KWIAHT

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General Comments on San Juan Islands National Monument draft RMP/EIS

Summary

This document describes technical concerns with the general themes of BLM's draft RMP such as the prioritization of goals and objectives; the strategies ("management directions") that BLM proposes to address goals and objectives; and the tool-kit BLM proposes to employ on the ground, from trail designations and signs to prescribed fires and herbicide use. We also take issue with many site specific details in the draft RMP, such as species lists and characterization of the ecology and current status of species; but we will leave those concerns to a later technical report. As a scientific organization focused on habitats and species, we leave cultural resources to others, in particular to the relevant Tribal authorities, except as part of our discussion of the sensitivities of small uninhabited islands, or where cultural and biological issues intersect, *i.e.* with respect to cultural (anthropogenic) landscapes. Throughout this document, references to pages and lines of the draft RMP are in brackets.

The focus of the draft RMP is increasing public access and tourism. The draft RMP is most concrete and specific in addressing roads, trails, and recreational uses. San Juan County residents supported the establishment of the National Monument on the express understanding that it would not be used to promote tourism; that the cultural and educational interests of islanders in these lands would be protected; and that the views of islanders regarding management would be respected. Nonetheless BLM's "preferred Alternative" (Alternative B) would make most of the informal trails that have appeared throughout the Monument officially designated for hiking, and would also permit "dispersed" (non-designated sites off-trail) camping on most Monument acres. It is difficult to reconcile promoting recreational use with protecting fragile habitats and species.

The draft RMP admits that recreation is not mentioned in the proclamation that created the Monument, which refers instead to maintaining and enhancing habitats and landscapes, and to science and education [p. 20]. BLM nonetheless finds recreation *implied* in the proclamation, even while recognizing that recreation can degrade protected landscapes. We note that the 1990 ACEC (Area of Critical Environmental Concern) Plan for the Lopez Island properties that are now most of the acreage of the Monument prioritizes protection of these sensitive coastal landscapes, and authorizes recreation only to the extent that it does not result in damage to ecosystems or species. The RMP that BLM now proposes would place recreation on the same level as protection under every Action Alternative except Alternative A.

Moreover, the draft RMP is fatally vague about exactly what forces or processes must be managed in order to slow, stop or reverse the changes which are visibly taking place on the Monument's coasts and small islands. It proposes goals—let things change, slow down changes, stop further changes (using a 2016 baseline) or recreate the landscape that existed in 1860 (which

we contend is impossible at this time, given the spread of non-native species as well as climate change and changes in human activity). The draft mentions a wide range of tools albeit in general terms—hand clearing, herbicides, prescribed burning—but it does not define the processes these tools would be used to change. In terms used by marine managers in the Salish Sea, there appears to be no "change analysis" or "model" to guide government interventions to where they will be most effective. The closest the draft RMP comes to a change analysis is its reference to burning by Coast Salish peoples and post 1860 fire suppression, which conveniently disregards 160 years of logging, fire-clearing, sheep raising, plowing, and introductions of exotic plants and animals—not to mention climate change and its effects on the islands' weather and watersheds.

Our own observations over more than 20 years indicate that the main forces at work are (1) invasive grasses and herbaceous "weeds" replacing native wildflowers and facilitating woody succession in historical meadows; (2) wear and tear of meadows from growing recreational use, which causes soil disturbance and facilitates colonization and spread of wind-blown grasses and weed seeds; and (3) climate change resulting in longer, drier summers that favor Eurasian grasses as well as conifers that can do most of their growth in winter. Drier summers increase the risk of wildfires, which appear to have been very rare historically in the islands.

Woody succession—that is, the gradual colonization of meadows by shrubs and trees—has unquestionably been taking place at Iceberg Point and Point Colville, where several studies (including Kwiaht's 2014 surveys of habitat edges in the Monument, not cited by the draft RMP) have shown rapid southward expansion of the conifer woodlands, mainly in the last 25-35 years. The timing of the change is significant, since much these properties were logged or grazed until the 1980s. To the extent that it has focused on pre-Contact burning, BLM has misdiagnosed the problem, which is much more recent, and cannot be reversed by burning because sheep brought Eurasian grasses that fires promote. Lack of an accurate change analysis has led BLM to make a potentially catastrophic choice of tools to restore this landscape. Burning and herbicides have been tried on other public lands in San Juan County with equivocal results, as described below.

Core concerns and issues

1. The original intention of the National Monument designation, and the ACEC designations that preceded it, was protection. The draft RMP prioritizes recreation and tourism at the expense of sensitive habitats, however.
2. The importance of the National Monument to the San Juan archipelago ecosystem is that is contains many plants, mosses, lichens, and animals that are rare or absent elsewhere in the islands, and thus contributes to the biodiversity of the archipelago.
3. The most Important landscapes in the National Monument are coastal meadows, many of them on small uninhabited islets, where a large proportion of the plant species are native wildflowers. These meadows are not "fire dependent," they are not "grasslands," and they are not relics of historical oak prairies or savanna. Burning them today will increase weeds rather than increasing native plant species.

1. **The original intention of the National Monument designation, and of the ACEC designations that preceded it, was protection. The draft RMP prioritizes recreation and tourism at the expense of sensitive habitats, however.**

The draft RMP recognizes that "The President established the Monument on these islands to 'maintain their historical and cultural significance and enhance their unique and varied natural and scientific resources, for the benefit of Americans'" [p. 1:20-22]. The key terms of the 2013 proclamation to which the draft plan refers are "maintain" and "enhance". This is consistent with the oft-repeated goal of grassroots supporters of the designation of the Monument, which was to achieve "permanent protection" of these BLM-administered lands. Any activity that degrades existing habitats or results in a loss of existing species within the Monument is a violation of the ends for which the community and the President agreed to this re-classification of BLM lands.

