

DRAFT
Waterfowl Hunting
Decision Document Package

for

Julia Butler Hansen Refuge for the
Columbian White-tailed Deer

Wallace Island Unit

Willapa NWR Complex

Contents

1. Draft Environmental Assessment

**DRAFT
Environmental Assessment**

2007 Waterfowl Hunt Plan

Wallace Island Unit

Of

JULIA BUTLER HANSEN REFUGE
FOR THE
COLUMBIAN WHITE-TAILED DEER

WAHAKIAKUM COUNTY, WASHINGTON

For Further Information, Contact:
Project Leader
U. S. Fish and Wildlife Service
Willapa NWR Complex
3888 SR 101
Ilwaco, WA 98636

Prepared by:
U. S. Department of Interior
Cathlamet, Washington
March 2007

TABLE OF CONTENTS

INTRODUCTION.....6

Chapter 1 PURPOSE OF AND NEED FOR ACTION6

Chapter 2 ALTERNATIVES INCLUDING THE PROPOSED ACTION.....7
 No Action Alternative
 Proposed Action

Chapter 3 AFFECTED ENVIRONMENT.....8
 Physical Environment
 Social and Economic Environment
 Vegetation
 Wildlife Resources
 Columbian White-Tailed Deer and Other Wildlife
 Threatened, Endangered, and Candidate Species

Chapter 4 ENVIRONMENTAL CONSEQUENCES.....18
 Effects Common to all Alternatives
 Other Effects
 Effects to Habitat
 Effects to Hunted Wildlife
 Effects to Non-hunted Wildlife
 Effects to Endangered and Threatened Species
 Effects to Refuge Facilities
 Effects to Wildlife-Dependant Recreation

 Cumulative Effects Analysis.....23

 Anticipated Direct and Indirect Effects of Proposed Action on Wildlife Species
 Migratory Wildlife (Waterfowl)
 Non-hunted Migratory Wildlife
 Resident Wildlife
 Endangered Species

 Anticipated Direct and Indirect Effects of Proposed Action on Refuge Programs,
 Facilities, and Cultural Resources
 Other Wildlife-Dependent Recreation
 Refuge Facilities
 Cultural Resources

 Anticipated Effects of Proposed Hunt on Refuge Environment and Community

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

Anticipated Effects if Individual hunts are allowed to Accumulate

Chapter 5 CONSULTATION AND COORDINATION WITH OTHERS.....33
Chapter 6 REGULATORY COMPLIANCE.....33
Appendix A LITERATURE REFERENCES.....35
Appendix B DRAFT WALLACE ISLAND HUNT PLAN.....37
Appendix C COMPATABILITY DETERMINATION.....49

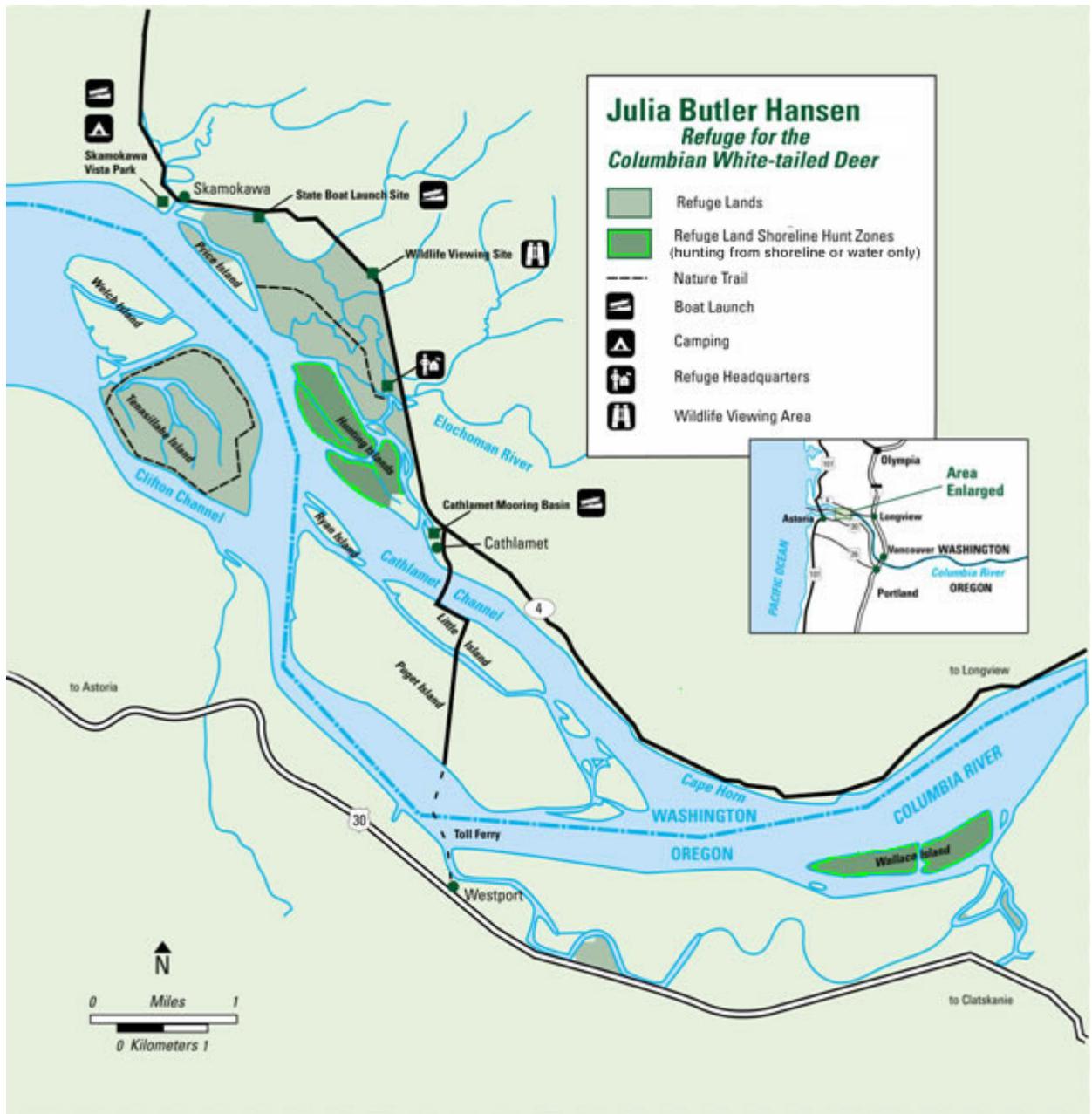


FIGURE 1 REFUGE UNITS

Introduction

This Draft Environmental Assessment 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 effects 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, including Julia Butler Hansen Refuge for the Columbian White-tailed Deer.

Chapter 1 Purpose of and Need for Action

The Julia Butler Hansen Refuge for the Columbian White-tailed Deer (Julia Butler Hansen Refuge, Refuge) was established in 1971 to protect and manage habitat for the Columbian white-tailed deer (CWT deer). The refuge contains over 6,200 acres of fields, forested tidal swamps, brushy woodlots, marshes and sloughs along the lower Columbia River in both Washington and Oregon. The principal units of the refuge are the Mainland Unit, Hunting Islands, Price Island, Tenasillahe Island, Wallace Island and Crims Island (not shown) (Figure 1). The refuge is managed by the U. S. Fish and Wildlife Service (Service) and is one of more than 500 National Wildlife Refuges in the United States.

The goals of the Julia Butler Hansen Refuge are (Refuge Management Information System, 1998):

- To manage for healthy and balanced populations of Columbian white-tailed deer on the refuge, as outlined in the Columbian white-tailed deer Recovery Plan (USFWS 1983), and cooperate with others in management of off-refuge deer.
- To maintain a native diversity of wetland habitats for breeding/migratory/wintering waterfowl and other aquatic migratory birds associated with the Columbia River estuary.
- To maintain a native diversity of habitats for fish and wildlife associated with the Columbia River estuary.
- To provide opportunities for wildlife/wildlands-dependent recreation, education, and research.

The National Wildlife Refuge System Administration Act of 1966 as amended by the National Wildlife Refuge System Improvement Act of 1997 (16 U.S.C. 668dd et seq.) provides authority for the Service to manage the Refuge and its wildlife populations. In addition it declares that compatible wildlife-dependent public uses are legitimate and appropriate uses of the Refuge System that are to receive priority consideration in planning and management. There are six wildlife-dependent public uses: hunting, fishing, wildlife observation, and photography, and environmental education and interpretation. The Act directs managers to increase wildlife-

dependent opportunities, including hunting, on National Wildlife Refuges when compatible with the purposes for which the Refuge was established and the mission of the National Wildlife Refuge System.

The purpose of this Draft Environmental Assessment is to evaluate the formal opening of the Wallace Island Unit of the refuge to hunting of waterfowl. The waterfowl hunt would be held in conjunction with the current State of Oregon waterfowl hunting season. Under the proposed alternative an additional 30,500 feet of refuge shoreline (5.8 miles) on the Wallace Island Unit of the refuge would be opened to waterfowl hunting. Hunting is currently permitted on State of Oregon-owned waters surrounding Wallace Island which are all tidally influenced and submerged lands below mean high water (MHW). Opening the Refuge owned portion of Wallace Island shoreline will complement State permitted activities and resolve potential problems over the exact position of the Refuge boundary and associated law enforcement that would exist with a waterfowl hunt closure.

Chapter 2 Alternatives Including the Proposed Action

This chapter discusses the alternatives considered for waterfowl hunting on the Wallace Island Unit of the Refuge. These alternatives are the 1) No Action - which will not initiate a hunt program on the Wallace Island Unit and the 2) Proposed Action - which formally implements the Refuge's 2007 Waterfowl Hunting Management Plan for the Wallace Island Unit.

No Action Alternative: No Hunt Program

Under this alternative, waterfowl hunting would be limited to the 6.8 miles of shoreline currently open to hunting on the Hunting Island Unit of the Refuge and to the species currently allowed to be hunted, including ducks, geese, coots and common snipe.

Proposed Action: 2007 Waterfowl Hunting Plan for the Wallace Island Unit, Julia Butler Hansen Refuge.

The proposed action would increase land open to hunting by 5.8 miles of shoreline on Wallace Island (Figure 1). All hunting would be in accordance with the State of Oregon waterfowl hunt season regulations. All or parts of the refuge may be closed to hunting at any time if necessary for public safety, to provide wildlife sanctuary, or for administrative reasons, or for other legitimate purposes. The reader is referred to the 2007 Waterfowl Hunting Plan for the Wallace Island Unit of the Refuge for a more-detailed description of this alternative, including specific regulations. The Hunt Plan is incorporated into this document through reference.

Chapter 3 Affected Environment

The Julia Butler Hansen and Lewis and Clark National Wildlife Refuges are located around and within the Columbia River Estuary in southwestern Washington (Wahkiakum County) and in northwestern Oregon (Clatsop and Columbia Counties). The field office that services both refuges is located approximately two miles west of Cathlamet, Washington, along Washington Highway 4, within the Julia Butler Hansen Refuge.

Both refuges are part of the Willapa National Wildlife Refuge Complex. The administrative office for the Complex is located approximately 13 miles north of the town of Ilwaco, in Pacific County, along Washington State Route 101.

The Julia Butler Hansen Refuge contains over 6,200 acres of pastures, forested tidal swamps, brushy woodlots, marshes, and sloughs in both Washington and Oregon (Figure 1). The Refuge is located along the Columbia River from river mile 33 to 50. Virtually all refuge lands were originally inter-tidal wetlands; some areas were diked, drained, and converted to uplands early in the 20th century, prior to refuge establishment. In-holdings owned by Wahkiakum County include two parcels just east of the Mainland Unit and half of Price Island in Washington. At the Westport Unit in Oregon, three small tracts with private ownership totaling less than 18 acres are located between the Westport Slough and the refuge boundary.

Surrounding land use involves mostly agricultural production and water recreation on the refuge. The Columbia River lies adjacent to a large portion of the Julia Butler Hansen refuge and provides a multitude of benefits including fishing, hunting, cargo ship transportation, boating recreation and floating recreational cabin use. At the Mainland Unit of the Refuge, Washington State Highway 4 borders the northwest boundary of the refuge. A 250-acre cottonwood plantation (Nelson Creek property) is located across the road from the refuge and is owned by the Columbia Land Trust for its riparian and fisheries values. To the northwest of the Mainland Unit are diked pasture lands which are being managed as a combination of enhanced wetlands and hayed/grazed pastures for waterfowl hunting opportunities.

Although heavy industry is limited in the area, there are a few industries that are located near refuge lands. The main area of note is owned by the Port of Clatskanie in the Clatskanie Flats across the channel from Crims Island. This area has one natural gas power generating facility in use, with construction on another plant just being completed. A third plant to process ethanol has recently begun construction. A fourth plant, a liquid natural gas (LNG) facility is being proposed for the Clatskanie Flats area. Downriver near Tenasillahe Island another LNG facility is being proposed for construction on the Oregon shoreline of the Columbia River across the channel from the refuge. The proposed facility would be constructed approximately ½ mile from refuge lands and is scheduled for completion in 2010.

Physical Environment

The Julia Butler Hansen Refuge is divided into seven management units. The Mainland Unit, Hunting Island, and Price Island Units are in Washington. The Tenasillahe Island, Wallace Island, Westport and Crims Island Units are in Oregon.

The *Mainland Unit* contains 2,238 acres and is located along the Columbia River between the towns of Cathlamet and Skamokawa, Washington. The Elochoman River joins the Columbia River in the southeast part of the unit. Most of the unit is diked along the rivers to prevent tidal flooding. Drainage is accomplished by six tide gates, a pump, and a system of ditches and natural sloughs that move water from within the diked area into the rivers and sloughs outside the dikes. The unit's vegetative cover is a mosaic of brushy woodlots, actively managed pastures, and old grass fields. The Mainland Unit also includes approximately 151 acres of forested inter-tidal swamp and marsh on the east side of the Elochoman River that is not diked.

The Elochoman River separates the *Hunting Island Unit* from the southwestern edge of the Mainland Unit. The refuge owns the northern 747 acres of the island, while 80 acres at the southern tip are being held in trust by the Bureau of Indian Affairs. Forested inter-tidal swamp and shrub/scrub occupy most of the island, although there are a few areas of inter-tidal marsh totaling perhaps 100 acres.

Price Island lies along the northwestern edge of the mainland unit, separated from the mainland by Steamboat Slough. The northern 150 acres are within the refuge, while Wahkiakum County owns approximately 100 acres of the southern end of the island. The island is primarily a Sitka spruce intertidal swamp, although there is a sandy upland of 30 acres that was created by dredge spoil.

Tenasillahe Island lies just across the main channel of the Columbia and west of the Mainland, Hunting Island, and Price Island units. The island is 1,950 acres in size, of which 1,700 acres are surrounded by a dike. The diked area is similar to the mainland unit in water drainage and land cover. The interior drainage of the island is accomplished by ditches, sloughs, and four tide gates in two locations. The island's vegetation is a mix of woodlots, brush, pastures, and old grass fields. The southern tip of the island consists of a black cottonwood/Sitka spruce inter-tidal swamp that encompasses 250 acres and is not diked.

