

Chapter 4 Environmental Consequences

4.1 Introduction

This chapter identifies the effects of the two alternatives presented in Chapter 2. Effects are those outcomes expected to occur as a result of the management objectives and strategies as described in Chapter 2. Specific objectives and associated strategies are referred to in this discussion, for further details regarding these topics refer to Chapter 2. This chapter is organized by resource area. The depth of analysis corresponds to the scope and magnitude of potential environmental effects. Both the direct and indirect effects likely to occur over the 15-year period of the CCP and beyond its life span are discussed. Resource areas assessed in this chapter include: climate and ocean conditions, geology and soils, biological resources, cultural resources, wilderness resources, and environmental justice. Recreation and public uses, visual resources, socioeconomics, and public health and safety, are not discussed because an initial assessment determined that there would be no impacts to these resources.

Access by Tribes in accordance with approved agreements between the Service and individual Tribes would strive to minimize impacts to all resources.

In describing the expected effects of particular management actions, the terms “positive,” “negative,” and “neutral” are used frequently. A “positive” effect means that the action would be favorable to the resources under discussion. A “negative” effect means that the management action would be harmful to the resources under consideration. A “neutral” effect means that the action either would have no obvious effects or that it would have both equal positive and negative effects. No change in management practices (as in Alternative A), does not necessarily imply neutral effects over time.

4.2 Climate and Ocean Conditions

Effects to climate and ocean conditions are challenging to quantify. The scale of the CCP strategies is much smaller than climatic level conditions. The most dramatic impacts the proposed CCP actions could have on the physical qualities of the site would be through oil spill prevention and preparation. Other impacts are best examined from a cumulative perspective, such as the long-term results of regulating recreational boating activity in the area.

The greatest threat to ocean conditions comes from pollution, especially oil pollution. The inaccessibility of the area in combination with the cooperative programs already in place does provide some protection. While no preparation measures can fully guard against oil spill impacts, they may lessen the effect on ocean ecosystems. Under the No Action Alternative (Alternative A), the current level of climate and ocean protection would continue. While the size

and degree of any potential impacts would be determined by the pollution event; Alternative A provides less oil spill preparation and readiness than Alternative B, therefore, it would increase the likelihood of oceanic pollution. Boat trespassing on the Refuges also leads to small amounts of oil and debris in the surrounding water. The Service's limited capabilities to reduce boat trespassing, increases the risk of this source of pollution under Alternative A. In addition to potential oil spill pollution impacts, the current level of waste and debris accumulating on Destruction Island would have a small and local negative effect on ocean water quality around the island, if cleanup actions do not occur.

Under Alternative B, benefits to climate and ocean resources would be enhanced over Alternative A due to oil spill and pollution control actions in objectives WH2, WH3, WP1, and CP4. Cooperative oil spill preparation programs, outlined in WH2, would have a positive effect on ocean and climate conditions by providing a current plan, organizing labor, and obtaining equipment. The scale and degree of this positive effect would depend on the size and type of pollution spill events. Creating and managing mapped data, as proposed in objective WH5, for refuge resources would allow for potential pollution clean-up efforts to be concentrated on sensitive areas surrounding the refuge islands. Under Alternative B, clean-up actions not related to oil pollution (i.e., WP1 and CP4), such as cooperative programs with the U.S. Navy and USCG, would positively affect ocean conditions by preventing materials from entering ocean waters. In addition, cooperation with neighboring agencies and Tribes (CP objectives), would minimize pollution by reducing trespassing on the Refuges.

4.3 Geology and Soils

Under the No Action Alternative (Alternative A), trespass protection by boats and foot traffic is limited. Currently, the Refuges are closed, and there is an MOU between the Service and the NPS for law enforcement on the Refuges for trespassing (see Appendix C-9). Shoreline patrols are infrequent, however, and trespassing does occur especially during low tides. Boat landings and foot traffic can induce soil erosion impacts along shorelines and cliffs. These forms of trespass, which would remain unaddressed under the No Action Alternative, could negatively impact the soils of the Refuges on a small and local scale.

