

Ridgefield National Wildlife Refuge

Comprehensive Conservation Plan Amendment

Post-Translocation Management of Columbian White-tailed Deer at Ridgefield NWR and Environmental Assessment

Clark County, WA

April 2013

Chapter 1. Proposed Action

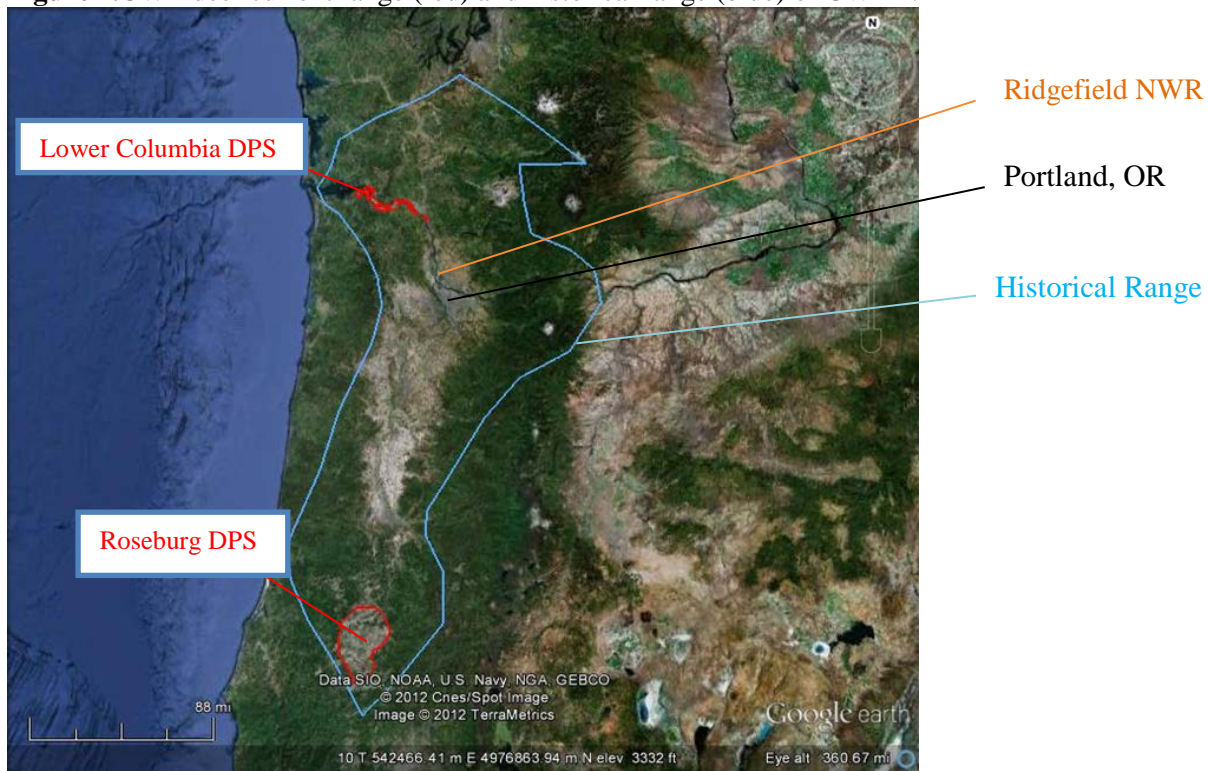
1.1 Background and Introduction

In 1806, explorers Lewis and Clark observed and harvested white-tailed deer along the Columbia River from approximately The Dalles, Oregon, to Astoria, Oregon (Thwaites 1905). By the early 1900s, the Columbian white-tailed deer (CWT deer—*Odocoileus virginianus leucurus*) had been extirpated throughout much of its historic range (Jewett 1914, Bailey 1936) because of habitat loss and degradation primarily from agriculture conversions and logging as well as industrial and urban development (Brookshier 2004, Gavin et al. 1984). Scheffer (1940) documented the presence of CWT deer along the lower Columbia River in 1939, where an estimated 500 to 700 animals inhabited diked floodplain areas near Cathlamet, Washington, and Westport, Oregon. Small numbers of white-tails (presumably CWT deer) were also known to exist along the Umpqua River in the vicinity of Roseburg, Oregon, in Douglas County.