Wallace Island is located in the Columbia River between river mile 47 and 50, approximately ten miles upstream (southeast) of the Mainland Unit. The island is on the south side of the Columbia, at the mouth of the Clatskanie River and is separated from the Oregon mainland by Wallace Slough. The 578-acre Island consists almost entirely of a cottonwood/willow inter-tidal swamp, with two small reed canary-grass dominated meadows. This unit also includes Kinnunen Cut, a 37-acre island located in the lower Clatskanie River one-half mile south of the eastern end of Wallace Island, and 60 acres on adjacent Anunde Island although only Wallace Island proper would be opened to hunting under the proposed alternative. The remaining 85 acres of Anunde Island are in private ownership. The vegetation on Kinnunen Cut and Anunde Islands is a mix of cottonwood/willow swamp and wet meadows dominated by reed canary-grass.

Crims Island is located at the far upstream end of the refuge on the Columbia River between river mile 54 and 56. It is the newest addition to the refuge and consists of a main island and peninsula separated by a slough channel to the north. The island is separated from the Oregon mainland by the Bradbury Slough to the south, and to the north it is separated from the Washington mainland by the Columbia River ship channel. The refuge owns 451 acres and shares ownership of the remainder of the island with four adjacent owners. Gull Island which is located at the tip of the northern peninsula is separated by a narrow channel to the east from the peninsular portion of Crims Island and by a larger slough channel to the south from the main part of the island. This 750-acre Crims-Gull Island Complex is dominated by a large reed canary-grass meadow in its center with, a 90-acre cottonwood/willow inter-tidal swamp to the west and an accreted spoil site with cottonwoods on the northern peninsula.

The *Westport Unit* is located on the Oregon mainland approximately four miles southeast of the mainland unit and one mile east of the town of Westport. The Westport Unit is 145 acres and bordered on three sides by Westport Slough and on one side by Oregon State Highway 30. The unit's vegetation is dense cottonwood/willow and shrub/scrub swamp. Three small parcels which total less than 18 acres are located between the refuge boundary and the Westport Slough.

Hydrology, Geology and Soils

The Wallace Island Unit is positioned in the lower part of the Columbia River. The lower Columbia River ecosystem extends 146 river miles, from Bonneville Dam to the Pacific Ocean. The basin of the lower Columbia River includes the basins of lower tributary streams, the largest of which are the Willamette, Cowlitz, Kalama, Sandy, and Lewis Rivers. Downstream from St. Helens, Oregon, the Columbia River cuts through the coast range, a passage marked by steep-shouldered bluffs and broad alluvial floodplains. The river channel, dotted with low islands of deposited sediments throughout its lower reaches, opens out below Skamokawa, Washington, into several broad bays that extend more than 30 miles to the Pacific Ocean.

Historically, flooding within the Columbia River was the product of regional precipitation, the rate and volume of snowmelt, and synchronization of runoff between the Columbia and Snake River drainages. Construction of over 200 dams on the Columbia River and its tributaries has dramatically altered the historic hydrology. Dams now impose additional water level fluctuations to meet demands for hydro-electricity, agriculture, navigation, pool recharge, recreation, fisheries, and water quality priorities. (Scherer, N. M. 1991)

The soil types on the Wallace Island Unit are primarily made up of alluvial floodplain soils; such as Locoda, Wauua-Locoda silt loams, and Udipsamments. (<http://www.soils.usda.gov>).

Water Quality

Fish and wildlife in the lower Columbia River are exposed to a range of pollutants known to cause adverse health effects via contaminated water, sediments, and prey. In *The Health of the River*, the Bi-State Water Quality Program summarized results from a six-year study to assess

the state of the lower Columbia River. (Tetra Tech. 1996) It found that fish-eating wildlife, specifically river otter, mink, and bald eagle, are being contaminated by man-made organic pollutants. These pollutants, especially dioxins and furans, DDE (a metabolic byproduct of DDT), and PCBs are found in a number of locations in the river at levels that may be harmful to wildlife. The primary unregulated sources of pollutants include non-point sources such as urban and agricultural run-off.

Social and Economic Environment

Cultural Resources

The geographic setting of the refuge--occupying both islands and mainland along the lower Columbia River--is at the heart of prehistoric and historic travel, hunting, and resource collecting routes. The refuge is situated within the traditional domain of the Cathlamet and Wahkiakum groups of Lower Chinookan Indians. Chinookans had lived on the Columbia River for thousands of years before Euro-American explorers first arrived in the area. Settled in autonomous villages on both shores from its mouth to The Dalles, the Chinookans used the river as a highway to carry trade goods between the coast and the interior. Their strategic control over the lower Columbia made them wealthy and powerful traders.

The Wahkiakum and Cathlamet were active participants in the Euro-American trade network that evolved during the first half of the 1800s. But their numbers dwindled as warfare, liquor, and especially introduced diseases took their toll on all the native people of the Columbia River. By the 1840s, few Chinookans remained in their traditional places on the river, and white settlers began arriving in the 1850s.

A thorough cultural resources inventory of the Mainland Unit of the refuge was conducted in 1981 (Gilbow et. al). It was determined that most historical and pre-historical artifacts, if they exist, are buried several feet deep under sediment. These artifacts may include items such as remnants of native peoples' villages or boats, arrowheads and foundations of settler structures. No other cultural resources studies have been conducted in other areas of the refuge. However, due to the movement of the river over the years, and the fact that the proposed hunting site is located in a flood plain, it is considered unlikely that any permanent habitations would have occurred in the shoreline area.

Socio Economic

The Wallace Island Unit is located in Columbia County, Oregon and is bordered on the east by the Columbia River, on the south by Multnomah County and Washington County, and on the west by Clatsop County. The southern County line is approximately 30 minutes from Portland, the largest metropolitan area in Oregon. The western County line is approximately 30 minutes from the Pacific coast.

The County's northern and eastern boundaries are outlined by 62 miles of Columbia River shoreline. Columbia County enjoys the longest stretch of the Columbia River in the State of

Oregon. The Columbia River is a major route of ocean-going vessels and is a popular fishing ground, as well as a popular boating and windsurfing river.

Facts regarding the early history of Columbia County are few. It is known that a New England trading vessel, the *Columbia Rediviva*, commanded by Captain Robert Gray arrived in the summer of 1792 with the first Euro-Americans to see the County's timbered shoreline. In 1805, the explorers Lewis and Clark traveled and camped along the County's Columbia River shoreline. Carved out of Washington County in 1854, its more recent past was tied to commercial fishing, water transportation and lumber. Industrialization has accelerated in recent years but timber, dairy and horticulture remain important. Natural gas fields have been identified and are producing.

The County offers the only two marine parks in Oregon: Sand Island on the Columbia River and J.J. Collins Memorial Marine Park on the Multnomah Channel.

According to the U.S. Census Bureau, in 2003 the median household income in Columbia County is \$47,072. The current economic impact of the refuge and its management practices on the surrounding communities is relatively minor as the refuge only manages around 900 acres of land in the county. Wallace Island, Crims Island and the Westport Unit are all located in Columbia County, Oregon.

Currently, opportunities for waterfowl hunting are concentrated in the Columbia River and surrounding sloughs in the lower estuary. Hunter density on Wallace Island is estimated to be an average of 1 hunter per 35 acres throughout the hunting season (based on a 5.8 mile shoreline, 100 foot width and an average of two hunters per day). The main recreational pursuits on the refuge are generally wildlife viewing, photography, hunting and fishing.

Vegetation

The native vegetation of the Julia Butler Hansen Refuge is classified as a tideland spruce community, although this vegetation type is intact only in specific smaller sites such as portions of Hunting Island and on Price Island. Much of the mainland and Tenasillahe Island has been cleared of their forest overstory and consist of pastures separated by woodlots, sloughs and ditches. Where the forest canopy has been removed, openings are occupied by reed canarygrass, or planted varieties of grass such as orchard grass and tall fescue (all non-native species). Unless these grass lands are manipulated in some way, growth is exceptionally heavy. Within wooded areas, the understory consists of various grasses and forbs. Snowberry, rose, blackberry, hazelnut, and dogwood are common understory shrub species.

Forest resources consist primarily of the Sitka spruce, black cottonwood, willow, red alder and western red cedar swamps in the wet lowlands and the Sitka spruce/western red alder forest in the uplands. The primary early-successional species are red alder and willow with later-successional species being Sitka spruce and black cottonwood. In areas of the lower river with significant tidal fluctuations, willow-dominated communities may be considered later-successional. The forest swamps that grow on the Julia Butler Hansen Refuge and Lewis and Clark NWR are specialized plant communities within the Sitka spruce forest zone of western

Washington and Oregon. Sitka spruce is indicative of a coastal climate. The forest swamps are very wet most of the year and can have standing water for long periods of time during the wet season. The coastal climatic influence disappears east of Cathlamet, Washington, where the Sitka spruce dominated forests become cottonwood dominated forests.

Managed woodlots have been planted each year since 1999 to supplement the native forest cover on the Refuge. The managed woodlots have been created on the Mainland and Tenasillahe Units, in areas that were formerly old grass fields. The woodlots are generally comprised of native seedling and sapling trees and shrubs.

Columbian White-Tailed Deer and Other Wildlife Resources

The varieties of wildlife habitats on the refuge provide an abundance of wildlife. More than 200 species of birds, 50 species of mammals, and 14 species of amphibians and reptiles are known to occur in and around the refuge. To avoid repetition, species will not be separated out into categories in later chapters of this document.

Columbian White-tailed Deer

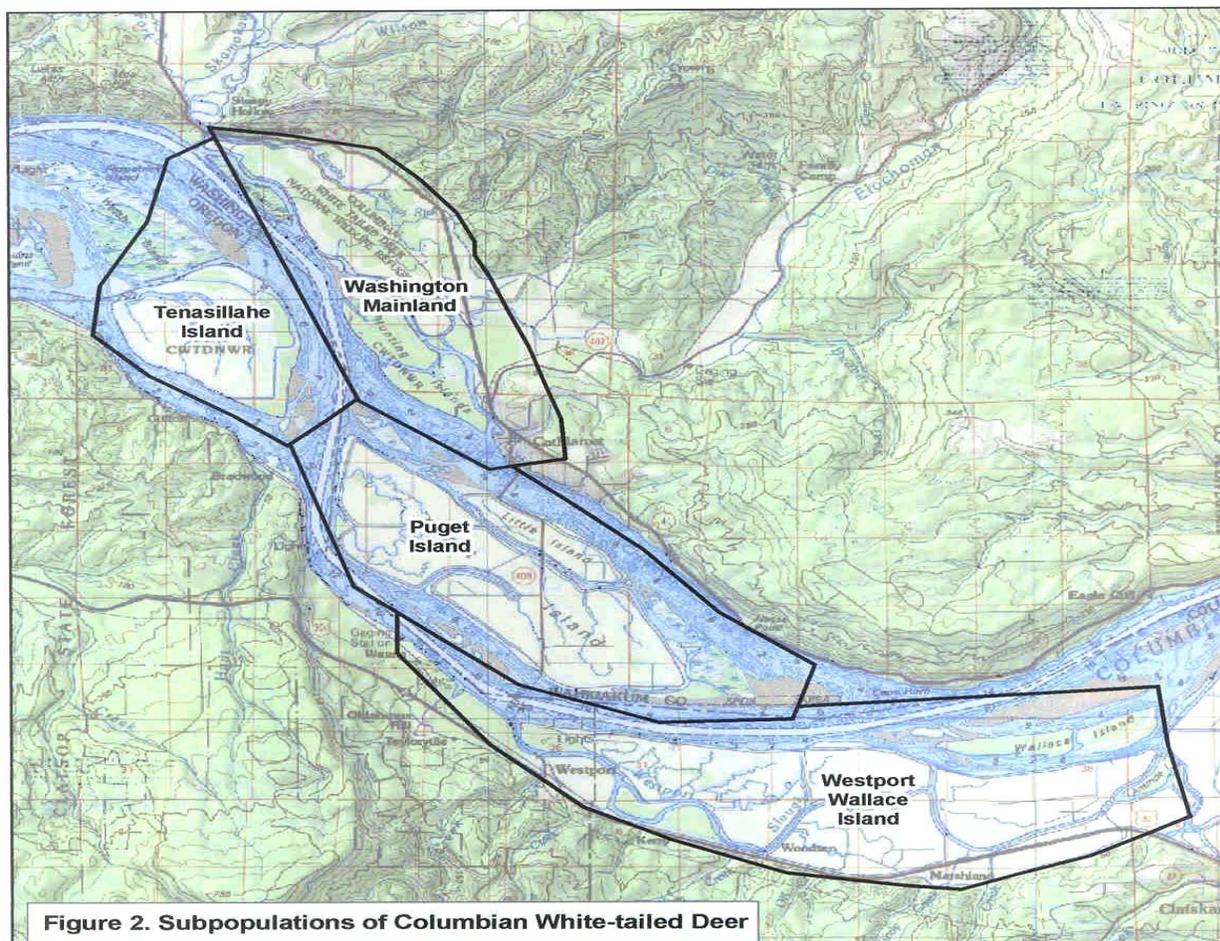
The Columbian White-tailed deer (*Odocoileus virginianus leucurus*) is one of 30 subspecies of white-tail in North and Central America (Baker 1984). It is the only white-tail found west of the Cascade Mountains. It is similar in appearance to the other subspecies, although genetic differences have been noted (Gavin and May 1988). CWT deer first received Federal recognition as an endangered species in 1968, and was formally listed in the Endangered Species Act of 1973. Formerly widespread in the Columbia River drainage of western Oregon and Washington (Taylor 1956), the deer exist today in just two small populations. The Columbia River population is located along the upper end of the Columbia River Estuary in northwestern Oregon and southwestern Washington. The Roseburg (Douglas County) population is located 200 miles to the south in southwestern Oregon. The Columbian White-tailed Deer Recovery Plan (USFWS 1983) treats these populations separately. The Recovery Plan is a plan of action for restoring the species. It was prepared by a committee of persons, called the Recovery Team, having knowledge of the CWT deer's biology. This Environmental Assessment addresses issues relating to the Columbia River population.

The Columbia River population of the CWT deer inhabits an area of about 23 square miles along the estuary. Most of the habitat is former tidelands that were diked and converted to agricultural use in the 1930s and 40s. The topography is flat. The vegetation consists primarily of pasture grasses, wetland plant communities, trees such as Sitka spruce, black cottonwood and red alder, understory shrubs such as creek dogwood, willow, rose and currant, and hybrid cottonwood plantations. Farm fields and cottonwood plantations constitute more than half of the habitat. The deer occupy the riparian zone and do not utilize the surrounding conifer forested hills to any large degree.

The Recovery Plan specifies that the population will be considered recovered when a minimum of 400 deer are maintained in at least three viable subpopulations on suitable secure habitat. A viable subpopulation is defined as having at least 32 breeding adults (approximately 50 total

deer when fawns and other non-breeders are added) in the fall of the year. Habitat is considered secure only if it is free from adverse human activities for the foreseeable future, meaning it must be in public ownership or protected by deed restrictions.

