Nisqually National Wildlife Refuge

Draft Supplemental Cumulative Impact Analysis

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Introduction

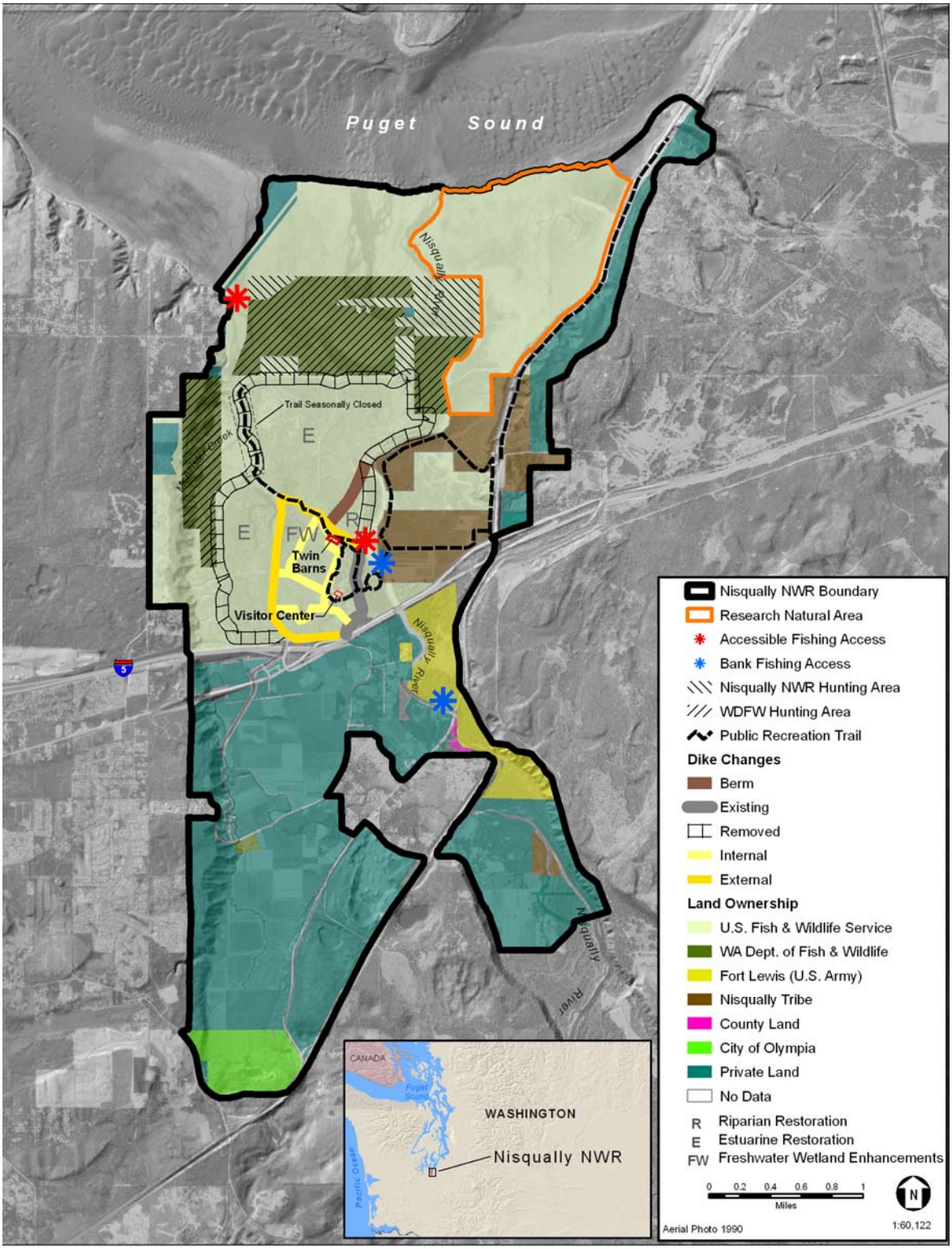
This document is a Draft Supplemental Cumulative Impact Analysis (Supplement) tiered to the Environmental Impact Statement (EIS) for the Nisqually National Wildlife Refuge (NWR) Final Comprehensive Conservation Plan (CCP) (USFWS 2004). This Supplement provides additional information on the cumulative impacts associated with opening Nisqually NWR to waterfowl hunting.