Pollution that would remain unaddressed under the No Action Alternative on Destruction Island and other refuge islands may negatively impact the island soils in terms of composition and content. Size and influence of this impact would depend on the type of debris left on the islands.

Under Alternative B, the reduction of island trespassing (WH1) and the clean-up of Destruction Island (WH3) and other refuge islands (WP1) would positively affect the geology and soils of the Refuges. Size and influence of this positive effect would depend on the type of debris left on the islands. However, clean-up on Destruction Island, as well as refuge-wide invasive species control (WH4) as called for under this alternative, may slightly increase erosion during the clean-up period, but if sites are properly replanted they would stabilize.

4.4 Biological Resources

4.4.1 Effects to Vegetation

Under the No Action Alternative (Alternative A), the public closure policy would continue to benefit refuge vegetation in terms of decreasing direct human disturbance. However, there are occasional trespassing events that would not be addressed under the No Action Alternative. These trespassing events can have negative effects on vegetation from trampling and harvest impacts. Another vegetation risk associated with trespassing is the introduction of invasive plant species onto the islands. This can have negative effects through a decrease in vegetation diversity. Currently, there is little information on invasive plant species on the islands, and the No Action Alternative does little to curtail this potential threat to island vegetative health.

The threat with the biggest damage potential for island marine vegetation is an oil spill, as well as chronic oil pollution. Under the No Action Alternative, current oil spill measures would continue for the Service. The No Action Alternative does not take enhanced oil spill prevention and preparation actions. This could significantly harm island vegetation. Pollution in other forms, such as debris left by USCG and U.S. Navy activities, would also not be addressed under Alternative A. These pollutants could negatively harm both terrestrial and marine vegetation. The size and extent of this impact would depend on the nature of the pollution, which is currently unknown.

Alternative B would allow for greater protection from human disturbance on vegetation. Trespassing on the islands would be discouraged through cooperative boundary enforcement programs with Tribes and Federal, State, and local agencies; and boating and aircraft educational programs and general public education (WH1, WH6, WH7, and CP objectives).

Enhanced oil spill strategies in WH2 would lessen the effects of oil on refuge marine vegetation, by reducing the potential for spilled oil to wash up on shorelines. It should be noted that oil spill prevention and preparation cannot remove all potential oil spill impacts because many of the factors, such as oil tanker travel and shipping regulations, are outside the control of the Service. However, enhanced spill preparation and planning could lessen the severity of impacts from oil spills. In addition, other pollution threats would be addressed through clean-up on refuge islands by the U.S. Navy and USCG (WH3, WP1).

A threat specific to the vegetation on Destruction Island is the European rabbit, which has been negatively reducing vegetative cover. The invasive species management strategies (WH4) under Alternative B could be used to address this issue. The reduction or elimination of rabbits that is proposed under the invasive species strategy, would positively impact vegetation by reducing predation. Across the rest of the vegetated refuge islands, the invasive species strategies would benefit the health of biological resources through the identification of threats and control of invasive vegetation and wildlife.

The development of a new refuge headquarters (WH8), under Alternative B, would aid in creating a centralized office for data collection, storage, and management. This organization would have positive effects on refuge-wide vegetation due to the ready access to information.

Information management carried out under the library and spatial data organization actions (WH5, RA5) of Alternative B, would increase opportunities for the identification of vulnerable vegetation areas and effective management methods. Scurvygrass, kelp beds, and turf algae areas are all known sensitive plant species adjacent to the Refuges. However, information is currently lacking regarding these species. Database management, in the form of vegetation mapping for the islands based on current and future data sets, would be particularly useful when identifying sensitive plant species locations and management options.

4.4.2 Effects to Wildlife

Fish

The No Action Alternative could be expected to negatively impact fish in the event of an oil spill. Though current measures and procedures for oil spill protection and clean-up would provide some protection from such an event, it could be fortified and more proactive.

Under Alternative B, efforts to improve oil spill management strategies (WH2) would have positive impacts on fish in waters surrounding refuge islands. This would be especially true in the event of a large spill. No degree of oil spill preparation can guard against all oil induced fish impacts. Thus, this strategy under Alternative B would be a simple lessening of impacts.