The deer historically have occurred in four distinct subpopulations, each separated from the other by main channels of the Columbia River (Figure 2). The subpopulations are identified by geographic names - Washington Mainland, Puget Island (Washington), Tenasillahe Island (Oregon) and Westport/Wallace Island (Oregon). Movement of deer between subpopulations occurs, but not commonly (USFWS 1983). Recently, the Service and the Washington and Oregon Departments of Fish and Wildlife have been relocating deer from private lands to the Crims/Fisher/Lord Island complex, near Longview, WA, to establish a new subpopulation.



Two of the subpopulations (Washington Mainland and Tenasillahe Island) occupy secure habitat. The Service attempted to secure habitat for the Westport/Wallace Island subpopulation, but because of a lack of willing sellers not enough habitat was protected to consider the subpopulation secure. Efforts were then directed at reintroducing deer to areas of suitable habitat that were publicly owned, i.e., Crims, Lord, and Fisher Islands. This would make the third subpopulation secure, if the reintroduced deer thrive. The CWT deer could be removed from the endangered species list provided that each subpopulation contains at least 32 breeding adults and the total number of deer on secure habitat is at least 400.

In recent years, total deer numbers have been adequate for recovery. The population contained an estimated 500-700 individuals in 2003, with each of the established subpopulations containing 100 or more. However, numbers have fluctuated considerably over the years, reflecting the deer's vulnerability to natural and human-caused events. For example, CWT deer numbers on the refuge mainland varied from a high of 500 in 1985/86 to a low of 60 in 1996. Currently, there are approximately 100 CWT deer on the refuge mainland. The average for the past 30 years is about 200. Events such as floods, predation by coyotes and competition with elk and/or black-tailed deer can have major impacts on the CWT deer.

The continued viability of the refuge mainland subpopulation is essential to the CWT deer's recovery. The Service is responsible for making every effort to remove or control limiting factors, such as competition or predation that might threaten that viability. Competition with elk on the refuge mainland is just one of the many limiting factors for the deer, but it is one that the Service can relatively easily control. Failure to continue to control numbers of elk on the refuge would result in a negative impact on the CWT deer and violate the purposes and needs of the refuge.

Mammals

Mammals other than Columbian white-tailed deer that inhabit the forested and pasture areas of the refuge include bobcat (*Lynx rufus*), coyote (*Canis latrans*), Virginia opossum (*Didelphis virginiana*), raccoon (*Procyon lotor*), porcupine (*Erethizon dorsatum*), striped skunk (*Mephitis mephitis*), snowshoe hare (*Lepus americanus*), long-tailed weasel (*Mustela frenata*), and a variety of small mammals such as bats, mice, voles, moles, and shrews. Black bear (*Ursus americanus*) and mountain lion (*Felis concolor*) occupy the adjacent hills and pass through the refuge occasionally.

The Roosevelt elk (*Cervus elaphus roosevelti*) is one of six recognized subspecies of elk in North America (Bryant and Maser 1982). They are native to western Oregon and Washington, northwestern California and Vancouver Island, British Columbia. The Willapa Hills, which surround the refuge, support one of the highest concentrations of elk in Washington. Elk occur on the mainland unit of the refuge and in the forested hills surrounding the lower Columbia River estuary. They generally do not occur on other refuge units.

Mammals that inhabit the streams, rivers, and associated riparian habitats within the refuge include mink (*Mustela vison*), beaver (*Castor canadensis*), nutria (*Myocastor coypus*), muskrat (*Ondatra zibethicus*), harbor seal (*Phoca vitulina*), California sea lion (*Zalophus californianus*), and river otter (*Lutra canadensis*).

No bat surveys have been conducted on the refuges. Species likely to be present include the little brown myotis (*Myotis lucifugus*), big brown bat (*Eptesicus fuscus*), Yuma myotis (*M. yumanensis*), western long-eared myotis (*M. evotis*), long-legged myotis (*M. volans*), California myotis (*M. californicus*), silver-haired bat (*Lasionycteris noctivagans*), and the hoary bat (*Lasiurus cinereus*) (Harvey et al. 1999). Many of these bat species roost and forage in forested

areas and several frequently use snags and downed logs as day roosts.

Amphibians and Reptiles

Long-toed (*Ambystoma macrodactylum*) and northwestern (*A. gracile*) salamanders are abundant on the refuge and often breed in ditches and shallow managed wetlands. Other salamanders present include ensatina (*Ensatina eschscholtzii*), Pacific giant (*Dicamptodon tenebrosus*), western red-backed (*Plethodon vehiculum*) and rough-skinned newt (*Taricha granulosa*).

Frogs present include bullfrog (*Rana catesbeiana*), red-legged frog (*R. aurora*) and Pacific tree frog (*Pseudacris regilla*). The western toad (*Bufo boreas*) occurs in the area and may be present on the refuge at times.

Reptiles include the northwestern garter snakes (*Thamnophis ordinoides*), common garter snake (*T. sirtalis*), possibly the western terrestrial garter snake (*T. elegans*), northern alligator lizard (*Elgaria coerulea*), and painted turtle (*Chrysemys picta*).

Fish

The Columbia River flows through the refuge and provides a passageway and foraging area for the salmonids of the watershed. Species include coho (*Oncorhynchus kisutch*), chinook (*O. tshawytscha*), chum (*O. keta*), sockeye (*O. nerka*) and pink salmon (*O. gorbuscha*), as well as steelhead (*O. mykiss*) and coastal cutthroat trout (*O. clarki clarki*). Several races of these species are listed or candidates for listing under the Endangered Species Act (see section on Threatened and Endangered Species below). In a typical year, upwards of 750,000 adult and 100,000,000 juvenile salmonids pass through the estuary. Both adults and juveniles are present year-round, although the number of juveniles peaks in spring and early summer. There are no salmonid spawning streams within the refuge.

Warm water fish species such as largemouth bass (*Micropterus salmoides*), yellow perch (*Perca flavescens*), carp (*Cyprinus carpio*), and crappie (*Pomoxis* spp.) are abundant in refuge sloughs.

Birds

The Refuge and the Columbia River Estuary provide important wetland habitat that sustains the migratory birds of the Pacific Coast. The refuge is both a wintering area and a migrational stopping area for waterfowl that nest in Alaska and winter in Oregon, Washington, and California. Up to 20,000 ducks may be present during the winter. The most common species are mallard (*Anas platyrhynchos*), American wigeon (*A. americana*), pintail (*A. acuta*), green-winged teal (*A. crecca*), and greater scaup (*Aythya marila*). In addition, mallards, cinnamon teal (*Anas cyanoptera*), gadwalls (*A. strepera*) and wood ducks (*Aix sponsa*) nest on the refuge during the spring and summer.

Migrating shorebirds feed and rest on intertidal mud flats and the edges of managed wetlands during the spring, summer and fall. The estuary has been recognized by the Western Hemisphere Shorebird Reserve Network as an internationally important area because more than

100,000 shorebirds are often present. Principal species are dunlin (*Calidris alpina*), western sandpiper (*C. mauri*), short-billed dowitcher (*Limnodromus giseus*), and common snipe (*Gallinago gallinago*).

The seven subspecies of wintering Canada geese (*Branta canadensis*) found at the refuge are the lesser (*B. c. parvipes*), Taverner (*B. c. taverneri*), cackling (*B. c. minima*), dusky (*B. c. occidentalis*), western (*B. c. moffitti*), Vancouver (*B. c. fulva*), and Aleutian (*B. c. leucopareia*). Geese forage in the fields and managed wetlands on the Mainland and Tenasillahe Island Units.

Approximately 1,000 tundra swans (*Cygnus columbianus*) winter in the estuary and occasionally forage in refuge wetlands.

Raptors include bald eagle (*Haliaeetus leucocephalus*) (see following section on threatened and endangered species), peregrine falcon (*Falco peregrinus*), white-tailed kite (*Elanus leucurus*), northern harrier (*Circus cyaneus*), kestrel (*Falco sparverius*), merlin (*F. Columbarius*), red-tailed hawk (*Buteo jamaicensis*), rough-legged hawk (*B. Lagopus*); and barn (*Tyto alba*), great horned (*Bubo virginianus*), short-eared (*Asio flammeus*), barred (*Strix varia*), screech (*Otus kennicottii*), saw-whet (*Aegolius acadicus*), and pygmy (*Glaucidium gnoma*) owls.

American bitterns (*Botaurus lentiginosus*) and great blue herons (*Ardea herodias*) are abundant. There are heron nesting rookeries on the Mainland, Price Island and Hunting Island Units. Bitterns nest in fields in the Mainland and Tenasillahe Island Units.

Virtually all neotropical migrant song birds that occur in the region use the refuge for nesting and foraging during the spring, summer, and early fall.

Threatened, Endangered, and Candidate Species

Bald eagles (threatened) are abundant in the estuary year-round, numbers peak at approximately 150 during the months of February and March. Seven eagle pairs nested within the refuge in 2003 and more than 30 pairs nested nearby. Refuge units with nest sites are Hunting Island (2 sites), Tenasillahe Island, Wallace Island (2 sites), Crims Island and Price Island. There is no documentation of marbled murrelets (*Brachyramphus marmoratus*) (threatened) nesting within the refuge, however, it is possible although no old growth forest (which is typical murrelet nesting habitat) is found on the refuge. Streaked horned larks (*Eremophila alpestris strigata*) (candidate) occur in the vicinity, but the refuge lacks suitable nesting and foraging habitat.

Columbian White-tailed deer (endangered) are distributed throughout the refuge. The primary purpose of the refuge is to provide habitat for this species. CWT deer numbers vary annually. In 2005, there were an estimated 250 at the refuge, and 300-400 on other lands near the refuge, with the largest numbers occurring on the Mainland and Tenasillahe Island Units. Wallace Island currently supports approximately 20 CWT deer.

Stellar sea lions (*Eumetopias jubatus*) (threatened) may on rare occasions swim along refuge shores while following runs of salmon and eulachon (*Thaleichthys pacificus*).

Several listed salmonids pass through the estuary, both as adults migrating upstream and

juveniles moving downstream. The inter-tidal mudflats and shallows provide a rich foraging area for smolts. Species include Chinook (both threatened and endangered runs) (Lower Columbia River, Upper Willamette River, and Upper Columbia River spring-run), Chum (Columbia River) (threatened), and Steelhead (both threatened and runs) (Upper Columbia River, Snake River Basin, Lower Columbia River, Upper Willamette River, and Middle Columbia River). In addition, Lower Columbia River Coho are a candidate for listing.

Two threatened plants, *Howellia* (*Howellia aquatilis*) and Nelson's checkermallow (*Sidalcea nelsoniana*), could possibly occur on the refuge but their presence has not been documented.

Chapter 4 Environmental Consequences

This chapter describes the foreseeable environmental consequences of implementing the two management alternatives in Chapter 2. When detailed information is available, a scientific and analytic comparison between alternatives and their anticipated consequences is presented, which is described as "effects." When detailed information is not available, those comparisons are based on the professional judgment and experience of refuge staff and other Service and State biologists.

Effects Common to all Alternatives

Environmental Justice

Executive Order 12898 "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" was signed by President Bill Clinton on February 11, 1994, to focus federal attention on the environmental and human health conditions of minority and low-income populations with the goal of achieving environmental protection for all communities. The Order directed federal agencies to develop environmental justice strategies to aid in identifying and addressing disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and low-income populations. The Order is also intended to promote nondiscrimination in federal programs substantially affecting human health and the environment, and to provide minority and low-income community's access to public information and participation in matters relating to human health or the environment. This assessment has not identified any adverse or beneficial effects for either alternative unique to minority or low-income populations in the affected area. Neither alternative will disproportionately place any adverse environmental, economic, social, nor health impacts on minority or low-income populations. We propose to charge no fees for waterfowl hunting and any individual with a State hunting license, Duck Stamp, and access to a boat (motorized or even human-powered) could participate in this hunt.

Public Health and Safety

Each alternative would have similar effects or minimal to negligible effects on human health and safety.

Refuge Physical Environment

Impacts of each alternative on the refuge physical environment would have similar minimal to negligible effects. Some disturbance to surface soils, topography, and vegetation would occur in areas selected for hunting; however effects would be minimal, especially in comparison to natural hydrological effects associated with daily tidal changes and River flooding.

Impacts to the natural hydrology would have negligible effects. The refuge expects impacts to air and water quality to be minimal and only due to refuge visitors' boating activities. The effect of these refuge-related activities on overall air and water quality in the region are anticipated to be relatively negligible. Existing State water quality criteria and use classifications are adequate to achieve desired on-refuge conditions; thus, implementation of the proposed action would not impact adjacent landowners or users beyond the constraints already implemented under existing State standards and laws.

During the fall/winter season in which waterfowl hunting occurs, general visitation to this remote boat access only island is reduced, which creates a sense of solitude that enhances and provides for a quality hunt and visitor experience.

Cultural Resources

No known cultural resource sites have been identified on the refuge in this area and artifacts, if any exist, are more than likely buried under several feet of sediment. Existing laws and regulations prohibit collection of and damage to cultural resources on the Refuge. These rules, law enforcement, the remoteness of the location, and modest participation should result in no or low threat to cultural resources. Therefore, none of the alternatives are expected to have any impact on the cultural resources in the area.

Facilities

There would be no effects on existing refuge facilities (i.e. parking areas, roads, trails, and boat ramps) as the unit is only accessible by boat and there are no refuge facilities located on Wallace Island.

Other Effects

Effects on Habitat

No Action Alternative

Under this alternative, no additional acreage would be opened to waterfowl hunting. Although hunters would not be traversing across the 5.8 miles of bare mudflat shoreline on Wallace Island, non-consumptive users would still be able to walk throughout the area. Thick dense vegetation which occurs throughout the island tends to be self-regulating by discouraging much public use activities in any areas other than along the shoreline. Immediately adjacent to the refuge shoreline waterfowl hunting would continue to occur in State waters below mean

high tide (MHW). Only small differences in hunting impacts to refuge resources can be expected under the no action alternative. Effects on refuge habitats are expected to be somewhat less because no hunters will access the refuge shoreline.

Proposed Action Alternative

Under this alternative, additional acreage would be opened to waterfowl hunting. Hunters could traverse across portions of the 5.8 mile shoreline on Wallace Island however most of the hunt area would either be in water or on bare mudflats which would have very limited effects on refuge habitat. Small areas of grass/willow habitat along the immediate edge of the shoreline may be affected. The additional shoreline acreage that would be utilized by the public (hunters) may cause increased trampling of vegetation however effects on vegetation should be very minor.

The primary Refuge purpose is to maintain the unit in optimum condition for the Columbian White-Tailed (CWT) Deer. Wallace Island currently supports approximately 20 CWT Deer. This proposed use would not result in any degradation of Wallace Island in terms of its suitability for CWT Deer since use would be limited to the shoreline area. Other resident wildlife habitat would not be impacted from this activity due to its proximity away from the shoreline. Hunter density is estimated to be an average of 1 hunter per 35 acres throughout the hunting season (based on a 5.8 mile shoreline, 100 foot width and an average of two hunters per day).