Currently, CWT deer exist as two Distinct Population Segments (DPS) (Figure 1). The Douglas County DPS in Oregon contains over 6,000 animals and was removed from the endangered species list in 2003. The lower Columbia DPS occurs in the Columbia River floodplain in Washington and Oregon and is currently listed as endangered under the Endangered Species Act (ESA). The Julia Butler Hansen Refuge for the Columbian White-tailed Deer (JBH) Refuge near Cathlamet, WA supports nearly 40 percent of the lower Columbia DPS.

The U.S. Fish and Wildlife Service (Service) recently translocated 37 CWT deer from the Mainland Unit of the JBH Refuge to the Ridgefield National Wildlife Refuge (Ridgefield NWR) (Refuge) near Ridgefield, WA (Figure 1). Details of this activity are described in the Service's 2012 Final Environmental Assessment "Proposed Translocation of Deer from the Julia Butler Hansen Refuge for the Columbian White-tailed Deer and Puget Island to Ridgefield National Wildlife Refuge and Cottonwood Island" (USFWS 2012b).

Figure 1. CWT deer current range (red) and historical range (blue) of CWTD.



The translocation of CWT deer is in response to a dike failure posing potential catastrophic and routine flooding on the Refuge, which jeopardizes the secure population of this endangered species. Historically, the constructed dike has prevented the Columbia River from flooding the JBH Mainland Unit at high tide. In recent years, the dike has progressively deteriorated through impacts from the rivers waves causing destructive erosion, leading to the closure of the road (Steamboat Slough Road) that runs atop the dike.

A geotechnical assessment revealed the dike to be at “imminent risk” of failure. A dike breach at this location would result in the flooding of JBH Mainland Unit at high tides. Prior weeklong flood events in February 1996, November 2007 and December 2009 in this Unit have reduced deer numbers by up to 50% from existing levels. Daily flooding from a breach at this location could substantially reduce or eliminate this endangered subpopulation to where it could not recover.

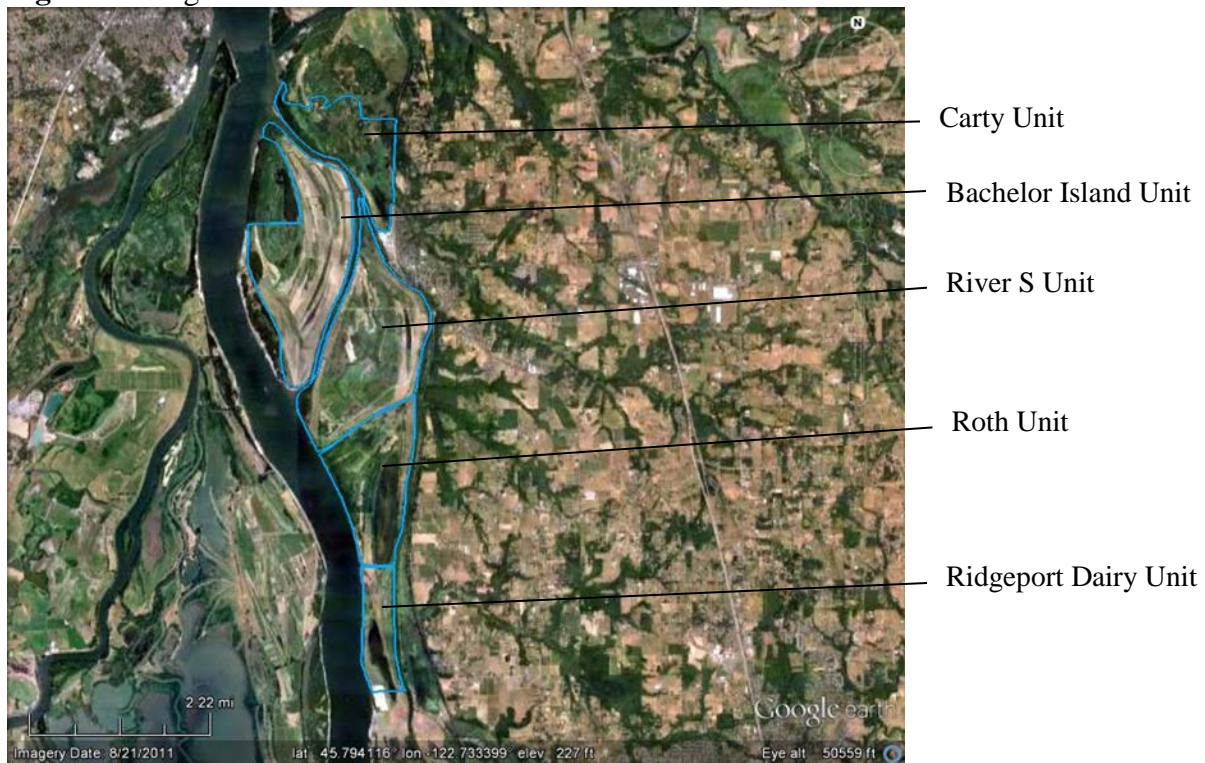
The actions described in this Environmental Assessment (EA), include in the preferred alternative a draft CWT deer management goal, objective and implementation strategies tiered from the Lewis and Clark National Wildlife Refuge and Julia Butler Hansen Refuge for the Columbian White-tailed Deer Final Comprehensive Conservation Plan and Environmental Impact Statement 2010 (JBH CCP/EIS) (USFWS 2010a). This procedure is consistent with the National Environmental Policy Act (NEPA) regulation 43 CFR 46.140, these proposed actions, the analysis of data, environmental consequences and public review and comment are incorporated and tiered to this EA for the management of the CWT deer. This EA will amend the Ridgefield National Wildlife Refuge Final Comprehensive Conservation Plan and