We note at the outset that the draft plan purports to supersede the ACEC management plans adopted in 1990 for the coastal parcels (Iceberg Point, Point Colville) on Lopez that comprise the majority of acreage within the National Monument. As justification for this, the draft plan states that it will provide greater protection for habitats and species than the 1990 ACEC plans. In fact, this is facially untrue. The ACEC plans expressly prioritize protection of habitats and species, and authorize the BLM to permit limited recreational opportunities only to the extent that they do not weaken protection. On the contrary, the draft RMP promotes recreational access that BLM concedes will result in damage to some Monument habitats. This is a reduction, not an increase, in the level of protection from disturbance already enjoyed by most Monument lands since 1990.

Increased public access will result in trampling of sensitive plants and, in adjacent inter-tidal habitats, trampling of invertebrate fauna. Over a 10-year period, visitors to the beaches and tide pools surrounding Indian Island have increased, and the abundance and diversity of inter-tidal wildlife has decreased, as Kwiaht reported in its November 15, 2018, public report on the status of the Indian Island ecosystem. This conclusion was based on nearly three hundred beach seines and transect counts on beaches and eelgrass flats conducted since 2009.

Kwiaht reported degradation of native plant species at Iceberg Point to BLM repeatedly since 2006 and strongly recommended trail closures, and restricting access to designated trails. One wildflower species (*Polemonium pulcherrimum*) that is restricted to fewer than 25 individuals in San Juan County declined from 15 to 2 individuals at Iceberg Point between 2008 and 2018 as a direct result of off-trail trampling by visitors.

Purported justification

The draft RMP plainly acknowledges that "Proclamation 8947 does not identify recreation as an object or value for which the Monument was designated" [p. 28:8]. Nonetheless, BLM argues that since the proclamation describes the new Monument as "a refuge of scientific and historic treasures and a classroom for generations of Americans" that recreation–as opposed to research and education—is *necessarily implied* [p. 28:11]. This is not justified by the legislative history of the 2013 proclamation, and conflicts with the ACEC management framework that has applied to

most of these lands since 1990. This change is a *reduction* in the level of protection that the Lopez properties previously enjoyed.

The draft RMP concedes, moreover, that recreation "has the potential to degrade the values that attract visitors to the Monument and the San Juan Islands in general" [p. 28:12], that is, the promotion of recreation conflicts with BLM's explicit responsibility "to maintain… and enhance" the Monument's landscapes, habitats and species. Thus BLM is trying to use the RMP to reverse the management priorities set out by President Obama on the advice of the island community, and already put in force on most Monument lands by the 1990 ACEC plan, which makes any kind of recreation on the south Lopez parcels contingent on evidence that recreation is *not* degrading landscapes or habitats.

Federal legislation governing land-use planning by the Interior Department (FLPMA, sec. 202) does not require recreational access to all public lands. On the contrary, it gives "priority" to the protection of Areas of Critical Environmental Concern, and expressly requires that plans be based on "science" and inventories of scarce or potentially threatened biological and cultural resources. The draft RMP recognizes FLPMA as governing law, and also acknowledges that the specific goals (or "objects and values} set out in the 2013 proclamation are controlling [p. 4:2, p. 5:2]. The draft plan also concedes that the operative verb must be to "protect" [p. 5:15-16].

Impact on small islands

BLM's proposed treatment of all vegetated islands[1] in the Monument except Patos as a single recreational category [p. 29:2] illustrates the danger of privileging recreation. We have previously reported to BLM that there are archaeological sites including graves on five of the 17 small islands grouped together by the draft RMP; and anthropogenic "cultural landscapes" with culturally and biologically significant herbaceous meadows on six additional islands. That leaves six islands that might reasonably be regarded as more "scenic," than fragile "scientific and historic treasures" in the terms used by the 2013 proclamation, and thus more appropriate for recreational uses. BLM treating all of these islands the same for recreational and other management purposes disregards the original intent of the Monument and scientific evidence of fragile resources.

While the draft RMP commits BLM to "protect[ing] Monument objects and values from loss due to visitation" [p. 29:32], it is unclear how this can be achieved without completely closing at least some small islands—and parts of the larger coastal parcels such as Iceberg Point—to all but permitted scientific monitoring. Actions common to all Alternatives would include limitations on the location of camp fires, a prohibition on fireworks (already prohibited by county ordinances), and prohibition of geocaches, and limitations (but not exclusion) of lighting on Monument lands

[1] BLM's categorization of non-vegetated "rocks" [p. 28:28ff] appears unnecessary. We have visited most of them in the course of our pre-2013 surveys and found little evidence of recent human activity. Two groups of rocks on the west side of San Juan Island, Kanaka Bay Rocks and King Islands, were being used as seal haul-outs when we conducted our survey, thus by BLM's own criteria should have been classified as "B" (more protected).

[pp. 29:34ff]. Area closures would be authorized under all Action Alternatives, but would remain limited, temporary, and at the discretion of BLM *except* under Alternative A, which would limit access to all parts of the Monument to permitted scientific, educational, and Tribal activities.

Comparing alternatives

Alternative B (*i.e.* BLM's preferred alternative) recreational activities would be prohibited on "rocks," and require a special recreational permit at Cape Saint Mary, Carter Point, Kellett Bluff, Lopez Pass, President Channel, and on small islands except Patos [p. 30:20-21]. Other properties would remain open to hiking on designated trails or on beaches; camping in existing campsites; and dispersed camping (*i.e.*, off-trail and not within existing campsites). In fragile meadow areas such as Iceberg Point, or along relatively undisturbed shorelines and wetlands on Patos, allowing dispersed camping could have devastating impacts on flora and fauna, and significantly increase the risk of accidental-ignition wildfires. Camping cannot be reconciled with the "maintenance" of native plant communities. The direct impacts of dispersed camping (such as trampling, spiderweb social trails, soil disturbance, trash) could be considerably less on highly disturbed parcels with little native plant cover (*e.g.* Cattle Point, Kellett Bluff) but would still increase wildfire risk, and interfere with landscape restoration efforts.