Effects on Hunted Wildlife

No Action Alternative

Mortality of individual hunted animals using the refuge would still occur under this alternative. Disturbance by hunters in adjacent State owned tidelands next to refuge wildlife would likely continue due to the close proximity of the State hunt area. In addition, other previously permitted public uses would continue to cause minimal disturbances to wildlife using the area. Thick dense vegetation which occurs throughout the island tends to be self-regulating by discouraging much public use in any areas other than along the shoreline. The biological integrity of the refuge would be protected under this alternative, and the refuge purpose of protecting the endangered Columbian White-Tailed Deer and other wildlife would be achieved. As with generally all refuge permitted public recreation, activities are restricted to daylight hours only. Overall impacts to refuge waterfowl under the no action alternative would be expected to be slightly less (200 versus 300 mortalities) due to the fact that no hunters would access the refuge shoreline.

Proposed Action Alternative

Additional mortality of individual hunted animals (waterfowl) would occur under this alternative, estimated by the refuge to be a maximum of 100 ducks and geese annually. The biological integrity of the refuge would also be protected under this alternative, and the refuge purpose of protecting the endangered Columbian White-Tailed Deer and other wildlife would

be achieved. Waterfowl hunting would cause disruption of normal foraging and resting activities of some species, such as geese, ducks, and larger mammals that would probably flee the immediate vicinity of hunters. The impacts are expected to be minor as these species coexist with hunting throughout much of the United States. Disturbance would be minimized by the fact that hunting pressure would be temporary and localized and would likely be widely dispersed throughout the island at any given time, ensuring an abundance of sanctuary areas. Overall impacts to refuge wildlife can be expected to be slightly more under this alternative due to the fact that hunters would be able to access and utilize the refuge shoreline.

Effects on Non-hunted Wildlife

No Action Alternative

Disturbance to non-hunted animals would still occur under this alternative. Disturbance by hunters in the adjacent State waters to refuge wildlife occurs due to the close proximity of the State hunt area. In addition, other permitted public access would continue to cause minimal disturbances to non-hunted wildlife using the area. Thick dense vegetation which occurs throughout the island tends to be self-regulating by discouraging much public use in any areas other than along the shoreline. As with generally all refuge permitted public recreation, activities are restricted to daylight hours only. Overall effects on non-hunted refuge wildlife can be expected to be relatively minor under this alternative due to the fact that no hunters would access the refuge shoreline for the purpose of hunting.

Proposed Action Alternative

Disturbance to non-hunted wildlife would increase slightly. However, any substantial disturbance would be temporary and localized. The primary Refuge purpose is to maintain the Refuge in optimum condition for the Columbian White-Tailed (CWT) Deer. Wallace Island currently supports approximately 20 CWT Deer. Some disturbance to CWT Deer due to waterfowl hunting would be expected, although as the activity is confined to the shoreline, disturbance and subsequent displacement of individual deer would be temporary and localized. Allowing waterfowl hunting on the Refuge portion of the shoreline would not increase the number of waterfowl hunters in the general vicinity of Wallace Island as hunters already use the State-owned tidal and submerged lands surrounding Wallace Island. Therefore, the temporary and localized disturbance to CWT Deer on Wallace Island currently experienced would not be expected to change. Other species which could be affected by the proposed alternative include bald eagles, great blue herons and other birds which reside along island shorelines and riparian vegetation in the Columbia River. No effects are expected for Columbia River or Refuge fish populations.

Nearby resting and feeding areas would be available for use by waterfowl, deer and other refuge species that are disturbed. These species would likely move to other areas of the Refuge which are less accessible to the hunters.

Effects on Endangered and Threatened Species

No Action Alternative

Because current public use levels on Wallace Island would remain the same, there would be no increased chance of adversely affecting threatened and endangered species.

Proposed Action Alternative

Under the Endangered Species Act of 1973, a Section 7 Evaluation associated with this assessment was conducted, and it was determined that the proposed action would not be likely to adversely affect any threatened and endangered species that occur on the Refuge (Refer to 2007 Section 7 Evaluation for Sport Hunting on Julia Butler Hansen Refuge (Wallace Island Unit)).

Effects on Wildlife-Dependant Recreation

No Action Alternative

Effects to other public uses are expected to be minimal as Wallace Island is accessible only by boat and due to the time of year waterfowl hunting occurs, other recreational uses such as kayaking or boating in the Columbia River have ceased or are at minimal levels. Under this alternative, additional acreage would not be opened to waterfowl hunting. Although hunters would not be traversing across the 5.8 miles of bare mudflat shoreline on Wallace Island, non-consumptive users would still be able to walk throughout the area. Immediately adjacent to the refuge shoreline waterfowl hunting would continue to occur in state waters below mean high tide (MHW). Since waterfowl hunting can and does occur legally along the shoreline below MHW, only minor differences in public use impacts to refuge resources would be expected between the no action and proposed action alternatives.

Proposed Action Alternative

Effects to other public uses would expected to be minimal as Wallace Island is accessible only by boat and due to the time of year waterfowl hunting occurs, other recreational uses such as kayaking or boating in the Columbia River have ceased or are at minimal levels.

By its very nature, waterfowl hunting has very few if any positive effects on waterfowl and other birds while the activity is occurring, but it is well recognized that this activity has given many people a deeper appreciation of wildlife and a better understanding of the importance of conserving their habitat, which has ultimately contributed to the Refuge System mission. Furthermore, despite the potential impacts of hunting, a goal of Julia Butler Hansen Refuge for the Columbian White-tailed Deer is to provide opportunities for quality wildlife-dependent recreation. By law, hunting is one of the six wildlife-dependent public uses of the National Wildlife Refuge System which, when determined compatible on a refuge-specific basis, becomes a priority public use for that refuge, and is to be encouraged and otherwise receive special consideration in planning and management.

Cumulative Effects Analysis

Anticipated Direct and Indirect Effects of Proposed Action on Wildlife Species

Migratory Wildlife

Waterfowl

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). 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. Oregon's 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 can not 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, and other aspects of a hunt 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 2.5 million birds which represent approximately 18 percent of the estimated average annual U.S. harvest of 14 million ducks (USFWS 2004). The estimated average annual goose harvest for the Pacific Flyway is 383,091 which represent 12.4 percent of the estimated annual U.S. harvest of over 3.5 million geese.

For comparison, in 2005, the breeding duck population estimate for those areas surveyed (California, Oregon, Nevada, Utah and Washington) in the Pacific Flyway was 1,097,276 birds, which was a 22.7 percent increase from the 2004 average (USFWS 2005). The estimated average annual duck breeding population for these areas from 1994-2005 was approximately 1.10 million birds. These numbers serve to demonstrate the relative importance of the more southern portions of the Pacific Flyway for wintering waterfowl, rather than waterfowl production. In fact, the vast majority of birds wintering and subsequently harvested in the Flyway come from breeding grounds to the north. The estimated duck breeding population in traditional survey areas of the western and central US (Alaska, prairie pothole region of the west, Canada) was 36.2 million (USFWS 2005).

In 2005, the midwinter survey index of ducks for the Pacific Flyway was over 5.7 million, an 18% increase from the 10-year (1995-2005) average of 4.9 million. The index for Canada geese was 416,000, down 1.7% from the 10-year average of 432,270. The index for total geese (Canada, snow/Ross', white-fronted, and brant) was over 1.6 million, a 46% increase over the 10-year average of 1.1 million (USFWS 2005).

Regional Analysis

The estimated breeding duck population in 2005 in Oregon was 225,349. The estimate for neighboring Washington was 111,504 (USFWS 2005). Neither state is a major duck breeding area. Wintering birds from breeding areas farther north make up the bulk of the states' waterfowl populations.

The duck midwinter survey index for Washington was 956,979. The index for Oregon was 379,256. The midwinter surveys are conducted in January, after waterfowl that winter farther south (California, etc.) have passed through and more than two-thirds of the waterfowl hunting season is over. The Canada goose midwinter indexes were 43,908 for Washington and 125,763 for Oregon (USFWS 2005).

The estimated total duck harvests for Oregon and Washington in 2004 were 256,798 and 353,299 (USFWS 2005), respectively. The estimated total Canada goose harvest in 2004 was 67,610 in Oregon and 72,147 in Washington (USFWS 2005). Waterfowl numbers in the Pacific Flyway are remaining relatively stable. The 2005 midwinter survey indices for the 11 Pacific states were 18% and 46% above the 10-year average for ducks and geese, respectively.

The number of waterfowl hunters, as reflected in the sales of duck stamps, has been declining in both states. In 2004, duck stamp sales in Oregon and Washington were 28,086 and 28,184 respectively, far below the 50,000-70,000 that was typical in both states during the 1970's (USFWS 2005).

Local Analysis

The lower Columbia River in Oregon and Washington has long been a popular place for waterfowl hunting. Ridgefield NWR, Lewis and Clark NWR, and the State of Oregon's Sauvie Island Wildlife Management Area are well known hunting destinations. Most of the Julia Butler Hansen Refuge is closed to hunting. Many other areas of the lower river are in state or private ownership and are also used by waterfowl hunters. In many cases, there is no check-in or mandatory reporting procedure, so harvest estimates for the region are not available. At Sauvie Island, where reporting is mandatory, a total of 19,720 ducks (2.2 ducks per hunter visit) and 140 Canada geese (2.2 geese per hunter visit) were harvested during the 2005/2006 hunting season. The 2006/2007 season harvests at Ridgefield NWR were 3,268 ducks and 283 geese. No estimates are available for Lewis and Clark NWR, but area managers/biologists believe that the total harvest there probably lies somewhere between Ridgefield NWR and Sauvie Island.

Direct effects of hunting on waterfowl are mortality, wounding, and disturbance (DeLong 2002). Hunting can alter behavior (e.g., foraging time), population structure, and distribution patterns of wildlife (Owens 1977, Raveling 1979, White-Robinson 1982, Thomas 1983, Bartelt 1987, Madsen 1985, and Cole and Knight 1990). These impacts can be reduced by the presence of adjacent sanctuary areas where hunting does not occur, and birds can feed and rest relatively undisturbed. Sanctuaries or non-hunt areas have been identified as the most common solution to disturbance problems caused from hunting (Havera et. al 1992). The Julia Butler Hansen Refuge Mainland and Tenasillahe Island Units, with a total acreage of about 4,000, are closed to waterfowl hunting and often draw many thousand ducks and geese. Closed areas are also available within Lewis and Clark NWR, Ridgefield NWR, and Sauvie Island Wildlife Management Area.

The approximately 5.8 miles of shoreline at Wallace Island would represent but a tiny fraction of the available waterfowl hunting area in the lower Columbia River. Opening Wallace Island is not expected to be additive, that is, the total amount of waterfowl hunting and the total harvest in the lower Columbia River would not likely increase. To the contrary, hunting use in this area will probably decrease if current participation trends continue. Immediately adjacent to the refuge shoreline waterfowl hunting would continue to occur in state waters below mean high tide (MHW). Since waterfowl hunting can and does occur legally along the shoreline below MHW, opening this area clarifies jurisdiction and would assist law enforcement.

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 options produced in recent years and despite continued hunting Nation-wide, waterfowl continue to be abundant and available for both hunting and viewing.

Current harvest levels are not threatening waterfowl populations at the flyway, regional, or local level. Opening Wallace Island to hunting is not expected to have any effect on either harvest levels or waterfowl populations. Therefore, the Service believes that hunting at Wallace Island would not have a significant impact on flyway, regional, or local waterfowl populations.

Non-Hunted Migratory Wildlife

Migratory species other than waterfowl that are present on or near the refuge include other waterbirds, neotropical migrant birds, migratory bats, raptors, salmon, other migratory fish, and various invertebrates (butterflies, etc). California sea lions and harbor seals frequent the mainstem Columbia River, but are not expected to be present close to the Wallace Island shoreline where the hunt would occur.

Flyway, Regional and Local Analysis

While these species would not be targeted, some individual animals might be disturbed by hunting activities. Human disturbance associated with hunting includes loud noises and rapid movements, such as those produced by shotguns and boats powered by outboard motors, as well as the presence of humans. This disturbance, especially when repeated over a period of time, may compel some wildlife species to change food habits or move to other areas.

Waterfowl hunting takes place during the late fall and winter, generally from about mid October to late January (the season length may vary from year to year, depending on waterfowl breeding success rates and other factors). Many species, such as migratory bats, migratory invertebrates, and many neotropical migrant birds, have migrated south for the winter and are not present during the hunting season.

Hunting would occur only on the shoreline of Wallace Island. The interior of the island is a forested swamp with thick underbrush; it is not suitable for waterfowl hunting. Migratory wildlife that is disturbed by hunting could escape the disturbance by moving to the island's

interior or to other nearby areas of the lower Columbia River. The refuge's Tenasillahe Island and Mainland Units, which total about 4,000 acres, are closed to waterfowl hunting and could act as sanctuaries for wildlife disturbed by hunting. Sanctuaries or non-hunt areas have been identified as the most common solution to disturbance problems caused from hunting (Havera et. al 1992).

Hunting season would not coincide with the nesting season of migratory birds. Long-term future impacts that could occur if reproduction was reduced by hunting are not relevant for this reason. Disturbance to the daily wintering activities, such as feeding and resting, of birds might occur and be temporary and localized. Disturbance to birds by hunters would probably be commensurate with that caused by non-consumptive users.

This proposed hunt would not be expected to result in an increase in the relatively small number of hunters using that area of the river. It is doubtful that more than 2 or 3 hunting parties would use Wallace Island on any given day, and on most days there would probably be no one hunting there. The river surrounding the island is open to hunting and would remain so. One of the reasons for proposing the hunt is that a closure would be virtually unenforceable given the lack of a clear boundary between refuge-owned "uplands" and state-owned tidelands.

Conclusion

Waterfowl hunting on Wallace Island would result in some minor disturbance to other migratory wildlife. The Service believes that the impacts to migratory wildlife would be temporary and localized.

Resident Wildlife

The term resident wildlife refers to those wildlife species that are not migratory. The Oregon Department of Fish and Wildlife (ODFW) is the lead agency for managing the state's fish and wildlife. Resident wildlife species are protected by state regulations to ensure their continued existence. Because the Columbia River is the boundary between Oregon and Washington, some resident species that utilize Wallace Island may also frequent nearby areas of Washington. There, the Washington Department of Fish and Wildlife (WDFW) would be the lead agency.

Resident wildlife found on and near Wallace Island would include river otters, mink, muskrats, non-migratory species of bats, Columbian white-tailed deer (see Section 4.3), ruffed grouse and other resident birds, a variety of small mammals, reptiles, amphibians, non-migratory fish, most invertebrates, plants, and others.

Wallace Island would not be open to hunting of resident wildlife; therefore, there are unlikely to be any direct impacts. The human presence and activities (boating, shooting, etc.) associated with hunting have the potential to cause disturbance to non-hunted resident wildlife. This disturbance, especially when repeated over a period of time, may compel some wildlife species to change food habits or move to other areas.

