and feasible for on site monitoring by stewards, students, and citizen scientists (monitoring some phenomena like hypoxia and ocean acidification require scientific instrumentation and expertise and so are likely not as

amenable to field monitoring, even by trained volunteers); implement monitoring on impacts from changing ocean-climate conditions as noted in monitoring metrics below (e.g., number of intertidal sea stars observed with wasting disease; types and numbers of rocky intertidal species showing visible signs of other diseases or sublethal stress from heat shock; estimated storm wave height and frequency observed from the Crook Point-Mack Reef uplands). While Sea Level Rise (SLR) is a virtual certainty coastwide, we have not determined any specific risks associated with SLR at the proposed site in terms of human safety or threats to habitats or resources. This said, long term effects of SLR are likely to include gradual upward vertical shifts in the distribution and abundance of rocky intertidal (and shallow subtidal) organisms, particularly sessile species, and a corresponding increase in the area or volume of nearshore shallow subtidal habitat adjacent to the low intertidal zone that could be colonized by shallow subtidal species as sea level rises.

f. Monitoring and Research Metrics

Monitoring of biological and environmental conditions is often complicated by the fact that many factors, phenomena, or features interact with one another to create often unpredictable synergistic or cumulative effects or impacts. Monitoring for social and economic trends also present some challenges. Despite these, there are many existing, successful, and sustainable models for monitoring by trained members of the public including those without a scientific background, e.g., the CoastWatch (CW) program (https://oregonshores.org/coastwatch). CoastWatch provides a well-established, highly regarded and successful program for recruiting and training volunteers and managing data collected by coast watchers (whose functions are similar to and overlap those of proposed site stewards).

Human dimensions information is central to understanding the context of natural resource issues and how people, coastal communities, economies, and nearshore resources are interrelated and might be affected by various management actions. The social and economic benefits and consequences of resource management actions need to be an integral part of the resource management process. Studies are needed of social and economic patterns and trends as they relate to rocky habitat resources, human use of resources, and effects of resource management actions on individuals, user groups, or communities. Studies can be coordinated among all the designated rocky habitat sites coastwide. Potential topics include coastal community demographic trends, economic and social contributions of industries that depend on rocky habitat resources directly (e.g., fishing) or indirectly (e.g., tourism), and the impacts of management changes. In some cases, new methods may need to be developed to study these topics and develop data useful for resource management.

Recent information indicates large scale invasive species problems are occurring in marine coastal systems in Oregon and other coastal states and provinces. There is a general lack of information, which does not indicate that invasive species problems are a minor concern. Once a species invades or is introduced it can affect food webs, introduce toxins, alter habitats, and out-compete native species. Early detection and rapid management responses to invasive species problems are cost-effective and can ameliorate the problem before an invasive species becomes well established. A network of designated rocky habitat sites with trained observer-stewards along the Oregon coast can serve as a living laboratory for early detection of invasive species problems. Coordination is required between management agencies, volunteers, stakeholders, and

researchers to develop, train for, and implement rapid survey and assessment methods for early identification and management responses to invasive species at a coastwide scale across all designated rocky habitat sites.

Within 1-2 years of site designation, initiate on site resource-specific, human uses (including inappropriate or illegal uses), trail infrastructure and site monitoring and related volunteer training and testing for consistency and accuracy of data collection among different observers. Metrics for what can be monitored by trained volunteers to track impacts and local manifestations of changing ocean-climate conditions and other disturbances include (but are not limited to): number of intertidal sea stars observed with various levels of wasting disease; types and numbers of rocky intertidal species showing visible signs of other diseases or sublethal stress from, e.g., heat shock; numbers of rare, threatened, endangered or other species of concern (including, e.g., abalone, Black Oystercatchers, nesting seabirds, Pelicans, pinnipeds, otters, whales); estimated storm wave height and frequency viewed from the Crook Point-Mack Reef uplands; estimated relative abundance of drift kelp biomass on shore between and following storms; estimated area of offshore canopy-forming kelp beds within mid-upper range of interannual variability viewed with binoculars from the Crook Point-Mack Reef uplands; number of dead Common Murres (baseline data available from the Coasst Program (https://coasst.org/about/our-story/), Cormorants, and other dead sea- and shore-birds or marine mammals observed washed up on shore; number of Black Oystercatcher and other coastal bird species nesting pairs visible at Crook Point-Mack Reef; numbers and species of pinnipeds hauled out on rocks; numbers and species of pinnipeds showing symptoms of possible disease transmission between marine wildlife and humans (Waltzek et al., 2012); number of types and specimens of invasive species discovered, documented, and removed; number of types and pieces of marine debris > 100 cm^2 in area, especially those pieces with attached invasive species; number of participants engaged in on site bioblitz events, other citizen science, monitoring, inventory, maintenance, or training events and activities; number of trail sections monitored and maintained, and; tracking of other factors, observations, or phenomena that may be used as metrics in other evaluation metric categories above. Progress towards achieving the site-specific goal and objectives will be measured by participation levels and quantity, quality, and adequacy of data to support adaptive and holistic management decisions for the CP-MR MCA.

Citizen science in many jurisdictions has been shown to allow for monitoring on a large-scale, ongoing, cost-effective basis, which provides scientists with large and diverse data sets that might otherwise be unavailable. Citizen science also provides opportunities for engagement between the public and scientists, which can lead to increased site stewardship and strengthen linkages between the community and the MCA.

The proposed management measures (NRMM) identify opportunities to capitalize on existing monitoring and citizen science efforts to increase our scientific understanding of the ecological structure, functions, and integrity of rocky habitats and resources at Crook Point-Mack Reef. Future monitoring and research needs will be determined over time and needs and efforts will be prioritized to fill information gaps. For example, the site specific management objectives in this proposal include data collection or studies to better understand some of the social and economic patterns and trends identified at the site as they relate to rocky habitat resources, human use of the resources, and effects of resource management actions on individuals, user groups, or communities.

This MCA designation will help to increase the understanding of ecological trends within rocky habitats at CP-MR as well as inform assessments of regional trends for rocky intertidal and subtidal ecosystems.

Ecosystem based management needs to happen at multiple geographic scales (site specific and regional). Natural temporal variation in rocky intertidal and subtidal systems can be quite high, and can occur on the scale of months (seasonal), years, and even decades, so long-term monitoring is essential for distinguishing natural from human-induced changes. Sharing data, monitoring methods and management practices among all rocky coast habitat designations within Oregon and a wider regional audience would lead to more effective management at and across sites. Identifying regional ecosystem trends through site-based monitoring provides greater opportunities for managers to implement adaptive management practices that are responsive to changing conditions.

How does the proposed site improve upon or fill a gap in addressing objectives/policies that are not currently addressed by other designated sites or management measures?

Please address this question in relation to the following topics: a) Maintenance, protection, and restoration of habitats and natural communities. b) Allowing for the enjoyment and use of the area while protecting from degradation and loss. c) Preservation of public access. d) Consideration for the adaptation and resilience to climate change, ocean acidification, and hypoxia. e) Fostering stewardship and education of the area or coastwide.

The proposed new site and site-based management measures will create cooperative relationships with agencies' staffs that will increase capacity and allow existing gaps in management actions to be largely fulfilled by a trained volunteer steward labor source working with and under the direction of agency site managers and staff. As mentioned elsewhere in this proposal, USFWS, OPRD and other agencies coastwide are currently (and are projected for some time into the future to remain) understaffed, and agency budgets are insufficient to fully implement or enforce existing approved plans, policies, or laws affecting rocky habitat resources at this and other site(s). For example, despite best possible efforts, at present the budget and personnel levels and resulting frequency of beach ranger patrols and ranger travel times to sites to respond to incident reports is such that patrols do not adequately prevent or restrain threats or impacts to coastal resources. (L. Becker, OPRD south coast regional manager, personal communication 11/24/2020).

This designation creates an opportunity to fill gaps in site-specific ecosystem based management for the rocky coast resources at Crook Point-Mack Reef that, in turn, provide long term ecological, economic, and social benefits to the local communities who utilize these resources.

a) Maintenance, protection, and restoration of habitats and natural communities.

Protection of rocky intertidal and subtidal ecological communities, habitats, species dependent on them, and their human uses will be improved by the proposed non-regulatory management measures associated with this MCA designation, which will better inform and guide the public about site features and management. Information from this proposal and observations by volunteer site stewards and others will contribute to informing government agencies and prompting them to act cooperatively to eliminate any gaps in local land management practices affecting nearshore rocky habitats and resources.

The situation concerning upland soil erosion, runoff into the nearshore ocean, and impacts to marine life (see Watershed Conditions, below) is a clear gap in management oversight and action that requires timely coordinated action by multiple agencies to resolve. This situation is not specific to the local watershed in which the CP-MR site occurs, however the magnitude of the problem at this site is currently not as well characterized as elsewhere on the Oregon coast. We recommend either a local or coastwide approach be taken starting with meetings between appropriate agencies (e.g., ODF, OPRD, ODSL, ODFW), landowners, and stakeholders to delineate problem upland area(s), gaps in existing upland management practices, and

solutions. Volunteer site stewards can fill gaps in unfulfilled management actions in the lower watershed by serving to monitor, document, and interpret related nearshore ocean conditions in efforts to ameliorate threats and impacts in nearshore marine rocky habitats. Lessons learned from this local issue can be shared and applied coastwide wherever similar problems exist or have potential to occur. Although outside of the scope of this proposal, our recommended timely, cooperative efforts across multiple government agencies and affected parties are needed to address and ameliorate upper watershed conditions as they affect nearshore marine resources; such across-agency efforts can fill gaps in resources protection not currently addressed by local, coastwide or statewide regulations or management.

b) Allowing for the enjoyment and use of the area while protecting from degradation and loss.

Improved coastal visitor experiences through greater information or interpretation at access points is emphasized in OPRD survey data (Bergerson 2019), which showed that 62% of users were "least satisfied" with the amount of information and education available. Proposed as part of the NRMM, multipurpose signage at the northern beach access to the CP-MR site would greatly reduce the gap in information available to the visiting public. Proposed non-regulatory management measures also call for visitor education and monitoring rather than restricting uses in order to fill gaps in protection of marine habitat and wildlife, which has been subjected to multiple human disturbances. No changes to coastwide, regional, or local harvest regulations for fish and invertebrates will remain possible into the future because proposed non-regulatory management measures (NRMM) will fill management gaps by allowing on-site stewards to observe resources and human behaviors, increase awareness of visitors about resources and protections, and thereby continue to allow the public unrestricted coastal access to and enjoyment of fishing and other activities under existing regulations.

c) Preservation of public access.

While remote, public access to this coastal site from the beach to the north, an approximately 1.5 mile walk at low tide from Pistol River State Park, will remain unchanged. Public access from the refuge uplands is only by permission of the USFWS, and this is expected to remain unchanged except for permitted visitors and occupants of houses there. Public access to rocky habitats within the MCA will remain unrestricted, unless agencies with jurisdiction are required by policy or law to use their authorities to impose justifiable temporary or emergency access limits in the future. The visitor experience will be enriched through general informational and interpretative signage. The content and placement of signage will be determined in cooperation with USFWS, OPRD, and tribal representatives with cultural knowledge. We recommend sign placement above the mean high water line just north of the refuge boundary. This signage reflects a current gap in implementation of both the Rocky Shores Communication Strategy (1995) of the ODLCD Oregon Coastal Management Program, and since the area is part of the OPRD managed state shore, the Curry County State Parks Master Plan (2003).

Access for members of federally recognized Tribal Nations will remain unaffected by this proposed site designation and associated management measures. Tribal Nation agreements with the state of Oregon cannot be altered through the Rocky Habitat designation proposal process. Federally recognized Tribal Nations may have, or obtain, consent decrees or other intergovernmental agreements which outline separate rights or harvest regulations.

d) Consideration for the adaptation and resilience to climate change, ocean acidification, and hypoxia.

This proposed MCA designation is a common type of resource management tool that has been shown to improve the health of the marine environment, preserve biodiversity, and increase the number and sizes of marine species (Lubchenco and Grorud-Colvert 2015). This type of protection facilitates adaptation and resilience to climate change, ocean acidification, and hypoxia (Baxter, Laffoley, and Simard 2016). None of these indirect threats to the marine environment can be directly mitigated through protection, however, healthy, diverse, resilient ecosystems are better able to withstand such stressors.

This MCA designation would create several opportunities to fill gaps in current management regarding climate change as part of adaptive ecosystem-based management of and related decision making on marine rocky habitats and resources. This proposed MCA designation builds climate resilience and climate change adaptation into non-regulatory management measures to maximize the long-term benefits of today's public investment in natural resource management. Agency capacity issues have led to gaps in climate change (including ocean acidification and hypoxia) information and related management action. Filling most of these gaps will require outside third party investment by researchers for related measurement instruments and determining where to install them. The CP-MR MCA, due to its relative remoteness and reduced likelihood of vandalism, would be a good candidate site for instruments that measure climate change. Other related information gaps can be filled by monitoring for climate change effects on coastal resources through science-based training of volunteer site stewards and citizen scientists, who can also fill information gaps in resources status and trends monitoring, public education and interpretation, enforcement through compliance education, maintenance, and other needs currently beyond the capacities of the land and resource management agencies with responsibilities at this site.

e) Fostering stewardship and education of the area or coastwide.