Environmental Assessment (Ridgefield CCP/EA) (USFWS 2010b) and be referred to as the Amendment/EA.

The biological analysis of wildlife, habitats, and the environmental consequences of predator control described in the JBH CCP/EIS stem from the Predator Management Plan (USFWS 1997), Supplemental Environmental Assessment, Management of Coyotes at the Julia Butler Hansen Refuge for the Columbian White-tailed Deer 1998 (PMP/EA) (USFWS 1998), which was fully incorporated in the JBH CCP/EIS.

There are no proposed changes in the analysis or the underlying data and assumptions specifically for predator control. This EA intends to employ the same objectives and strategies, and proposes adopting and modifying Goal 5 and Objective 2.9.5.1 and 2.9.5.2 including the specific predator control activities as were included in the JBH CCP/EIS.

Figure 2. Ridgefield NWR Unit locations



1.2 Proposed Action

This Environmental Assessment is considered an amendment to the 2010 Ridgefield NWR Final Comprehensive Conservation Plan and Environmental Assessment (Ridgefield CCP/EA). The Service proposes amending the Ridgefield CCP/EA by adopting CWT deer management goal, objective, and implementing strategies including predator management for the development and protection of the Ridgefield subpopulation of CWT deer. The proposed action would assist the Service in stabilizing and expanding a small subpopulation of endangered CWT deer, which have recently been trans-located to the Refuge.

The preferred alternative includes the necessary predator management including the effects, which were thoroughly analyzed and researched and subject to public review and comment, tiered from the JBH CCP/EIS in accordance with CFR 46.120. This Amendment/EA also identifies the U.S. Department of Agriculture's Animal and Plant Health Inspection Service (APHIS) as a cooperating agency for predator management activities on the Refuge.

1.3 Purpose and Need

The 2010 Final Ridgefield CCP/EA considered the potential for trans-locating deer in the future but did not address specific strategies for CWT deer management and necessary predator control for sustaining a viable subpopulation of the CWT deer on the Refuge. Emergency measures were necessary to provide secure habitat for the CWT deer at Ridgefield NWR, as described in the Final Environmental Assessment "Proposed Translocation of Deer from the Julia Butler Hansen Refuge for the Columbian White-tailed Deer and Puget Island to Ridgefield National Wildlife Refuge and Cottonwood Island". The Service intends to implement various CWT deer management strategies including predator management in an effort to build and maintain a minimum subpopulation of 80 endangered CWT deer and thereby contribute to CWT deer recovery.