Relatively few hunters would be expected to use the shoreline of Wallace Island and these would likely be people who already hunt on the state-owned tidelands adjacent to the island. Opening the shoreline to waterfowl hunting is not expected to add to existing disturbance caused by hunters and other users of the river such as boaters, fishermen, sightseers, marine workers, etc.

Waterfowl hunting takes place during the late fall and winter, generally from about mid October to late January (the season length may vary from year to year, depending on waterfowl breeding success rates and other factors). Most resident wildlife produce and rear their young in the spring and summer, so disturbance caused by hunting would be unlikely to have long-term regional or local effects on reproduction of resident wildlife. Reptiles and amphibians are largely in a state of winter torpor during the hunting season, so they would be unlikely to be affected at all. Terrestrial invertebrates are also largely inactive during winter and would be unlikely to come in contact with hunters. Fish are under water and thus would be unlikely to be affected by waterfowl hunting.

Conclusion

Hunting might result in disturbance to other wildlife species on or near the Refuge's Wallace Island Unit; however, the cumulative effects, if any, of the disturbance would be temporary and localized.

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. This includes protecting their habitats. Endangered, threatened, proposed, and candidate species that occur on or near the refuge include Columbian white-tailed deer, bald eagle, marbled murrelet, northern spotted owl, *Howellia* (a plant), Nelson's checkermallow (a plant), streaked horned lark, Mazama pocket gopher, and Pacific fisher. There are also endangered and threatened salmonids and bull trout in the waterways; however, they would not be affected by the waterfowl hunting program.

The marbled murrelet, northern spotted owl, streaked horned lark, Mazama pocket gopher, and Pacific fisher are not known to occur at or adjacent to Wallace Island and the habitat there (forested cottonwood/willow swamp) is not suitable for them, so they would not be affected by a waterfowl hunt.

Regional and Local Analysis

A Section 7 Consultation (USFWS 2007) concluded that waterfowl hunting at Wallace island would not likely adversely affect Columbian white-tailed deer and bald eagles, and would have no effect on the other endangered, threatened, proposed, or candidate species listed in the paragraph above.

Conclusion

The Service believes that waterfowl hunting at Wallace Island would have no or not adverse cumulative effects on endangered, threatened, proposed, or candidate species or critical habitat.

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

Other Wildlife-Dependent Recreation

Hunting affects other wildlife-dependent recreation opportunities in a variety of ways. Many non-hunters plan their vacations or visits to avoid being in the "woods" during the hunting seasons. Most tend to seek out areas that offer amenities such as trails, parking areas, and information kiosks, such as the refuge Mainland Unit. These facilities provide bird watchers, photographers, and students an opportunity to experience these Refuge units for a safe, informally guided visit. The bulk of the wildlife-dependent recreation use on the Refuge occurs during the spring and summer months, when waterfowl hunting is not occurring. The Mainland Unit, which receives the bulk of visitor use, is not open for waterfowl hunting.

Wallace Island proper receives very little visitor use. Access is by boat only and the thick vegetation on the island is not conducive to hiking. However, substantial numbers of recreational boaters and fishermen pass by the island and it is reasonable to assume that some scan the shoreline for birds and other wildlife. There is potential that the presence of hunters would detract from the enjoyment of non-hunters. That potential exists throughout the lower Columbia River. Waterfowl hunting at Wallace Island would not be expected to increase the number of hunters in that area and thus would not affect the potential for conflicts between non-hunters and hunters. Hunting already occurs, and will continue to occur, on state-owned tidelands adjacent to the island.

Refuge Facilities

There are no refuge buildings, roads, trails, or other facilities at Wallace Island. Hunters accessing the island do not pass through other refuge units. Therefore, the proposed hunt would have no effect on refuge facilities.

Cultural Resources

There are no known cultural resources on Wallace Island. Prior to the construction of the Columbia River dams, the island would have been inundated by the annual spring freshet of the Columbia (Christy and Putera 1992). Flooding still occurs at high river levels. If historical artifacts were ever present, they either washed downstream or were buried under sediments where they would not be readily accessible by visitors and therefore would not be affected by waterfowl hunting.

Conclusion

The Service believes that waterfowl hunting at Wallace Island would have few if any effects on other wildlife dependent recreation, refuge facilities, or cultural resources.

Anticipated Effects of Proposed Hunt on Refuge Environment and Community

Hunting would be conducted by boat and on foot along the shoreline. Impacts to Refuge soils and vegetation by hunters would be expected to be minimal, such as insignificant soil compaction.

Impacts to air and water quality would be minimal and restricted to automobile emissions as hunters travel to and from public boat ramps, and boat motor emissions. Boat motors sometimes discharge oil and gasoline into the water. These impacts would be only a minute fraction of the impacts of automobiles of other refuge visitors and general boat traffic on the river. Hunting at Wallace Island would not be expected to result in an increase in hunting activity; therefore, the hunt would have no cumulative effect on air and water quality.

Impacts associated with solitude would be expected to be minimal given time and space zone management techniques, such as seasonal access and area closures, used to avoid conflicts among user groups. Hunting already occurs on state-owned tidelands adjacent to the island. The proposed hunt would have no additional effects on solitude.

The refuge would work closely with State, Federal, and private partners to minimize impacts to adjacent lands and its associated natural resources; however, no indirect or direct impacts are anticipated. The newly opened hunt would result in a net gain of public hunting opportunities positively impacting the general public, nearby residents, and refuge visitors, although no gain in the actual number of hunters is would be expected. The Service expects that as a result of opening the Island to hunting there would be no effect upon the area's economy.

Conclusion

The Service believes that waterfowl hunting at Wallace Island would have few if any effects to air quality, water quality, soils, vegetation, adjacent lands and their natural resources, the general public, nearby residents, and refuge visitors. There would be no economic benefit to local communities.

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

Past

The refuge was established in 1972 to preserve habitat for the Columbian white-tailed deer. Prior to that, the land was in multiple small private ownerships where traditional hunting had been conducted for generations. Hunting ceased on the refuge mainland and Tenasillahe Island once the refuge was established. Waterfowl and snipe hunting were allowed on the Hunting Islands unit.

Hunting has long been a traditional activity along the lower Columbia River. Waterfowl hunting in the marshes and lowlands was popular during fall and winter. Elk, black-tailed deer, and small game were hunted in the uplands.

Present

Hunting continues to be a popular activity along the lower Columbia River. Wintering waterfowl draw thousands of hunters to federal, state, and private lands in southwestern Washington and northwestern Oregon. Elk hunting in the uplands attracts hunters from all over Washington, as well as other states. Black-tailed deer and small game are also popular with hunters.

The small hunting program on the refuge is insignificant compared to overall hunting activity in the lower Columbia River area. Local and regional populations of hunted wildlife continue to thrive. Hunting is a highly regulated activity, and generally takes place at specific times and seasons (dawn, fall and winter) when the game animal is less vulnerable (e.g., not in breeding season) and other wildlife-dependent activities (e.g., wildlife observation and photography, environmental education and interpretation) are less common, reducing the magnitude of disturbance to refuge wildlife. We are aware of no evidence to suggest that managed and regulated hunting of wildlife would reduce species populations to levels where other wildlife-dependent uses would be affected.

Reasonably Foreseeable Hunts

The most important consideration in the maintenance of wildlife populations is the protection of their habitat. The Service, The Washington and Oregon Departments of Fish and Wildlife, The Nature Conservancy, the Columbia Land Trust, and a multitude of other agencies and organizations are all working to protect and restore native habitat along the lower Columbia River. Habitat protection and restoration helps to fulfill the Service's congressional mandate to preserve, restore, and enhance riparian habitat for threatened and endangered species, songbirds, waterfowl, other migratory birds, anadromous fish, resident riparian wildlife, and plants. Habitat restoration will also have a positive effect on wildlife populations on the Refuge.

Hunting is carefully regulated by Federal and State laws and regulations to ensure that wildlife populations and habitats are not jeopardized. Moreover, the amount of hunting on the refuge is not expected to increase significantly in the future.

Conclusion

The Service believes that waterfowl hunting at Wallace Island, taken in context with other past, present, and reasonably foreseeable hunts, would have no or only minor effects on populations of waterfowl and other wildlife, other refuge resources, and other wildlife-dependent activities public uses.

Anticipated Effects if Individual Hunts are Allowed to Accumulate

There are 18 national wildlife refuges in Oregon and 22 in Washington. Hunting, fishing, wildlife observation, photography, environmental education, and interpretation are enjoyed by millions of visitors annually. These 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 Julia Butler Hansen Refuge would be expected to have no effects on wildlife populations on other refuges.

National Wildlife Refuges, including Julia Butler Hansen Refuge, conduct hunting programs within the framework of State and Federal regulations. The proposed waterfowl hunting program is as restrictive as the State of Oregon's. 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 hunt plan has been reviewed and is supported by the Oregon Department of Fish and Wildlife. Additionally, refuges in Oregon coordinate with ODFW annually to maintain regulations and programs that are consistent with the State management program.

The proposed hunt at Wallace Island would not be expected to result in an increase in waterfowl hunting locally, regionally, or nationally. Therefore, there should be no cumulative effects from an accumulation of hunts.

Conclusion

The Service has concluded that there would be no significant cumulative effects on the Refuge's wildlife populations, either hunted or non-hunted species. The Service has also concluded that the proposed action would not cumulatively affect 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. Hunting is an appropriate wildlife management tool that can be used to manage wildlife populations. Some wildlife disturbance would occur during the hunting seasons. Proper regulations and Refuge seasons would be designed to minimize any negative effects on wildlife populations using the Refuge.

Chapter 5 Consultation and Coordination with Others

The Oregon Department of Fish and Wildlife (ODFW) is thoroughly evaluating/reviewing the proposed regulated waterfowl hunt associated with the Wallace Island Unit of the Julia Butler Hansen NWR. Fish and Wildlife Service Regional Office personnel and staff biologists have carefully reviewed this proposed hunt program. Contacts were made throughout the area of the refuge soliciting comments into the development of the accompanying hunting plan. This EA will be made available for public review and comment for 30 days.

Chapter 6 Regulatory Compliance

The following executive orders and legislative acts have been reviewed as they apply to the implementation of the Environmental Assessment Waterfowl Hunt Plan for Julia Butler Hansen Refuge.

National Environmental Policy Act (1969).

The planning process has been conducted in accordance with National Environmental Policy Act Implementing Procedures, Department of Interior and Service procedures, and has been performed in coordination with the affected public. The requirements of the National Environmental Policy Act (42 U.S.C. '4321 et seq.) and its implementing regulations in 40 CFR Parts 1500-1508 have been satisfied in the procedures used to reach this decision. These procedures included: the development of a range of alternatives for the EA; analysis of the likely effects of each alternative; public notification and involvement.

The Draft EA shall be released for a 30-day public comment period on April 9, 2007. The affected public shall be notified of the availability of these documents through news releases to local newspapers, the Service's refuge website, and posted at the refuge office and refuge complex headquarters. Copies of the Draft EA, Section 7 evaluation, Compatibility Determination and Hunt Plan shall be made available upon request. The Draft EA shall be revised based on public comment received on the draft documents.

National Historic Preservation Act (1966).

The management of archaeological and cultural resources of the Refuge will comply with the regulations of Section 106 of the National Historic Preservation Act. No historic properties are known to be affected by the proposed action based on the criteria of an effect or adverse effect as an undertaking defined in 36CFR800.9 and Service Manual 614FW2, however, determining whether a particular action has a potential to affect cultural resources is an ongoing process that occurs as step-down and site-specific project plans are developed. Should historic properties be identified or acquired in the future, the Service will comply with the National Historic Preservation Act if any management actions have the potential to affect any these properties.

Endangered Species Act (1973).

This Act provides for the conservation of threatened and endangered species of fish, wildlife, and plants by Federal action and by encouraging the establishment of state programs. Section 7 of the Act requires consultation before initiating projects which affect or may affect endangered species; consultation on specific projects will be conducted prior to

implementation.

National Wildlife Administration Act of 1966, as amended by The National Wildlife Refuge System Improvement Act of 1997 (16 U.S.C. 668dd-668ee). The National Wildlife Refuge System Improvement Act (Public Law 105-57, Improvement Act) requires evaluation of opportunities for wildlife-dependent recreation; the refuge manager evaluated all existing and proposed refuge uses on the Wallace Island Unit. Priority wildlife-dependent uses (hunting, fishing, wildlife observation and photography, environmental education and interpretation) are considered automatically appropriate under Service policy and thus exempt from appropriate uses review. A Compatibility determination has been prepared for waterfowl hunting on Wallace Island. This use was found to be compatible with Refuge purposes and the System mission with stipulations specified in the compatibility determination.

Executive Order 12372. Intergovernmental Review. Coordination and consultation with affected Tribal, local and State governments, other Federal agencies, and local interested persons has been completed through personal contact by Refuge staff, and Refuge Supervisors.

Executive Order 12898. Federal Actions to Address Environmental Justice in Minority and Low-Income Populations. All Federal actions must address and identify, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations, low-income populations, and Indian Tribes in the United States. The EA was evaluated and no adverse human health or environmental effects were identified for minority or low-income populations, Indian Tribes, or anyone else.

Executive Order 13186. Responsibilities of Federal Agencies to Protect Migratory Birds. This Order directs departments and agencies to take certain actions to further implement the Migratory Bird Treaty Act. A provision of the Order directs Federal agencies to consider the impacts of their activities, especially in reference to birds on the Fish and Wildlife Service's list of Birds of Conservation (Management) Concern (BCC). It also directs agencies to incorporate conservation recommendations and objectives in the North American Waterbird Conservation Plan and bird conservation plans developed by Partners in Flight (PIF) into agency planning. The effects of all alternatives to Refuge habitats used by migratory birds were assessed within EA.

Appendix A Literature References

- Baker, R.H. 1984. Origin, classification and distribution. Chapter 1 In White-tailed deer ecology and management, ed. L.K. Halls, pp. 1-19. Stackpole Books, Harrisburg, PA.
- Bartelt, G. A. 1987. Effects of disturbance and hunting on the behavior of Canada goose family groups in east central Wisconsin. *J. Wildl. Manage.* 51:517-522.
- Christy, J.A., and J.A. Putera. 1992. Lower Columbia River natural area inventory. Report to The Nature Conservancy, Washington Field Office, Seattle.
- Cole, D. N. and R. L. Knight. 1990. Impacts of recreation on biodiversity in wilderness. Utah State University, Logan, Utah.
- DeLong, A. 2002. Managing Visitor Use & Disturbance of Waterbirds. A Literature Review of Impacts and Mitigation Measures.
- Gavin, T.A., and B. May. 1988. Taxonomic status and genetic purity of Columbian white-tailed deer. *Journal of Wildlife Manage.* 52(1):1-10.
- Gilbow, G., Lindeman, G.W., and H.S. Rice. 1981. Cultural resource overview and intensive survey of the Columbian White-tailed Deer National Wildlife Refuge, Wahkiakum County, Washington, and Clatsop County, Oregon. Report Number 1-1, Eastern Washington University Reports in Archaeology and History, Cheney, WA.
- Havera, S. P., L. R. Boens, M. M. Georgi, and R. T. Shealy. 1992. Human disturbance of waterfowl on Keokuk Pool, Mississippi River. *Wildl. Soc. Bull.* 20:290-298.
- Madsen, J. 1995. Impacts of disturbance on migratory waterfowl. *Ibis* 137:S67-S74.
- Owens, N. W. 1977. Responses of wintering brant geese to human disturbance. *Wildfowl* 28:5-14.
- Raveling, D. G. 1979. The annual cycle of body composition of Canada geese with special reference to control of reproduction. *Auk* 96:234-252.
- Scherer, N. M. 1991. The status of *Rorippa columbiae* on Pierce Island; a review of field studies and *R. columbiae* and water management practices on the Columbia River. Report to The Nature Conservancy, Washington Field Office, Seattle, WA.
- Taylor, W.P. Ed. 1956. The deer of North America. Wildlife Management Institute. Stackpole Books, Harrisburg, PA.
- Tetra Tech. 1996. Lower Columbia River Bi-State Program –

The Health of the River, 1990-1996. Integrated Technical Report. Prepared for Oregon Department of Environmental Quality and Washington Department of Ecology.