The South Coast Rocky Shores Group, CoastWatch, other cooperators and partners will work with appropriate agencies, the Confederated Tribes of the Siletz Indians, other tribes, organizations and individuals as appropriate to obtain grants, matching, and in-kind contributions to initiate and implement the proposed stewardship program, in order to fill multiple management gaps stated elsewhere in this proposal. Based on discussions with several groups who are proposing designations for other rocky habitat sites coastwide, an "umbrella" Oregon-coastwide stewardship program is envisioned to consistently serve and support training, communications, and other needs of multiple local site-based stewardship program affiliates coastwide, by providing uniform information, interpretive materials and educational messaging that addresses coastwide and site-specific rocky habitat features and values. A coastwide "umbrella" stewardship program would benefit all designated rocky habitat sites coastwide (regardless of designation type) by allowing greater economies of scale compared to development of single, isolated site stewardship programs, and through greater efficiencies in recruitment, training, engagement of volunteer stewards, and other program elements. Several Gold Beach and Brookings-Harbor residents in the vicinity of Crook Point-Mack Reef, along with a number of current south coast Coastwatch volunteers have demonstrated a deep appreciation and understanding of local rocky habitats, wildlife, and viewsheds. Some have expressed an interest in volunteering as stewards to protect the natural and cultural resources at Crook Point-Mack Reef, and to ensure continued access, uses, education, and enjoyment for all visitors. The MCA designation would create the opportunity to fill a gap in community engagement by supporting development of a community sense of responsibility and pride in "ownership" of the site through a local stewardship program. A coastwide or site-focused biennial forum for community members, agencies, the Confederated Tribes of the Siletz Indians and other Tribal Nations and interested organizations and individuals would fill information gaps and allow for discussion and evaluation of progress toward achieving the CP-MR MCA site-specific goal and objectives.

Education is emphasized over enforcement to fill existing capacity gaps and achieve the proposed designation goals and objectives. Site stewards would work cooperatively with agencies, educators,

institutions and media outlets to expand public awareness of the RHMS and the CP-MR MCA through direct visitor engagements, social media, websites, school curricula, webinars and other media and materials. On-site signage, stewardship, citizen science and interpretation will fill gaps to engage the public to increase awareness of features and issues facing rocky habitats and their responsible stewardship by visitors.

Signage near the northern coastal boundary of the USFWS refuge will fill information gaps for users about site features and how to safely, responsibly and legally interact with rocky habitats and resources, including the fact that it is not permitted to trespass over the refuge uplands to reach rocky coast habitats south of Crook Point. Local natural resources will benefit as well because education measures foster greater site and coastwide appreciation, awareness, and a sense of collective community pride in "ownership" and protection of sites. Resource protection gaps including compliance enforcement needs can more readily be identified and served through the proposed volunteer stewardship program. State marine resources management policy addresses the importance of early detection and response to marine invasive species, which has been a management gap for exposed outer coast marine habitats. Other gaps in resource protection, including incidences of human disturbances to nesting seabirds, shorebirds, pinnipeds, and other wildlife are anticipated to decrease in response to education, signage and stewardship as proposed.

Site Information

To the best of your knowledge, please provide the following information on your proposed rocky habitat site.

Name of Proposed Site*

What is the general site name of the area of your proposed location? (Example: Haystack Rock, Cannon Beach)

Crook Point-Mack Reef, Curry County, Oregon

Site Location

What is the specific location of your proposed site (if applicable)? Use common place names, latitude/longitude, and geographic references to identify the location of the site.

The proposed Crook Point-Mack Reef (CP-MR) MCA is the coastal area just below and seaward of the upland area of the Crook Point unit of the USFWS Oregon Islands National Wildlife Refuge, Curry County, SW Oregon. The site is between Gold Beach to the north and Brookings-Harbor to the south, south of Cape Sebastian and the Pistol River mouth, north of Burnt Hill and Hooskanaden Creeks and Cape Ferrelo, and west of the Oregon Coast Highway U.S. 101. The proposed site is bounded by the approximate coordinates in degrees (derived from Seasketch; Latitude / Longitude): 42.25866 / -124.4104 (NE corner); 42.2398 / -124.3992 (SE corner); 42.2594 / -124.4198 (NW corner); 42.2256 / -124.4098 (SW corner) (Figs. 1-5, 7).

General Site Description*

The site is bounded by the approximate coordinates noted above, as shown on the proposed site polygon (attached). The proposed site boundary includes: the length of shoreline from approximately 0.5 miles north of Crook Point to about one linear mile south of the point (Figs. 1-3, 7), from the vegetation line on the cliff face of the refuge uplands, extending offshore across the intertidal, including diverse rocky habitats such as the headland and boulders at the point; intertidal rocky pools, boulder-cobble fields, bedrock benches or platforms, and boulders, and; intertidal and subtidal rocky habitats below the mean high water line on or surrounding the offshore rocks and islands including submerged rocky reefs, shallow shoals, and relatively small kelp beds, out to the 20 meter (60') depth contour or the furthest offshore extent of kelp beds and offshore rocks and islets (whichever is farthest seaward; see Figs.1-3, 7 and proposed site polygon). No cultural or historic sites or artifacts were observed at Crook Point-Mack Reef.

Site Boundaries*

Provide a written description of the intended boundaries and scope of the proposed area (e.g. intertidal area, subtidal area, depth contour, etc.) All proposals must include a map of the proposed site boundaries.

The proposed approximate site boundaries are shown in the site polygon included in this proposal and detailed above under Site Location and General Site Description. The scope of the proposed area is shown in Figs. 1-3, 7, and includes the: (1) rocky upland (up to the vegetation line on the cliff face of the refuge uplands), (2) rocky intertidal, (3) rocky shallow subtidal, and (4) subtidal parts of offshore rocks and islands, rock reefs and kelp beds, as follows:

(1) Rocky upland immediately adjacent to and inland from the intertidal shore, from the vegetation line on the cliff face of the refuge uplands down to the cliff base at or near the extreme high water line. Rocky upland habitat area is defined in the RHMS, p. 11 as:

"a. Rocky Shoreline–all rocky habitat between the statutory vegetation line described in ORS 390.770 and extreme low water (encompasses cliffs, tidepools, and rocky intertidal). These areas may be reached by foot from shore (regardless of hazard or convenience).

i. Rocky upland – rocky habitat area between the statutory vegetation line and extreme high water line. In unvegetated areas, this is delineated at the 16-foot elevation contour."

(2) The rocky intertidal headlands, bedrock benches or platforms, boulder-cobble fields, tide pools and connected rocky intertidal substrates and habitats as defined in the RHMS, p. 12 as:

"ii. Rocky intertidal – rocky habitat area between extreme high water line and extreme low water line."

(3) The shallow subtidal (continuously submerged at all tidal levels) rocky substrates and habitats immediately adjacent to and offshore from the low intertidal zone to the – 5 meter depth contour, as defined in the RHMS, p. 12 as:

"b. Submerged Rocky Habitat–all rocky habitat below extreme low water, out to the deepest limits of the territorial sea. This area includes submerged rocky reefs, shallow rocky subtidal, and other submerged rocky habitats."

and RHMS p. 59:

"c) Rocky Shallow Subtidal

This subtidal region, between extreme low water and the – 5 meter depth contour, is generally a geologic extension of rocky intertidal or cliff areas along the shore."

(4) Subtidal portions of offshore islands and rocks below the mean high water line, submerged rock reefs and kelp beds to the -10 Fathom or ~ - 18M (- 60') depth contour.

"b. Offshore Rocks and Islands – any rock or landform within the territorial sea separated from the mainland at mean high water which remains above the surface of the sea at mean high water.

Site Access Information*

How is this site commonly accessed?

The rocky coast habitats at Crook Point-Mack Reef can be legally accessed by the public at low tide by walking approximately 1.5 miles along the beach south from Pistol River State Park near the junction with U.S. Highway 101, just south of the Pistol River bridge. The area cannot be accessed from the refuge uplands without prior permission or permit from the USFWS, however, occupants of houses on the uplands use a short trail south of the point to walk down to the shore. Access from the south along the beach is possible but requires walking a long distance; very few people have been seen coming from or going south.

What is your understanding of current management at this site?*

This may include site ownership, management authorities, and other key stakeholders.

Crook Point is a mostly undeveloped mainland refuge unit, which with the offshore area of rocks and islands above the mean high water line, including Mack Reef, comprises part of the USFWS Oregon Islands National Wildlife Refuge. The area between the upland and offshore areas, the ocean shore, including extensive rocky intertidal habitats, are owned and managed by OPRD under multiple statutes and regulations, including OAR 736-020, General Ocean Shore State Recreation Rules. Adjacent offshore intertidal and subtidal habitats and marine plant resources below the mean high water line are owned and managed by the Oregon Department of State Lands (ODSL) under authority of ORS 274. ODFW manages marine natural resources under multiple authorities, including OAR Chapter 635. Although not included within the scope of this proposal, exposed aerial or emergent portions of offshore rocks and islands above the mean high water line are wholly owned and managed as Federal wilderness by the USFWS Oregon Islands National Wildlife Refuge (National Wildlife Refuge System Administration Act (16 USC § 668dd-668ee) and Oregon Islands National Wildlife Refuge; Wilderness Act. (16 USC §§ 1131-1136)).

It should be noted that the level of protections noted above, which are afforded by statute or law for the USFWS-managed site uplands and for the USFWS-managed offshore refuge area appear to exceed the current level of protections afforded by state rules and regulations for the adjacent rocky intertidal and nearshore subtidal areas in between. These dissimilar levels of protection across the landscape-seascape interface serve as a significant justification for this CP-MR MCA designation proposal, in order to fill gaps in protection across the entire site. The proposed designation, with associated non-regulatory management measures, especially site stewards with monitoring, visitor engagement and enforcement-through-education for compliance functions, would allow for more even, consistent levels of protection, management, and information from the uplands, across the intertidal, to and including the offshore rocky subtidal habitat areas of the CP-MR MCA.

Seabirds and Migratory birds using rocky habitats at the site are managed under USFWS authorities including the Migratory Bird Treaty Act (16 U.S.C. 703-712), the Fish and Wildlife Act of 1956 (16 U.S.C. 742a-j), and the Fish and Wildlife Improvement Act of 1978 (16 U.S.C. 742l). Marine mammals using rocky habitat at the site are managed under the Marine Mammal Protection Act (MMPA) 16 USC 1361-1407; the USFWS is responsible for ensuring the protection of sea otters, while NOAA has responsibility for managing other marine mammals --pinnipeds including seals and sea lions and cetaceans - whales and dolphins. Other management authorities include (but are not limited to) the Federal Endangered Species Act – ESA: 16 U.S.C. §1531 et seq., managed by USFWS and NOAA, and CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora), an international agreement between governments. ODFW authorities regulate fisheries. ODFW and NOAA regulate permits for scientific research and collection. The Clean Water Act of 1972 and the Oil Pollution Act of 1990 regulate marine natural resources protections and damages, and the latter may be placed at higher values in areas with special protection designations such as the MCA. Other state and federal management and legal authorities for fisheries, other extractive activities, and coastal-ocean development are varied and too numerous to mention. Other key stakeholders include the local communities, the Confederated Tribes of Siletz Indians, other Tribal Nations as appropriate, other government agencies, visitors, commercial, charter and recreational fishermen, other site users, and nature-based tourism or other businesses.

Site Uses

To the best of your knowledge, please provide the following information **based on the current site management.**

Site Uses*

Describe the current users and uses present at the site. Uses may encompass recreational, commercial, cultural, and scientific.

Current users are mainly recreational. Users include members of the Confederated Tribes of Siletz Indians, other Tribal Nations on the south coast as appropriate, local residents from Curry and Coos counties, including fishermen, hikers, dog walkers, photographers, Audubon Society members who birdwatch and conduct coastwide surveys of Black Oyster Catchers due to widespread population declines and nest failures, CoastWatch volunteers who monitor the ocean shore, and visitors from many locations outside of the region.

Human non-extractive uses at CP-MR include: sightseeing; hiking; picnicking; dog walking; tide pooling; plant and wildlife viewing; photography, bird watching; whale and other marine mammal watching; kayaking, and; snorkeling. Information gathered from Curry County residents indicates that 59.1% of the population participates in beach activities and 46.7% of the population enjoys exploring tidepools (Rosenberger and Lindberg 2012). Motorcycle riding, paraglider flying, camping, and walking uncontrollable dogs off leash are activities that have been observed that are illegal on this stretch of coast. Drone flying has been observed to disturb marine wildlife and birds on site and is not permitted over National Wildlife Refuge lands. OPRD is now reviewing drone use for possible changes in policy regarding their operation (Mr. Chris Johnson OPRD Cape Blanco Management Unit, personal communication 11/19/2020). Concerns have been raised about: disturbance of birds and wildlife by uncontrollable unleashed dogs; people apparently unaware of their behaviors that disturb birds and wildlife; trampling in rocky intertidal areas around tidepools; unauthorized camping, and; disturbance by drones of marine birds and wildlife.

Extractive uses include: traditional fishing and gathering of living cultural resources by members of the Confederated Tribes of Siletz Indians, and other Tribal Nations on the south coast as appropriate; beach combing; agate hunting; clamming; shore angling; small-scale personal harvest from intertidal rocks of edible sea weeds and marine invertebrates such as mussels, and commercial fishing offshore in the general vicinity. Curry County residents enjoy fishing from boats (22.2%) and from shore (22.7%) for non-commercial consumption. 16.8% of the population enjoys crabbing, and 13.6% enjoy clamming/shellfish harvesting (Rosenberger and Lindberg 2012).