As described in the JBH CCP/EIS, predation of CWT deer fawns, primarily by coyotes, continues to be a major factor in achieving necessary CWT deer recovery goals. Clark et al. (USFWS 2010a) conducted a fawn mortality study on the JBH refuge and suggested that low fawn survival was responsible for low recruitment rates. Coyotes killed 52% of radio-tagged fawns and were responsible for 69% of all mortality. Coyotes have become increasingly abundant in the lower Columbia region over the last 20 years and coyote predation is likely responsible for low recruitment in all subpopulations, not just on the refuge. The time of highest vulnerability for fawns is within the first 90 days of life (mid-June through August for this population). After this time, fawns are large enough and mobile enough to escape most predation by coyotes. In order to maintain a healthy and viable CWT deer subpopulation, as specified by the revised Columbian White-tailed Deer Recovery Plan predation should be managed (USFWS 1983). As the CWT deer population becomes sustainable, predator control measures would be steadily reduced and eliminated.

The Ridgefield CCP/EA habitat management goals, objectives, and strategies are consistent with those of JBH CCP/EIS for providing appropriate forage and cover for the CWT deer. To remove CWT deer from the federal endangered species list (delisting) the Service is required to meet

specific criteria outlined in the JBH CCP/EIS and the CWT deer Recovery Plan; maintain a minimum total of at least 400 animals, with 3 secure subpopulations of 50 or more (USFWS 1983).

Currently, the total population of the Columbia River DPS is estimated at about 600 animals. Any continued losses would represent a significant setback in efforts to recover CWT deer, which has led to the emergency translocation to the Refuge.

The Service evaluated two draft alternatives and identified Alternative 2 as the preferred draft alternative. The alternatives address the major issues, relevant mandates and are consistent with principles of sound fish and wildlife management. This EA is intended to comply with both the Refuge Administration Act and the National Environmental Policy Act (NEPA), as amended (42 U.S.C. 4321-4347).

1.4 National Wildlife Refuge System

The National Wildlife Refuge System is the world's largest network of public lands and waters set aside specifically for conserving wildlife and protecting ecosystems. From its inception in 1903, the Refuge System has grown to encompass over 560 national wildlife refuges in all 50 states, and waterfowl production areas in 10 states, covering more than 150 million acres of public lands. More than 40 million visitors annually fish, hunt, observe and photograph wildlife, or participate in environmental education and interpretive activities on National Wildlife Refuges.

1.5 Purpose and Goals of the Ridgefield NWR

The Ridgefield NWR was established in 1965 to provide wintering habitat for dusky Canada geese and other waterfowl, provide breeding and migration use (by waterfowl), and provide substantial public shooting opportunities. While these remain the primary purposes for the refuge, as lands were acquired, purposes for those additional lands were identified as follows:

- To preclude uses that would be incompatible with wildlife use, such as industrial, commercial, or residential development, and to gain the capability to manage the land for increased wildlife benefits. (Bachelor Island and Ridgeport Dairy Units, Tract 14, Roth Unit)
- To prevent major changes in the present pattern of wildlife use (Ridgeport Dairy Unit)
- For the development, advancement, management, conservation and protection of fish and wildlife resources (Fish and Wildlife Act of 1956) (Ridgeport Dairy Unit)
- To preserve a major wintering area for migratory waterfowl along the Pacific coast (Roth Unit, Tracts 14, 14a)

The Refuge manages 5 units. In addition to dusky Canada geese and other migratory waterfowl, the following species or species groups were identified as management priorities for the Bachelor Island Unit, Ridgeport Dairy Unit, and Tract 14 of the Roth Unit: bald eagle, sandhill crane, great blue heron, peregrine falcon, shorebirds, marshbirds, and songbirds.