Thomas, V. G. 1983. Spring migration: the prelude to goose reproduction and a review of its implication. In Fourth Western Hemispheric Waterfowl and Waterbird Symposium, ed., H. Boyd. 73-81. Ottawa, Canada: Canadian Wildlife Service.

USDA. Physical Soil Properties, Columbia County, Oregon, Database, 04-06-2007
United States Department of Agriculture; Natural Resources Conservation Service.
(<http://soils.usda.gov>) (Tabular Data Version:4, Date 03/20/2007)

USFWS. 2004. 2004 Pacific Flyway Data Book: Waterfowl Harvest and Status, Hunter Participation and Success, and Certain Hunting Regulations in the Pacific Flyway and United States. Compiled by R.E. Trost and M.S. Drut. U.S. Fish and Wildlife Service, Portland, OR.

USFWS. 2005. 2005 Pacific Flyway Data Book: Waterfowl Harvest and Status, Hunter Participation and Success, and Certain Hunting Regulations in the Pacific Flyway and United States. Compiled by R.E. Trost and M.S. Drut. U.S. Fish and Wildlife Service, Portland, OR.

White-Robinson, R. 1982. Inland and salt marsh feeding of wintering brent geese in Essex. Wildfowl 33:113-118.

Appendix B

DRAFT
Julia Butler Hansen Refuge
for the Columbian White-tailed Deer

Wallace Island
Waterfowl Hunt Plan

April 2007

Recommended by the
Project Leader:

(Signature) (Date)

Concurrence by the
Regional Chief,
National Wildlife
Refuge System:

(Signature) (Date)

Approved by the
Region Director:

(Signature) (Date)

DRAFT

Julia Butler Hansen Refuge for the Columbian White-tailed Deer Wallace Island Waterfowl Hunt Plan

Table of Contents

- I. Introduction**
- II. Conformance with Statutory Authorities**
- III. Statement of Objectives**
- IV. Assessment**
 - A. Are wildlife populations present in numbers sufficient to sustain optimum population levels for priority refuge objectives other than hunting?**
 - B. Is there competition for habitat between target species and other wildlife?**
 - C. Are there unacceptable levels of predation by target species on other wildlife forms?**
- V. Description of Hunting Program**
 - A. Areas of the refuge that support populations of the target species**
 - B. Areas to be opened to the public**
 - C. Species to be taken, hunting periods**
 - D. Justification for permit, if one is required**
 - E. Procedures for consultation and coordination with State (If refuge regulations regarding species to be taken and permitted methods of taking are to be more restrictive or more liberal than State regulations, a justification must be provided.)**
 - G. Hunter requirements**
 - 1. Age (if restrictions are imposed by State)**
 - 2. Allowable equipment (dogs, vehicles, blinds, sporting arms, ammunition)**
 - 3. Use of open fires (for cooking, warmth, etc.)**
 - 4. License and permits**
 - 5. Reporting harvesting**
 - 6. Hunter training and safety (if required by State)**

DRAFT

**Julia Butler Hansen Refuge for the Columbian White-tailed Deer
Wallace Island Waterfowl Hunt Plan**

I. Introduction

About the Refuge

The Julia Butler Hansen Refuge for the Columbian White-tailed Deer was established in 1971 to protect and manage habitat for the Columbian white-tailed deer (CWT deer). The refuge contains over 6000 acres of fields, forested tidal swamps, brushy woodlots, marshes and sloughs along the lower Columbia River in both Washington and Oregon. The principle units of the refuge are the refuge Mainland Unit, Hunting Islands, Price Island, Tenasillahe Island, Crims Island, and Wallace Island (see Map 1). The refuge is managed by the U. S. Fish and Wildlife Service (Service) and is one of more than 500 National Wildlife Refuges in the United States.

The goals of the Julia Butler Hansen Refuge are (Refuge Management Information System 1998):

- To manage for healthy and balanced populations of CWT deer on the refuge, as outlined in the Columbian white-tailed deer Recovery Plan, and cooperate with others in management of off-refuge deer.
- To maintain a native diversity of wetland habitats for breeding/migratory/wintering waterfowl and other aquatic migratory birds associated with the Columbia River estuary.
- To maintain a native diversity of habitats for fish and wildlife associated with the Columbia River estuary.
- To provide opportunities for wildlife/wildlands-dependent recreation, education, and research.

II. Conformance with Statutory Authorities

Refuge Recreation Act of 1962 (16 U.S.C. 460K) authorizes the Secretary of the Interior to administer Refuges, hatcheries, and other conservation areas for recreational use. The Refuge Recreation Act requires 1) that any recreational use permitted will not interfere with the primary purpose for which the area was established; and 2) that funds are available for the development, operation, and maintenance of the permitted forms of recreation.

Fundamental to the management of lands within the National Wildlife Refuge System (Refuge System) is the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57) (Improvement Act), an amendment to the Refuge Administration Act of 1966 (16 U.S.C. 668dd-668ee). The Act provided a mission for the Refuge System, and clear standards for its management, use, planning, and growth. Its passage followed the promulgation of Executive Order 12996 (April 1996), Management of Public Uses on National Wildlife Refuges, reflecting

the importance of conserving natural resources for the benefit of present and future generations of people. The Improvement Act recognized that wildlife dependent recreational uses involving hunting, fishing, wildlife observation and photography, and environmental education and interpretation, when determined to be compatible with the mission of the System and purposes of the Refuge, are legitimate and appropriate public uses of the Refuge System. Compatible wildlife dependent recreational uses are the priority general public uses of the Refuge System and shall receive priority consideration in planning and management.

Recreational hunting authorized by the regulations will not interfere with the primary purpose for which the refuge was established. Refuge funding and staffing are adequate to operate the hunt in a compatible manner at present and in light of anticipated changes into the foreseeable future. These determinations are based upon and are further explained in the Compatibility Determination, located in Appendix A of the Environmental Assessment for Waterfowl Hunting on Wallace Island on the Julia Butler Hansen Refuge for the Columbian White-tailed Deer. Also see section V. G. below.

III. Statement of Objectives

The objective of this hunting plan is to provide hunters a quality hunting experience while minimizing negative impacts on wildlife and other wildlife-dependent public uses of the Refuge. It supports the mandate of the National Wildlife Refuge System Improvement Act of 1997 that refuges shall endeavor to provide quality hunting opportunities wherever compatible.

IV. Assessment

A. Are wildlife populations present in numbers sufficient to sustain optimum population levels for priority refuge objectives other than hunting?

Yes. Effects to other public uses are expected to be minimal as Wallace Island is accessible only by boat and due to the time of year waterfowl hunting occurs, other recreational uses such as kayaking or boating in the Columbia River have ceased or are at minimal levels.

The refuge and the Columbia River estuary provide important wetland habitat that sustains the migratory birds of the Pacific Coast. The refuge is both a wintering area and a migrational stopping area for waterfowl that nest in Alaska and winter in Oregon, Washington, and California. Up to 50,000 ducks may be present during the winter (refuge files – waterfowl surveys). The most common species are mallard (*Anas platyrhynchos*), American wigeon (*A. americana*), pintail (*A. acuta*), green-winged teal (*A. crecca*), and greater scaup (*Aythya marila*). In addition, mallards, cinnamon teal (*Anas cyanoptera*), gadwalls (*A. strepera*) and wood ducks (*Aix sponsa*) nest on the refuge during the spring and summer.

There are typically a minimum of 5,000-10,000 Canada geese along the lower Columbia during waterfowl hunting season (refuge files – waterfowl surveys). There are six principal subspecies of Canada geese that frequent the area – western, dusky, lesser,

Taverner's, cackling (recently considered a separate species), and Vancouver. All except the dusky are relatively abundant. For hunting purposes, Wallace Island is located in the Northwest Oregon Goose Permit Zone. To minimize the dusky harvest, there is a season bag limit of one. Hunters must take a test on subspecies identification and bring all harvested geese to a check station. Hunters that check a dusky lose their goose hunting privileges in the permit zone for the rest of the season. The harvest of dusky geese is regulated by a quota system, whereby the season ends prematurely if the quota is filled. These special regulations, as well as the general regulations pertaining to goose hunting in general, ensure that goose populations will not be jeopardized by hunting.

There are no survey data on snipe numbers along the lower Columbia. Snipe are observably common (A. Clark, Refuge Biologist, pers. comm.). The North American population is estimated at 2,000,000 to 5,000,000 (Mueller 2005, USFWS 2000). The estimated harvest for the state of Oregon in 2004 was 900 (USFWS 2004). Very few people hunt snipe in the lower Columbia region (A. Clark, Refuge Biologist, pers. comm.), therefore, hunting is not likely to have a measurable impact on local numbers of snipe.

Coots are common in the lower Columbia during winter. A total of 1,400 were tallied during the 2007 midwinter waterfowl index survey (Refuge Files – waterfowl surveys). The US wintering population is estimated at 2,500,000 to 3,000,000 (Brisbin et al. 2002). Coots are seldom targeted by local waterfowl hunters and the local harvest is thought to be insignificant (A. Clark, Refuge Biologist, pers. comm.).

B. Is there competition for habitat between target species and other wildlife?

While other species of wildlife including numerous shorebirds, non-target waterfowl species, and mammals such as river otter use the Wallace Island shoreline, Wallace Island comprises a relatively small portion of the available habitat. We are aware of no evidence that levels of competition between target and non-target species are not currently within acceptable levels.

C. Are there unacceptable levels of predation by target species on other wildlife forms?

Not applicable.

V. Description of Hunting Program

A. Areas of the refuge that support populations of the target species

Target species of waterfowl are found (numbers vary seasonally) throughout the refuge's riparian areas. Waterfowl extensively utilize the waters of the lower Columbia River both on and off of refuge lands. The seven subspecies of wintering Canada geese (*Branta canadensis*) found at the refuge are the lesser (*B. c. parvipes*), Taverner (*B. c. taverneri*), cackling (*B. c. minima*), dusky (*B. c. occidentalis*), western (*B. c. moffitti*), Vancouver (*B.*

c. fulva), and Aleutian (*B. c. leucopareia*). Geese forage in the fields and managed wetlands on the Mainland and Tenasillahe Island Units but may also be found on the river.

B. Areas to be opened to the public

The shoreline of Wallace Island (approximately 5.77 miles) under refuge jurisdiction will be opened to public waterfowl hunting. Wallace Island is located in the Columbia River between river mile 47 and 50, approximately ten miles upstream (southeast) of the Mainland Unit. The island is on the south side of the Columbia, at the mouth of the Clatskanie River and is separated from the Oregon mainland by Wallace Slough.

C. Species to be taken, hunting periods

Geese, ducks, coots, and common snipe will be taken. Limits and hunting periods will be set by Oregon State Department of Fish and Wildlife (ODFW) to match adjacent areas open to waterfowl hunting.

D. Justification for permit, if one is required

No refuge permits will be required.

E. Procedures for consultation and coordination with State (If refuge regulations regarding species to be taken and permitted methods of taking are to be more restrictive or more liberal than State regulations, a justification must be provided.)

Refuge staff and ODFW staff will consult on issues regarding law enforcement and any significant changes in the number or behavior of wildlife. Refuge regulations will be in accord with state regulations.

F. Methods of control and enforcement (identify check stations)

Refuge and ODFW officers will patrol to ensure hunters are complying with all regulations and restrictions.

G. Funding and staffing required for the hunt.

The proposed expansion to include waterfowl hunting on Wallace Island would not require any new infrastructure or personnel. Administration of the hunt and annual coordination with the State of Oregon would be required as would some law enforcement patrols, however refuge staff is in place and capable of conducting these additional duties. Revision and printing of the Refuge brochure, updating the Refuge web site and other outreach information would be required at an estimated cost of \$20,000. Base funding is available to cover these costs.

VI. Measures Taken to Avoid Conflicts With Other Management Objectives

A. Biological Conflicts: Include Sec. 7 consultations, and other measures proposed to mitigate or eliminate conflicts with endangered species or other species.

The primary Refuge purpose is to maintain the Refuge in optimum condition for the Columbian White-Tailed (CWT) Deer. Wallace Island currently supports approximately 20 CWT Deer. This proposed use would not result in any degradation of Wallace Island in terms of its suitability for CWT Deer. Due to the limited number of hunters, limited field time, and the activity being confined to essentially the shoreline, no effects to vegetation are anticipated. Some disturbance to CWT Deer due to waterfowl hunting would be expected, although as the activity is confined to the shoreline, disturbance and subsequent displacement of individual deer would be minor. The 578-acre island is forested, with a thick, nearly impenetrable, understory of shrub willow, red-osier dogwood, wild rose, salmonberry, and other shrubs. The forest extends to the shoreline for the most part, so that hunters would only utilize the very edge to construct blinds to hunt outward toward the open water. This shoreline edge probably encompasses less than 10 acres of the island.

Allowing waterfowl hunting on the Refuge portion of the shoreline would not increase the number of waterfowl hunters as waterfowl hunters already use the State owned tidal and submerged lands surrounding Wallace Island. Therefore, the limited disturbance to CWT Deer on Wallace Island currently experienced would not be expected to change. It is not expected that the numbers of hunters will increase in the future. Other species which may be affected by the proposed alternative include bald eagles, great blue herons and other birds which reside along island shorelines and riparian vegetation in the Columbia River. Hunting would occur outside of the breeding season for eagles, herons, and other birds, so there would be no effect on their reproduction. Accidental shootings of nongame birds are expected to be negligible. No effects are expected for Columbia River or Refuge fish populations.

Nearby resting and feeding areas will be available for use by waterfowl, deer and other refuge species that are disturbed. These species would likely move to other areas of the refuge which are less accessible to the hunters. The Service will consult on the proposed action under Section 7 of the Endangered Species Act to ensure that the action does not unacceptably affect listed species, including the Columbian white-tailed deer, bald eagle, marbled murrelet, northern spotted owl, bull trout, *Howellia* (a plant), and Nelson's checkermallow (a plant).