Under Alternative B, cooperative program strategies (CP objectives) would be implemented to benefit fish populations in the refuge area. Enhanced cooperative intertidal zone management development, as described in the action strategies under objective CP3, would be a positive action for fish as this is a critical habitat for a number of fish species and influences the deeper waters beyond. Clean-up efforts with the Department of Defense (WP1, CP8) would positively affect fish and any areas where debris is impacting the marine environment.

Marine Mammals

Under Alternative A, the occasional disturbances caused by planes, boaters, and foot traffic would continue unchecked and may have negative effects on the breeding and resting grounds for marine mammal species. In addition, pollution issues would remain a threat to marine mammal populations using the Washington Islands Refuges. Current oil spill preparation measures would offer minimal protection to marine mammals. Debris currently on a few islands, including Destruction Island, could pose a threat to marine mammals, which are known to be vulnerable to debris entanglement and pollution.

The absence of cooperative intertidal management could cause long-term negative impacts on marine mammals. Current management layers jurisdictions over intertidal resources, without

providing guidance for multi-agency cooperation. This could lead to confusion over resource status and management.

Under Alternative B, in the Wildlife and Habitat Protection and Management Goal, the Service proposes to renew efforts to protect native wildlife and associated habitats. Under this goal, the restricted public access (WH1), enforcement of trespassing policies (WH1, CP objectives), and promotion of buffer zones (WH6, WH7), would have a direct, positive impact on the reduction of human disturbance to marine mammals on sensitive haul-out sites.

Enhanced pollution control, for both oil (WH2) and debris (WH3, WP1), would be addressed under Alternative B. The Washington Islands Refuges support for efforts to reduce oil spills, as called for under Alternative B, would have positive effects on marine mammals. Under Alternative B, the debris clean-up strategy would positively impact marine mammals by providing terrestrial habitats that are free from entanglement and pollution impacts.

Under Alternative B, the cooperative programs (CP objectives) would alleviate many potential problems for marine mammals using the Washington Islands Refuges, such as intertidal zone and haul out habitat health. Improvements to cooperative intertidal management (CP3) would reduce threats to these habitats. In addition, enhanced cooperation between the OCNMS and the Service (CP6) would improve management when jurisdictions overlap. For example, sea lions are managed by NOAA Fisheries, but the species utilize refuge habitats for hauling out and breeding.

Marine Invertebrates

Under the No Action Alternative, wildlife and habitat protection measures that would be carried out by the Service offer minimum protection for marine invertebrates. Marine invertebrates would also be at risk of occasional disturbances due to the lack of enhanced efforts made to promote a boat-free buffer around the islands. Pollution, in the form of oil spills and debris, could negatively affect marine invertebrates. Under Alternative A, oil spill impacts represent the greatest threat to marine invertebrates in the refuge area. Oil spill prevention measures would not be enhanced and up to date. While no spill prevention and recovery plans can guarantee protection, higher levels of planning would boost current efforts. Under Alternative A, island debris could negatively impact these invertebrate species due to habitat degradation. The extent and degree of this impact depend on the movement of island debris into the intertidal zone. It is currently unknown if any debris is located in the intertidal areas of the islands.

Marine invertebrate conservation and protection on refuge islands are a function of intertidal zone management. Under Alternative A, there is a lack of clear cooperative management goals and responsibility for this habitat, which exists in an area of jurisdictional overlap. The lack of cooperative management of this zone could, over the long term, lead to negative impacts on these species.

Under Alternative B, the additional reduction in occasional trespassing combined with the enhanced control of island buffer zones (WH1, WH6, and WH7) would have a direct, positive impact on marine invertebrates through decreasing direct trampling, harvesting, and pollution impacts on these sensitive species.

Pollution reduction efforts as described in objectives WH2 and WH3, proposed in Alternative B, would have positive effects on marine invertebrates. Enhanced island debris clean-up efforts would positively impact invertebrate species, due to habitat improvement. The extent and degree of this effect depend on the movement of island debris, and potentially spilled oil, into the intertidal zone. It is currently unknown if any debris is located in the intertidal areas of the islands.