The goals of the Ridgefield NWR CCP/EA (USFWS 2010b) are as follows:

- Provide and manage a mixture of secure, diverse, productive grassland habitats for foraging migratory waterfowl and grassland-dependent wildlife.
- Provide agricultural crops as forage for migratory waterfowl and sandhill cranes annually.
- Provide, manage, and enhance a diverse assemblage of wetland habitats characteristic of the historic lower Columbia River.
- Protect, manage, and restore a natural diversity of native floodplain forests representative of the historic lower Columbia River ecosystem.
- Protect, manage, and restore a natural diversity of native upland forests representative of the historic lower Columbia River ecosystem.
- Protect, enhance, and where feasible restore riverine habitat and tidal wetlands representative of the historic lower Columbia River ecosystem, to benefit salmonids and other native aquatic species.
- Collect scientific information (inventories, monitoring, and research) necessary to support adaptive management decisions on the Refuge.
- Protect and manage cultural resources for their educational, scientific, and cultural values for the benefit of present and future generations of Refuge users and communities.
- Provide waterfowl hunters of all abilities a quality, safe hunting program that provides a variety of waterfowl hunting experiences, promotes youth hunting, balances hunt program needs with other public use program needs, and reduces impacts to non-target species.
- Provide visitors of all abilities the opportunity to participate in safe, quality wildlife-dependent recreation programs, including wildlife observation, photography, interpretation, and fishing, consistent with the needs of other public use programs, with limited wildlife disturbance in the face of increasing Refuge visitation. These programs will focus on enhancing public understanding and appreciation of wildlife and building support for the Refuge.
- Provide interpretation of the refuge's cultural resources and the Cathlapotle Plankhouse to enlighten visitors about the refuge's unique natural and cultural history.
- Provide quality environmental education programs for Southwest Washington students on the Refuge that meet State educational requirements and provide safe and memorable experiences that foster a connection with nature and the Refuge.

1.6 Endangered Species Recovery Plan - Columbian White-tailed Deer

The Service for most endangered species prepares Recovery Plans. These plans specify actions that are believed to be necessary to protect and recover the species. The Recovery Plan for the Columbian White-tailed Deer, as revised in 1983 (USFWS 1983), states that the Lower Columbia River population of the deer may be considered recovered if a minimum of 400 individuals can be maintained in at least three viable subpopulations distributed in suitable secure habitat. General guidelines for accomplishing this goal are:

- (1) maintain overall viability of 400 deer;
- (2) increase the subpopulation on Tenasillahe Island to a minimum viable herd of 50; and
- (3) secure the habitat of one additional subpopulation.

Listed stepwise under the general guidelines are specific actions that are recommended to accomplish the deer's recovery.

Actions that are applicable to the Ridgefield subpopulation include:

- Continue to manage habitats and closed areas as described in the 2010 Ridgefield CCP/EA.
- Manage predators as necessary to maintain CWT deer minimum population.
- Census the subpopulation annually for total population numbers, sex ratios, and doe to fawn ratios.
- Maintain public use activities as described in the CCP/EA with monitoring for disturbance issues.
- Prepare CWT deer animal damage management step-down plan to address potential off-refuge depredation activities in cooperation with WDFW, ODFW and the Cowlitz Tribe.

Chapter 2. Proposed Alternatives

This chapter identifies the two draft alternatives describing current and proposed management actions based on post-translocation management of endangered CWT deer on the Refuge.

2.1 Actions Considered but Dismissed

In accordance with 43 CFR 46.135, the Service incorporates through reference; the actions below and the evaluation of the environmental effects described in, tiered from the JBH CCP/EIS, and associated Environmental Assessments. All available research, data, and environmental conclusions in the JBH CCP/EIS is considered appropriate for the management of CWT deer on Ridgefield NWR. The following actions have been considered and dismissed for the current actions for reasons identified.

No Mammalian Predator Control

The lack of mammalian predator control would jeopardize the protection of CWT deer age classes vulnerable to predation. Based upon available scientific information (Refuge studies, monitoring, and population modeling), not conducting predator control would hinder the achievement of management goals and population objectives for CWT deer which are necessary to promote its recovery in the lower Columbia River region. This action and its effects were evaluated in the Service's final *Julia Butler Hansen Refuge Predator Management Plan and Environmental Assessment* (PMP/EA) (USFWS 1997) and the supplemental document *Management of Coyotes at the Julia Butler Hansen Refuge for the Columbian White-tailed Deer* (USFWS1998). In accordance with 43 CFR 46.135, the Service incorporates through reference, the action (no mammalian predator control) and evaluation of its environmental effects described in the JBH CCP/EIS.