B. Public Use Conflicts: Include measures proposed to mitigate or eliminate conflicts between various public uses.

Effects on other public uses are expected to be minimal as Wallace Island is accessible only by boat and due to the time of year waterfowl hunting occurs, other recreational uses such as kayaking or boating in the Columbia River have ceased or are at minimal levels.

C. Administrative Conflicts: Cite measures proposed to mitigate or eliminate any administrative conflicts.

At this time, no administrative conflicts are anticipated

VII. Conduct of the Hunt

A. Refuge-specific hunting regulations

Waterfowl hunters would be expected to comply with all current and applicable State and Refuge regulations. This will be achieved through a combination of printed information, signing, outreach efforts, and enforcement of regulations by State and Refuge law enforcement officers.

The shoreline of Wallace Island (approximately 5.8 miles) under refuge jurisdiction will be opened to public waterfowl hunting.

Geese, ducks, coots, and common snipe will be allowed to be taken. Limits and hunting periods will be set by Oregon State Department of Fish and Wildlife (ODFW) to match adjacent areas open to waterfowl hunting

Refuge staff and ODFW staff will consult on issues regarding law enforcement and any significant changes in the number or behavior of wildlife. Refuge regulations will be in accord with state regulations. Refuge and ODFW officers will patrol to ensure hunters are complying with all regulations and restrictions.

Temporary blinds may be constructed, but they must be available to everyone on a first-come, first-served basis.

Hunters may use dogs to aide in retrieval of birds but dogs will need to be kept under control at all times.

Only non-toxic shot will be allowed for the hunt.

Camping, overnight use and fires are prohibited.

B. Anticipated public reaction to the hunt

Public reaction to the hunt is expected to be mixed. There is a consistent desire among certain segments of the population to open more federally managed property, including the refuge, to hunting. Other members of the public are expected to object on the grounds that a refuge should be 'a safe haven' for wildlife with no hunting permitted. Overall, response – especially locally - is expected to be positive.

C. Hunter application and registration procedures (if applicable)

Not applicable.

D. Description of hunter selection process

Not applicable.

E. Media selection for announcing and publicizing the hunt

The hunt will be published in the Oregon Department of Fish and Wildlife's Waterfowl pamphlet. We will also publish the appropriate hunt information in the CFR and other refuge literature (e.g., brochure, hunting tear sheet, etc.).

F. Description of hunter orientation, including pre-hunt scouting (if applicable)

Not applicable

G. Hunter requirements

1. Age (if restrictions are imposed by State)

Age restrictions will be in accord with ODFW regulations.

2. Allowable equipment (dogs, vehicles, blinds, sporting arms, ammunition)

Restrictions will be in accord with ODFW regulations.

3. Use of open fires (for cooking, warmth, etc.)

All open fires are prohibited.

4. License and permits

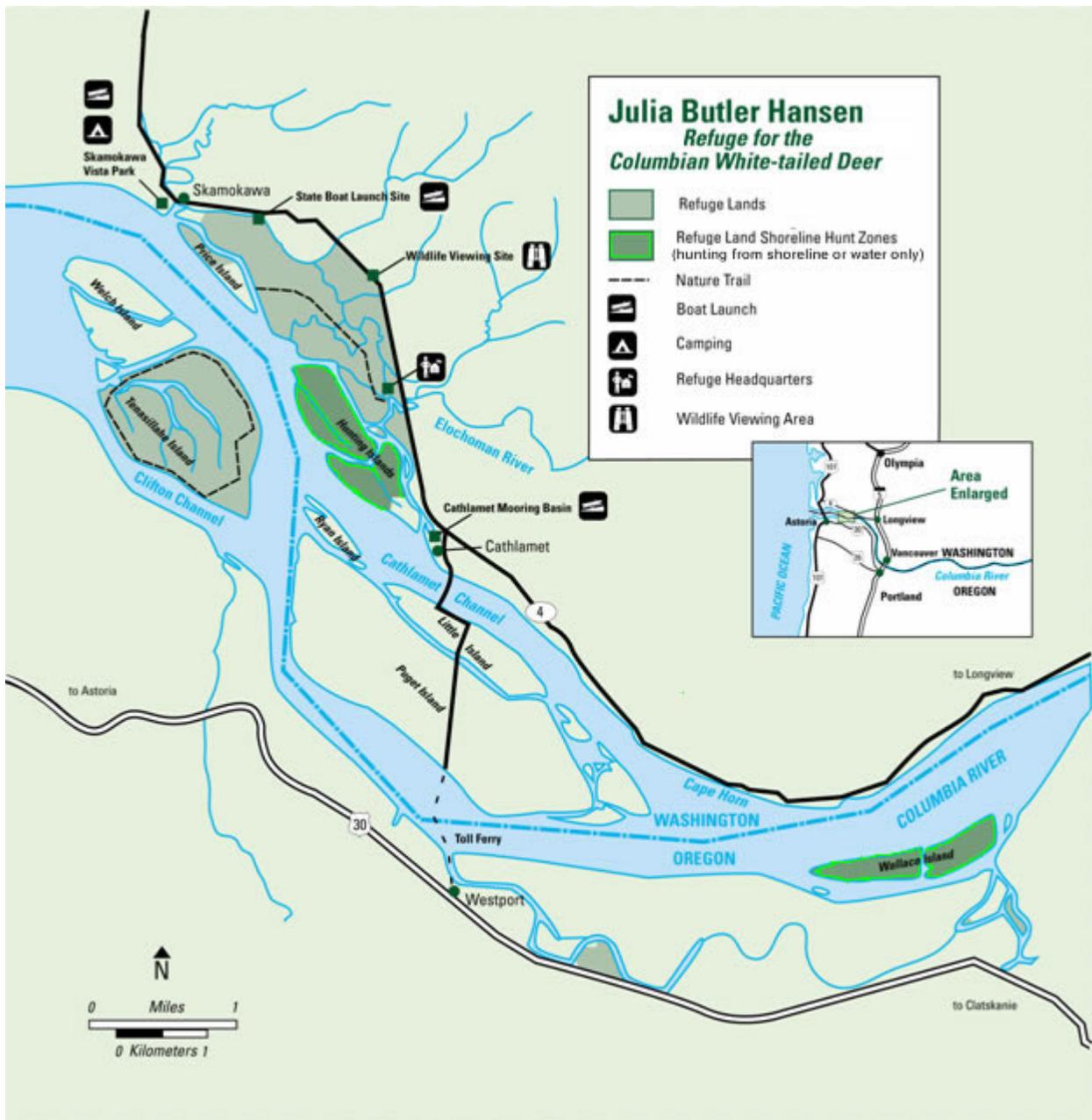
All hunters must have valid Oregon state licenses for waterfowl as well as a Federal Duck Stamp.

5. Reporting harvesting

Hunters must fulfill all state reporting requirements.

6. Hunter training and safety (if required by State)

Hunters must fulfill all state requirements for training and hunter safety classes.



Map 1 (Julia Butler Hansen Refuge for the Columbian White-tailed Deer)

Literature Cited

Brisbin, I.L., Jr., H.D. Pratt, and T.B. Mowbray. 2002. American Coot (*Fulica americana*). The Birds of North America Online (A. Poole, Ed.).

Mueller, H. 2005. Wilson's snipe (*Gallinago delicata*). The Birds of North America Online (A. Poole, Ed.).

USFWS. 2004. 2004 Pacific Flyway Data Book: Waterfowl Harvest and Status, Hunter Participation and Success, and Certain Hunting Regulations in the Pacific Flyway and United States. Compiled by R.E. Trost and M.S. Drut. U.S. Fish and Wildlife Service, Portland, OR.

USFWS. 2000. US Shorebird Conservation Plan. US Fish and Wildlife Service, Office of Migratory Bird Management, Portland, Oregon.

Appendix C

DRAFT **COMPATIBILITY DETERMINATION** **(April 5, 2007)**

JULIA BUTLER HANSEN REFUGE FOR THE COLUMBIAN WHITE-TAILED DEER

Introduction: This compatibility determination discusses the proposed expansion of the waterfowl hunt program to include Wallace Island which is identified as the preferred alternative/proposed action in the Julia Butler Hansen Refuge for the Columbian White-tailed Deer Waterfowl Hunt Plan and Environmental Assessment. All refuge uses must be compatible with the mission of the National Wildlife Refuge System and the purposes of the Refuge. A refuge use is, "...a recreational use (including refuge actions associated with a recreational use or other general public use), refuge management economic activity, or other use of a national wildlife refuge by the public or other non-National Wildlife Refuge System entity" (603 FW 2.6Q). The term compatibility was first used in 1918 in regulations developed by the precursor of the Fish and Wildlife Service, the Bureau of Biological Survey. A compatibility standard has been in use by refuges since 1937 and was reaffirmed through the National Wildlife Refuge System Improvement Act of 1997 (Improvement Act, 16 U.S.C. 668dd-668ee). Current compatibility policy became effective November 17, 2000 and can be found in the U.S. Fish and Wildlife Service Manual at 603 FW 2.

The Improvement Act stipulates that, on national wildlife refuges, the needs of wildlife must come first and defines a compatible use as a use that "...in the sound professional judgment of the Director, will not materially interfere with or detract from the fulfillment of the mission of the [NWRS] or the purposes of the refuge" (603 FW 2.6B). Sound professional judgment is defined as "...a finding, determination, or decision, that is consistent with principles of sound fish and wildlife management and administration, available science and resources..."(603 FW 2.6U). Compatibility for wildlife-dependent public uses may depend on the level or extent of a use. If determined to be compatible, wildlife-dependent recreational uses, which are defined as hunting, fishing, wildlife observation and photography, and environmental education and interpretation, receive priority consideration over other refuge uses.

Use Hunting (waterfowl) on Wallace Island.

Refuge Name: Julia Butler Hansen Refuge for the Columbian White-tailed Deer, Wahkiakum County, Washington and Clatsop and Columbia Counties, Oregon.

Establishing and Acquisition Authority(ies):

- Endangered Species Act of 1973, as amended [16 U.S.C. 1531-1544])
- Refuge Recreation Act (16 U.S.C. 460k-460k-4), as amended)
- Fish and Wildlife Act of 1956 (16 U.S.C. 742a-742j, not including 742d-1)
- Estimated Land Acquisition under (P.L. 88-578) (Land and Water Conservation Fund) FY 1967

- DOI Final Environmental Statement, Proposed Additions To And Operation of The Columbian White-Tailed Deer National Wildlife Refuge Oregon and Washington, May 10, 1973
- Draft Environmental Assessment, Proposed Additions to Julia Butler Hansen for Columbia White-tailed Deer, Clatsop and Columbia Counties, Oregon, December 1990
- Categorical Exclusion for the Willamette Industries Addition to JBH, October 1998

Refuge Purpose(s)

“... to conserve (A) fish or wildlife which are listed as endangered species or threatened species or (B) plants ...” 16 U.S.C. 1534 (Endangered Species Act of 1973)

“... suitable for (1) incidental fish and wildlife-oriented recreational development, (2) the protection of natural resources, (3) the conservation of endangered species or threatened species ...” 16 U.S.C. 460k-1 “... the Secretary ... may accept and use ... real ... property. Such acceptance may be accomplished under the terms and conditions of restrictive covenants imposed by donors ...” 16 U.S.C. 460k-2 (Refuge Recreation Act (16 U.S.C. 460k-460k-4), as amended).

“... for the development, advancement, management, conservation, and protection of fish and wildlife resources ...” 16 U.S.C. 742f(a)(4) “... for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. Such acceptance may be subject to the terms of any restrictive or affirmative covenant, or condition of servitude ...” 16 U.S.C. 742f(b)(1) (Fish and Wildlife Act of 1956)

“The lands proposed for acquisition are essential to the preservation of the endangered Columbia white-tailed deer, *Odocoileus virginianus leucurus*.” Estimated Land Acquisition FY 1967

“...and management of these lands primarily for the benefit of the endangered Columbian white-tailed deer and public enjoyment derived therefrom.” DOI Final Environmental Statement, May 10, 1973

“...to secure additional habitat for the benefit of the endangered Columbian White-tailed deer.” Draft Environmental Assessment, December 1990

“...to preserve native spruce swamp habitat for the Endangered CWTD” Categorical Exclusion, October 1998

National Wildlife Refuge System Mission: The mission of the National Wildlife Refuge System is “to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans” (National Wildlife Refuge System Administration Act of 1966, as amended [16 U.S.C. 668dd-668ee]).

Description of Use: Formally opening Wallace Island, which is located in Columbia County, Oregon, to waterfowl hunting during the State waterfowl season. Hunting would be allowed consistent with State regulations except as specifically noted herein. Geese, ducks, coots, and common snipe will be permitted to be taken. Specific species/numbers to be taken and hunting periods will be set by Oregon State Department of Fish and Wildlife (ODFW) to match adjacent areas open to waterfowl hunting. Only the shoreline of the island will be opened for hunting since no potential exits on the interior as it is comprised of dense forested upland.

Hunters may use dogs to aide in retrieval of birds but dogs will need to be kept under control at all times. Hunters may set up temporary blinds along the shoreline which must be removed at the conclusion of each hunting period. Since this hunt will occur on an island in the Columbia River access is only available by boat. Additional information can be found in the Julia Butler Hansen NWR Hunt Plan for the Wallace Island Unit (USFWS, 2007).

Opening Wallace Island will complement State permitted activities and resolve potential problems over the exact position of the Refuge boundary that would exist with a waterfowl hunt closure, and associated enforcement of relevant laws and regulations. Hunting is currently permitted on State of Oregon owned waters and tidelands surrounding Wallace Island. These adjacent waters are all tidally influenced submerged lands below mean high water (MHW).

Hunting Island which is located in Wahkiakum County, Washington, is the only other portion of the Julia Butler Hansen Refuge which is currently open to waterfowl hunting. Waterfowl hunting primarily occurs along the approximately 6.9 miles of shoreline and interior sloughs. As with Wallace Island, Refuge ownership is confined to land above MHW with the State of Washington owning and regulating use of the surrounding tidal and submerged land.

Recreational hunting (a wildlife-dependent activity) has been identified in the National Wildlife Refuge System Improvement Act of 1997 as a priority public use, provided it is compatible with the purpose for which the refuge was established.

Availability of Resources: The proposed expansion to include waterfowl hunting on Wallace Island would not require any new infrastructure or personnel. Administration of the hunt and annual coordination with the State of Oregon would be required as would some law enforcement patrols, however refuge staff is in place and capable of conducting these additional duties. Revision and printing of the Refuge brochure, updating the Refuge web site and other outreach information would be required at an estimated cost of \$20,000. Base funding is available to cover these costs.