BLM's Alternative C would go one step further and allow recreational activity throughout the Monument (except some "rocks"), including small islands and significant cultural landscapes such as Iceberg Point [p. 31:4ff]. Camping would be restricted to designated campsites; but horseback riding and bicycling would be allowed, which tend to increase wear and widen trails. Compared to Alternative B then, Alternative C would allow recreation on more of the Monument's culturally and biologically sensitive lands, and trade heavier trail use (horses and bicycles) for not allowing dispersed camping.

Alternative D would afford recreation the greatest leeway and encouragement. In addition to horseback riding, bicycling, and camping in designated campsites throughout the Monument, Alternative D would promote dispersed camping everywhere except Twin Rocks, Victim Island, Watmough Bay, and some "rocks" [p. 32:7-11. It is also the only alternative that would increase the number and total length of designated trails. For all practical purposes, Alternative D means managing nearly all of the Monument like a state park, i.e., with recreation as a priority.

In our opinion, the most rational and effective approach to managing recreation within the Monument is to restrict it to parcels that are already most degraded and least likely to be capable of significant restoration. Amongst the small islands, for example, recreation could continue on Blind (Bay) Island, Posey, and the west third of Patos at current levels; facilities could be improved to enhance visitor experience at those sites; and small areas of sensitive plants and archaeology could be fenced. Some already-popular but fragile properties such as Indian Island, Skull Island, and Iceberg Point can be restricted to day use hiking on a small number of designated trails, with fencing or signage barring access to sensitive archaeological sites and meadows. At the other end of the spectrum are properties such as Oak Island that would best be closed because even small levels of boat-landing, picnicking or camping would have significant adverse impacts.

Roads and trails

Roads and trails are the principal means by which the BLM will manage human activity within the Monument. Realistically, BLM will continue to lack resources to monitor and police all of the dispersed parcels and small islands that comprise the Monument. People will go wherever they find easy access: parking, roads or trails. Access amenities invite visitors, and are difficult to undo once they have been designated, signed, or improved. Under the 1990 ACEC Plan, BLM has had authority to close trails and limit access to parts of the large south Lopez properties for protection of fragile habitats; and used this authority to a limited extent in 2016 by obscuring some informal trails and posting a map of open routes around Iceberg Point. This authority would remain, under the "No Action Alternative".

The size and nature of the trail network on the Lopez coastal properties and small islands will differ considerably under different Action Alternatives proposed in the draft RMP [p. 35:7ff]. The BLM's preferred alternative (B) would close 1.1 miles of existing informal trails, mainly on Lopez, and designate 19.4 miles of existing informal trails for hiking. Alternative C would close more trail miles to hiking but open 2.6 miles of existing informal trails to dry-season horseback riding; while Alternative D would entail a significant expansion of hiking trails to 23.5 miles, including 8 miles for horseback riding and 8 miles for bicycling.[2] Superficially, it would appear that Alternatives B and C require at least some trail closures, while Alternative D requires the designation and likely the construction of additional trails. But the results are more complicated because the draft RMP includes maps of purportedly existing trails, and proposed closures or extensions of trails, which show that "current conditions" overstate the size of the existing trail network [Appendix H]. As a result, many proposed trail "closures" do not involve trails existing as of December 2018.

We use Indian Island as an example. BLM's current conditions [Map 26, Appendix H] show six trail segments forming a central loop with two spokes totaling 0.103 miles. In actuality, only three of these trail segments have been in use since we began monitoring conditions at Indian Island a decade ago (*i.e.* 1, 2, and 6, totaling 0.053 miles). Half of the "existing" trail miles on Indian Island do not "exist". This misrepresentation of fact makes it easy for BLM to purport to retain or reduce the Indian Island trail network while actually expanding it. BLM's preferred alternative (B) would indeed involve *tripling* the trail mileage on Indian Island while purporting to increase mileage by only 50 percent [Map 27, Appendix H]. In addition, trail segment 4, which BLM proposes to close seasonally for nesting birds, is not only non-existent, but is not in fact located anywhere near to the well-known Black Oystercatcher nesting area on the southwest end of the island.[3]

BLM has overstated existing trail networks on other small islands. Map 5 shows a non-existent trail crossing half of Broken Point Island, which we surveyed in 2011 and have revisited five times since. Only the most imaginative field surveyor could have found a trail on Read's Bay Island [Map 54], where our survey found only deer tracks. Without resorting to further examples, we feel the

[2] Under Alternative A, recreational hiking would no longer be permitted on existing trails.

[3] Similarly, Map 60 shows several small trail segments on Skull Island that BLM proposes closing for nesting birds; however, in eight years of visiting that island, we have seen no nests at those locations.)

point to be made here is that the accuracy of baseline data is fundamental to the validity of BLM's impact assessment, and to the ability of the public to comment meaningfully on the draft RMP and its action alternatives.

2. The importance of the National Monument to the San Juan archipelago ecosystem is that is contains many plants, mosses, lichens, and animals that are rare or absent elsewhere in the islands, and thus contributes to the biodiversity of the archipelago.

The draft RMP focuses on protection of animal and plant species that are currently listed as threatened by Washington state or federal agencies, that is, regionally or nationally [p. 117-119]. Most of the listed plants are concentrated at Iceberg Point, such as Slender Crazyweed (*Oxytropis campestris monticola*), California Buttercup (*Ranunculus californicus californicus*), and the White-topped Aster (*Sericocarpus rigidus*). We find no consideration of the extent to which Monument lands provide a reservoir for plants that are wholly absent, or rare and unprotected elsewhere in the San Juan Islands so that their disappearance from the Monument would most likely result in their disappearance from San Juan County (locally rare species), such as Showy Jacob's Ladder (*Polemonium pulcherrimum*) and Yampah (*Perideridia gairdnerii*), an important Coast Salish food plant traditionally. This is not an oversight. The draft RMP states expressly that species of "local concern" are no concern of BLM [p. 124:2-4]. BLM will only protect species where required to do so by other federal and state laws, regardless of the Monument designation.[4]

The omission of locally-rare species is conspicuously unscientific in the management of small islands, where physically isolated species are likely to be deviating gradually from conspecifics on the mainland and, on a time scale of millennia, becoming distinct population and possibly cryptic species discoverable only by genetic analysis. To the best of our knowledge, relatively rare small vertebrates in the islands such as Northern Flying Squirrels (*Glaucomys sabrinus*), Vagrant Shews (*Sorex vagrans*), and Northern Alligator Lizards (*Elgaria caerulea*) have not yet been screened for this possibility. Isolation and the formation of a genetically distinct island population was recently demonstrated for Coastal Cutthroat Trout in the islands, however (Glasgow et al., 2016).