Marine invertebrate conservation and protection on refuge islands rely on intertidal zone health. Intertidal focused cooperative actions proposed under Alternative B, would aid in defining clear management roles on an interagency level (CP3). Unified and defined management goals and actions taken in the intertidal zones around refuge islands, would have a positive impact on marine invertebrates.

Birds

Under the No Action Alternative, occasional trespassing and disturbance events would continue, negatively impacting bird species, especially species known to be particularly sensitive, such as breeding seabirds. These disturbances, though infrequent, can have large impacts depending on the time of year and day in which they occur. The lack of enhanced efforts to decrease trespassing events could have significant negative impacts on breeding colonies over the long-run.

The largest potential threat to island birds is an oil spill, as well as chronic oil pollution. Current oil spill measures exist for the Service and other agencies, but they could be more proactive and efficient with Service participation. The No Action Alternative does not take enhanced oil spill prevention and preparation actions. Considering the concentration and importance of the region to many seabird species, this is a serious potential negative effect of Alternative A.

The current Destruction Island environment holds many areas of debris and unused structures that may be hazardous to birds. Under the No Action Alternative, this debris would not be removed. The degree of impact these structures and materials are having on bird habitats is unclear. It is known, however, that large vegetated islands are a limited habitat among the Washington Islands Refuges; these areas could be very important for certain species, such as puffins, that need soils found on vegetated islands in which to build burrow nests.

Invasive species are currently poorly understood in terms of the impact they are having on refuge bird populations. Under the No Action Alternative, the lack of efforts to identify and assess impacts of invasive species may negatively impact bird species.

There are currently a number of avian species using the Washington Islands Refuges that are State or federally listed. These include the brown pelican, marbled murrelet, bald eagle, and black oystercatcher. Federally listed species are all currently managed by the Service according to the guidelines in their recovery or other management plans. Alternative A would have neutral effects on federally listed avian species. In addition, the lack of resources to protect State-listed birds under Alternative A, may negatively impact these species.

Under Alternative A, the lack of organized cooperative intertidal zone management among Federal and State agencies whose jurisdictions overlap, would continue, and could have long-term negative impacts on certain birds. This is especially true for oystercatchers and other shorebirds that depend on intertidal zones for forage. Shorebird species are currently thought to be in general decline, and the areas of breeding and foraging importance on the Washington Islands Refuges, would become increasingly important to the conservation of these species.

There are growing concerns regarding the decline of seabird species along the entire west coast of North America. Washington's seabird populations are dynamic and use the entire west coast. It is important for seabird researchers to share information throughout the entire range of these species, to enhance seabird conservation and protection. Under Alternative A, the lack of an annual Washington Islands Refuges report creates a gap in facilitating the communication of seabird information.

Under Alternative A, refuge avian research focuses on seabird and raptor biology. This work consists of population estimates and breeding location mapping that would continue to be beneficial for seabird and raptor species. Long-term avian databases are rare. The Service's ongoing efforts would provide valuable data for understanding seabird and raptor biology in the region. However, there are a few areas that the Washington Islands Refuges' research efforts do not currently address, which leads to data gaps when management actions are needed in response to conservation issues and problems. Applied and comparable research would continue to be lacking and limit the usefulness of avian data collection. Spatial databases would also be lacking, and this creates a weakness in the Service's ability to use the best available science in the overall management of the area. Under Alternative A, monitoring programs focusing on seabirds and raptors, would continue to provide information only on high priority species. Thus, basic information would be lacking on many other bird species. In addition, the lack of an organized refuge library would also limit the ability of the Service to quickly identify refuge management options. Overall, current refuge research actions would have positive short-term effects on selected high priority species.

Under Alternative B, decreasing trespassing and disturbance events (WH1, WH6, and WH7) would positively impact bird species, especially species known to be particularly sensitive, such as breeding seabirds. These disturbances, though infrequent, can have large impacts depending on the time of year and day in which they occur. The enhanced efforts to decrease these trespass events could have significant positive impacts on breeding colonies over the long-term.