We made several attempts to talk with commercial fishermen to share information, and to learn about their work and any possible concerns about the proposed MCA site designation, with only modest success to date. However, once informed about the proposed MCA and lack of proposed new regulations or restrictions on existing site uses including fishing, any initial concerns or opposition were, in all cases, alleviated, and most individuals expressed interest, and at least tentative support. Besides fishermen themselves, the next best information on local fishing operations is from ODFW. The commercial Dungeness crab fishery, with vessels out of Port Orford, Coos Bay, Gold Beach or Brookings-Harbor occurs in soft bottom areas along much of the southern Oregon coast including the vicinity of Crook Point-Mack Reef. However, no observed vessel-based offshore fishing operations or crab pot sets have been observed within the proposed site polygon area over several years, perhaps due to the prevailing rough sea conditions, offshore rocks and shallow shoal waters, and other hazards to navigation typical of the exposed outer coast at this location. In addition to the Dungeness crab fishery, it is possible that other fishing activity may occur at or near this site, including sport or commercial salmon fishing, and harvest of rocky intertidal invertebrates. There are recent

reports of targeted collection by the restaurant trade of large intertidal limpets – snails, in and south of the Port Orford area. Similar to abalone harvest (currently under ODFW closure) this activity should be closely monitored due to the slow growth, reproduction, and recruitment of these snails and the resulting potential for local overharvest, as well as the known overharvest and slow recovery of related limpets in other jurisdictions. ODFW could not definitely ascertain whether any fishing occurs within the proposed MCA boundary, or any change in fished stocks within the area. In any case we do not propose, recommend or support any new fishing regulations, exclusions or restrictions.

In fact, we view this proposal for a Marine Conservation Area (MCA) at Crook Point-Mack Reef to be as much in support of fishing as conservation, because we could find no evidence of stocks being overfished in the area, and designation would serve to benefit fishing by protecting nearshore fish nursery habitats and those producing prey foods for fished species being targeted. Most of these areas are in shallow shoal water depths which most fishers (except for a few kayak or dive fishermen) do not utilize due to ocean safety concerns. The MCA designation would also serve to provide more awareness about the site, it's values and accepted uses. We understand that in the future ODFW may independently decide to change fishing regulations based on reasons or criteria unrelated to the proposed MCA designation, and that this may affect fishing at or near the proposed site.

Research at the site on intertidal nudibranchs, some shelled snails, marine algae or seaweeds, and land plants has been done on occasion by three local independent scientists over several years. There are no other commercial or scientific uses of the site known at this time, although a science-based project to restore the coastal prairie habitat on the refuge uplands is currently in progress.

Site Infrastructure

Please summarize existing site infrastructure. For example: large parking lot, public restrooms, 10-foot stairway leading to cobble beach, etc.

There is no infrastructure observed or known at this site. There is an unpaved road with a locked gate from the Oregon Coast Highway (U.S. 101) onto the refuge uplands, however this is only accessible by occupants of a few houses on the uplands, by refuge staff, or others with permission from the USFWS. The coast here is among the most wild and undeveloped in Oregon. A section of the Oregon Coast Trail runs along the beach through the site but there is no distinguishable trail bed since the beach is washed by high tides and storm waves.

Potential Future Site Uses

Please describe potential future site uses of the proposed site if there was no change to current site management. Much like current uses, future uses may encompass recreational, commercial, cultural, and scientific, as well as others not listed.

Although public access to the site's coast is limited to walking from the beach to the north, it appears inevitable that visitor use levels here will continue to increase into the future, as at most other coastal sites. Potential future site uses, in the absence of changes to current site management, are not anticipated to change or differ appreciably from current uses as noted above, with some exceptions noted below under Impacts on Site Uses. Future uses also could include permitted school or public education groups, commercial nature-based tourism activities, more scientific field work, proposed stewardship activities, and any other permitted uses that do not pose threats or impacts to the area or its resources.

Impacts on Site Uses

How will altering this site's management designation impact existing and potential future uses? Please outline the potential positive and negative impacts to current and future users as well as the degree of impact.

How does the proposed site management balance the conservation of rocky habitat resources with human use?

Designating CP-MR as an MCA with the proposed non-regulatory management measures will not impact existing and potential future permitted uses, unless future regulatory changes affecting uses are made which are independent of and unrelated to the proposed designation and non-regulatory management measures. New site designation would publicly signal that the CP-MR MCA contains marine resources of such high value to Oregonians as to warrant protections conferred by this special rocky shores site designation, protections that will help guard and maintain resource conditions and values for the long term future. New designation is likely to increase the public profile and awareness of the site, which could lead to increased visitation. However, with adequate volunteer stewardship of the area and increased information signage and programming, it is unlikely significant negative impacts would result from the designation. It is important to note that increased visitor use of the area is likely to result regardless of designation, so by making the area an MCA, an effective volunteer steward program would be established to get ahead of the curve and prepare for the inevitable increase in visitation and interest in coastal recreation at CP-MR. So long as visitor behaviors and activities conform with applicable law (including not trespassing on the refuge uplands), higher visitor levels are not expected to impact either human uses or marine resources. Implementing the proposed site-based volunteer stewardship program would enhance visitor awareness and compliance and thereby minimize threats and impacts to people, human uses, and marine resources. Based on available information at this point, increased visitation would appear to be a net positive, particularly due to additional revenue contributions to the local tourism-based economic sector.

As mentioned above under Site Uses, some existing uses have raised concerns about current or future impacts on resources and uses. These include motorcycle riding and collecting native plants (both illegal on this stretch of coast; D. Bilderback personal communication), paragliding, disturbance of birds and wildlife by humans and uncontrollable unleashed dogs, littering, camping, and drone flying disturbing marine birds and wildlife. With the proposed MCA designation and management measures we are not recommending restrictions or regulations on any current human uses. In efforts to balance human uses and marine resources conservation as part of proposed NRMM we recommend cooperative -- with USFWS refuge management and OPRD -- design and placement of signage at the northern beach access near the refuge boundary that matches with the wild, undeveloped character of the site, to include: (1) a small map showing key site features, walking distances, and safety concerns, including situational awareness required of visitors to avoid their return access northward from being blocked by incoming tides; (2) a brief overview of the history, natural and cultural features of the site (without indicating locations of sensitive or threatened cultural or natural resources), and; (3) a brief summary of rules on allowed and unpermitted uses at the site, and; (4) a QR code posted on signage that would allow users to see an interactive map of the Marine Conservation Area on their smartphones, and to follow a link to a centralized website where users can interactively view different rocky shores designations along the Oregon coast. This would show all the areas coastwide with each type of designation and include detailed regulations for each area. To date, the only website we have found with similar comprehensive maps and information is eregulations.com. While camping on the site is not officially permitted, in the past OPRD staff have apparently allowed some Oregon Coast Trail (OCT) through-hikers to camp. Past evidence of camping, both near and away from the OCT, indicates lack of compliance with Leave No Trace principles, including leaving trash and human feces. We recommend enforcement by OPRD of existing no camping rules so that no camping be allowed in the future to protect the fragile coastal resources on site, to maintain the wilderness character of the area, and to prevent wildfire,

a severe threat here in summer. We also recommend timely implementation of clear guidelines and policy regarding use of drones, currently being considered by OPRD, to prevent further disturbance and other impacts to marine wildlife and birds at and near Crook Point-Mack Reef. This proposal recommends development, training and implementation of a volunteer stewardship program to assist and support USFWS and OPRD in carrying out management activities on site into the future (e.g., assisting with upland habitat restoration efforts; coastal monitoring, visitor engagement, public education and interpretation, notifying visitors about compliance and safety issues, and cooperation and communication with law enforcement when all other visitor compliance measures have been exhausted, as a last resort).

In summary, we anticipate all positive and no negative impacts to current or future users or uses that comply with management policies or laws in force (no regulatory changes are being proposed). These, along with proposed non-regulatory management measures, are expected to result in no impacts to legal uses and reduced or no future impacts -- from camping, littering, trampling, or disturbance by humans, unleashed uncontrolled (by owner voice command) dogs, or irresponsible use of drones -- of birds and wildlife using rocky coast habitats. Any possible impacts on users would affect a very small fraction of all users, who would not be permitted to camp where it is already illegal, but would be able to continue all other uses as long as these do not create threats or cause impacts to other visitors or resources. As such, the above recommended minimal changes to allowed human uses through non-regulatory measures is a balanced approach to maximizing both human uses and conservation of rocky habitat resources.

Key Natural Resources

To the best of your knowledge, please provide the following information on your proposed rocky habitat site.

Rocky Habitat Present*

Please include as much information as possible on the specific types and composition of rocky habitat present at the site (e.g. rocky intertidal with extensive tidepools, adjacent rocky cliffs, and rocky subtidal).

The types and composition of rocky habitat present at the site includes:
(1) rocky upland - the cliff face of the refuge uplands (Figs. 1-3), from their base up to the vegetation line;
(2) rocky intertidal - the intertidal rocky headland and boulders at and near the point itself (including those surrounded by patches of sand beach), intertidal rocky platforms, benches, tide pools, boulder-cobble fields, and boulders;
(3) rocky shallow subtidal – subtidal parts of offshore rocks and islands below the mean high water line and rock reefs and shoals from the extreme low water line on shore to a depth of – 5 meters, and;
(4) intertidal and subtidal parts of offshore rocks and islands below the mean high water line, subtidal rock reefs, shoals, and kelp beds out to their furthest offshore extent or the - 10 Fathom (- 18M [- 60']) depth contour, whichever is closest to shore.

Key Resources*

Describe current rocky habitat resources present at the site. These may include, but are not limited to: kelp beds; pinniped haulout or pupping areas; seabird colonies; presence of threatened/endangered/protected species; intertidal diversity (invertebrates, marine plants, etc.).

Living Cultural Resources

Coquille Indian Tribe representatives on the south coast have noted the presence and use of diverse non-specified sensitive living cultural resources at this and other sites.

Kelp Beds

There are several relatively small beds of canopy forming kelp, primarily Bull Kelp, *Nereocystis luetkeana,* included in the proposed site polygon. The appearance and size of surface canopy forming kelps varies greatly by season and from year to year, however long term trends indicate reductions in kelp bed canopy area over time, based on observations at Crook Point-Mack Reef, elsewhere on the Oregon (and California) coasts, as well as data from aerial kelp canopy surveys done by or for ODFW (Merems 2011). Kelp beds are surrounded by subtidal rock reefs including shallow shoals, and patches of soft sediment benthic substrates. Kelps and kelp forests throughout Oregon, Northern California, and much of their range along the Pacific coast of North American have experienced multiple threats and impacts (Rogers-Bennett and Catton 2019, Rumrill 2020a, b). These range from increased ocean temperatures due to marine heat waves and other oceanographic phenomena, and reduced nutrient availability, to increasing storm wave frequency and severity, and extreme overgrazing of kelp. Overgrazing, related to the heavy recruitment of purple sea urchins, *Strongylocentrotus purpuratus*, has resulted in many places in the near total loss of benthic macroalgae including kelps and most other fleshy seaweeds, and the formation in former kelp forests of large, high density urchin barren areas devoid of kelp (Schiel and Foster 2015, Rogers-Bennett and Catton 2019, Rumrill 2020a, b). The urchin population explosion has been exacerbated by the widespread die-off of sea stars (star fish), major predators of urchins, from the Sea Star Wasting Syndrome (SSWS) and lack of recovery to date of populations of several species of sea stars, particularly the large, multi-armed sunflower star, *Pycnopodia helianthoides. Pycnopodia* was recently (12/10/2020) listed as "Critically Endangered" on the Red List of the International Union for the Conservation of Nature (Table 1 and website link below). This new critically endangered status is based on: (1) a calculated 90.6% decline in their global population; (2) numerous surveys coastwide which estimated 5.75 billion animals have died from what is described as the largest known marine disease epidemic on record; (3) a complete lack of population recovery on the entire west coast of North America, from Alaska to Baja California, Mexico in the 7 years since the disease outbreak began in 2013, and; (4) very few animals observed off the outer coasts of Oregon and Washington since 2018 (https://www.nature.org/en-us/newsroom/california-sea-star-endangered/?fbclid=IwAR36fsJgMQcNRc5xKsyDRDSsRQgHSkG4qmHMXO_QjraL4UEsQ59mmrugkrc).

Further, kelp beds and their inhabitants within the proposed CP-MR site polygon have been under additional threat for a number of years due to local turbidity events in the nearshore ocean resulting from erosion, run off, and downslope transport of soils (from nearby land clearance activities) in streams nearby. The fine sediment fractions of these soils, once transported downstream into the nearshore ocean, either block light from, scour, blanket or bury the sea floor and benthic (bottom-living) animals and plants in the area during these conditions, and are known to have both sub-lethal and lethal effects on benthic organisms, and impacts on ecosystem goods and services, based on studies done elsewhere (e.g., Kiest 1993, Foster and Van Blaricom 2001, Konar and Roberts 2009). These nearshore marine threats and impacts are detailed below under Watershed Conditions.

Pinniped Haulout and Pupping Areas

We found no published data on pinniped haulouts or pupping at Crook Point-Mack Reef itself or on the offshore rocks and islands, except for a small amount of data indicating that Harbor Seals, *Phoca vitulina*, haul out on rocks here (Fig. 7; Brown 1988). A few people have observed pinnipeds at various tide levels over several years in good weather conditions when swells are not large. These observations indicate use of on- and off-shore rocky habitats as haulouts by four species of pinnipeds within the site polygon. These pinniped species are (interspecific relative abundance, highest to lowest): Harbor Seal, *Phoca vitulina*; California Sea Lion, *Zalophus californianus,* Stellers Sea Lion, *Eumetopias jubatus,* and Northern Elephant Seal, *Mirounga angustirostris.* Young Harbor Seal and California Sea Lion pups have occasionally been

sighted. Pinniped numbers vary considerably: at times there are up to about one hundred adult Harbor seals and California sea lions, while at other times numbers are in the tens of individuals or less; Steller Sea Lion adults have been seen occasionally, and Northern Elephant Seals relatively rarely.