It is worth noting in this regard that the United States has identified a putative sub-species of the Large Marble butterfly (*Euchloe ausonides insulanus*) and of the Townsend's Vole (*Microtus townsendii pugetti*) and privileged them in this draft plan, although no genetic confirmation has been produced yet for either population. As a matter of scientific consistency, all geographically disjunct and locally rare native animal species in the islands should be protected on federal lands until appropriate genetic analyses have established whether they are not "distinct populations" within the meaning of the Endangered Species Act.

In light of the goals and values expressed in the Presidential proclamation, moreover, efforts should be made to prevent any loss of *species diversity* within the Monument. Thus, for example, while Shooting Stars (*Dodecatheon hendersonii*) can be found in patchy abundance on a number

[4] The draft RMP restricts protective actions such as fencing or site closures to plant species that are currently classified as "BLM sensitive" [p.17].

of public and private properties in the San Juan Islands, they only occur in a single patch within the National Monument, at Iceberg Point, close to an existing trail. We also note the exceptional diversity of lichens identified at Point Colville by Fred M. Rhoades, *Lichens of South Lopez Island* (2009), which form a community unknown elsewhere. No lichens are protected by the draft RMP.

The draft RMP refers to maintaining "vulnerable" animal species so that they do not need to become candidates for action under the Endangered Species Act [p. 40:27-28]. We broadly agree with this criterion, on the assumption that the determination of "vulnerability" is consistent with scientific criteria and advice. Action Alternatives B, C, and D would authorize BLM to take a more activist role in augmenting or reintroducing native species and removing invasive species. We are concerned that this authority would be used for experimental "re-wilding" of Monument parcels with federal resources that would be better spent on preserving the genetic diversity and island distinctiveness of humble animals already present within the Monument such as the Wandering Garter Snake (*Thamnophis elegans vagans*), which swims out to small Monument islands to hunt, and Townsend's Chipmunk (*Tamiasciurus townsendii*), abundant on Chadwick.

We contend that, for the management of Monument lands must be ecologically sound, more attention must be devoted to the mix of herbaceous plants, mosses and lichens, insects and other small consumers, that are functionally essential to the maintenance of the values that islanders (the human ones) deem fundamental to their appreciation and past protection of the landscapes concerned. This includes all of the plants of traditional significance to Coast Salish peoples—not only Camas (*Camassia leichtlinii*, on Monument lands) but Yampah, Chocolate Lily, Columbia Lily, Brodiaeas, Pacific Crabapple (*Malus fusca*), amongst others—because these were the targets of indigenous management of the landscapes that comprise the Monument. It should also include functionally essential species that may not be rare but should nevertheless by monitored and if declining, must be protected; such as Spring-gold (*Lomatium urtriculatum*), the first spring nectar source for most of the Monument's solitary wild bees.

Action triggers

It is difficult for us, as scientists with nearly two decades' experience studying the lands that comprise the Monument, to understand exactly what the draft RMP is proposing with regard to action triggers and treatment targets for habitat protection. Under Alternative A, for example, the trigger for intervening on "invasive plant species" would be "when an average of less than 50 percent cover by native vegetation remains in a vegetative community across the Monument (e.g. total Monument grasslands and shrublands)" [p. 18:9-11]. If we have read this correctly, no action will be taken to control *any* herbaceous weeds *anywhere* in the Monument, unless and until the total acreage of the Monument occupied by native herbaceous plants falls below 50 percent. It occurs to us that this criterion may already be met for meadows due to the abundance of Eurasian grasses. In any event, weed control becomes more difficult the more weeds spread,

so it is puzzling why BLM would even suggest, as an alternative, letting weeds spread until they formed a majority of the total plant community of the Monument.[5]

We note that it is unclear whether the draft RMP contemplates authorizing the excavation of archaeological sites at the expense of biological resources. The following direction is common to all of the Action Alternatives:

> Allow excavation and recovery of scientific and/or historic values of cultural or historic sites through practices such as data recovery (e.g., by excavation, relocation, or documentation), if avoiding disturbance is not possible or where natural disturbances makes loss of values unavoidable [p. 12:36-38]

This leaves unclear what kind of disturbance of a cultural site is deemed unavoidable, other than a natural phenomenon such as tidal erosion, landslides or flooding. BLM argued in 2017 that the excavation of a significant part of Iceberg Point, an ACEC, was necessary for a cultural inventory. We objected then, and we object now to any argument that an intact, undisturbed habitat must be excavated on the grounds that archaeological materials might be buried beneath it.

Against the background of ambiguities in the draft RMP's standards for action to protect the Monument's extant objects and values, BLM also proposes alternative goals for long-term change in the mix of habitats on Monument lands. Based on our experience and study of the landscapes in question, we broadly agree with BLM's preferred alternative (B), which would commit the BLM to making modest enhancements and enlargements of meadows and wetlands, focusing on the diversity and abundance of native plant species. We believe this is attainable, albeit challenging from a technical viewpoint, and subject to the concerns we raise in this comment regarding tools such as fire, herbicides, and "biopesticides". Woody succession, the spread of grasses and other weeds, and trampling have increased during the two decades we have studied Monument lands, and we believe that action to reverse some of this degradation is reasonable. Experimentally we have found that the seed-and-bulb bank on south Lopez coastal meadows survives for about ten years following weedy and woody encroachments, so that during this period the removal of the encroaching plants permits relatively rapid rebound of native species. After 20 years or longer, it would require much more aggressive removal of weeds and trees, and would be necessary to re-introduce native species—with far greater soil disturbance and risk of fresh weedy invasions.