This Supplement was prepared as a result of the Fund for Animals lawsuit against the U.S. Fish and Wildlife Service (Service) on March 14, 2003, alleging noncompliance with the National Environmental Policy Act (NEPA) in opening 37 refuges to hunting during the 1997-98 through 2002-03 seasons. On August 31, 2006, the U.S. District Court Judge granted plaintiff's motion for summary judgment agreeing that the Service did not adequately consider the cumulative impacts of opening these refuges to hunting. The Service's October 5, 2006 brief asked the court not to enjoin the hunt programs while the Service proceeded to address the NEPA deficiencies in the original 37 hunting packages. In addition, the Service informed the court that by May 30, 2007, it would also correct NEPA deficiencies for the refuges opened to hunting since the lawsuit was filed. Because no new circumstances, new information, or changes in the action of opening a waterfowl hunt on Nisqually NWR have been proposed, the detailed analysis in the Draft Nisqually NWR CCP and EIS (2002) and Final Nisqually NWR CCP and EIS (2004) is incorporated by reference. Therefore, this Supplement only analyzes the cumulative impacts associated with opening Nisqually NWR to waterfowl hunting.

Hunting is identified in the National Wildlife Refuge System Improvement Act of 1997 (Improvement Act) (Public Law 105-57) as a priority use for refuges when it is compatible with the refuge purposes and mission of the Refuge System. In 2004, the Service determined waterfowl hunting to be a compatible wildlife-dependent use on Nisqually NWR (Waterfowl Hunting Compatibility Determination, Appendix G.3, CCP (USFWS 2004)). Washington Department of Fish and Wildlife (WDFW) has determined that fish and wildlife resources in the Nisqually estuary are healthy and robust enough to support regulated waterfowl hunting on 617 acres of State lands within Nisqually NWR boundaries (Figure 1). A Section 7 evaluation concluded that waterfowl hunting will have no effect or is not likely to adversely affect any of the special status species/designated critical habitat occurring on the Refuge including: brown pelican, marbled murrelet, bull trout, Chinook salmon, steelhead, and Steller sea lion (USFWS 2008a).

The Nisqually NWR Final CCP and EIS (USFWS 2004), Waterfowl Hunting Compatiblity Determination, Appendix G.3 in the CCP and EIS (USFWS 2004), Waterfowl Hunt Plan for Nisqually NWR (USFWS 2008b), and the Section 7 consultation (USFWS 2008a) are herein incorporated by reference. The Final CCP and EIS and the Compatibility Determination may be viewed at the following website: http://www.fws.gov/pacific/planning/main/docs/WA/docsnisqually.htm. The Waterfowl Hunt Plan and Draft Supplemental Cumulative Impacts Analysis may be viewed at: http://www.fws.gov/Nisqually/.

Figure 1. Nisqually National Wildlife Refuge showing the authorized Refuge boundary, land ownership, and activities including the waterfowl hunt area.



Purpose and Need

The purpose of this Supplement is to provide supplemental information and analysis on the cumulative impacts of waterfowl hunting as described within the Nisqually National Wildlife Refuge Final CCP and EIS (USFWS 2004). Cumulative impacts are effects on the environment that result from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions. The additional cumulative impact analysis will focus on effects regarding the Refuge's waterfowl hunting program proposed to be initiated during the 2009 hunting season.

Project Area

Nisqually NWR (Refuge) is located at the southern end of Puget Sound, Washington in the Nisqually River estuary (Figure 1). The 2,925-acre Refuge, located in Thurston and Pierce counties, is managed by the U.S. Fish and Wildlife Service (Service) and protects one of the few relatively undeveloped large estuaries remaining in Puget Sound. The Refuge has international significance as a staging area, sanctuary, and migration stopover for migratory birds of the Pacific Flyway. The Refuge also has regional importance as migration and rearing habitat for salmon, particularly the Federally threatened Chinook salmon. Nisqually NWR was established in February 1974, in recognition of the area's unique fish and wildlife resources. Funds approved by the Migratory Bird Conservation Commission under authority of the Migratory Bird Conservation Act were used to purchase 1,285 acres of the Refuge. Revenue received from duck stamps is the primary source of funding for those lands purchased under the Migratory Bird Conservation Act.

More detailed information about the project area can be found in Chapter 3 of the Nisqually NWR Final CCP and EIS (USFWS 2004).

Anticipated Direct and Indirect Impacts of Proposed Hunt on Wildlife Species

Table 1. Nisqually NWR, Hunting Season Bag Limit Summary Based on 2008-2009 Regulations.