Seabird Colonies and Nesting Shorebirds

Seabird Colonies ranging in size up to approximately 1000-10,000 breeding birds have been documented within the proposed Crook Point-Mack Reef MCA for the following species (Naughton et al. 2007):
Double-crested Cormorant, *Phalacrocorax auritus*
Pelagic Cormorant, *Phalacrocorax pelagicus*
Brandt's Cormorant, *Phalacrocorax penicillatus*
Western/Glaucous-Winged Gull, *Larus glaucescens*/ *L. occidentalis*/ *L. argentatus*
Leach's Storm Petrel, *Oceanodroma leucorhoa*
Fork-Tailed Storm Petrel, *Oceanodroma furcata*
Common Murre, *Uria aalge*
Pigeon Guillemot, *Cepphus columba*
Cassin's Auklet, *Ptychoramphus aleuticus*
Rhinoceros Auklet, *Cerorhinca monocerata*
Tufted Puffin, *Fratercula cirrhata*

A few nests of Black Oyster Catcher, *Haematopus bachmani* have been observed on site. This species is a USFWS shorebird of concern due to declines in nesting pairs in southern Oregon, and coastwide, its dependence on rocky shoreline habitats, its rarity, and vulnerability to threats including climate change and human disturbance.

Presence of Threatened/Endangered/Protected Species/Species of Concern

Several species of concern, protected or listed species are known in, have a high probability of occurring at, or occasionally move through the Crook Point-Mack Reef area (Table 1).

Rocky habitat biodiversity is detailed in the next section.

Flora and Fauna*

List the animal and plant species you know exist at this site along with relative abundance.

Rocky Habitat Biodiversity

The intertidal species diversity at CP-MR is extremely high. Invertebrate species observed at CP-MR are abundant and span across many taxonomic groups. Characteristic species observed at CP-MR include: Mussels (*Mytilus* spp.), Dogwhelk snails (*Nucella* spp), Ochre sea stars (*Pisaster ochraceus*), Gooseneck barnacles (*Pollicipes polymerus*), Acorn barnacles (*Balanus* spp), Thatched barnacles (*Semibalanus* spp.), Buckshot barnacles (*Chthalamus dalli*), Purple sea urchins (*Strongylocentrotus purpuratus*), Green anemones (*Anthopleura* spp.), and many species of worms, isopods, amphipods, sponges, crabs, snails and other invertebrate animals.

There also are many species of red, brown, and green algae, and seagrass (a vascular plant) present which provide habitat for other intertidal and subtidal organisms. Species observed include but are not limited to: Iridescent Weed (*Mazzaella* spp.), Black Pine Seaweed (*Neorhodomela* spp.), Featherboa Kelp (*Egregia*

menziesii), Bull Kelp *Nereocystis luetkeana*, Rockweed (*Fucus distichus*), Strap kelp (*Lessoniopsis littoralis*), Dwarf Rockweed (*Pelvetiopsis limitata*), Sea Cabbage (*Saccharina* spp.), Sea Lettuce (*Ulva* spp.), and Surfgrass (*Phyllospadix scouleri*).

Because an area of nearshore subtidal rocky habitats is included in our proposed site designation, data on the presence of specific fish species determined by the ODFW Nearshore Strategy (https://oregonconservationstrategy.org/oregon-nearshore-strategy/species/) is included. ODFW annual monitoring at Redfish Rocks (located 31 miles north) or the Humbug Comparison area (28 miles north) identified the following species present in recent years: Striped perch (*Embiotoca lateralis*), Kelp greenling (*Hexagrammos decagrammus*), Lingcod (*Ophiodon elongatus*), Cabezon (*Scorpaenichthys marmoratus*), and 9 different species of Rockfish (*Sebastes* spp.). We can assume that these species are also present at Crook-Point-Mack Reef due to the similar habitat types, marine connectivity, and reasonable proximity to Redfish Rocks and the Humbug Comparison area. Additional nearshore species are undoubtedly present but data on subtidal fish is sparse for this site. The off-shore rocky subtidal area likely includes critical habitat important in the life cycles of the species listed above and many others.

See Table 2. Species List for Crook Point-Mack Reef Area.

In extensive literature searches for relevant data online and at the OIMB library (including unpublished gray literature reports, raw data, and communications with several local and other professional biologists) we found almost no marine species survey data sets, species lists, or relative abundance estimates for animals or plants (except for colonial nesting seabirds and some pinnipeds, above) within the proposed Crook Point-Mack Reef MCA.

With the exception of some nudibranchs and algae, we found very little biological data collected at CP-MR *per se*. Species listed for this site (Table 2) are: (1) those that are so common to southern Oregon rocky intertidal or subtidal communities that (based on strong inference and 4+ decades of experience and professional judgment) their absence at this site would be considered highly improbable, and; (2) those species found at other rocky site(s) with similar habitats as close to this site as possible (e.g., in this case the MARINe Burnt Hill site just to the south and Cape Blanco (41 miles north), where PISCO has collected data on rocky intertidal species for several years, and either Orford Reef (37 miles north), Redfish Rocks (31 miles north) or the Humbug Comparison area (28 miles north), where biological data has been collected by or for ODFW in rocky subtidal habitats). Many of the species from other sites can be categorized as having a high probability of occurring in the Crook Point-Mack Reef area because of the geographic proximity of the sites or the strongly inferred high connectivity between them due to ocean currents and dispersal between sites either by migrating adults or drifting planktonic larvae of invertebrates and fishes or spores of kelps and other seaweeds— early life stages common to most marine animals and algae.

Data on marine algae or seaweeds were obtained from a local biologist who made herbarium collections at CP-MR, and from gray literature reports, a few published literature sources, and surveys done at other sites as close as possible to Crook Point-Mack Reef.

We obtained available data for marine invertebrates from a systematic bioblitz event that was conducted by numerous experienced professional biologists from the OIMB and other institutions nationwide at and in the vicinity of Cape Arago in 2019. We used these data to "bracket" species richness data elsewhere on the southern Oregon coast including the CP-MR area, to provide a contextual framework in which to view species composition or richness derived for the Crook Point-Mack Reef site. While the bioblitz was certainly not exhaustive or completely comprehensive and therefore could not record all species present, it nonetheless represents the highest rocky intertidal invertebrate species richness values found anywhere on the entire Oregon coast. To place site biological information in context, we derived an estimate of

approximately 303 total species (marine algae, invertebrates, fish, birds, and mammals) at Crook Point-Mack Reef. This value is surely a considerable underestimate of both the total number of species present and the total number of invertebrate species present at CP-MR, based on the fact that well over 800 species of marine invertebrates were documented by the bioblitz in similar habitats in the vicinity of Cape Arago (71 miles north of Crook Point-Mack Reef). However this number does not include annelid worms and other animal groups, which, when enumerated, will likely bring the estimated total number of species of rocky intertidal invertebrates in Oregon to at least 1000. One can then reasonably extrapolate qualitatively that species richness for other taxa — particularly algae and fish — is also considerably underestimated (since these are either less familiar or more cryptic), while species numbers for birds and mammals are likely to be only slightly underestimated if at all due to their overall relative greater familiarity and ease of identification.

To derive species richness (based on presence) and relative abundance data (where possible), if, as is the case at rocky intertidal sites sampled by PISCO, density data exist for some species, we assumed the species is present and therefore must be included in the sites' species list. Different species are likely to occur at high, medium or low density(/abundance) at a site. Density data can, where appropriate, be "binned" into relative density/abundance categories (which are each defined). These density categories are on a relative scale, and may be qualitatively converted to a scale of relative abundance, e.g., high density (dominant or abundant); medium high density (common); medium density (occasional); low density (rare). If, as noted above, a species has a reasonably high probability of occurring at a proposed rocky site, even if based on occurrence at the most proximate site(s) or on professional knowledge, it should be listed as occurring at the proposed site and recorded as "P" – Present, or Probable (not observed at site but highly probable to be present there). If, as is the case for the vast majority of species, relative abundance data were not available or could not be estimated or derived, then species presence data only was recorded.

Information for fishes, where available, was obtained from other sites in the area where ODFW has data from general subtidal surveys (e.g., using ROVs, camera landers, or divers), and from data collected by the ODFW marine reserves monitoring program, including hook and line sampling, at site(s) as close as possible to Crook Point-Mack Reef, including Orford Reef, Redfish Rocks and the Humbug Comparison Area, all to the north.

Data sources for birds include the 2018 Checklist to Birds of Curry County, Oregon, published by the Kalmiopsis Audubon Society (KAS). This list includes 403 species found in Curry County, to 200 miles offshore, during 53 years of documented sightings. This list was filtered to only include bird species likely to occur at or near the coast. We also attempted to use survey data from annual KAS Christmas Bird Counts (CBCs) to present absolute and relative abundances for coastal and likely near coastal species, but were unable to obtain the raw data in time to meet the submission deadline for this proposal. We obtained some data on breeding seabird colonies near Crook Point-Mack Reef from USFWS surveys (Naughton et al. 2007).

Data sources for pinniped populations and haulouts include surveys done for NMFS (Brown 1988). Data on other mammals come from our observations, online listings of species of concern, and from Maser 1998, as well as communications with locals who have been familiar with the Crook Point-Mack Reef coast for decades.

Unique Features

Does this site include any unique or special features in relation to the Oregon Coast? This may include high quality examples of rocky habitats, etc.

There are a number of unique or special features at and near Crook Point-Mack Reef. The wild, undeveloped, and remote location itself appears to be increasingly uncommon feature on the Oregon coast as development and visitation increases.

Observations along the entire Oregon coast, review of the coastal geology literature, and speaking with a professional geologist suggest that the stunning archipelago of offshore rocks and islands at CP-MR are a unique landform in Oregon and perhaps beyond. There is a fairly high proportion of intertidal rock at the site composed of Serpentine minerals. On land, serpentine-derived soils, derived from deep sea rocks, due to their chemical composition (including trace metals and toxic compounds) prevent all but specially adapted land plants from growing on them. It would be interesting to study whether serpentine rock has similar limiting effects on the establishment or distribution and abundance of marine rocky intertidal or subtidal organisms, many of whose settling larval or spore stages can detect subtle chemical or physical characteristics of substrates, affecting where these organisms settle.

The Crook Point-Mack Reef rocky coast has high beta or habitat diversity including intertidal bedrock, benches, boulder-cobble fields, vertical walls, tide pools, patches of sand beach, and subtidal vertical rock walls, shelves, shoals, reefs, boulders, and mixed rock-soft sediment areas, as well as kelp beds and urchin barrens.

Biological observations at the site indicate several distinguishing features, including: overall high biodiversity; seabird colonies; pinniped haulouts, and; a considerable number of species of special concern. These include reduced numbers of Black Oystercatcher nesting pairs. Red abalone, *Haliotis rufescens*, the largest and most fecund of abalone species, have been observed in numbers so low that their reproductive potential is extremely limited due to low adult densities and high nearest neighbor distances reducing fertilization success because female and male gametes free-spawned by adults into the water column are unable to mix and fertilize. This and other life history traits shared by abalone species have contributed to greatly reduced numbers throughout their geographic range, fisheries closures in Oregon (and California), and Federal Endangered Species listings for two congeneric species, the white abalone, *Haliotis sorenseni* and the black abalone, *Haliotis cracherodii*. Flat abalone, *Haliotis walallensis* have very rarely been observed on the southern Oregon coast over many years, suggesting that this species is ecologically extinct in the region. The rocky intertidal and subtidal areas at Crook Point-Mack Reef otherwise have excellent habitat for abalone (L. Basch, pers. observations 1993-2020), and should be considered for inclusion in future efforts to restore abalone populations in Oregon, which would be necessary for reopening any fishery. This said, the prognosis for recovery of abalone populations hinges on the condition and recovery of their rocky habitats, which are currently under multiple threats and impacts at this site, as noted under Watershed Conditions and elsewhere.

In part due to the proximity of streams near this location on the Wild Rivers Coast, several species have been either observed, e.g., river otters, raccoons, or strongly inferred, e.g., listed salmon and sturgeon, to occur here at times with high probability. The proposed CP-MR MCA also may be unique in that threatened sea otters have been observed at different times north and south of CP_MR, which includes overall high quality rocky habitats for otters (L. Basch, pers. observations 2013-2020).

Values and Resources

Please discuss site values and resources and how a change in designation will impact them.

Site values and resources are numerous, but are only briefly summarized here since these are discussed elsewhere in this proposal. Site values and resources include but are not limited to: the undeveloped, wild character of the site; characteristic landforms (e.g., dense archipelago of dramatic offshore rocks and islands;

high marine rocky habitat diversity); geology (mixture of Serpentine, metamorphic and sedimentary rock mineralogies, sand beach, etc.); site-specific cultural values for and uses by the Confederated Tribes of Siletz Indians and other local coastal tribes including living cultural resources; nesting sea bird colonies; pinniped haulouts; kelp beds; high species richness, and; use of the site by several species of special concern (e.g., Black Oystercatcher, Peregrine Falcon, etc.). The area is valued for its present and expected future human use values: sightseeing; hiking; picnicking; dog walking; tide pooling; plant and wildlife viewing and other natural history observations; photography; bird watching; whale and other marine mammal watching; kayaking; snorkeling; drone flying; walking dogs; beach combing; agate hunting; clamming; shore angling; small-scale sport harvest from intertidal rocks of edible sea weeds and marine invertebrates such as mussels, and; fishing.