As such, the long-term habitat management goal of Alternative B could reasonably be stated as restoring the landscape to its state as of the 1990s with regard to habitat structure and extent. Even that modest goal may prove too great, especially if recreational activity on Monument lands increases, which would be the inevitable result of other elements of BLM's preferred alternative. We contend that BLM cannot realistically reverse the impacts of one or two decades of increasing human activity, while further increasing human activity. This is inconsistent. Only a reduction in

[5] Based on our own field experience, most invasive plants in the Monument are herbaceous, including Himalayan (or Armenian) Blackberry. It is difficult to understand how this part of the draft RMP could apply to woodlands.

human activity, such as substantial area and trail closures, can facilitate enhancement of native-plant communities in the meadows and coastal bluff habitats that attract most visitors.

At the same time, it is clear that the more ambitious restoration goal proposed by Alternative C, *i.e.*, restoration to the landscape as it existed in 1860, is not feasible for the same reasons that it is not useful to employ the tools that Coast Salish peoples used to maintain the landscape 160 years ago (discussed below): forests have expanded, pyrophilic Eurasian grasses dominate most of the remaining meadows, the wind carries seeds of thistles and other weeds from neighboring homes and farms onto any disturbed soil, and our summers are longer and drier.

3. **The most Important landscapes in the National Monument are coastal meadows, many of them on small uninhabited islets, where a large proportion of the plant species are native wildflowers. These meadows are not "fire dependent," they are not "grasslands," and they are not relics of historical oak prairies or savanna. Burning them today will increase weeds rather than increasing native plant species.**

A fundamental scientific flaw in the draft RMP is its misleading assertion that "Coast Salish tribes used fire to maintain grasslands in the San Juan Islands. Due to a discontinuation of these traditional stewardship practices and other historic activities, encroaching forest vegetation is gradually reducing grassland acreage. Without management intervention, these communities will continue to decline" [p. 16:5-8]. Based on this assertion, BLM insists that burning would be a necessary and effective tool for maintaining the native plant species that the Monument was, in large part, established to protect, notably the wildflower meadows at Iceberg Point and many of the small uninhabited islands such as Read's Bay, Skull, and Indian Island.

In the course of several years' field surveys, the results of which were shared with BLM (and were part of the record that was submitted to Congress and the White House in support of the case for permanent protection), Kwiaht scientists found little evidence of pre-Contact burning in exposed soils except at Iceberg Point, part of Cattle Point and Patos, and Indian Island. Evidence of logging and sheep grazing was more extensive on Monument parcels, and sufficient to explain the colonization of these lands by conifers that appears (from dendrochronological and historical data) to have begun in the 1950s-1980s.

The role of a century of sheep-grazing on the Monument's dry coastal meadows—which the draft RMP does not mention at all in its ecological analysis—is under scored by the prevalence of non-native, pyrophilic Eurasian grass species throughout the Monument. These grasses were the choice of 19th century sheep raisers and were rapidly spread by seeding, and by sheep themselves as they grazed and defecated. Referring to Coast Salish practices and "grasslands" in one breath is highly misleading: Coast Salish had no use for grasses, and the areas they kept clears of shrubs were used to grow *Camassia leichtlinii* and other geophytes, not grass. Native grasses were, and continue to be relatively scarce in the coastal meadows of the San Juan Islands. Our field surveys indicate that native grass species—as opposed to Eurasian ones—comprise less than 10 percent of the grass coverage of meadows in the Monument.

It is puzzling why the draft RMP repeatedly refers to protecting grasslands, when the grass is non-native. Moreover, since the introduced grass species, originating in the steppes of the "Old World," are pyrophilic (fire tolerant), whereas our native Salish Sea grass species and wildflowers are not. What this means is that burning will promote non-native grasses at the expense of native species of grasses and forbs. This is precisely what has happened over two decades of prescribed fire at Mount Young in San Juan Island National Historical Park (SAJH), according to independent monitors who report annually to the park; and what Kwiaht researchers observed after a series of small experimental burns on private property adjacent to Iceberg Point.

Consequently, the science says that burning may result in fewer trees but it will also produce more non-native grasses: for all practical purpose, lawns. In addition, we note that fires can kill relatively slow or sedentary wildlife unable to escape the fire front, such as amphibians, reptiles, mollusks, and the eggs and unfledged nestlings of birds (Smucker et al., 2005; Russell et al., 1999). We note that the Monument is home to 29 native slugs, snails, and pea clams alone (Burke 2006; Burke, 2008), while its small-vertebrate fauna has not yet been adequately inventoried.[6]

Yellow Island has been held up as an example of successful native wildflower "restoration" in the San Juan Islands using fire. The Nature Conservancy's experiment at Yellow Island, extending over more than 35 years, involved herbicides and out-planting of nursery grown plants as well as annual burns of an acre or two in scale. Herbicides and planting proved necessary because fires alone produced more non-native grasses. We have observed the same development at American Camp in SAJH. Burning of mixed native and non-native grasses and forbs began 14 years ago and resulted in more weeds and fewer native wildflowers. Nursery propagation and out-planting was added, and then herbicides were recommended. At this stage, it is difficult to state what positive effect, if any, can be attributed to the use of fire.

The draft RMP also ignores the well-established fact that Coast Salish peoples highly valued Western red-cedar for building community houses, Douglas fir for fuel, ocean spray (*Holodiscus discolor*) for spears, bows and fishing poles, and all of the native *Ribes* and *Rubus* berries (Turner & Bell, 1971; Suttles, 1974; Turner, 1996; Deur & Turner, 2005). They did not burn these valuable resources to create meadows, much less grass. Light flashy fires were probably used to contain, and regenerate berry brush in wooded areas, but setting fires large and hot enough to incinerate trees was a practice introduced by early Euro-American settlers to clear farmland, according to the contemporary observations of Smithsonian Institution naturalist C. B. R. Kennerly, who hiked the San Juan Islands and collected specimens in 1857-1861.