The largest potential threat to avian species is oil spills, as well as chronic oil pollution. The size, location, and timing of an oil spill would determine the effect of a spill event on the birds of the Washington Islands Refuges. Oil spill actions, established under objective WH2 in Alternative B, would provide more cooperative and developed measures, which would have positive impacts on birds. Oil spills impact every biological aspect of these marine dependent species. Considering the concentration and regional importance of many seabird species, efforts to reduce the threat and impacts of such spills would have significant positive effects on refuge birds.

The clean-up actions for Destruction Island that would be addressed under the objective CP4 strategies in Alternative B would be established in a new MOU between the Service and the USCG. The MOU would outline plans and responsibilities for the removal of debris and unused structures that may be hazardous to birds. Many seabird species have been shown to experience negative effects on foraging and breeding due to debris and human generated alterations of island habitats. The degree of positive impacts, from the removal of these materials, is unclear. Large vegetated islands, such as Destruction Island, are limited among the refuge islands, so this area could be very important for certain species, such as puffins that need soils found on vegetated islands in which to build burrow nests.

The invasive species action in objective WH4 under Alternative B, proposes to identify and assess the impacts of invasive species. This action may positively impact bird species by providing the data needed to make informed management decisions to enhance native flora and fauna, and thus maintaining natural systems under which seabirds evolved.

Enhanced cooperative intertidal management, as proposed under objective CP3, is a much-needed effort that would be addressed under Alternative B, and could have a long-term positive impact on certain birds. This is especially true for oystercatchers and other shorebirds that depend on intertidal zones for forage. Many shorebird species are currently thought to be declining; thus, these areas of breeding and migration foraging importance will become increasingly important to the conservation of these species.

The generation of an annual Washington Islands Refuges report (CP9), as well as the promotion of research publications (RA3) under Alternative B would contribute to seabird data compilation and review on an annual basis. An annual report would create a positive impact on seabird species by providing refuge management staff updated data, assessment, and problem identification. The distribution of an annual report would improve communication between the Service and interested agencies, as well as other groups such as tribes, academic institutions, and conservation groups. This increase in communication may lead to a holistic and regional approach to avian understanding and protection.

Under Alternative B, continued and enhanced long-term monitoring and sustained applied scientific research is proposed. The enhanced research management actions outlined in

strategies RA1 through RA5 would improve current refuge research activities and contribute to positive impacts on seabird species. Improvements would be made in the promotion of applied avian studies, spatial databases, regional data communication, and comparative studies with seabird and raptor studies outside of the Refuges. These changes would aid biologists and resource managers in positively affecting avian diversity on refuge islands, through the use of quality refuge and regional bird data. Integration of refuge monitoring with seabird monitoring efforts in California, Oregon, and Washington through development and implementation of the California Current System Seabird Monitoring Manual (see objective RA2) would provide a much larger regional context and provide valuable information.

Public educational efforts as outlined in objectives PE1, PE2, PE3 and PE4 under Alternative B, would significantly enhance education. A visitor contact station, website, and educational displays would educate the public on the importance of the refuge islands to marine birds. The remote nature of the islands makes the community and tourism connection with these islands a difficult endeavor. The educational actions in Alternative B, would promote public understanding and support for the Refuges, which would in turn positively impact avian species.

Non-Avian Terrestrial Fauna

Under Alternative A, risks to terrestrial species would continue to exist from pollution. The absence of enhanced oil spill cooperative programs could cause terrestrial areas to become polluted, harming fauna and poisoning marine prey species. River otters would be at high risk for oil-induced impacts. The lack of cooperative debris clean-up efforts could also harm terrestrial species. The Destruction Island shrew could be negatively impacted by the remaining USCG debris. Not much is known about this endemic subspecies of shrew, but Aubry and West (1984) did suggest that the species is declining. A known threat to this shrew species is the presence of European rabbits on Destruction Island. Under the No Action Alternative, the lack of control or eradication of European rabbits could be a serious negative impact on this shrew.

Under Alternative B, pollution prevention and clean-up actions are proposed and could positively affect terrestrial species. Strategies, as described under objective WH2, such as: participating in an oil spill risk reduction planning effort; supporting the OCNMS "Area To Be Avoided"; supporting the tug boat station at Neah Bay; and participating in staff training, would positively affect terrestrial species, especially river otters. Positive affects would be due to increased forage health, as many terrestrial species on these islands rely on intertidal and coastal zone forage. In addition, cooperatively designed clean-up of the remaining USCG debris (WH3) could positively affect the Destruction Island shrew. The other known threat to this shrew species is the presence of European rabbits on Destruction Island. Under Alternative B, the impacts and control of these rabbits would be examined and could lead to positive impacts on this shrew.