A new or changed site designation will positively impact site values and resources. For example, a new site designation opens up opportunities for individuals and community groups to determine how best to protect these vital rocky shoreline resources and their uses. A new or changed designation can however have both positive and negative impacts. For example, a designation can increase public awareness of a place and its natural attractions, and a new site designation can itself be an attraction. A higher public profile is very likely to lead to increased visitation. Increased visitation could, in the absence of adequate signage and on site volunteer stewardship, public education, and compliance monitoring (proposed herein under non-regulatory management measures) result in negative impacts to both human safety and resource conditions if or when visitor numbers overshoot the site carrying capacity, or irresponsible or unlawful human behaviors impact resources. Greater impacts also can occur both cumulatively over time, or when multiple impacts interact in combination or become synergistic. Such impacts may be delayed, or may require more time or effort to determine. On the other hand, increased visitation is very likely to happen regardless, given increasing visitor trends locally and globally, and would in any case positively contribute to the local south coast economy, as has occurred previously in Curry County with other attractions (e.g., Cape Blanco Music Festival). New site designation would increase protections for the site rocky shore resources and values and allow for continued, sustainable human uses without new restrictions, by further developing and implementing a set of complimentary non-regulatory management measures, including increasing a community sense of ownership of place by implementing a volunteer site stewardship program.

Regulations & Enforcement

To the best of your knowledge, please provide the following information on your proposed rocky habitat site. Due to the complexity of site regulation and enforcement, this section will not be used to evaluate proposal completeness, but will be considered for the merit of this proposal. Agencies will address gaps where information is available.

Management Consideration

How was enforcement/compliance of management considered in the design of this site proposal? If possible, please estimate the cost to implement this change in site management.

Enforcement of and compliance with existing management has been a central consideration throughout the development of this site proposal, from recognition that existing management by USFWS, OPRD, ODSL, and ODFW as prescribed by law and policy appears adequate, yet full implementation of compliance or education-enforcement and other measures is currently constrained by agency budget or personnel levels below those necessary to fulfill these management needs. It is largely for these reasons that we propose non-regulatory management measures including cooperation and partner building to support enforcement through compliance-education and other management needs by developing a community sense of ownership of place via a volunteer site stewardship program and formal cooperation with community groups and individuals, the Confederated Tribes of Siletz Indians and other tribes as appropriate, land, resource management and law

enforcement agencies, funding organizations, NGOs, etc. Because similar programs (e.g., Haystack Rock Awareness Program, Makai Watch) have been developed and implemented in conjunction with law enforcement, and proven to be highly effective and sustainable elsewhere we have confidence that we can use these programs and related resources (e.g., MOUs with government agencies, the Rocky Shores Communication Strategy 1995, Northwest Aquatic and Marine Educators Oregon Coast Education Program, Coast Watch, S.E.A.) as models and guidance to develop and implement a volunteer stewardship program at the proposed CP-MR MCA. At this time, mainly due to difficult access to and lack of available information during the pandemic, we are unable to accurately estimate the cost to implement these non-regulatory changes in site management. However, since we propose to staff the stewardship program mainly with volunteers, we can reasonably expect that costs will be fairly modest. Further, economies of scale achieved by the proposed coastwide "umbrella" stewardship program that would serve and support several proposed site-based steward programs would also reduce costs. Once decisions are made on approval of site designation proposals, we will confer further with agency and other partners and pursue budget estimates, justifications, and related information and actions, including seeking external funding (at least until such time as state budgets recover from current impacts due to the pandemic and economic conditions), to advance the volunteer stewardship program and other proposed non-regulatory management measures that support agency enforcement needs.

Enforcement Changes

In comparison to current site management, what changes would be necessary to enforce the proposed management measures? This may include the addition or removal of infrastructure, personnel, etc. Include the estimated financial impact of the proposal. Some designations incorporate larger financial or programmatic support. Please identify any entities or funding sources that may be available to continually support this proposal. This information is not required for a proposal to be accepted, but review bodies would like to be informed of any support that is already in place or expected for the site.

Changes necessary to enforce proposed management measures and thereby enhance current site management, protection, use, and enforcement include (but are not limited to):

(1) We propose to work as local community members and groups in cooperation with USFWS, OPRD, ODFW, OSP, U.S. Coast Guard, and other appropriate agency staff, the Confederated Tribes of Siletz Indians and other Tribal Nations cultural resources staff as appropriate, NGOs and other partners to support programmatic budget increases or within-budget or personnel time reallocations for more frequent resources and education-enforcement patrols, and placement of informational signage at the site boundary.

(2) Along with these cooperative efforts we propose creation of a site-based volunteer stewardship program, as detailed in the following section on Non-Regulatory Management Mechanisms (NRMM). Key to this stewardship program is building formal MOUs and working relationships with law enforcement and other agencies in the area so that appropriately trained volunteer site stewards can safely act as eyes and ears for law enforcement and call on their support when necessary, as is done in similar programs elsewhere (Haystack Rock Awareness Program, Makai Watch). Where ever this proposal refers to enforcement by volunteer stewards, we mean visitor intercepts using education as the main enforcement tool, where visitors are engaged, informed about resource or safety conditions and threats and what responsible actions they can take to help protect themselves and site resources. In cases where human safety or resources are threatened or impacted by lack of visitor compliance with applicable rules and regulations, stewards would contact USFWS refuge management, OPRD beach rangers, or law enforcement agencies after education and related approaches (e.g., documentation) have been conducted safely and determined to be unproductive. However, stewards would immediately call for help in any emergency.

(3) Implementation of elements in the Curry County State Parks Master Plan 2003 related to ocean shores.

Information on the estimated financial impact of this proposal is not currently available largely due to the pandemic, but will be pursued in cooperation with agency and NGO staffs, and other appropriate people following final decision making on site designation proposals. Actual and potential sources of programmatic and financial support are indicated below in the section "Support for Management Mechanisms."

Needed Regulations

What regulations and enforcement would be necessary to implement this change in management? What regulatory changes at the proposed site would be needed at this site? Which state/federal agencies would be impacted by this change in site management?

We do not anticipate the need for any new regulations or changes in existing rules and regulations. Existing regulations appear adequate as written. However, conversations with USFWS, OPRD, other state agency staff, others in the region, and publicly available information confirm the widely held impression that agency budget and staffing limitations severely constrain enforcement, stewardship and public education and outreach activities at and near this site (and others). We propose non-regulatory management measures to work as local community members and groups in cooperation with USFWS, OPRD and other appropriate agency staff to support programmatic budget increases or within-budget or personnel time reallocations for more frequent natural resources and enforcement patrols and placement of informational signage at the site. As part of the NRMM we propose creation of a site-based volunteer stewardship program, as detailed in the following section on Non-Regulatory Management Mechanisms. Key to this stewardship program is building formal cooperative working relationships with land management and law enforcement agencies in the area so that volunteer site stewards can be trained to safely act as eyes and ears for agencies, including law enforcement, and call for their support when necessary. We anticipate no negative impacts and only net positive impacts on state and federal agencies (e.g., USFWS, OPRD, OSP, ODFW, ODSL, U.S. Coast Guard) from the proposed non-regulatory management measures.

Improvements to Management

How does the proposed site improve upon or fill gaps in addressing objectives/policies that are not currently addressed by coastwide regulations or management?

The proposed site and site-based NRMM improve upon and fill gaps in management policies and objectives not addressed by coastwide (or site-specific) regulations or management in the following way. USFWS, OPRD and other agencies coastwide are currently (and are projected in the future to be) understaffed and agency budgets are insufficient to fully implement or enforce existing policies, plans, or laws affecting marine resources at the site. The proposed site-based management measures will create formal cooperative relationships with agency staff that will increase capacity and allow management actions to be fulfilled on site by a trained volunteer labor source working with and under the direction of agency managers and staff. This proven model can be used to improve on and fill in gaps in unmet objectives or policies that are not currently addressed by coastwide regulations or management.

The situation concerning upland soil erosion, runoff into the nearshore ocean, and impacts to marine life (see Figs. 4-6, and Watershed Conditions, below) is not specific to the local watersheds surrounding the CP-MR area. Either a local or coastwide approach can be taken, starting with meetings between the appropriate agencies, landowners, and stakeholders to identify the problem upland area(s), upland land management practices, and solutions. Volunteer site stewards can serve to monitor and document related nearshore ocean

conditions in an effort to begin to ameliorate threats and impacts in marine rocky habitats. Lessons and solutions learned and applied from this and other local site issues or problems can be shared and applied coastwide to fill management and information gaps at other rocky habitat sites on the Oregon coast wherever similar problems may exist.

Non-Regulatory Management Mechanisms

To the best of your knowledge, please provide the following information on your proposed rocky habitat site.

Management Mechanisms

What non-regulatory mechanisms are required at this site in order to meet the goals of the proposed designation? These may include, but are not limited to, public access management, on-site enhancement, and educational intercepts.

The proposed CP-MR MCA site designation goal and objectives can all be met with non-regulatory management measures. Proposed NRMM include, but are not limited to:

(1) Designing and installing informational signage near the access point on the beach north of the refuge boundary, to match the undeveloped wilderness characteristics of the site (placing signage elsewhere is regarded by community members as detracting from the wild, undeveloped character of the site and hence unacceptable);

(2) Developing a community sense of pride and "ownership" of the site by creating a site-based volunteer stewardship program to train and support rocky coast stewards to:
(a) educate visitors on responsible, safe uses of the site;
(b) inform visitors of inappropriate, unsafe, or illegal behaviors;
(c) if necessary, communicate with resource protection, local law enforcement or OSP officers concerning potential public safety issues or illegal activities threatening or impacting marine resources;
(d) provide educational/interpretive intercepts for the public about the natural and (with guidance from the Confederated Tribes of Siletz Indians and other tribes as appropriate) cultural features and resources on site, and;
(e) conduct monitoring of site and resource conditions, and assist refuge staff with maintenance tasks or coastal prairie habitat restoration, etc.

"Using Partnerships to Implement Site Goals" and "Providing interpretation and other information resources for visitors" are general management measures not requiring regulations and are called for in state agency documents noted elsewhere. A coastwide shoreline interpretative program is called for in the state's Rocky Shores Communications Strategy (1995) and elsewhere. The many advantages of an "umbrella" coastwide rocky habitat stewardship program include: creation of uniform quality messaging, content, and interpretive materials, based on consistent training coastwide; considerable economies of scale, wherein one coastwide stewardship program can develop and implement combined coastwide and site-specific program standards and elements for multiple rocky coast sites regardless of their new or changed designation type, and; the ability to convey both general coastwide and site-specific information to visitors. Reinventing the wheel is not necessary because similar programs are long-standing, sustainable, highly effective, and successful, and serve as models for the rocky coast stewardship program proposed here. These models include the Haystack Rock Awareness Program at Cannon Beach, Oregon (https://www.ci.cannon-beach.or.us/hrap) and Makai (toward the ocean) Watch in Hawai'i (https://dlnr.hawaii.gov/makaiwatch/), and elements of the SEA and CoastWatch programs. Realizing that stewards cannot always be on site, we propose a cost effective

technical solution(s) (easily concealed to prevent vandalism) to monitor site conditions and uses that would fill gaps in observation capacity when no agency staff or stewards can be on site.

(3) Adaptive modification of the Memorandum of Understanding (MOU) between the Haystack Rock Awareness Program or Friends of Haystack Rock at Cannon Beach and local government and appropriate law enforcement agencies, to develop a similar MOU for implementation at and for the Crook Point-Mack Reef MCA.

(4) Work in cooperation with government agencies, officials, Tribal Nations, other stakeholders, and external funding sources (NGOs, etc.) to develop budget or personnel time reallocation proposals, budget justifications, or sustainable long term external funding sources for a Crook Point-Mack Reef MCA Coastal Stewardship program.

Support for Management Mechanisms

How do you propose to support these mechanisms? Some designations incorporate larger financial or programmatic support. Please identify any entities or funding sources that may be available to continually support this proposal. This information is not required for a proposal to be accepted, but review bodies would like to be informed of any support that is already in place or expected for the site.

The existing community volunteer-based coastal stewardship programs on the southern Oregon coast, Shoreline Education for Awareness (SEA) and CoastWatch (CW) are long-established, fully operational, and highly effective. SEA trains and fields volunteer interpreter-stewards at two sites in Coos County – Simpson Reef Overlook at Cape Arago State Park and at Coquille Point in Bandon. SEA also maintains a presence in Curry County, serving as the Friends group for the Crook Point unit of the USFWS Oregon Islands National Wildlife Refuge. CoastWatch, a statewide organization, is a mile-by-mile shoreline adoption program in which volunteers periodically patrol and report on a section(s) of the Oregon coast. Discussions with SEA (https://sea-edu.org) and Coastwatch (https://oregonshores.org/coastwatch/overview) indicate that both of these organizations are preadapted and poised to serve key roles in developing and fielding a combined coastwide and site-specific volunteer rocky coast stewardship program, since these organizations have been successfully training and fielding volunteers to perform interpretation, stewardship, monitoring, public or resource protection roles on the coast for many years. Both programs have expressed interest in collaboratively developing and implementing such a rocky coast stewardship program, but cannot fully commit to this until such time as rocky habitat site designations are approved and funding opportunities begin to materialize.

Based on preliminary research to date, potential entities or funding sources to sustainably support proposed rocky coast stewardship efforts include: The Ford Family Foundation, The Gordon and Betty Moore Foundation, Oregon Community Foundation, Oregon Coast Visitors Association, Travel Oregon, The Coquille Indian Tribe, the Confederated Tribes of Siletz Indians, the Confederated Tribes of Coos, Lower Umpqua and Siuslaw Indians, the U.S. Fish and Wildlife Foundation, the Oregon Conservation and Recreation Fund, Wild Rivers Coast Alliance, the Audubon Society, and several others. Support for signage at other coastal sites has been provided by ODOT and the Oregon Coast Visitors Association (OCVA); we would pursue similar support. Upon notice of approval of the Crook Point-Mack Reef Marine Conservation Area site designation we will initiate cooperative efforts with agencies, government officials, local community groups and individuals, partner organizations with experience in coastal stewardship, funders, and others to pursue sustainable funding for a Crook Point-Mack Reef and coastwide stewardship program. We are hopeful that when state budget forecasts improve, funds can be allocated to create a sustainable structure for this program to ensure the longterm success of a coordinated coast-wide stewardship-

interpretive program, whether solely government supported, in the form of a public-private joint venture, or entirely through external funding.