We note further that there is little evidence of Garry oak in the San Juan Islands prior to Euro-American settlement. A single oak "prairie" was identified in the islands by Smithsonian naturalist C. B. R. Kennerly during his explorations in the 1850s; it was located in central San Juan Island on

[6] Townsend's Big Eared Bat (*Corynorhinus townsendii*), a federal Species of Concern, have a large roost on Lopez and have been seen and recorded throughout that island. No roosts have yet been identified on Monument land but as this species and other island bats tend to disperse to woodlands and remain active in winter (Barsh, 2015) they could be adversely affected by prescribed burns.

land that is now privately owned. Moreover, there are no records of Coast Salish people making use of oak timber or acorns in the San Juan Islands (Suttles, 1972). The Victoria Capitol Region of British Columbia, where extensive oak-dominated meadows were described by early settlers in the 1860s, as well as the southern Gulf Islands, differ in geology, climate, plant communities and wildlife from the San Juan Islands (Barsh & Murphy, *in press*), and therefore should not be used as reference ecosystems for restoration of lands in the Monument. Nonetheless, the draft RMP makes repeated reference to "oak savanna" as the pre-European forest community that will be restored by BLM [e.g., p. 18:26, 19:2]. This conflicts with BLM's own inventory of rare woodland plant communities in the Monument, which are mostly coniferous and not oak-dominated [Table 24, pp. 122-123].

Prescribed burning

The draft RMP promotes the prescribed burning but is unclear about the ways fire would be used as a maintenance tool. The preferred alternative (B) refers to "low intensity" fires to reduce shrub understory in woodlands [p. 20:6], as well as to using fire "as the preferred method for maintaining desired conditions once established" by methods such as hand clearing [p. 20:24]. Burning mature trees, snags or slash for habitat or for fuel reduction is not expressly discounted, however, although this approach has been pursued in parts of San Juan Island National Historical Park and is currently under consideration for application to state parks in the islands. The acreage and fuel loading of fires can result in order-of-magnitude differences in soil surface temperatures and ecological results. A flashy grass fire can dissipate in seconds and never exceed more than a few hundred degrees Celsius at soil surface, whereas a forest fire can burn for days and carbonize buried roots, seeds and burrowing animals. Bulbs and corms of native plants can survive a flashy fire but not a wood-fueled fire.

There is also need to consider the role of woodlands as carbon sinks, and that burning trees produces greenhouse gases. Alternate methods of slowing or reversing woody succession should be preferred. The BLM draft RMP acknowledges the contribution of prescribed burns to climate changing greenhouse gases [p. 45] but recommends burning nonetheless.

References to the successful use of prescribed burning in other North American eco-regions can be misleading. They involve different climates, different plant species, and different pre- and post-Contact management histories. Wildfires were naturally frequent in the northern Rockies' Ponderosa pine forests, but were very infrequent in the Salish Sea (Brown & Smith, 2000). In the northern prairies, indigenous peoples burnt grasslands to produce more grass for their bison to eat (Barsh & Marlor, 2003). In northern California, indigenous people burnt grassy meadows to produce more grass for basket-weaving (Anderson, 2018). But Coast Salish peoples had no use for grass; and as Wayne Suttles observed (in Deur & Turner, *op. cit*.) they pulled grass out of their camas gardens. If they periodically used fire to recycle dead stalks and woody seedlings in their camas gardens, the evidence is that these fires were small and flashy, probably no more than a fraction of an acre in size, and fueled mainly by raked brush (Lepovksy & Lertzman, 2008).

Landscapes now part of the Monument were mainly shaped by pre-Contact selective logging, gardening, and brush clearing including flashy fires, but not by fires extensive enough to consume trees. Burning cannot recreate pre-Contact landscapes, moreover, because the principal "weeds" that are encroaching on the Monument's wildflower meadows are native trees that burn readily and non-native grasses that regrow aggressively after fires.

Action Alternative B refers to allowing "naturally ignited wildfires" on small islands [p. 19:17], and the Watmough-Chadwick-Point Colville parcel on Lopez [p. 20:25-27]. Natural ignitions are almost unknown in the San Juan Islands. The only small island that has burnt in recent decades was Goose Island, where dry leaf litter and guano was ignited by fireworks shot from a passing boat. Most of that island, with its large gull and cormorant colonies, was mainly exposed rock, with small patches of mosses and herbaceous plants in scattered depressions. No independent follow-up study was conducted to assess impacts of the fire on the plant community or seabirds. We do not find any evidence in existing scientific literature that fires were historically an element of seabird island ecology in the Salish Sea, or would offer any benefits to vegetation or wildlife. We are especially concerned about the impact of fires on very slow growing lichens, which have been found to be unusually diverse and rare at Colville (Rhoades, 2009).

Herbicides

Action Alternatives B, C, and D would authorize BLM to apply herbicides to landscapes within the Monument. Herbicides are non-selective; they kill native as well as non-native plant species. Furthermore, herbicides can have lethal or sub-lethal impacts on wildlife, especially animals that live in burrows or beneath leaf litter in the application area (voles, shrews, snakes, salamanders, solitary bees, beetles), or that feed on treated plants (including birds and larvae of butterflies). Although synthetic auxins such as glyphosate were long believed to be specific to vascular plants and thus relatively safe for use as aerial sprays in habitats visited by sensitive wildlife, there has been growing evidence of toxicity to animals (reviewed by Gill et al., 2017), and its use has been curtailed recently in the European Community.