Species	Dates	Daily Bag Limits
Waterfowl – Ducks (except canvasback)	Youth hunt (2 days in September); Mid-October extending to late January with a 1-2 day split	Up to 7 ducks; see below**; possession double the bag limit
Waterfowl – Canada Geese	September – early Canada goose season, approximately 6 days in early September	Up to 5 Canada geese; possession double the bag limit
Waterfowl – Geese	Concurrent with duck season, except for an approximately 7-day split during season to account for the September goose season and youth hunt	Up to 4 geese; see below***; possession double the bag limit
American Coot	October - concurrent with youth hunt and duck season	25/day, 25 in possession

****Duck Bag Limits:** Based on USFWS Adaptive Harvest Management strategy; 7 ducks/ but not more than 2 hen mallards, 1 pintail, 2 scaup, 2 redhead, 1 harlequin, 4 scoter, and 4 long-tailed duck. Canvasback season closed. Written authorization from WDFW is required to hunt for sea ducks (harlequin, scoter, long-tailed duck).
***Brant season closed.

Migratory Species

Waterfowl

Flyway Analysis

Waterfowl populations throughout the United States are managed through an administrative process known as flyways, of which there are four (Pacific, Central, Mississippi, and Atlantic). The review of the policies, processes, and procedures for waterfowl hunting are covered in a number of documents.

NEPA considerations by the Service for hunted migratory game bird species are addressed by the programmatic document, ‘‘Final Supplemental Environmental Impact Statement: Issuance of Annual Regulations Permitting the Sport Hunting of Migratory Birds (FSES 88– 14),’’ filed with the Environmental Protection Agency on June 9, 1988. The Service published a Notice of Availability in the Federal Register on June 16, 1988 (53 FR 22582) and the Record of Decision on August 18, 1988 (53 FR 31341). Annual NEPA considerations for waterfowl hunting frameworks are covered under a separate Environmental Assessment and Finding of No Significant Impact. Further, in a notice published in the September 8, 2005, Federal Register (70 FR 53776) the Service announced its intent to develop a new Supplemental Environmental Impact Statement for the migratory bird hunting program. Public scoping meetings were held in

the spring of 2006, as announced in a March 9, 2006, Federal Register notice (71 FR 12216). This document will be completed during 2009.

Because the Migratory Bird Treaty Act stipulates that all hunting seasons for migratory game birds are closed unless specifically opened by the Secretary of the Interior, the Service annually promulgates regulations (50 CFR Part 20) establishing the Migratory Bird Hunting Frameworks. The frameworks are essentially permissive in that hunting of migratory birds would not be permitted without them. Thus, in effect, Federal annual regulations both allow and limit the hunting of migratory birds.

The Migratory Bird Hunting Frameworks provide season dates, bag limits, and other options for the States to select that should result in the level of harvest determined to be appropriate based upon Service-prepared annual biological assessments detailing the status of migratory game bird populations. In North America, the process for establishing waterfowl hunting regulations is conducted annually. In the United States, the process involves a number of scheduled meetings (Flyway Study Committees, Flyway Councils, Service Regulations Committee, etc.) in which information regarding the status of waterfowl populations and their habitats is presented to individuals within the agencies responsible for setting hunting regulations. In addition, public hearings are held and the proposed regulations are published in the Federal Register to allow public comment.

For waterfowl, these annual assessments include the Breeding Population and Habitat Survey, which is conducted throughout portions of the United States and Canada and is used to establish a Waterfowl Population Status Report annually. In addition, the number of waterfowl hunters and resulting harvest are closely monitored through both the Harvest Information Program (HIP) and Parts Survey (Wing Bee). Since 1995, such information has been used to support the adaptive harvest management (AHM) process for setting duck hunting regulations. Under AHM, a number of decision making protocols render the choice (package) of pre-determined regulations (appropriate levels of harvest) which comprise the framework offered to the States that year. The Washington Department of Fish and Wildlife Commission then selects season dates, bag limits, shooting hours, and other options from the Pacific Flyway package. Their selections can be more restrictive, but cannot be more liberal than AHM allows. Thus, the level of hunting opportunity afforded each State increases or decreases each year in accordance with the annual status of waterfowl populations.

Each National Wildlife Refuge considers the cumulative impacts to hunted migratory species through the Migratory Bird Frameworks published annually in the Service's regulations on Migratory Bird Hunting. Season dates and bag limits for National Wildlife Refuges open to hunting are never longer or larger than the State regulations. In fact, based upon the findings of an environmental assessment developed when a refuge opens a new hunting activity, season dates and bag limits may be more restrictive than the State allows.