In addition, considerable non-monetary in-kind matching support is present in the form of: existing volunteer pools on the south coast; established coastal curricula for public education, outreach and interpretation, and; plans, standard operating procedures and guidance, including memoranda of understanding for an established coastal volunteer stewardship program (Haystack Rock Awareness Program/Friends of Haystack Rock). Other non-monetary support includes, e.g., the Rocky Shores Communication Strategy (1995) developed for the Oregon Coastal Management Program, ODLCD. We anticipate additional in-kind support for coastal marine education program curricula and elements from the Charleston Marine Life Center of the University of Oregon, Oregon Institute of Marine Biology and The South Slough National Estuarine Research Reserve Education and Coastal Training Programs -- all based on the south coast, as well as; The Oregon Coast Aquarium, and; the Hatfield Marine Science Center of Oregon State University. These resources, along with the Northwest Aquatic and Marine Educators (NAME) chapter of the National Marine Educators Association (NMEA) share information and education materials focused on marine and aquatic environments and issues. NAME's Oregon Coast Education Program's (OCEP) mission is: "To create, support, and inspire an international community of marine and aquatic educators throughout the Pacific Northwest." OCEP's Coastal Education Modules provide curriculum and activities appropriate for a wide age range of learners (K-12, adult), for hands-on learning about Oregon's coastal ecosystems and their connections to Oregonians living throughout the state.

There are other local sources of volunteer coastal stewards in addition to SEA and CW. Crook Point-Mack Reef is on the Wild Rivers Coast and local streams enter the coastal zone nearby (Pistol River is about 2 miles north of and often visible from Crook Point). As such, the region is a series of coastal frontal watersheds with clear linkages and influences between the coastal communities, uplands and coastal habitats, including rocky intertidal and subtidal areas nested within coastal watersheds. Locals have strong ties to and many uses of coastal areas, including rocky sites. As a result we feel confident that the memberships of the Wild Rivers Land Trust, Curry Watersheds Partnership, Surfrider Foundation Blue Water Taskforce volunteers, Kalmiopsis (Curry County) chapter of the Audubon Society, Gold Beach Salmon Trout Enhancement Program (STEP) volunteers, Gold Beach and Brookings senior centers, teachers, students and student organizations in Gold Beach and Brookings area schools, Pistol River neighbors, the South Coast Striders regional hiking group, and other local individuals and community groups can serve as important sources of volunteer coastal stewards.

Stakeholder Engagement

To the best of your knowledge, please provide the following information on your proposed rocky habitat site.

Letters of Support

Before submitting your proposal, please attach any materials or letters of support gathered as part of the development of this proposal. You may include meeting resources, campaign materials, etc.

Letters of support are attached under Additional Materials.

Stakeholder Collaboration

Describe the steps taken to develop this proposal in collaboration with stakeholders. a) Please describe the community support and opposition for this proposal. b) Please list the communities, organizations, and groups that have worked to develop and support this proposal, as well as those in opposition of the proposal.

We started sharing information with the public in 2019 about anticipated updates to the Rocky Habitat Management Strategy on CoastWatch and other partner websites, Facebook pages and newsletters. Stakeholder outreach intensified in 2020 to include public meetings and webinars, featuring public listening and Q & A sessions, some with Rocky Habitat Working Group members and state agency representatives. Several educational and informational webinars about rocky habitats were broadcast between June and December. This early outreach prompted consideration and recommendation of a rocky habitat site designation for CP-MR from individuals working, volunteering and/or living near Crook Point and elsewhere on the south coast. In order to get input on the goal, objectives, framework, and proposed management measures for this proposal, between June and December 2020, we conducted numerous meetings, phone calls, a site visit, and online outreach actions with land managers, staff, and researchers at Crook Point, local residents, representatives of the Coquille Indian Tribe and other south coast Tribal Nations, community groups, business owners, other stakeholders and partners in the south coast communities of Coos Bay, Charleston, Bandon, Langlois, Floras Lake, Port Orford, Gold Beach, Pistol River, Brookings-Harbor, and elsewhere along the Oregon coast. We held several online community informational and Q & A sessions to date with partners (SEA, CW, PISCO, OSU Port Orford Field Station, and ORKA (Oregon Kelp Alliance)) on the Rocky Habitat Management Strategy and proposed new designations for several rocky habitat sites on the south coast. Input received from over one hundred individuals, including business owners, fishermen, the Coquille Indian Tribe, other tribal members, local government officials, and other community members has been overwhelmingly positive and supportive. A few individuals, including an active commercial fisherman, initially expressed skepticism, concern, or mild-moderate opposition, but once these people learned more about the proposed CP-MR MCA, including no new regulations or restrictions on human uses, the few expressions of potential concern or opposition turned into ones of at least tentative interest or support. Sample comments from community members are in the following section on Feedback from Stakeholders.

We have cooperated and collaborated with stakeholders and partners, and others writing site designation proposals on the south coast, and in every county on the Oregon coast, from Astoria, Clatsop County to Brookings-Harbor, Curry County on the Oregon-California border. We have met or communicated numerous times with members of the South Coast Rocky Shores Group, North Coast Rocky Habitat Coalition, Lincoln City Audubon, CW, SEA, the Rocky Habitat Partners Group, PISCO, ORKA, state agency representatives, members of the state's Rocky Habitat Working Group, OPAC, and others on how to answer some proposal questions, to share information and proposal drafts, or to support our respective efforts in other ways. Critical information required to complete portions of this proposal was provided by K. Iaquinto – USFWS refuge manager, J. Hodder – OIMB, D. Ivy – Chief, Coquille Indian Tribe, K. Rippee – Coquille Indian Tribe Historic Preservation Officer, A. Lanier and M. Moses -- ODLCD, L. Hillman, L. Becker, and C. Johnson -- OPRD, D. Fox and S. Rumrill -- ODFW, J. Jones – CoastWatch, R. Lowe -- USFWS retired, and L. Zaklikowski -- UO Libraries. The following people have contributed to several sections of this proposal: J. Jones -- CW, B. Poirson, L. Hanley, L. Field, C. MacAdams, J. Sciog -- PISCO, K. Rippee – Coquille Indian Tribe, K. Doughty – Lincoln City Audubon, D. and D. Bilderback – independent researchers, A. Shanks, R. Yoshioka, A. Galloway, N. Treneman, -- OIMB, R. Lowe, R. Bailey, C. DeMoll, P. Sherman, R. Olson, A. Derr, and others. Outreach efforts have been led by J. Jones, in cooperation with South Coast Rocky Shores Group, Coastwatch, PISCO, ORKA, Kalmiopsis Audubon Society, Coos Bay Surfrider, and Cape Arago Audubon.

Feedback from Stakeholders

List and explain both positive and negative opinions received regarding this proposal. While preparing this proposal and conducting stakeholder outreach, describe the main comments of support and issues of concerns voiced regarding this proposed change in site management/ designation.

The stakeholder feedback on this proposal received thus far has been overwhelmingly positive and supportive. In a few cases, some individuals initially had concerns or were outright opposed, however, after talking with them, when their questions were answered these few individuals' concerns were alleviated, they were no longer opposed, or expressed at least tentative interest or support. While letters of support are still coming in, the main points and concerns received about this proposal to date are reflected in the following sample of comments from south coast locals (with responses in parentheses):

"The Crook Point uplands are a mainland unit of the Oregon Islands National Wildlife Refuge, which also includes the offshore rocks and islands above the mean high-water line. The rocky reefs and other submerged rocky habitats below require a comparable high level of protection afforded by the proposed MCA designation, to bolster coastal ecological resilience needed to reduce susceptibility to effects of sea level rise, ocean acidification, and other ongoing environmental impacts, and to maintain the ecological services necessary to help support the local fishing economy. The rocky intertidal shore similarly remains susceptible to impacts, is inadequately protected relative to the adjacent refuge areas, and requires the increased protection afforded by the MCA designation." (the protections mentioned are central in the proposed MCA designation and NRMM).

"Before Crook Point was purchased for conservation as a public benefit, it was one of the last privately owned undeveloped coastal headlands in Oregon. It is considered one of 31 Important Ecological Areas in Oregon, as defined in a 2005 report on the Oregon coast by Oceana. It is important to note that while the Crook Point refuge uplands are closed to the public, the beach is publicly accessible at low tide from the north and from the water by kayak and canoe. Crook Point was identified for special management protection as a Habitat Refuge in a 1994 plan, but this was never implemented. The MCA designation will provide the required level of protection to match the high resource values of rocky habitats at the site." (the protection mentioned is central in the proposed MCA designation and NRMM).

"Crook Point and the Mac Reef is such a special place and the intertidal and subtidal really deserve more protection and conservation. Interestingly, back in the late 1980's USFWS proposed that the State of Oregon should establish conservation zones around refuge rocks and islands since USFWS jurisdiction stopped at mean high water. The only potential means to do that back then would have been to establish state wildlife management areas around the refuge rocks as marine reserves, MCA's etc. did not exist. The state did indeed acknowledge the importance of the refuge lands but that's as far as it went. All these years later it is now happening." (this can be accomplished by proposed designation and non-regulatory management measures).

"Designating Crook Point as a MCA may protect it in the future, if the designation requires developers to put in place and enforce protective measures, monitoring, and mitigation of the intertidal zone and offshore rocks. However, it may also have some negative impacts. It is important that the local residents continue to enjoy the beach as they do now. If the designation requires an increase in educational visits of large numbers of people then trampling could increase significantly." (coastal development issues are covered adequately under the state TSP and related rules and are not within the scope of this proposal, however on site stewards would observe and document impacts from development or other causes for management action; we propose only non-regulatory management measures and no additional rules or restrictions on existing uses).

"… a MCA designation for Crook Point would be beneficial if it confers protection from development in the future, and retains the option for scientific research, including the collection of specimens when necessary. At the same time, I have concerns that the designation would create an antagonistic relationship with current residents if their use of the area is restricted." (we do not propose or support any restrictions or regulations on existing site access or uses, including research, beyond those now in place).

"However, in the future, development may be proposed on adjacent lands. In 2009 a proposal for an extensive golf resort was put forth by local land owners. This would likely impact the intertidal zone by degrading environmental parameters and increasing direct human impacts. Silt, Pesticides, herbicides, and bacterial pollution would reach the intertidal zone through the water table, creeks and run off." (coastal development issues are covered adequately under the state TSP and related rules, and are not within the scope of this proposal, however on site stewards would observe and document impacts from development or other causes for management action; we propose only non-regulatory management measures and no additional rules or restrictions on existing uses. Proposed NRMM including monitoring, will provide information about potential development impacts on site resources).

"The beauty of the rocks, intertidal zone, and surrounding land is enough to make Crook Point an amazing place. This beauty combined with the diversity of seaweed, marine invertebrates and habitats, make it one of the most important rocky intertidal sites on the southern Oregon Coast."

"In over 50 visits to this site since 2008 I have observed beach walkers, clamming and abalone hunting and bicycle riders …. Although motorized vehicles are illegal on this stretch of beach, I observed an ATV driving on the beach on one occasion (2009)." (this and other resource threats would be managed as part of proposed non-regulatory management measures).

"I would like to make some suggestions/recommendations to the existing polygon for consideration. I suggest the southern 2/3 of the western boundary be adjusted to incorporate the westernmost rock of the reef which is included in Oregon Islands National Wildlife Refuge. This would add additional subsurface and intertidal rocky habitat to the area." (this recommendation was adopted and is reflected in the proposed site polygon).

"As we look to the future, we can prepare protect and safeguard this wild place, while maintaining existing access to its natural coastal treasures for local residents, students, and visitors. The world class ecological and natural aesthetic values of the rocky intertidal and subtidal areas are clear, as are the ecological services these rocky habitats contribute to economically important local fisheries." (management protections for continued access, etc., including consideration of future conditions is built into proposed non-regulatory management measures).

"Please install information signs near the north refuge boundary near the beach, but don't develop the area" (proposed as part of non-regulatory management measures).

Public Outreach

List and describe engagement opportunities where the public has had the opportunity to learn about and/or comment on this proposal (e.g. conferences, meetings, tabling events).

Through social media posts, educational webinars, in-person meetings, public Zoom meetings, organizational newsletters, brochures, personal emails and phone calls, the South Coast Rocky Shores Group and CoastWatch have been providing consistent information about the RHMS update process and proposed south coast rocky habitat sites to a broad range of individuals on the south coast and elsewhere including a number of tribal members, local community groups (e.g., Rotary, Surfrider, Audubon), several local business owners including a charter fishing operation, three USFWS staff (one now retired), nine state agency staff members (ODLCD, OPRD, ODSL, ODFW), local government officials and politicians, commercial and sport fishers, bird watchers, surfers, kayakers, conservationists, researchers at OIMB – Oregon Institute of Marine Biology, etc. We have engaged in person with USFWS staff and a local researcher on a site visit at Crook Point-Mack Reef.