Kwiaht researchers identified more than a hundred native pollinator species in meadows of the National Monument and San Juan Island National Historical Park; species lists are posted on https://www.google.com/site/sjipollinators/home). Most of the pollinators are solitary bees that nest within a hundred meters of their nectar sources, and "flower flies" (Syrphidae) that lay their eggs directly on host plants. Eggs and larvae are present year-round, and will be affected by any aerial spray that coats plants or drifts over and settles on exposed soils.

Most of the wildflower meadows (referred to misleading as "grasslands" in the draft RMP) found in the Monument begin at the edge of the sea along rocky or sandy bluffs. Application of herbicides to these meadows would almost certainly drain to and affect inter-tidal and sub-tidal habitats and wildlife. Instructions for use of commercially available biocides generally discourage their discharge near lakes, streams, wetlands, beaches, or seashores. We find it very difficult to imagine where in the Monument a biocide could be applied by area spray and not contaminate

the nearshore. This would adversely affect forage fish and ESA-listed salmon that feed along the shorelines of the San Juan Islands including in particular Watmough Bay and the south coasts of Lopez that are covered by the original 1990 ACEC Plan. This area is a nursery for ESA-listed Puget Sound ESU Chinook salmon (Chamberlin et al., 2017).

We regard any aerial spraying of biocides within the Monument as a threat to pollinators as well as mollusks and vertebrate fauna, and to non-target native plants. Modest spot applications to individual target plants, by hand or with a brush, pose significantly less risk to other organisms and could be incorporated into a management strategy that includes hand-clearing and removal, solarization, and infilling with seed and seedlings from appropriate sources on the same island.

Plant materials sourcing

We note in this regard that the draft RMP does not comply with NRCS guidelines for sourcing plant seed and stock for habitat restoration (Code 643, Restoration and Management of Rare or Declining Habitats): "When feasible, only local ecotypes will be used." The purpose of this basic guidance is twofold, to maximize the likelihood that plantings will survive, and to minimize the modification of existing local gene pools. This standard is especially relevant to islands, where it is likely that local plant populations have diverged genetically from their mainland ancestors and may have evolved specific local adaptations. Infilling a camas meadow at Iceberg Point should be carried out with seeds collected at Iceberg Point or, if that is not feasible, another population on Lopez, but certainly not the mainland. However, the draft RMP would only require that seeds or stock be sourced from the same USDA geographic zone [p. 18:5, 19:23] —effectively, anywhere in the Salish Sea. We can think of no practical reason why any of the native plant species found on Monument lands could not be sourced from the same islands; and we contend that for the sake of conserving genetic diversity, same-island sourcing should always be prioritized.

Biological controls

Action Alternatives A, B, C and D refer to "biological control methods" [pp. 18:1, 19:28, 20:34, 21:24] without further specification, as well as "biopesticides" [p. 18:14, 19:29. 20:35, 21:25]. To clarify, a "biopesticide" is defined by the EPA as a biocide that is derived from natural resources such as plants, animals, or some minerals. In most instances, they are chemical compounds that exist in nature, rather than derivative or synthetic compounds. This does not mean that they are inherently safe or non-toxic. EPA approval simply means that a particular chemical compound is not so toxic that the impacts of its production and sale outweigh its benefits (40 CFR Part 158). A biopesticide can be just as toxic as synthetic biocides that EPA previously approved for use.

For example, products containing various strains of *Bacillus thuringiensis* have been approved as "biopesticides" by EPA. "BT" products are typically applied to orchard trees to control insects such as Coddling Moth and other Tortrichid species. It also kills other butterflies and moths in the area of application (e.g., Johnson et al., 1995). Impacts on non-target species are commonplace in the use of biological agents such as bacteria and fungi as biocides (Flexner et al., 1986). There is insufficient information in the draft RMP to assess the risk to protected plants and insects, such

as the Island Marble Butterfly, because no specific products or approved active ingredients have been identified by BLM.

The draft RMP would allow under all Alternatives the use of grazing *e.g.* by goats for habitat restoration [p. 15:41-42]. Under proper planning and supervision, this could be an effective and appropriate method of reducing weeds including non-native thistles and blackberries, combined with other methods such as hand clearing, solarization, and infilling with fast growing native plant species. It is important to recognize that livestock can also spread seeds of plants they consume, however; especially non-native pasture grasses.

Wetland restoration tools

Alternative B would authorize expanding wetlands by "excavation" to widen and deepen the habitat available for aquatic plant species [p. 19:13-15]. This is ill-suited to the young post-glacial geology of the San Juan Islands, where shallow glacial tills rest on outwash clays, and wetlands (and stream flows) are generally seasonal in nature. Our native wetlands are shallow, and plants adapted to natural conditions in the islands are shallow dwellers (no more than a meter depth). As hundreds of homeowners in the islands have discovered to their dismay, nothing grows in the deeper parts of dug ponds except either floating algal mats, or floating plants such as pondweeds (*Potamogeton spp*) and water-meal (*Wolffia spp*), which are equally at home in shallow wetlands. Indeed, there is growing evidence that the few historical perennial wetlands in the islands were maintained by beavers, who build up (dams resting in the soil surface) rather than down. A large historical wetland on Waldron Island was conspicuously re-charged when beavers re-colonized that island nearly 20 years ago. A similar beaver-induced restoration of an historical wetland was observed by WADNR at Duck Lake on Cypress Island at about the same time.[7]

We believe that digging out shallow wetlands is always destructive under the conditions that prevail in the San Juan Islands. Widening wetlands like a beaver—using outlet control structures to restore historical water levels—should be the preferred means of enhancing wetlands in the San Juan Islands, and enlarging the acreage and diversity of native aquatic plant species.

Other specific issues and concerns

Action Alternative B [p. 19:19] refers to the propagation of non-native plant species that are utilized by "federally listed or candidate species". We can think of only a single application of this principle to the Monument: the use of non-native field mustard *Brassica rapa campestris* by the purported Island Marble butterfly subspecies, which until 2006 was established on the Cattle Point parcel. We do not disagree with authorizing plantings of field mustard at Cattle Point in the hope of re-establishing Marbles there. However, the language of the draft RMP is overbroad and could be used to justify BLM propagation of non-native species that have not yet been identified,

[7] By way of contrast, WDFW efforts to improve water quality in Hummel Lake, Lopez, by dredging out vegetation in one to 1.5 meters of water resulted in more aggressive colonization by exotic aquatic plants.

to feed candidate species that have not yet identified. As such, the potential environmental costs and benefits of this proposed activity cannot by evaluated. We recommend narrower language.