As a result of the recent regulations, the estimated average annual duck harvest for the Pacific Flyway is 2.7 million birds which represent approximately 21 percent of the estimated average annual U.S. harvest of 13 million ducks (USFWS 2008c). The estimated average annual goose

harvest for the Pacific Flyway is 404,891 which represent 11.4 percent of the estimated annual U.S. harvest of over 3.5 million geese.

Regional Analysis

The estimated breeding duck population in Washington in 2008 was 120,896 birds, which was a 5.7 percent decrease from the 2007 (USFWS 2008c). The average estimated breeding duck population for Washington from 1990-2008 was 146,226 birds. Mallards generally comprise more than a third of each years breeding population estimate. With a North American breeding duck population of greater than 31 million, Washington does not provide a significant portion of the total population. Even Western Washington's midwinter duck and goose population of approximately 450,000 is only 6.4 percent of the flyway total of 7.1 million. Washington plays a larger role as a migratory corridor for birds migrating farther south for the winter and north to the Canadian and Alaskan breeding areas.

Annual harvest estimates for Washington indicate that a total of approximately 409,928 ducks and 73,314 geese have been harvested by some 31,000 (based on Federal Duck Stamp sales) waterfowl hunters in recent years (USFWS 2008c). This compares to the Pacific Flyway annual harvest numbers of 3.4 million ducks and 458,168 geese by about 270,000 waterfowl hunters.

Local Analysis

Historically, Native Americans have seasonally hunted and fished on the Nisqually Delta for thousands of years. Since the early 20th century and up to the establishment and acquisition of Refuge lands there were from one to four private hunting clubs operating on the delta. In the late 1960s the Washington Department of Fish and Wildlife acquired 3 large tracts of land on the delta totaling 617 acres which later became in-holdings in the Refuge. These State and private hunt club lands are/were open to hunting. Due to the difficulty in marking the complicated boundary between Refuge and State lands, much of the Refuge boundary was unmarked adjoining State lands. Consequently, unauthorized waterfowl hunting occurred on approximately 1,100 acres of Refuge lands since the establishment of the Refuge. The majority of lands were recently posted and waterfowl hunting is now controlled.

Refuge staff and volunteers monitored waterfowl harvest activities associated with State lands in the Nisqually Delta for many years. Based on varying levels of hunter bag checks conducted at the Luhr Beach boat ramp, analysis of the 1990-1997 data set showed that the annual number of ducks harvested per hunter visit ranged from 1.5 to 1.9 ducks/hunter visit (1992 and 1993 data were not included due to very limited sampling). The number of geese harvested ranged from 0.0 to 0.2 geese/hunter visit. Between 1990 and 1997, annual hunter visits ranged from 11 visits/day in 1997 to 31 visits/day in 1991 and 1994. The vast majority of ducks harvested were dabblers, primarily American wigeon, mallards, and green-winged teal. American wigeon comprised 51% of the total duck harvest over all years. Fifty-five percent of hunter visits occurred in the tideflats north of the Brown Farm Dike (USFWS data).

In October 1998, an intensive hunter bag check project was initiated to provide a more thorough monitoring effort through a complete season and better document and understand hunting activity on the delta. All hunting activities occurring on weekend days, holidays, and 41% of weekdays were monitored throughout the waterfowl hunting season. The results of this

monitoring effort showed similar results in terms of species harvest with wigeon, teal, and mallard comprising over 80% of the harvest. Hunter success averaged 1.5 birds/hunter-visit over the season. There were an estimated 1,000 to 1,200 hunter visits during the entire season. Hunter visits were four times higher on weekends, averaging 20.5 hunters visiting each weekend day, and only 5.2 hunters per weekday. The level of hunting activity was relatively stable throughout the season, with only a slight decrease in activity after mid-November.

Some private hunting (Medicine Creek Hunt Club) occurs on property south of the Refuge (across I-5), although use levels are believed to be low. Waterfowl hunting also occurs in the Trotter's Woods area on Fort Lewis lands south of I-5 by approximately 3-4 hunters.

Conclusion

The hunting of waterfowl in the United States is based upon a thorough regulatory setting process that involves numerous sources of waterfowl population and harvest monitoring data. As a result of the regulatory AHM options, in recent years, Washington hunter's harvested an estimated 450,000 ducks. This is approximately 3.1 percent of the U.S. harvest (14.5 million) and 13.2 percent of the Pacific Flyway's (3.4 million) estimated waterfowl harvest. Comparative numbers for estimated goose harvest yield percentages of 2.1 percent and 17 percent of the U. S. and Pacific Flyway totals, respectively.