Written communications included development of several informational public presentations with photographs and maps, hundreds of individual emails, posts on the South Coast Rocky Shores Group Facebook page, mass emails to members of the two local Audubon Society groups (Kalmiopsis Audubon chapter in Curry County, Cape Arago Audubon chapter in Coos County), the Coos Bay chapter of the Surfrider Foundation, the Coos Watershed Association, the Curry Watershed Partnership, and other groups. Other written communications include updates on the RHMS and related south coast proposed site designations on the websites of Coastwatch, Oregon Shores, and Kalmiopsis Audubon Society, in the latter's newsletter "The Storm Petrel." In addition we have engaged numerous times in writing and videoconferences with members of the Rocky Shores Working Group, Tribal representatives, NGO and state agency representatives, and with other individuals or groups coastwide who are developing site designation proposals or are partners or stakeholders assisting with related communications. These include SEA, PISCO, Lincoln City Audubon and the North Coast Rocky Habitats group. We wrote and distributed press releases and letters to the editor about the RHMS and proposed site designations to the principal newspapers of record in Coos and Curry Counties: The World/Bandon Western World, Port Orford News, and Curry Coastal Pilot. We also have created and distributed site-specific informational brochures about the RHMS and proposed site designations (see outreach materials attached).

Some webinars/meetings were recorded and are available on YouTube:
https://www.youtube.com/channel/UCmfpsfd5mRUoKbnpIZ6COZQ/videos

A brief summary of meetings we have (co-)hosted include:

- RHMS Update Process Q & A #1 with guests Charlie Plybon, Dave Fox, Michael Moses and Roy Lowe (CoastWatch in partnership with North Coast Rocky Habitats and Audubon Society of Lincoln City) – 6/17/2020 (31 attended, available on YouTube)

- RHMS Update Process Q & A #2 with guests Charlie Plybon, Dave Fox and Michael Moses (in partnership with Audubon Society of Lincoln City and North Coast Rocky Habitats) – 6/24/2020 (25 attended, available on YouTube)

- On the Rocks with Roy Lowe presenting about the history and photography of the Oregon Islands National Wildlife Refuge (CoastWatch in partnership with Audubon Society of Lincoln City) – 6/10/2020 (61 attended, available on YouTube)

- Numerous meetings either in person or via Zoom with south coast residents, business owners and non-profit leaders for the purpose of outlining the RHMS, discussing candidate sites for possible designation, gathering scientific and visitor data and local knowledge, and recruiting volunteers to help with proposals. – August and September 2020

- Zoom meetings or phone calls with members of the Coquille Indian Tribe and CTCLUSI to share information and receive feedback on site designation proposals - November and December 2020

- The South Coast Rocky Shores Group and CW hosted or co-hosted four online public information meetings and Q and A sessions via videoconference on the RHMS and south coast sites proposed for new site designations. These include:

  - Curry county residents to present and discuss proposed site designation - 10/29/2020 (6 attended)
  - Coos Bay Surfrider/Cape Arago Audubon joint meeting (including many Curry Co, residents) along with Shoreline Education for Awareness to present proposed site designations – November 11, 2020 (27 attended)

- RHMS and proposed site designations Listening Session hosted by the Port Orford Field Station (in partnership with PISCO) – November 13, 2020 (13 attended)
- Public meeting to present RHMS update and proposed site designations in Curry and Coos counties. In partnership with PISCO and Shoreline Education for Awareness. - December 15, 2020 (20 attended)

Below is a sampling of events and posts created by CoastWatch and the South Coast Rocky Shores Group related to rocky habitats and the RHMS. The South Coast Rocky Shores Facebook page was created specifically for this campaign and will continue into the future. Many other posts were created by CoastWatch on the Oregon Shores FB page and Instagram page.

- South Coast Rocky Shores FB page - https://www.facebook.com/southcoastrockyshores
- CoastWatch FB page - https://www.facebook.com/OregonShoresCW
- Oregon Shores FB page - https://www.facebook.com/OregonShoresCC

https://www.facebook.com/southcoastrockyshores/photos/a.150346499934298/216555956646685/
https://www.facebook.com/events/684837139089532/
https://www.facebook.com/events/729645501270845/
https://www.facebook.com/OregonShoresCW/photos/a.120736521605329 3/3306790536 110740/
https://www.facebook.com/OregonShoresCW/photos/a.120736521605329 3/3178600238929771/
https://www.facebook.com/OregonShoresCW/photos/a.120736521605329 3/3136353479821114/
https://www.facebook.com/OregonShoresCW/photos/a.2200847343371737/2970495386406925/
https://www.facebook.com/OregonShoresCW/photos/a.120736521605329 3/2929896950466769/
https://www.facebook.com/events/582399556040437/
https://www.facebook.com/OregonShoresCW/photos/a.2200847343371737/2789222941200838/

Since July 1, the CoastWatch Facebook page has run 13 posts, with 1,872 views, 212 engagements, and 53 likes. The Oregon Shores Facebook page has run 18 posts on RMHS topics, with a total of 3,713 views, 262 engagements, and 125 likes.

Coos Watershed Association included information on the RHMS in their newsletter and also on FB in September/October 2020
https://www.facebook.com/cooswa/photos/a.10150796064912783/10158883697972783

Additional Information

To the best of your knowledge, please provide the following information on your proposed rocky habitat site.

Local Knowledge

How does this proposal incorporate local knowledge?

In addition to our collective local knowledge as long-time area residents and coastal site users, we have shared information with and learned from many individuals and groups with local knowledge of site features, resources, uses, history, threats, or impacts, starting with descendants of the first site occupants and users – the Coquille Indian Tribe and other south coast tribal members with expertise and knowledge of the site. Long-term observations of present or former USFWS staff working on site are also based on local knowledge. Input based on local knowledge of this site led us to create proposed site boundaries and NRMM that optimally serve to protect its coastal resources and the needs of local residents, Tribes, anglers, beachcombers, and visitors.

Additional local knowledge sources include state agency staff, a former state park ranger who worked throughout coastal Curry county, including the coast near Crook Point-Mack Reef, long time, and more recent residents of Pistol River, Carpenterville, Gold Beach, Brookings-Harbor, Port Orford, Langlois, Bandon, and Charleston, who, as local users of the site's coastal area have collective local knowledge of the site spanning decades. Local knowledge shared by these individuals includes, but is not limited to, natural history observations, observed human uses, impacts to natural resources including sea birds, wildlife and plants living on or using the sites' rocky habitats, trampling of intertidal organisms, leaving trash, human, and pet wastes, running uncontrollable dogs off leash that have resulted in disturbance of shore and sea birds and pinnipeds, direct hazing disturbance by humans or AUVs (drones) which constitute illegal "takes" of species of concern or state or federally protected species using rocky habitats on site including: Black Oystercatchers, Harbor Seals, and California Sea Lions.

A site-specific threat based on both local and scientific knowledge (see next question) concerns land use practices in the steep upland watershed of nearby streams, including Pistol River (Maguire 2001, Basch 2018), Hidden Creek, Burnt Hill Creek, and Hooskanaden Creek. Indeed, this threat is one reason for including subtidal rocky habitats in this site designation proposal. See Watershed Conditions below for details on this significant threat to nearshore rocky habitats and resources.

Other human uses, threats and impacts to the sites' rocky habitats based on local knowledge are documented under appropriate headings in this proposal.

Scientific Knowledge

How does this proposal incorporate scientific knowledge?

This proposal has incorporated scientific knowledge throughout its development wherever appropriate. This includes: consulting and seeking advice, information, scientific journal articles, unpublished reports and data from biologists, ecologists, fisheries scientists, geologists, resource managers, and others in several state and federal agencies and tribes with jurisdiction on the southern Oregon coast, including: USFWS, ODFW, OPRD, ODLCD, ODSL, academic scientists including an oceanographer at the University of Oregon, Oregon Institute of Marine Biology (OIMB) and Oregon State University Hatfield Marine Science Center researchers, graduate and undergraduate students. We worked with professional biologists, including former public school science teachers and retired university faculty and staff to obtain data on invertebrates, algae, birds and mammals.

We have done wide-ranging scientific literature searches at the OIMB library and using University of Oregon Libraries and associated system's online search resources and document delivery services. We also have shared knowledge from these and other sources with individuals and groups in several Oregon coastal communities, including others working on proposals for designation of rocky shore sites coastwide.

We have cooperated with University of Oregon OIMB biologists who conducted an intertidal bioblitz in 2019 with several colleagues from various institutions including the Smithsonian Institution, Washington, D.C., L.A. County Museum of Natural History, Washington State University, and the University of Florida. We also have cooperated with ODFW staff, OSU PISCO staff, students and interns, independent researchers, and others to obtain information on Oregon rocky marine habitat species composition, distribution, and (where available) abundance.

Lastly, our group has gained local and scientific knowledge from members with diverse experience including a marine ecologist with 40 years of monitoring, research, other field work, teaching, consulting, and advising

on rocky intertidal, kelp forest, and other subtidal benthic communities, nearshore fisheries, larval ecology, coastal oceanography, and marine resources management along the coasts of Oregon, Washington, California, SE Alaska, and elsewhere, a retired commercial fisherman, and a former state park ranger.

Goals and Policies

Which goals and policies in the Rocky Habitat Management Strategy does this proposal address, and how?

This proposal addresses most all goals and policies of the RHMS as follows. The main goal of the strategy "aims to be a coordination and adaptive planning framework focused on the long-term protection of ecological resources and coastal biodiversity within and among Oregon's marine rocky habitats, while allowing appropriate use." (RHMS p.1).

We address this goal and its objectives through further adaptive development and planned subsequent implementation of a set of proposed non-regulatory management measures as part of the MCA designation, to: maintain, protect, or restore rocky habitats and biological communities; implement a holistic ecosystem-based management program through site designation and non-regulatory management actions that allow for enjoyment and use of rocky habitats while protecting them from degradation and loss; enhance appreciation and foster personal stewardship of rocky habitats through education, interpretation, and outreach; improve our knowledge and understanding of rocky habitat ecosystems by fostering monitoring and scientific study; facilitate cooperation and coordination among local, state, and federal resource management agencies, community stakeholders and partners, the Confederated Tribes of Siletz Indians and other tribal governments as appropriate, to ensure that marine resources and habitats are holistically managed (RHMS p. 1).

Further, we recognize that a collaborative, coordinated effort between agencies and stakeholders in the community increases the likelihood of success and decreases the need to add laws and authorities for any individual management agency. We developed the proposed non-regulatory management measures cooperatively and collaboratively in discussions with stakeholders and agency representatives and using state agency documents in order to achieve adaptive, holistic ecosystem-based management of rocky coast resources without restricting human uses. Following RHMS management principles we have incorporated public educational, awareness, citizen and community science and monitoring, and outreach programs as integral parts of proposed local site management, where practicable, because an informed and aware public is critical to protecting rocky habitat resources and carrying out the goals, objectives, and policies of the RHMS.

The proposed non-regulatory management measures directly reflect and support RHMS management principles and policies, including the following RHMS policy statements:

"It is essential for the continued ecological functioning and well being of Oregon's rocky habitats that visitors interact responsibly in these areas. Fostering a culture of stewardship of rocky habitat resources will help protect the ecological, cultural and economic resources of Oregon's rocky coastline. Targeted messaging, including information on ways that individuals and groups can take action to positively affect these rocky habitats is crucial." The proposed set of NRMM have at their core these (and other) RHMS principles, policies and specified education actions.

The proposed NRMM are fully compatible with and supportive of RHMS policies, which are mandatory for rocky habitat management; these policies, in turn, have been crafted to ensure consistency with state goals and priorities. Proposed management measures were designed to align and integrate closely with the stated RHMS policy: "Oregon's rocky habitats, in the broadest definition, are unique and carry coastwide importance ecologically, economically, culturally, and recreationally. The Rocky Habitat Management Strategy recognizes the importance of these interconnected habitats and the resources within them regardless

of designation or recommendation. Therefore, this strategy recommends management actions that protect ecological values and biodiversity within and among Oregon's rocky habitats while allowing appropriate use."

Specific ways in which this proposal addresses, supports, incorporates, or integrates RHMS policies include:

Development of a site-based stewardship program as part of proposed management measures to increase awareness, interest, and support to conserve marine resources and ecological functions for the purpose of providing long-term ecological, economic, and social values benefits, consistent with Statewide Planning Goal 19.

Protection of rocky habitat resources (i.e. living marine organisms and their habitat) are prioritized over development of non-renewable ocean resource uses in the proposed management measures.

Education about rocky habitats will be fostered through the implementation of RHMS principles by the site-based stewardship program and other proposed measures.

Public access is unchanged by the proposed non-regulatory management measures, which do not affect agencies' authorities to create temporary emergency or non-emergency access restrictions at individual rocky habitat sites based on science or management decision rationale, when necessary, to ensure visitor safety, resource and habitat protection, and to manage for user conflicts.

The proposed MCA designation and associated management measures are consistent with and support standards for designations described in the RHMS Section D ROCKY HABITAT SITE DESIGNATION STANDARDS & PRACTICES, which "shall apply to activities occurring in rocky shore habitats, and be incorporated by managing agencies into administrative rule or site management practices."

In community discussions on what the most appropriate designation type might be for CP-MR, a Marine Conservation Area (MCA) designation was decided on for various reasons. These include the fact that this designation under the RHMS allows the most flexibility in determining adaptive management strategies and future human uses that best match site resources with their protection needs, while continuing to allow all existing legal visitor uses, without need for new restrictions or regulations. We chose not to pursue a Marine Garden (Public Education) designation for Crook Point-Mack Reef because, practically speaking, the location is not amenable to easy access by school or public educational groups (unless permitted by USFWS), given the walking distance (about 1.5 miles one way) required to get from the Pistol River State Park parking area to the site's rocky coast, which would be a disincentive for many. We determined that a Marine Research Area (MRA) designation would not be appropriate at this time either, since there has only been relatively low level interest or participation in past, present or planned marine research, inventory or monitoring activity at this site. Further, under the RHMS a MCA designation leaves open future opportunities for both marine education and research. In addition, other regional sites from Cape Blanco to Lone Ranch Beach have yielded data from marine monitoring or research that can be applied to Crook Point-Mack Reef (where comparatively little such information has been collected), as has been done for this proposal, in order to provide data on species occurring at Crook Point-Mack Reef.