4.4.3 Effects to Species with Special Status

Federally Protected Species

Federally protected species documented in the Washington Islands Refuges area include the brown pelican, marbled murrelet, Steller sea lion, and bald eagle. Management actions with regard to these species are unique due to the guidelines in the recovery plans for each listed species. The Service and NOAA Fisheries are the agencies responsible for carrying out the Endangered Species Act, and recovery of listed species. Refuge management is an important recovery tool for species that utilize refuge habitats. Under Alternative A, management would be dictated by recovery plans alone. Under Alternative B, management would go beyond what is required in recovery plans and would enhance species recovery efforts positively through actions described below. Because the Refuges are under the primary Federal agency responsible for conserving, protecting, and enhancing wildlife and plants, refuge staff members are committed to these agency responsibilities. Under Alternative B, objective SS1 states that the Service would “continue coordination with others to identify, monitor, protect, and contribute to the recovery of plants and animals that are federally listed as threatened and endangered; proposed or candidates for Federal listing.”

Pelican and sea lion species are particularly sensitive to disturbances; thus, trespassing and disturbance reduction actions (WH1, WH6, and WH7) under Alternative B would aid the recovery of these species. In addition, island pollution prevention and clean-up (WH2, WH3, WP1) would be enhanced. Bald eagles would benefit from pollution prevention directly and indirectly through prey habitat improvements. All threatened and endangered species (TES) would benefit from enhanced oil spill protection and recovery efforts. The establishment of a Washington Islands Refuges GIS database would have positive effects for TES through the ability to track distributions and abundance of these species. Under Alternative B, enhanced cooperative programs (CP objectives) that lead to intertidal zone protection, reductions in disturbance events, enhanced research cooperation, and compatibility, would have positive effects on TES. Finally, public educational efforts (PE objectives) would be significantly enhanced under Alternative B. A visitor contact station, website, and educational displays would educate the public on the importance of the refuge islands for TES. The remote nature of the islands makes the community and tourism connection with these islands a difficult endeavor. The educational actions in Alternative B, would promote public understanding and support for the Refuges, thus positively impacting TES.

State Protected Species

State-listed species documented on the Refuges include the marbled murrelet, Steller sea lion, bald eagle, peregrine falcon, brown pelican, and sea otter. Management of the Refuges' State-listed species that are also federally listed species is in compliance with recovery plan guidelines for each species. Under Alternative A, management plans for TES lead to positive impacts. The peregrine falcon, a State-sensitive species, and sea otter, a State-endangered species, do not have Federal status under the Endangered Species Act. Under Alternative A, the refuge would not

have the resources to commit to protection and recovery of State-listed species. Potential impacts to these species are described below.

Under Alternative A, refuge wildlife and habitat protection measures are positively affecting the falcon and otter populations through the closure policy of island habitats. However, there are still occasional trespassing events that could have negative effects on these two species, depending on timing and extent. Overflight disruptions could negatively impact falcons, especially during breeding and foraging activities. Boating disruptions in the intertidal areas around islands could disturb foraging otters. Under the No Action Alternative, risks to otter and falcon species would also exist from the absence of enhanced oil spill preparation. Under Alternative A, cooperative programs with WDFW would have positive impacts on State-listed species. State and Federal biologists would continue current monitoring programs of State-listed species. The State's recovery plans for these species would be followed by the Service.