Nonlethal Techniques to Remove Coyotes

In accordance with 569 FW 1 (Integrated Pest Management), the Service will select the best management control method that considers human safety, environmental integrity, effectiveness

and costs. In the final JBH CCP/EIS and its supplemental document, we addressed the following nonlethal methods for controlling coyotes: trapping and permanent relocation, and trapping and temporary relocation. We also considered the use of birth control (sterilization) and aversive taste conditioning in the PMP/EA (USFWS 1998), but dismissed these methods from further consideration. Birth control (sterilization) and aversive taste conditioning were dismissed from further consideration for this EA because the published scientific studies of these techniques have not shown them to be more effective than lethal methods for removing coyotes. After addressing nonlethal techniques, in the PMP/EA and its supplemental document, we addressed public trapping and hunting. These actions are also dismissed from consideration for the following reasons: Potential disturbance to CWT deer; Lower effectiveness of coyote removal; Safety of and potential conflicts with other Refuge users; and Potential conflicts with Refuge staff implementing on-the-ground management actions.

2.2 Alternatives Considered

The two draft alternatives analyzed in detail are Alternative 1: Current Management (No Action) and Alternative 2: Manage and Protect the Columbian White-tailed Deer sub-population in concert with existing resource and public use management. The Service's preferred alternative is Alternative 2.

Alternative 1. Current Management (No Action)

Under the current management, the Service would continue all Refuge management priorities as outlined in the Final Ridgefield CCP/EA 2010.

Current Refuge management activities provide high quality forage, browse and cover necessary for sustaining the CWT deer subpopulation. The Refuge would continue to maintain closed areas for wildlife sanctuary and CWT deer protection. Wildlife biologists from the Refuge would work with staff at JBH and WDFW to ensure that necessary research and monitoring information is collected for improving future adaptive management actions contingent upon available funding.

Alternative 2. Manage and Protect the Columbian White-tailed Deer sub-population in concert with existing resource and public use management

Alternative 2 (preferred alternative) proposes to continue habitat and public use management as identified in Alternative 1. This alternative would add a management goal and objective for CWT deer plus implementation strategies necessary to manage and protect the subpopulation on the Refuge (see table below). The Service would annually conduct mammalian predator management until we reach and maintain the minimum objective number of 80 CWT deer.

The Services emergency translocation of endangered CWT deer has placed several pregnant does on the Refuge. Predator management is necessary to increase the survival rate of fawns and to stabilize and protect this new subpopulation. Based on results from previous studies and population modeling at the JBH Refuge, implementing lethal control of coyotes (trapping and

ethanizing, as well as shooting) would assist in maximizing survival rates of adults and juveniles and promote a healthy CWT deer herd (USFWS 2010a).

Implementation of this alternative would include monitoring of both the deer population and doe:fawn ratios as an index to fawn recruitment. This information would be used to make decisions on follow-up predator control. After population goals are met, the decision to conduct predator control would be made on a yearly basis depending on the previous fall's fawn:doe ratios and the estimated deer population. No coyote control would occur when deer numbers were greater than 25 percent above the population objective (i.e., 100 animals). Coyote control would be triggered by 1) very low fawn:doe ratios, 2) very low deer numbers, or 3) a moderate combination of both. The specific criteria are as follows:

- 1) Deer numbers are above but within 25 percent of population objectives (80–100 deer), and fawn:doe ratios are below 20:100.
- 2) Deer numbers are more than 25 percent below population objectives (less than 60 deer), and fawn:doe ratios are below 45:100.
- 3) Deer numbers are below but within 25 percent of population objectives (60–80 deer), and fawn:doe ratios are below 37:100.

The state (WDFW) or U.S. Department of Agriculture's Animal and Plant Health Inspection Service (APHIS) would act, as a Service authorized agent and would conduct predator control activities. The specific details for implementing lethal control is described in the final JBH CCP/EIS and Predator Management Plan/EA (USFWS 1997).

Future translocation of CWT deer may be necessary until the deer population reaches a level sufficient to ensure adequate fawn survival. The deer herd could increase on its own if fawn survival were high over the next few years. Moreover, coyote control would be "temporary in nature" where removals would only be triggered by deer population levels and fawn survival rate.