Category and Itemization	One-time (\$000)	Annual (\$000/yr)
Administration and management:	\$2500.00	\$4000.00
Maintenance:	\$0000.00	\$4000.00
Monitoring:	\$0000.00	\$4000.00
Special equipment, facilities, or improvements:	\$2500.00	\$3000.00
Offsetting revenues:	\$0000.00	\$0000.00

Anticipated Impacts of the Use: The primary Refuge purpose is to maintain the Refuge in optimum condition for the Columbian White-Tailed (CWT) Deer. Wallace Island currently supports approximately 20 CWT Deer. This proposed use would not result in any degradation of Wallace Island in terms of its suitability for CWT Deer. Due to the limited number of hunters, limited field time, and the activity being confined to essentially the shoreline, no effects to vegetation are anticipated.

While the presence of hunters and dogs would cause some disturbance to CWTD on the island, this level of disturbance is expected to be minor and inconsequential. There is abundant hiding cover on the island for CWT Deer. Hunters would have no reason to penetrate the island's interior because of the thick brush which is not suitable habitat for waterfowl hunting or walking. Hunter's dogs would be expected to stay at the blind or boat, as they are trained to do, except when retrieving birds.

The number of hunters expected to use the shoreline would be small, probably 2 to 4 parties at most. Waterfowl hunting already occurs on state-owned waters and tidelands surrounding the island. Opening the island to hunting is not expected to increase the amount of hunting or boat traffic that occurs in close proximity to the island. A closure of the shoreline would be

unenforceable because the refuge boundary is described as the mean high water line, which cannot be precisely determined in many areas.

White-tailed deer in general are quite tolerant of moderate human disturbance. They often live in suburban neighborhoods and city parks, where human presence is nearly constant (Etter 2002, Raik et al. 2006, Harveson et al. 2007). The relatively minor disturbance caused by a few hunters using the shoreline of Wallace Island is not expected to have any measurable negative effect on CWT Deer.

Other species which may be affected by the proposed alternative include bald eagles, great blue herons and other birds which reside along island shorelines and in riparian vegetation in the Columbia River. No effects are expected for Columbia River or Refuge fish populations.

Nearby resting and feeding areas will be available for use by waterfowl, deer and other refuge species that are disturbed. These species would likely move to other areas of the refuge which are less accessible to the hunters. The Service is required by the Endangered Species Act of 1973 to complete a Section 7 evaluation of the proposed activity to ensure that the action does not unacceptably affect listed species. The completed Section 7 determined that the proposed action would not be likely to adversely affect any endangered mammals or birds in the area and would have no effect on Bull Trout.

Effects on other public uses are expected to be minimal as Wallace Island is accessible only by boat and due to the time of year waterfowl hunting occurs, other recreational uses such as kayaking or boating in the Columbia River have ceased or are at minimal levels.

Although hunting directly impacts individuals, the amount of waterfowl harvest is not expected to change or to have a measurable effect on Refuge, Lower Columbia River, or Pacific Flyway populations, as waterfowl hunting is already occurring on the shoreline surrounding Wallace Island below MHW and waterfowl hunting activity is not extremely high. Hunting may be either compensatory or additive to natural mortality (Anderson 1995). Compensatory mortality occurs when hunting substitutes for other forms of mortality (disease, competition, predation, severe weather, etc.). Additive mortality occurs when hunting compounds the total mortality. In some cases, hunting can be used as a management tool to control populations. In concert with Canada, Mexico, and multi-state Flyway councils, the Service and State wildlife agencies regulate hunting so that harvest does not reduce populations to unsustainable levels.

Direct effects of hunting on waterfowl are mortality, wounding, and disturbance (DeLong 2002). Hunting can alter behavior (e.g., foraging time), population structure, and distribution patterns of wildlife (Owens 1977, Raveling 1979, White-Robinson 1982, Thomas 1983, Bartelt 1987, Madsen 1985, and Cole and Knight 1990). In Denmark, hunting was documented to affect the diversity and number of birds using a site (Madsen 1995). Avian diversity changed from predominantly mute swan and mallard to a more even distribution of a greater number of species when a sanctuary was established. Hence, species diversity increased with the elimination of hunting. There also appears to be an inverse relationship between the numbers of birds using an area and hunting intensity (DeLong 2002). In Connecticut, lesser scaup were observed to forage less in areas that were heavily hunted (Cronan 1957). In California, the numbers of northern

pintails on Sacramento NWR non-hunt areas increased after the first week of hunting and remained high until the season was over in early January (Heitmeyer and Raveling 1988). Following the close of hunting season, ducks generally increased their use of the hunt area; however, use was lower than before the hunting season began.

Human disturbance to wintering birds and other wildlife using the open waters of the Columbia River surrounding Wallace Island would occur as a result of hunting activity. Migratory and wintering waterfowl generally attempt to minimize time spent in flight and maximize foraging time because flight requires considerably more energy than any other activity, other than egg laying. Human disturbance associated with hunting includes loud noises and rapid movements, such as those produced by shotguns and boats powered by outboard motors. This disturbance, especially when repeated over a period of time, compels waterfowl to change food habits, feed only at night, lose weight, or desert feeding areas (Madsen 1995, Wolder 1993). Disturbance levels from hunting activity outside Chincoteague NWR were found to be high enough to force wintering black ducks into a pattern of nocturnal feeding within surrounding salt marsh and diurnal resting within Refuge impoundments (Morton et al. 1989a, 1989b). Unhunted populations have been documented to behave differently from hunted ones (Wood 1993).

These impacts can be reduced by the presence of adjacent sanctuary areas where hunting does not occur, and birds can feed and rest relatively undisturbed. Sanctuaries or non-hunt areas have been identified as the most common solution to disturbance problems caused from hunting (Havera et. al 1992). Prolonged and extensive disturbances may cause large numbers of waterfowl to leave disturbed areas and migrate elsewhere (Madsen 1995, Paulus 1984). In Denmark, hunting disturbance effects were experimentally tested by establishing two sanctuaries (Madsen 1995). Over a 5-year period, these sanctuaries became two of the most important staging areas for coastal waterfowl. Numbers of dabbling ducks and geese increased 4 to 20 fold within the sanctuary (Madsen 1995). On Julia Butler Hansen Refuge, both the Tenasillahe Island and Mainland unit are closed to all public entry and with numerous wetlands and sloughs available, acts as a sanctuary during the waterfowl season. In addition, two established sanctuaries exist on the adjacent Lewis and Clark NWR and vast portions of the Columbia River act as de facto sanctuaries due to the amount of open water not subject to waterfowl hunting pressure.

Intermittent hunting can be a means of minimizing disturbance, especially if rest periods in between hunting events are weeks rather than days (Fox and Madsen 1997). It is common for Refuges to manage hunt programs with non-hunt days. At Sacramento NWR, 3-16% of pintails were located on hunted units during non-hunt days, but were almost entirely absent in those same units on hunt days (Wolder 1993). In addition, northern pintails, American wigeon, and northern shovelers decreased time spent feeding on days when hunting occurred on public shooting areas, as compared to non-hunt days (Heitmeyer and Raveling 1988). However, intermittent hunting may not always greatly reduce hunting impacts. The intermittent hunting program of three hunt days per week at Sacramento NWR results in lower pintail densities on hunt areas during non-hunt days than non-hunt areas (Wolder 1993). In Germany, several studies reported a range from a few days to approximately three weeks for waterbird numbers to recover to pre-disturbance levels (Fox and Madsen 1997). The proposed hunt on Wallace Island will not be

intermittent in order to provide consistent management with the existing Refuge waterfowl hunt program as well as on adjacent State lands and waters.

Additional detail on the impacts of the hunt can be found in the Wallace Island Unit Environmental Assessment (USFWS, 2007) prepared in conjunction with this compatibility determination.

Public Review and Comment: The public is being provided with a 30-day period for review and comment. Comments are being solicited by issuing a press release announcing the availability of the Wallace Island Waterfowl Hunt Plan, Environmental Assessment and Compatibility Determination. In addition copies of the document are posted on the Refuge website and made available to the public at both the Julia Butler Hansen and Willapa NWR Refuge offices.

Determination:

Use is Not Compatible

Use is Compatible with the Following Stipulations

Stipulations necessary to ensure compatibility:

Waterfowl hunters would be expected to comply with all current and applicable State and Refuge regulations. This will be achieved through a combination of printed information, signing, outreach efforts, and enforcement of regulations by State and Refuge law enforcement officers.

The shoreline of Wallace Island (approximately 5.8 miles) under refuge jurisdiction will be opened to public waterfowl hunting.

Geese, ducks, coots, and common snipe will be allowed to be taken. Limits and hunting periods will be set by Oregon State Department of Fish and Wildlife (ODFW) to match adjacent areas open to waterfowl hunting

Refuge staff and ODFW staff will consult on issues regarding law enforcement and any significant changes in the number or behavior of wildlife. Refuge regulations will be in accord with state regulations. Refuge and ODFW officers will patrol to ensure hunters are complying with all regulations and restrictions.

Temporary blinds may be constructed, but they must be available to everyone on a first-come, first-served basis.

Hunters may use dogs to aide in retrieval of birds but dogs will need to be kept under control at all times.

Only non-toxic shot will be allowed for the hunt.

Camping, overnight use and fires are prohibited.

Justification:

Hunting is one of the six legally designated wildlife-dependent public uses of the National Wildlife Refuge System. Refuges grant these six uses special consideration in planning and management. When on a refuge-specific basis one or more of these uses is determined compatible with the refuge purpose(s) and the NWRS mission, the refuge is to strongly encourage (facilitate) the use(s). Providing a quality hunting program contributes to achieving Refuge goals and purposes. The program as described was determined to be compatible, as potential impacts from waterfowl hunting on Wallace Island on CWT Deer, area waterfowl and other wildlife would be minimal and not materially interfere with or detract from achievement of the NWRS mission or from the Service's ability to achieve Refuge wildlife, habitat, or other public-use-related purposes and goals.

It is anticipated that by incorporating Wallace Island into an existing waterfowl hunt program, no habitat degradation would be anticipated, disturbance to CWT deer would be temporary and localized, and ample amounts of additional quality habitat for waterfowl and other wetland birds exists on the Refuge and in the lower Columbia River. Opening up the Refuge-owned portion of Wallace Island for waterfowl hunting compliments activities permitted by Oregon State on adjacent waters and tidelands and provides a distinct, manageable unit that can be more easily delineated, posted, and enforced, resulting in less confusion for the waterfowl hunting public. In addition, due to the time of year and the limited access except by boat, no conflicts amongst Refuge user groups is anticipated.

References

- Anderson, S. H. 1995. Recreational disturbance and wildlife populations. Pages 157-168 in R. L. Knight and K. J. Gutzwiller, ed. *Wildlife and Recreationists: coexistence through management and research*. Island Press, Washington, D. C. 372pp.
- Bartelt, G. A. 1987. Effects of disturbance and hunting on the behavior of Canada goose family groups in east central Wisconsin. *J. Wildl. Manage.* 51:517-522.
- Cole, D. N. and R. L. Knight. 1990. *Impacts of recreation on biodiversity in wilderness*. Utah State University, Logan, Utah.
- Cronan, J. M. 1957. Food and feeding habits of the scaups in Connecticut waters. *Auk* 74(4):459-468.
- DeLong, A. 2002. *Managing Visitor Use & Disturbance of Waterbirds. A Literature Review of Impacts and Mitigation Measures*.
- Etter, D.R., K.M. Hollis, T.R. Van Deelen, D.R. Ludwig, J.E. Chelsvig, C.L. Anchor, and R.E. Warner. 2002. Survival and movements of white-tailed deer in suburban Chicago, Illinois. *Journal of Wildlife Manage.* 66(2):500-510
- Fox, A. D. and J. Madsen. 1997. Behavioral and distributional effects of hunting disturbance on waterbirds in Europe: implications for refuge design. *J. Appl. Ecol.* 34:1-13.
- Havera, S. P., L. R. Boens, M. M. Georgi, and R. T. Shealy. 1992. Human disturbance of waterfowl on Keokuk Pool, Mississippi River. *Wildl. Soc. Bull.* 20:290-298.
- Harveson, P.M., R.R. Lopez, B.A. Collier, and N.J. Silvy. 2007. Impacts of urbanization on Florida Key deer behavior and population dynamics. *Biological Conservation* 134:321-331.
- Heitmeyer, M. E. and D. G. Raveling. 1988. Winter resource use by three species of dabbling ducks in California. Dept. Wildlife and Fisheries Biology, Univ. of Calif., Davis. Final Report to Delta Waterfowl and Wetlands Research Center, Portage La Prairie, Manitoba, Canada. 200pp.
- Madsen, J. 1985. Impact of disturbance on field utilization of pink-footed geese in West Jutland, Denmark. *Biol. Conserv.* 33 :53-63.
- Madsen, J. 1995. Impacts of disturbance on migratory waterfowl. *Ibis* 137:S67-S74.
- Morton, J. M., A. C. Fowler, and R. L. Kirkpatrick. 1989a. Time and energy budgets of American black ducks in winter. *J. Wildl. Manage.* 53(2):401-410 .
- Morton, J. M., R. L. Kirkpatrick, M. R. Vaughan, and D. F. Stauffer. 1989b. Habitat use and movements of American black ducks in winter. *J. Wildl. Manage.* 53:390-400.
- Owens, N. W. 1977. Responses of wintering brant geese to human disturbance. *Wildfowl* 28:5-14.
- Paulus, S.L. 1984. Activity budgets of nonbreeding gadwalls in Louisiana. *J. Wildl. Manage.* 48:371-380.
- Raik, D.B., D.J. Decker, and W.F. Siemer. 2006. Capacity building: a new focus for collaborative approaches to community-based suburban deer management. *Wildlife Society Bull.* 34(2):525-530.
- Raveling, D. G. 1979. The annual cycle of body composition of Canada geese with special reference to control of reproduction. *Auk* 96:234-252.
- Thomas, V. G. 1983. Spring migration: the prelude to goose reproduction and a review of its implication. In *Fourth Western Hemispheric Waterfowl and Waterbird Symposium*, ed., H. Boyd. 73-81. Ottawa, Canada: Canadian Wildlife Service.
- White-Robinson, R. 1982. Inland and salt marsh feeding of wintering brent geese in Essex. *Wildfowl* 33:113-118.

Wolder, M. 1993. Disturbance of wintering northern pintails at Sacramento National Wildlife Refuge, California. M. S. Thesis, Humboldt State Univ., Arcata. 62pp.
Wood, A. K. 1993. Parallels between old-growth forest and wildlife population management.

Mandatory Re-Evaluation Date (provide month and year for “allowed” uses only):

Mandatory 15-year Re-Evaluation Date will be provided in the Final EIS/CCP (for priority public uses)

Mandatory 10-year Re-Evaluation (for all uses other than priority public uses)

NEPA Compliance for Refuge Use Decision (check one below):

Categorical Exclusion without Environmental Action Statement

Categorical Exclusion and Environmental Action Statement

Environmental Assessment and Finding of No Significant Impact

Environmental Impact Statement and Record of Decision

[Include the signatures on a separate page.]

Refuge Determination

Prepared by: _____
(Signature) (Date)

Refuge Manager/
Project Leader
Approval: _____
(Signature) (Date)

Concurrence

Refuge Supervisor: _____
(Signature) (Date)

Regional Chief,
National Wildlife
Refuge System: _____
(Signature) (Date)