Under objective SS1 in Alternative B, the Service proposes to recommit its resources to the continued "coordination with others to identify, monitor, protect, and contribute to the recovery of plants and animals that are...state-listed as threatened, endangered, or sensitive; proposed or candidates for State listing; or State priority species." Furthermore, other objectives of Alternative B would benefit State sensitive species. Trespassing and disturbance reduction actions (WH1, WH6, and WH7), would aid in the recovery of otter and falcon species, which are particularly sensitive to disturbance. Under Alternative B, all State-listed species would benefit from enhanced oil spill protection and recovery efforts (WH1). Under Alternative B, enhanced cooperative programs (CP objectives) that lead to island clean-up, intertidal zone protection, reductions in disturbance events, oil spill prevention and recovery, enhanced research cooperation, and compatibility, would have positive effects on State-listed species. Due to the remote nature of the islands, the cooperation of all interested parties is the best method to gather information and use it to develop consistent, adaptive, and scientifically based management for the region. The enhanced cooperation between the State and the Service under Alternative B (CP2) would have positive effects on historic and future joint efforts regarding these species. Developing GIS and a Refuge library (WH5, RA5) would also benefit State-listed species through the compilation and organization of information. Public educational efforts (PE objectives) would be significantly enhanced under Alternative B. A visitor contact station, website, and educational displays would educate the public on the importance of the refuge islands to State-listed species. The remote nature of the islands makes the community and tourism connection with these islands a difficult endeavor. Educational actions in Alternative B would promote public understanding and support for the Refuges, which would in turn, positively impact State-listed species.

State Priority Habitats

State priority habitats on the Washington Islands Refuges are marine shoreline and cliffs. Some of the marine shoreline habitat falls within the intertidal zone. The intertidal zone has multiple overlapping State, Federal and tribal jurisdictions (see Figure 1-5).

Under Alternative A, the current level of protection would continue. Although the cliff and shoreline habitat above mean high tide would be protected, the wildlife and habitat protection measures carried out by the Service would offer little direct protection for the intertidal zone. Oil spills are the greatest threat to these habitats. Under Alternative A, the Service would continue spill prevention and recovery plans at the current level. Priority habitat conservation and protection on refuge islands rely on intertidal zone management. Under Alternative A, a lack of clear cooperative management roles and goals for this multi-jurisdictional habitat could, over the long term, lead to negative impacts on the species that occur in these habitats.

Under Alternative B, oil spill risk reduction (WH2) would have a positive effect on the shoreline habitat. State priority habitat conservation and protection on refuge islands rely heavily on intertidal zone management. Cooperative actions (CP3) proposed under Alternative B would aid in defining clear cooperative management goals and roles on an interagency level. Unified and defined management goals and actions taken in the intertidal zones around refuge islands would have a positive impact on these priority habitats. In addition, under Alternative B, public educational efforts (PE objectives) would be significantly enhanced. A visitor contact station, website, and educational displays would educate the public on the importance of the refuge islands for State priority habitats. The remote nature of the islands makes the community and tourism connection with these islands a difficult endeavor. The educational actions under Alternative B would promote public understanding and support for the Refuges, which would in turn positively impact State priority habitats.

4.5 Cultural Resources

The inaccessibility of the Washington Islands NWRs has limited formal cultural resource surveys to the larger islands that have experienced human use during the recent past. The presence of archaeological sites and traditional cultural properties in proximity to the Refuges, suggest that cultural resources may exist on unsurveyed islands. Protection of both known and unknown archaeological and historical resources within the jurisdictional boundaries of the Refuges is mandated by the National Historic Preservation Act of 1966 (NHPA). Any ground-disturbing activities or modifications to historic structures are subject to compliance with Section 106 of the NHPA.

Under the No Action Alternative (Alternative A), the current level of protection would continue. The greatest benefit to cultural resources lies in the fact that the islands are closed to the public, reducing the potential for vandalism, and also the fact that ground-disturbing activities are not a common element of refuge management. Limited access to islands for research purposes and unauthorized entry to islands does have the potential to impact cultural resources.

Under Alternative B, the benefits to cultural resources afforded under Alternative A would continue. Some activities outlined in Alternative B, however, have the potential to affect cultural resources. Objectives WH3, WP1, and CP8, for example, would involve the removal of human-generated debris and/or structures from islands. In these situations, evaluation of the

resource to determine its historical significance would be conducted prior to removal. On-the-ground research projects, such as those put forward in objectives CP2, RA1, RA2, and RA4, could increase human presence on the islands, therefore, increasing possible threats to cultural resources. However, because all research activities would be conducted under the control of the Service, proper briefing of researchers regarding the pertinent laws protecting cultural resources, would minimize the potential for damage.