The Service believes that hunting on Nisqually NWR will not have a significant impact on local, regional, or Pacific Flyway waterfowl populations for the following reasons:

- The area was hunted before the Refuge was established and unauthorized hunting occurred thereafter because of the lack of boundary signing
- Small acreage of wetland habitat on the Refuge compared to the total Pacific Flyway
- Small population of wintering waterfowl on the Refuge compared to the Pacific Flyway
- Low number of Refuge hunters and resulting harvest compared to the Pacific Flyway

Endangered Species

It is the policy of the Service to protect and preserve all native species of fish, amphibians, reptiles, birds, mammals, invertebrates, and plants, including their habitats, which are designated threatened or endangered with extinction. Federally listed species which occur on the Refuge include: brown pelican, marbled murrelet, bull trout, Chinook salmon, and steelhead.

Section 7 of the Endangered Species Act (ESA), as amended (16 U.S.C. 1531-1543; 87 Stat. 884), provides that,

> "The Secretary shall review other programs administered by him and utilize such programs in furtherance of the purposes of this Act" (and shall) "ensure that any action authorized, funded or carried out ... is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of (critical) habitat ..."

A Section 7 evaluation (USFWS 2008a) concluded that waterfowl hunting will have no effect or is not likely to adversely affect any of the special status species/designated critical habitat occurring on the Refuge including the brown pelican, marbled murrelet, bull trout, Chinook salmon, steelhead, and Steller sea lion. The Service believes that hunting on Nisqually NWR will not have a significant impact on endangered or threatened species.

Non-hunted Wildlife Species

Hunting is a highly regulated activity, and generally takes place at specific locations, times, and seasons (fall and winter), reducing the impact to non-hunted species. Sanctuaries (non-hunted areas) are also required on National Wildlife Refuges which give non-hunted species undisturbed habitat during the hunt season. In addition, other wildlife-dependent activities that overlap with waterfowl hunting, for example, some fishing or boating are less common during the rainy winter months, reducing the magnitude of disturbance to non-hunted wildlife species during hunt days. Furthermore, seasonal trail closures adjacent to the hunt area to ensure safety also reduce disturbance and provide more sanctuary areas for waterfowl and non-hunted species during the hunt season. Hunting is an appropriate wildlife management tool that can be used to manage harvestable game populations on a Refuge. Some wildlife disturbance will occur during the hunting season. However, when implemented with proper zoning, regulations, and seasons, hunting impacts will be minimized to non-hunted wildlife populations using the Refuge.

The CCP (USFWS 2004) balances all of the compatible priority public uses that occur on the Refuge with the mission of the Service and the purposes of the Refuge, and it is also consistent with the Refuge Improvement Act. Sensitive areas for fish, wildlife, plants, and cultural resources have been set aside as sanctuaries and are closed to the public or have seasonal closures. Portions of the Refuge that are open to the public allow regulated and carefully planned wildlife-dependent public uses. Compatible locations of trails and facilities, including restrooms and parking lots, have been chosen to minimize disturbance to wildlife. To minimize negative effects, areas that are known to have sensitive species would have restricted public access and may have temporary closures instituted for protection during critical lifecycle periods such as migration or wintering periods. Increased public education, trails and signage, brochures, and law enforcement will help to alleviate the degree of disturbance to non-hunted wildlife species.

Because hunting will be regulated to reduce impacts to non-hunted species and their habitats and appropriate closures or seasonal restrictions will be in place for other wildlife-dependent recreational users, and some reduction in use of the Refuge by other wildlife-dependent users would occur during the winter waterfowl hunting season, biological diversity of non-hunted species on the Refuge will not be impacted.

As stated in the Waterfowl Hunt Plan (USFWS 2008b), biological impacts will be minimized by the following:

- A 25-shell limit would be instituted on Refuge and WDFW lands.
- Refuge and hunt area boundaries would be clearly posted.
- The Refuge would provide a brochure that shows hunt areas.

- Service law enforcement staff would randomly check hunters for compliance with State laws and refuge-specific regulations pertinent to the hunt including compatibility stipulations.
- Service law enforcement staff would coordinate with WDFW and other law enforcement agencies. WDFW officers would patrol, when available, to help ensure compliance with hunting regulations.
- Information would be made available at the Refuge headquarters, Refuge website, and at the State boat launching site at Luhr Beach.