It is also important to develop and implement research and monitoring to identify impacts to habitat, population size, and adult and fawn mortality on an annual basis. Annual monitoring of the herd size is important to understand and offset natural mortality and maintain a viable herd. Management activities include developing partnerships with WDFW, and the public to develop a working CWT deer depredation step-down management plan. Staff would work closely with the private landowners to provide technical advice and address issues as they pertain to CWT deer. Outreach and interpretation materials would be developed for visitor information purposes regarding these endangered species.

The proposed amendment to the Final Ridgefield NWR CCP/EA 2010 includes the following goal objective and implementation strategies:

Maintain a Healthy, Sustainable Population of Columbian White-tailed Deer to Contribute to the Recovery of this Endangered Species

Objective: Establish Columbian White-tailed Deer sub-population in concert with existing resource and public use management.		
Contribute to the recovery of the CWT deer by maintaining a minimum total subpopulation greater than or equal to 80 CWT deer on the Refuge.		
Strategies for Achieving the Objective	Alt. 1	Alt. 2
Manage a mosaic of habitats (see 2010 CCP/EA, goals for all habitats) to meet the life-history requirements of CWT deer.	✓	✓
Limit disturbance by humans and pets by maintaining closed areas for wildlife sanctuary and CWT deer.	✓	✓
Work with state wildlife agencies, Tribes and Wildlife Services to develop a CWT deer Depredation Management Plan.	✓	✓
Work with wildlife biologist from JBH Refuge to ensure that biological information needed for adaptive management actions is obtained on CWT deer.	✓	✓
Remove coyotes when necessary to meet the population objective of 80 CWT deer.		✓
Develop and implement research and monitoring protocols for CWT deer, habitats, population size, adult and fawn mortality.		✓
Work with the private landowners to address issues as they pertain to CWT deer.		✓
Encourage the enhancement of CWT deer habitat off Refuge lands by providing technical advice and participating in interagency and private lands agreements.		✓
Develop outreach messages, educational materials, and interpretive media to inform the public about endangered species.		✓
A future surplus in CWT deer could be trans-located to support or initiate subpopulations in other areas.		✓
<p>Rationale: Currently, the total population of CWT deer in the Columbia River Distinct Population Segments (DPS) estimated at about 600 animals. Any loss would represent a future setback in efforts to “downlist” the CWT deer from endangered to threatened status on the endangered species list. The 2013 emergency translocation of CWT deer to the Refuge has been in an effort to alleviate potential subpopulation losses at JBH Refuge.</p> <p>The Columbian White-tailed Deer Revised Recovery Plan (USFWS 1983) recommends that greater than 400 CWT deer be maintained in three viable subpopulations occupying secure habitat. The term “secure habitat” is considered free from adverse human activities and relatively safe from natural phenomena that would destroy its value to CWT deer (USFWS 1983). Given such small numbers in the lower Columbia River region, the CWT deer population is vulnerable to extirpation by events such as prolonged severe weather, excessive predation, and loss of habitat from several</p>		

factors including flooding and agricultural conversion, and the spread of virulent diseases.

Management actions that directly benefit CWT deer (including mammalian predator control) are required to ensure the health and genetic integrity necessary for a long-term sustainable population on the Refuge. Active management of the habitat (mowing, grazing, haying, pasture improvements) would be continued as prescribed in the CCP to support the forage, browse and cover necessary for approximately 80 CWT deer and other species. (USFWS 2012b).

Based on results from previous studies and population modeling at the JBH Refuge, it would also be necessary on the Refuge to periodically remove coyotes when present, in order to maximize survival rates of adults and juveniles and promote healthy CWT deer herd. In the establishment of the subpopulation, the following factors were considered: CWT Deer Recovery Plan goals, the long-term health of the herd, the quality of the Refuge habitats, and opportunities for public viewing/education. The objective and strategies represent the best balance between a sustainable healthy deer population (to help achieve recovery goals) and quality habitats (to sustain deer and other native wildlife).