All other objectives involve developing partnerships, agreement documents, research projects, and education programs that would either have no effect or a positive effect on cultural resources. Notable positive effects facilitated under Alternative B could include: the development of a secure GIS layer with cultural resources and traditional cultural properties (WH5); establishment of a 200-yard (183 m), boat-free zone around islands (WH7); development of a new headquarters facility where the area's cultural history could be interpreted (WH8, PE1); development of tribal and other partnerships (CP1, PE2); and increased law enforcement and public education (CP5, PE4).

Mitigation

Under both alternatives, the Service would ensure that a qualified archaeologist conduct field surveys and research in any area where ground-disturbing, debris removal, or historic structure modification activities are proposed, prior to initiation of the project. If potentially significant resources are found during implementation of the project, all ground disturbing activities in the vicinity would cease until the Regional archaeologist was notified and the significance of the find could be assessed. If necessary, appropriate treatment measures would be developed in consultation with the Regional Archaeologist, the State's Historic Preservation Officer (SHPO), the Tribes, and other appropriate agencies.

4.6 Recreational/Public Use

Under Alternative A, continued existing management of the Refuges would have no effect on recreation and public use in the area. Currently, no public access is allowed on any refuge lands, a practice which would continue under the No Action Alternative. In addition, the supply of existing interpretive and educational facilities would remain at current levels which are declining in their quality. This would result in a negative impact on recreation/public use. Low-overflights and the close approach by boats to refuge islands would continue to be discouraged under this alternative.

Under Alternative B, there would be continued restrictions on public access (WH1), which would have a neutral impact on recreation. A positive effect would result from the provision of an annual Refuge report (CP9) by providing information on educational program activities. Measures to reduce or restrict low overflights (WH6) and close approach by boats (WH7) to refuge islands could have a negative effect on recreation and tourism-related activities.

4.7 Wilderness Resources

Under Alternative A, impacts to wilderness would be similar to the current situation, with some increases in human generated debris and wildlife disturbance over time as the population and number of visitors to the Olympic coast increases. Implementation of the objectives and strategies under Alternative B would provide more benefits to wilderness values than Alternative A. Alternative B would preserve and enhance the natural wilderness character of the area by removing human generated debris, reducing the risk of oil spills, monitoring and controlling invasive species, and reducing overflight and boating disturbances.

4.8 Environmental Justice

Under Alternative A, the continuation of current management practices related to the Washington Islands NWRs would have no adverse effects to environmental justice; to either the public or Tribes. Under the Preferred Alternative, public access to the Refuges would continue to be prohibited (WH1) and the Service plans to enter into MOUs with the affected Tribes to address tribal access to the Refuges (WH1 and CP1). Any potential changes under the MOUs to the way Tribes exercise reserved treaty rights within their usual and accustomed locations, would be by agreement. Therefore, we anticipate negligible effects related to environmental justice.

4.9 Unavoidable Adverse Impacts

The selection of any alternative would have no unavoidable adverse direct (or indirect) impact on the environmental parameters evaluated in this chapter, including biological resources. Adverse effects identified in this chapter have been reduced with mitigation measures to the maximum extent possible.

4.10 Irreversible and Irretrievable Commitments of Resources

Most management actions identified in this document would require a commitment of funds that would then be unavailable for use on other Service projects. At some point, commitment of funds to these projects would be irreversible, and once used, these funds would be irretrievable. Non-renewable or non-recyclable resources committed to projects identified in this CCP such as fuel for refuge vehicles or supplies used in management or maintenance activities (e.g. signs) would also represent irreversible and irretrievable commitments of resources.

4.11 Short-Term Uses vs. Long-Term Productivity

An important goal of the National Wildlife Refuge System is to maintain the long-term ecological productivity and integrity of the biological resources on national wildlife refuges. This system-wide goal is the foundation for the goals presented in this CCP. Compared to the

No Action Alternative, Alternative B favors long-term productivity over the short-term uses by reducing trespassing violations in favor of biological resource protection and conservation.