Hunting will not result in significant disturbance to non-hunted wildlife species on the Refuge. Harvesting waterfowl would not result in a decrease in biological diversity on the Refuge.

Anticipated Direct and Indirect Impacts of Proposed Action on Refuge Programs, Facilities, and Cultural Resources

Other Refuge Wildlife-Dependent Recreation

The Nisqually NWR Final CCP was designed to provide high quality wildlife dependent recreation, sufficient wildlife sanctuary, and to minimize conflicts between various users. A variety of open, closed, and seasonal or restricted use areas were identified as part of the CCP, both to minimize impacts to wildlife and to reduce or eliminate conflicts between various users. Waterfowl hunting can affect other wildlife-dependent recreation opportunities in a variety of ways. Some non-hunters may plan their visits to avoid coinciding with hunting activity. A portion of Nisqually NWR trails are closed seasonally during the waterfowl hunting season where they adjoin WDFW hunt areas to ensure visitor safety, minimize visitor conflict, and provide sanctuary areas for migratory birds. This closure is limited to the waterfowl hunt season from October to January and does not affect use or activity at the Refuge visitor center, parking lots, the 1-mile Twin Barns boardwalk trail, or on a portion of the trail along the Nisqually River. Hunters would access the Refuge hunt area only by boat. Other boating activity continues throughout the hunt season, including fishermen, kayakers, and general boating. A relatively small portion of Refuge tideflats (191 acres) would be open to waterfowl hunting, helping to minimize conflicts with other recreation users and those impacts would be limited to the hunt season. The CCP provides a balance of hunting, other wildlife-dependent opportunities, and sanctuary areas on the Refuge to minimize those situations where direct conflicts between user groups may occur. Opportunities for other quality wildlife-dependent recreation opportunities will continue to be provided year round.

Trail use is highest during the spring and summer months, so this use pattern helps to reduce the overall impacts caused by seasonal trail closures. The 1-mile boardwalk trail and portions of the main Brown Farm Dike Trail remain open year round. Figure 1 shows the trails and hunt areas. Managed and regulated hunting, through proper zoning, regulations, and seasons (generally consistent with WDFW) will maintain species populations to levels where quality wildlife observation and interpretation will continue to be provided on the Refuge.

Refuge Facilities

Hunting is conducted by foot/boat by individuals or small groups, often accompanied by a hunting dog. This direct impact of travel by hunters on the habitat is often different from that of

other wildlife-dependent recreation users because hunters tend to travel in very dispersed patterns over wide areas, minimizing the chances of negatively impacting sites (in contrast to the tendency of some other wildlife-dependent recreation users to congregate on a limited number of trails).

Because all Refuge hunt areas will be accessed only by boat, they will not be open for vehicle or off-road vehicle traffic. Access to the hunt area on the Refuge is either from the WDFW boat ramp at Luhr Beach or the boat ramp at Solo Point on Fort Lewis property. Few hunters access the Refuge from other parts of Puget Sound or upstream on the Nisqually River or McAllister Creek. There will be no impacts to Refuge facilities including roads and trails from waterfowl hunting activities on the Refuge.

Cultural Resources

Tidal conditions and limitations in accessing areas within the tideflats protect cultural resource sites on the Refuge. In addition, sensitive areas of the Refuge have been protected as sanctuaries and are not opened to the public or have restricted access. Therefore, there will be little or no impact to cultural resources from hunting activities on the Refuge.

Anticipated Impacts of Proposed Hunt on Refuge Environment and Community

Refuge Environment

Impacts to Refuge soils and vegetation by hunters are expected to be minimal, such as insignificant soil compaction. Hunting is conducted by boat or on foot but within close proximity to the boat by individuals or small groups often accompanied by a hunting dog. Hunters would tend to travel in very dispersed patterns over wide areas of tidal mudflats minimizing the chances of negatively impacting refuge estuarine habitats. In contrast, the tendency of many other wildlife-dependent recreation users is to congregate on a limited number of trails. In addition, the difficulty in walking in tidal mudflats generally limits the amount of walking that hunters do in the Nisqually estuary.