Discussions with staff from several agencies and organizations indicate that, while their policy states that they cannot officially advocate for or support the proposed non-regulatory management measures within this MCA designation framework, they agree with the need for, effectiveness of, and likelihood of success of these proposed management measures, and state that these have tacit written agency support in documents such as the RHMS, the Territorial Sea Plan writ large, the ODLCD Oregon Coastal Management Program's Rocky Shores Communication Strategy 1995, etc.

The proposed non-regulatory management measures all strongly support and are consistent with several other specific RHMS policies, including:

Development of agreements (like the proposed MOU) for cooperation between volunteer stewards, agency, and law enforcement personnel for long-term conservation of rocky habitats and organisms;

Managing agencies' education and information efforts for visitors to rocky habitat areas be conducted in a manner consistent with site-based management recommendations, Statewide Land Use Planning Goal 19, and education actions outlined in RHMS Section A.5.b;

Harvesting, gathering, or scientific collection of marine plants and animals in rocky habitat areas, where allowed, shall be conducted in a manner that minimizes impacts and disturbance to habitats or other organisms;

Marine development activities, not currently managed by a specific part of the Territorial Sea Plan, that cause significant adverse effects or permanent impacts to the form or function of submerged rocky habitats, or the fisheries dependent upon them, are prohibited;

Proposed management actions consider adaptation and resilience to climate change, ocean acidification, and hypoxia effects on rocky habitat ecosystems, in accordance with relevant state action plans, guidance, or policy;

The policy to foster and promote research and monitoring, compatible with the Rocky Habitat Management Strategy, including effects of climate change, ocean acidification, and hypoxia will be addressed in the monitoring section of an eventual comprehensive stewardship plan for the site, as part of the set of proposed management measures, however, pursuing an ambitious and costly research agenda is currently not within the scope of the RHMS or this MCA proposal, but we will plan to support partners interested in pursuing such research;

As part of our ongoing scoping, outreach and research efforts in developing this proposal, in compliance with RHMS policy, we are communicating with the Coquille Indian Tribe and continuing to reach out to representatives of other tribes on the south coast as appropriate to ensure they are aware of the proposed designation and management measures and any action that may affect rocky habitat areas, to insure any impacts of management actions to cultural resources in rocky habitats are absent, minimized or mitigated (as determined by the State Historic Preservation Office). In conformance with RHMS policy, proposed management measures will not affect hunting and fishing consent decrees or other agreements between the State of Oregon, the Confederated Tribes of Siletz Indians or any other Oregon federally recognized tribes.

The proposed management measures also are in agreement with RHMS policies regarding: harvest of marine aquatic vegetation, which is prohibited except as regulated by state agencies for appropriate recreational, scientific, restoration, and educational use, and; development activities within or near an area must have no significant adverse effects to the marine aquatic vegetation or its habitat. If "development activities within or near an area" are determined to include land excavation and clearing, timber harvest, or related road building or maintenance, the latter policy may extend and be applied to significant adverse effects of land use practices within the watershed causing erosion and sedimentation that impacts kelp forests and other marine vegetation and their habitats present at the Crook Point-Mack Reef site (see Watershed Conditions, below).

Watershed Conditions

What land or watershed activities/conditions exist adjacent to this site?

The site uplands and nearby area were once considered for development, including a golf course. There is a scattering of residences on the upland, some available for vacation rental. The surrounding watersheds are mostly forested and undeveloped, with notable areas characterized as being geologically dynamic (as evidenced by the near constant maintenance by ODOT of nearby U.S. Highway 101 due to land slumping, settlement and erosion). The land is mostly comprised of steep slopes with unstable or highly erodible soils, including serpentine minerals and rocks. There are several relatively small, steep gradient streams running into the nearshore ocean within or near the proposed CP-MR MCA. The surrounding watersheds contain low density dispersed rural residences, modest agriculture operations, commercial timber harvesting and other local businesses, and small coastal towns including Carpenterville and Pistol River (Figs. 4, 5). Threats from land use practices on marine habitats and resources at and near Crook Point-Mack Reef are detailed below.

Industrial logging and building has occurred within the surrounding watersheds for many decades, to recent times. While we value the contribution of the building and timber industries to our local communities and economy, a long-term, significant, unmitigated threat from land use practices in the upper Pistol River (Maguire 2001) and smaller stream drainages nearby is the heavy and uncontrolled erosion and slumping of soils with precipitation following clearcutting or other land clearing, particularly on the steep slopes dominating the watershed above and around the Crook Point area (Figs. 4, 5). On several occasions, over years (since at least 2009) to recent times, eroded upland soils have been observed to run off down streams from cleared lands and into the nearshore ocean in the CP-MR area (D. and D. Bilderback, personal communication; L. Basch, pers. observation, Fig. 6).

While this land use activity almost certainly directly impacts salmonids and other local anadromous fishes including lamprey and sturgeon moving through the nearshore area, and possibly their riparian spawning and rearing habitats (Murphy 1995), this erosion and sediment runoff also has been manifested in sediment plumes that move downstream and into the nearshore ocean, where these can last for days. This sediment-laden fresh water can have a prolonged residence time (at least several days) in the nearshore ocean, where it is held near shore by rocks, reefs, and oceanographic fronts parallel to shore that act as temporary barriers to movement of inshore water masses. These fronts are typically observed as a distinct, persistent “mud line” at the front, within or offshore from Mack Reef. The position of the mud line varies somewhat but typically extends alongshore up to about one mile north and south from stream mouths, and from the shoreline to approximately one mile offshore (Fig. 6). While trapped onshore by fronts, the muddy “chocolate milk” fine sediment-laden fresh water initially floats on and near the surface, since fresh water is less dense than seawater, but is often rapidly mixed down to the sea floor by winds, Ekman transport, tides, and currents, depending on local prevailing conditions.

While suspended in the water column the fine sediments result in significant turbidity, which has various impacts, including decreased available light in the water column and on the bottom, which reduces or eliminates photosynthesis of phytoplankton, other autotrophs, and macroscopic seagrasses and algae, including kelps. Suspended sediments also clog the filter feeding or respiratory mechanisms of numerous suspension feeding benthic invertebrates and other animals, including many of their critically important early life stages such as feeding larvae in the water column, many of which are sensitive stages in the lifecycles of several commercially fished stocks in the region. The highly concentrated fine sediments suspended in this onshore water mass typically settle to the sea floor after a few days to a week of calm conditions.
Once settled, the sediments create a “mud blanket”, from approximately 1 millimeter (thin) to several centimeters thick (heavy), or completely bury areas on the bottom as well as bottom-living or benthic animals and seaweeds, including bed-forming kelps with surface or subsurface canopies. The sediment

blanket causes sublethal effects on benthic plants and animals, and sediment burial results in the death of benthic organisms. These phenomena have been observed by an experienced coastal-marine ecologist off Crook Point-Mack Reef within the proposed site polygon, from the low intertidal to at least 10 meters depth on subtidal rock reefs, surrounding offshore rocks and islands, and within kelp beds. The effects on nearshore benthic ecosystems of sediment plumes from upriver is considered to be similar and analogous to the effects of coastal landslides, as has been documented off the Big Sur coast of central California (e.g., Kiest 1993, Foster and Van Blaricom 2001, Konar and Roberts 2009).

Consequently, an important justification for designating this site as an MCA is to support all applicable protections for subtidal rocky habitats to allow their recovery from the multiple interacting calamities at various scales that kelp forests and other rocky habitats have and will continue to be impacted by into the foreseeable future, and to also support the restoration of their ecological resilience and delivery of critical ecological goods and services, including fishing. The recovery and maintenance of these essential subtidal rocky habitats cannot be achieved without the protections, including enhanced awareness and monitoring, afforded by the proposed MCA designation and NRMM, which can hopefully be brought to bear on and have a positive impact on land use management in local watersheds that will improve forestry and other land use practices and eliminate soil erosion, runoff and the downstream effects of these in the nearshore ocean. It may seem absurd that cutting forests or moving earth on land adds to the threats and impacts to already stressed kelp forest ecosystems. Our objective here, consistent with the RHMS, is to support improved upland forestry and land use practices that will result in improved conditions for and recovery of kelp forests and other impacted nearshore rocky habitats and resources, and thereby allow for sustainable economic benefits from both land and sea forests to our local communities.

Existing Protected Areas

Are there any other overlapping protected areas within the site?

While not strictly overlapping, but immediately adjacent, the USFWS owns and manages the site uplands as a mainland unit of the Oregon Islands National Wildlife Refuge. OPRD owns and manages the intertidal ocean shore here (and coastwide), which is situated between the refuge uplands and the offshore rocks and islands of the refuge. The proposed Crook Point-Mack Reef MCA site polygon includes the ocean shore, offshore rocks and islands below the mean high water line, and surrounding intertidal and submerged lands. The exposed or emergent rocks and islands are under the jurisdiction of, and managed as federal wilderness, by the USFWS Oregon Islands National Wildlife Refuge down to the mean high water line. ODSL owns and manages the submerged lands and marine plants below the mean high water line out to the offshore boundary of the State of Oregon Territorial Sea. However, there are no other known overlapping designated protected areas within the site other than the USFWS refuge.

Site Characteristics

Please include descriptions of other characteristics of the site or adjacent area.

Site and adjacent area characteristics have been previously detailed in appropriate sections throughout this proposal.

Additional Designation Rationale

Please describe any other reasons you think this site warrants a change in designation.

The overall rationale for this proposed designation is to establish consistent, seamless, high levels of protection and effective management from the uplands to offshore across the sites' existing and proposed protected area boundaries, to span the diverse rocky habitats, organisms and resources within the entire proposed CP-MR MCA. While the isolated nature of the proposed MCA provides some degree of natural protection, the addition of the MCA designation will help ensure a higher level of protection for this exceptionally high-quality coastal-marine ecosystem into the future. Other reasons and justifications for this new site MCA designation are detailed throughout this proposal.

Other Proposals

Should this proposal be evaluated in conjunction with other proposals your entity has submitted? The merit of all proposals are evaluated independently unless otherwise indicated by the proposing entity. Review bodies reserve the right to also evaluate proposals spatially in relation to one another.

No, we do not see a need to evaluate this proposal in conjunction with any other.

Additional Information

What other information would you like to include about this site or your proposal?

There is no other information to include about this site that we are aware of beyond that mentioned in other proposal sections. Additional proposal information includes: Acknowledgements, Bibliography, Lists of Figures and Tables, and a Glossary of terms and abbreviations.

Acknowledgements

We sincerely appreciate the opportunity from the State of Oregon for south coast communities and residents to consider and propose this rocky habitat site for MCA designation through the RHMS process. We thank the many community members, tribal representatives, groups, businesses, agency staffs, Rocky Habitat Working Group and OPAC members for their cooperation, professionalism, information, and technical or scientific support provided throughout the proposal development process.

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Oregon coast, illustrates very similar conditions to those observed off Crook Point-Mack Reef. Photo © Larry Basch.

Fig. 7. Harbor Seals Hauled Out at Mack Arch, by David Ledig/USFWS.

List of Tables

Glossary of Terms and Abbreviations used in this proposal.

AUV Autonomous Unmanned Vehicle (drone)
CAAS Cape Arago Audubon Society
CBC Christmas Bird Count
CIT Coquille Indian Tribe
CTCLUSI Confederated Tribes of the Coos, Lower Umpqua, and Siuslaw Indians
CTSI Confederated Tribes of the Siletz Indians
CP-MR Crook Point-Mack Reef
CW CoastWatch Program
DOGAMI Department of Geology and Mineral Industries
EFH Essential Fish Habitat
HAPC Habitat Area of Particular Concern
HMSC Hatfield Marine Science Center
KAS Kalmiopsis Audubon Society
MCA Marine Conservation Area
MOU Memorandum of Understanding
NAME Northwest Aquatic and Marine Educators
NGO Non-Governmental Organization
NMEA National Marine Educators Association
NMFS National Marine Fisheries Service
NRMM Non-Regulatory Management Measures
OAR Oregon Administrative Rules
OCEP Oregon Coast Education Program
OCVA Oregon Coast Visitors Association
ODF Oregon Department of Forestry
ODFW Oregon Department of Fish and Wildlife
ODLCD Oregon Department of Land Conservation and Development
ODOT Oregon Department of Transportation
ODSL Oregon Department of State Lands
OIMB Oregon Institute of Marine Biology
OINWR Oregon Islands National Wildlife Refuge
OPAC Oregon Ocean Policy Advisory Council
OPRD Oregon Parks and Recreation Department
ORKA Oregon Kelp Alliance
ORS Oregon Revised Statutes
OSP Oregon State Police

OSU Oregon State University
PISCO Partnership for Interdisciplinary Study of Coastal Oceans
RHMS Rocky Habitat Management Strategy
RHWG Rocky Habitat Working Group
ROV Remote Operated Vehicle
SEA. Sea Education for Awareness
SSWS Sea Star Wasting Syndrome
TSP Territorial Sea Plan
UO University of Oregon
USC United States Code
USFWS U.S. Fish and Wildlife Service

Additional Materials

If there are any additional documents, materials, etc. that you feel may be relevant or pertinent to your proposal, please attach them here.

Additional materials attached to this proposal include: the proposed site polygon, seven figures (photographs), two data tables, outreach communication documents (in one pdf), and Letters of Support (in one pdf).