Hunting and firearms

The draft RMP acknowledges that state law continues to govern hunting and fishing within the Monument, under the express terms of the 2013 proclamation, but Alternative D nonetheless considers the possibility of prohibiting the discharge of firearms on the Lopez properties alone or throughout the Monument [p. 31:10, 32]. Apart from any legal or socio-economic considerations that may complicate such a decision, we observe from a strictly ecological viewpoint that nearly all hunting on Monument lands has been for Columbian deer; and that this species, historically regulated top-down by Coast Salish hunters and wolf packs (Kennerly collected wolves on Lopez 160 years ago), has grown so abundant in recent decades that it is regarded as a nuisance by the farmers and gardeners on Lopez. Deer have profound adverse impacts on the islands' native plant communities (Martin et al., 2011). Hunting deer is the one current recreational (and frequently cultural) activity in the Monument that contributes positively to maintaining plant communities that constitute objects and values of the Monument. And ironically, it is an activity that BLM has proposed restricting or eliminating.

Hunting and fishing in the National Monument (and previously, under the 1990 ACEC plans) are controlled by state law, but in either case BLM has authority to close areas to all persons for the purpose of protecting biological and cultural resources, subject only to legitimate assertions of Treaty rights. As a practical matter, none of the Alternatives optioned by the draft RMP would increase the authority of the BLM over hunting and fishing; indeed, on the contrary, most of the Alternatives would increase and/or improve access points and trails that harvesters could use.

Shoreline armoring

Some Alternatives in the draft RMP would permit "hard" shoreline armoring to prevent erosion or loss of archaeological sites and historical structures [p. 13]. This would be contrary to current Washington State law and federal (USACE) standards that ordinarily require "soft shore" materials (sand, gravel, plants) or "living shorelines" (salt marsh expansion) to stabilize crumbling bluffs and scoured beaches. We note that the 2013 presidential defines the National Monument as including "all unappropriated or unreserved islands, rocks, exposed reefs, and pinnacles, *above mean high tide*" [emphasis added] within the designated geographic area. The proclamation also reserves to the state full authority over "submerged or other lands within [its] territorial waters". It would appear that as a matter of law, BLM cannot modify a shoreline without complying with state and federal shoreline management laws that ordinarily forbid hard armoring.

Scientific research

We are broadly in agreement with BLM's proposals for supervising research projects within the Monument. Although scientific research is a primary object of the Monument, it should never be pursued in ways that sacrifice the integrity of cultural or biological resources, or that deprive

future generations of the opportunity to learn from the Monument's unique landscapes, habitats and genetic diversity. Research involving off-trail activity, soil disturbance, coring trees, collecting wildlife or plants, or any kind of destructive sampling should require a permit, and should not be permitted without convincing evidence that the benefits of the proposed research to managing the Monument outweigh its impacts [p. 32:36ff].

As scientists, we urge BLM to strengthen these proposed requirements in the following ways to ensure fairness, public involvement, and the application of research findings to management: (1) applications for research, and the reasoning behind decisions to approve or deny applications for research, should be publicized at the time they are made; (2) research findings should always be made public at the time they are reported to BLM; and (3) BLM should maintain a published list of approved research projects, principal investigators, and points of contact. Needless to say, BLM must not attempt to influence the findings of research projects, or the extent to which the findings are reported publicly.

Recommendations

The No Action alternative would leave the 1990 ACEC plan in place with respect to the major Lopez coastal properties, *i.e.* Iceberg Point, Point Colville, Watmough Bay, and Chadwick Hill [p. 8:13, 15-20]. The ACEC plan authorizes restrictions on recreational use, such as closures of trails, area closures, and prohibitions of activities such as fires and camping, in order to protect habitats and species. It does not prohibit maintaining or marking existing trails, where they are consistent with the protection of biological resources. In our view, the 1990 ACEC plan is satisfactory for the management of the National Monument as long as the BLM faithfully exercises its legal authority under the 1990 plan to minimize the impacts of any public access and use.

We further recommend that the ACEC be expanded to include the small islands that are now part of the National Monument. Most are relatively isolated, infrequently visited, and culturally as well as biologically sensitive; as such, access should be limited to monitoring and maintenance actions (such as weed removal). Those that have already been developed for camping under past agreements with Washington State Parks could remain open for that purpose, but continuation of boat access, picnic areas, trails and camping would remain subject to the overarching goal of protecting habitats and species. If existing uses, or proposed enhancements to campsites or trails would significantly impact biological (or cultural) resources, the protection mandate would take priority over recreation.

BLM acknowledges that the entire Monument meets the criteria for ACEC status [p. 9:1], but appears to argue that all of the Action Alternatives presented in the draft RMP exceed the level of protection that ACEC status would entail. We conclude from our analysis of the draft RMP that this is simply untrue. The only Action Alternative that could conceivably protect existing habitats better than the 1990 ACEC plan is Alternative A *because it eliminates recreational access*. At the same time, BLM has attached a poison pill to Alternative A in the form of an over-arching goal to allow natural succession (weedy and woody encroachment) to take half the remaining wildflower

meadows in the Monument. Most of this loss would necessarily be at Iceberg Point ACEC, where woodlands are expanding most rapidly over the largest area (Barsh et al., 2006).

We note that the Recreation entry in the Action Alternatives table [p. 11] states incorrectly and misleadingly that under the No Action alternative, camping and discharge of firearms would be permissible outside the currently-designated ACECs on Lopez. That would only be true if the BLM does not expand the existing ACEC to include the entire Monument, as we recommend here.

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