Boating activity associated with hunting during the fall and winter can alter wildlife distribution, reduce use of particular habitats or entire areas by waterfowl and other birds, alter feeding behavior and nutritional status, and cause premature departure from areas (Knight and Cole 1995). Access to the Refuge hunt area is by boat only. However, boating already occurs on McAllister Creek, Nisqually River, and the tideflats but not on the interior of the Refuge land base, hence disturbance caused by boats is limited more to the Refuge perimeter boundaries. Boating is a traditional use in the Nisqually estuary. Boat restrictions were developed as part of the Nisqually NWR CCP to reduce disturbance and improve wildlife protection, including boat speed limits of 5 mph in Refuge waters and seasonal closures in the Research Natural Area from October 1 to March 31 (located outside of the proposed hunting area). Recreational boating use includes motorboats and non-motorized boats, including kayaks and canoes in those waters under the jurisdiction of the Refuge which was determined to be a compatible use (Recreational Boating Compatibility Determination in USFWS 2004). The compatibility determination does not include the operation of personal watercraft. Because there will a limited number of

waterfowl hunters accessing the refuge mudflats by boats with motors adhering to US EPA requirements for 2- and 4-cycle motors, there will be minimal impacts to air quality and solitude.

Lead poisoning has been a chronic and significant cause of migratory bird (primarily waterfowl) mortality associated with hunting in some areas of North America. Birds ingest spent lead shotgun pellets. The pellets are ground in their gizzards, converted to soluble form, and absorbed into tissues, which can have lethal effects. Secondary poisoning of predatory birds can also occur when they feed on birds carrying lead pellets embedded in body tissues (USDI 1988). The Service has mandated the use of nontoxic shot for waterfowl hunting on all refuges (USDI 1988).

Other potential sources of impacts, such as littering specifically associated with hunting, are not known to be significant.

In summary, the Service believes that waterfowl hunting activities by a limited number of hunters on a small area of Refuge lands (<200 acres) will not have significant additional impact to water quality, air quality, soils, vegetation, or solitude. Waterfowl hunting occurs in fall and early winter under restricted circumstances which reduce possible conflicts between the different user groups that could impact solitude.

Community

Refuge Neighbors and Economy

The proposed opening of 191 acres of Refuge tideflats to waterfowl hunting will create a block of lands contiguous with WDFW-hunted lands (617 acres) that will support a traditional hunting activity in the Nisqually estuary. Based on past waterfowl hunting on WDFW lands (and previously unmarked Refuge lands), a significant increase or decrease in hunting levels is not anticipated. The actual amount of waterfowl hunting on Refuge lands is not expected to change because hunting occurred during past years on the Refuge. Therefore, it is not anticipated that opening Nisqually NWR to waterfowl hunting will have a significant impact on the local community or its economy.

Other Past, Present, Proposed, and Reasonably Foreseeable Hunts and Anticipated Impacts

Past

The Refuge was established in 1974 in recognition of the area's unique fish and wildlife resources. These lands were acquired from willing sellers and consisted primarily of 1285 acres of diked grasslands, freshwater marshes, and tidelands. At least 4 waterfowl hunting clubs were included as part of the initial acquisition. Funds from the sale of Duck Stamps provided the bulk of the initial purchase monies for the Refuge acquisition.

Hunting has traditionally occurred on the Nisqually Delta on private, WDFW, and unmarked federally owned Refuge lands.

Present

Wildlife populations on the Nisqually Delta are currently hunted only on WDFW lands along McAllister Creek and on the tideflats (Figure 1). Hunting is a highly regulated activity and generally takes place at specific times and seasons (fall and winter) when game animals are less vulnerable (e.g., breeding season) and other wildlife-dependent activities (e.g., wildlife observation, environmental education, and interpretation) are less common, reducing the magnitude of disturbance to Refuge wildlife. Managed and regulated hunting will not reduce species populations to levels where other wildlife-dependent uses will be affected.

The hunt program at Nisqually NWR would provide consistent management with the waterfowl hunt program on adjacent WDFW lands and waters, preventing confusion among hunters on the river, allowing consistent law enforcement and education on hunt regulations and areas, and providing improved sanctuary areas for wildlife.

Reasonably Foreseeable Hunts

The most important consideration in the maintenance of wildlife populations is the protection of their habitat. The Service, WDFW, Washington Department of Natural Resources, the Nisqually Indian Tribe, Nisqually Land Trust, The Nature Conservancy, and many other partners and agencies are all working to protect and restore native habitats in the lower Nisqually watershed and south Puget Sound. Habitat protection and restoration helps to fulfill the Service's congressional mandate to conserve, manage, and restore native habitats for threatened and endangered species, songbirds, waterfowl, other migratory birds, anadromous fish, and plant communities. As part of implementation of the Nisqually NWR Final CCP, Nisqually NWR has begun construction of a large estuary restoration project. This project will restore 762 acres of estuary habitat that was previously managed as diked freshwater wetlands. This is the largest estuary restoration project in the Pacific Northwest and it will benefit many fish and migratory birds of the south Puget Sound area. Habitat restoration locally and ongoing throughout the greater regional area will have a positive effect on wildlife populations that use the Refuge. Boat activity and hunting will not be allowed on the newly restored estuary lands.

Although waterfowl hunting directly impacts shot individual animals (killed or wounded), the amount of harvest is not expected to have a measurable effect on Refuge overall wildlife population levels, especially considering hunting activity is not expected to be high on the mudflats. In addition, hunting is monitored, regulated, and designed to ensure that harvest does not reduce populations to unsustainable levels. Moreover, the amount of hunting on the Refuge is not expected to increase significantly in the foreseeable future. Because additional existing Refuge lands are being restored to improved or restored habitat for waterfowl and other non-hunted wildlife, the Service believes the impacts of the existing hunting program will not increase in the future.

Based on observations and years of monitoring of hunter activity in the Nisqually Delta, the amount of hunting on the Refuge is not expected to increase significantly in the future (USFWS, unpublished data). Nisqually NWR enlarged its approved Refuge boundary as part of the Nisqually NWR Final CCP, allowing protection of additional lands from willing landowners in the lower Nisqually watershed. If enough lands were acquired in the future, waterfowl hunting could be considered in those areas, however, it is expected that this is a longterm goal that would

take many years and require a planning process including NEPA evaluation before additional hunting would be implemented on the newly acquired lands of the Refuge.

Anticipated Impacts if Individual Hunts Are Allowed to Accumulate

There are 23 National Wildlife Refuges in Washington providing 325,239 acres of wildlife habitat. Hunting, fishing, wildlife observation, photography, environmental education, and interpretation are enjoyed by millions of visitors annually on Refuges throughout the U. S. Refuges are also wild places where people can find solace and reconnect with nature. For the reasons cited earlier, the proposed waterfowl hunting program at Nisqually NWR would be expected to have no effects on wildlife populations on other Refuges.

NWRs, including Nisqually NWR, conduct hunting programs within the framework of State and Federal regulations. The proposed Refuge waterfowl hunting program will be generally in compliance with hunting regulations throughout the State of Washington. By maintaining hunting regulations that are as, or more restrictive than the State, individual Refuges ensure that they are maintaining seasons which are supportive of management on a more regional basis. The proposed waterfowl hunt has been reviewed and is supported by WDFW. Additionally, Refuges in Washington coordinate annually with WDFW to maintain regulations and programs that are consistent with the State management program. As a result, waterfowl hunting on Nisqually NWR will have an extremely minor impact on wildlife species on Refuges in Washington. There is a benefit to hunters by permitting waterfowl hunting on the Refuge; however, since the amount of hunting anticipated to occur on the Refuge does not represent a marked increase in hunting opportunity, this benefit does not represent a cumulatively significant effect.

The Service has concluded that there will be no significant cumulative impacts on the Refuge's wildlife populations, either hunted or non-hunted species. The Service has also concluded that the proposed action will not cumulatively impact the Refuge environment or Refuge programs. This determination was based upon a careful analysis of potential environmental impacts of hunting on the Refuge together with other projects and/or actions. Some wildlife disturbance will occur during the annual waterfowl hunting season. Proper zoning, regulations, and hunt season will be designated to minimize any negative impacts to wildlife populations using the Refuge. Due to the nature of Refuge habitats and the waterfowl hunt area (entirely boat access to mudflats and tidelands that are subject to an extreme range of daily tidal fluctuations), and based on years of harvest data collection from adjoining WDFW-hunted lands, we anticipate that hunter and harvest numbers will be limited on the Refuge. Waterfowl hunting would not result in a substantial decrease in biological diversity on the Refuge.

Based upon historical waterfowl hunting that has occurred on the Refuge, an increase in number of hunter visits is not expected for the foreseeable future. It is predicted that there will be limited waterfowl hunting due to it being boat access only and the difficulty in navigating the mudflats and tidelands in varying tidal conditions. Field checks by Service law enforcement officers will be planned, conducted, and coordinated with staff and other agencies to maintain compliance with regulations and monitor hunting activity.

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