Given the size of the Refuge, future CWT deer management actions may depend on population densities. Additional objectives could be developed as necessary, once the sub-population of 50 CWT deer is established. Deer populations are naturally cyclic in nature over time; herd size can vary in response to climate, predation, and other factors. Future population objectives could provide a reference point for determining when population numbers are too low and other management actions (e.g., coyote removal) may be needed to protect the CWT deer herd. The CWT deer numbers may rise above population objectives, in fact, it is expected that population levels would be above Refuge objectives much of the time. Under this scenario, surplus deer could be trapped for reintroduction elsewhere, if appropriate reintroduction sites are available. The population objectives are conservative estimates to ensure Refuge habitats support a healthy, sustainable deer herd.

Chapter 3. Affected Environment and Environmental Consequences

3.1 Physical Setting

The Refuge is comprised of 5,218 acres of marshes, grasslands and woodlands with about 3,800 acres of terrestrial habitat and separated into five units (see Figure 2). A conservative assessment of the habitats on the Refuge suggests that it should support at least 77 CWT deer (USFWS 2012a). The Carty, Bachelor Island, and Roth units have been the release sites for CWT deer because they contain the most suitable white-tailed deer habitat on the Refuge with minimal potential disturbance from public uses.

The Carty Unit supports mixed deciduous habitat with oak savannah comprising a large portion of the unit. The unit contains some areas of dense to sparse invasive reed canary grass, with upland meadows supporting a variety of grasses and forbs. This area also contains large areas of dry soils above the normal flood level. The Roth unit represents more of a parkland mosaic, with dense deciduous tree stands interspersed with upland and wetland meadows. The topography consists of fingers of forested high ground separated by swales. The three remaining units Bachelor Island, River S, and Ridgeport Dairy all contain large areas of low-lying meadow or

seasonally-flooded wetlands with pockets of woody cover. Most of the open areas in the River S unit consist of low-lying meadows and wetlands, which represent poorer quality habitat for CWT deer. There is sufficient riparian forest along the western side and north end of Bachelor Island, thus a number of animals (15) were released there.

The Refuge currently manages water levels on about 1,000 acres of wetlands on the River S, Bachelor Island, and Ridgeport Dairy Unit. Water is pumped into Refuge wetlands prior to the arrival of wintering waterfowl and pumped out throughout the summer to promote the growth of desirable moist soil waterfowl food plants. The water delivery system provides water to wetlands during the winter for a variety of water birds, and is used to hold water in some units for vegetation management, rearing of ducks, wading birds, and to support native amphibians/reptiles.

Cooperating farmers and Refuge staff manage approximately 1,500 acres of grasslands and crops to provide for wintering waterfowl, especially Canada geese. The Refuge allows cooperators to graze cattle and harvest hay between late spring and early fall; and both cooperators and Refuge staff mow pastures and invasive reed canary grass. These activities provide forage for Canada geese when they are on the Refuge from October–April.

Areas adjacent to the Refuge include agricultural and suburban landscapes around Ridgefield, and Sauvie Island, OR. The town of Ridgefield has a population of about 5,000 people. Radiating from the urban center are residential areas transitioning into semi-rural and rural areas. Across the Columbia River is Sauvie Island, which consists of about 26,000 acres. The northern half of this island (12,000 acres) is a wildlife area managed by the Oregon Department of Fish and Wildlife (ODFW). The southern half of the island consists of mostly rural landscape with large privately owned lots and agricultural interests.

3.2 Wildlife and Fisheries Resources

The Refuge is located within the Pacific flyway, and large numbers of birds pass through the area during migration. The area provides nesting, wintering, and migratory habitat for all bird guilds. The highest use of Refuge lands are by wintering waterfowl. Wintering waterfowl populations in the Lower Columbia area reach peaks of more than 200,000 birds, and the Refuge was established to provide wintering habitat for waterfowl, especially dusky Canada geese (*Branta canadensis occidentalis*) as well as State-listed sandhill cranes (*Grus canadensis*).

The Columbia River flows along a portion of the Refuge. In a typical year, over 750,000 adult and 100,000,000 juvenile salmonids pass through the estuary. Both adults and juveniles are present year-round, where the number of juveniles peaks during spring and early summer. There are no salmonid spawning streams within the Refuge, but several fish species found in the area are listed under Endangered Species Act (ESA) and are mentioned in the following section.

Columbian black-tail deer are found on the Refuge, there have not been any recent population estimates on the Refuge. With the absence of CWT deer, it is thought that black-tailed deer have increased their numbers in the former CWT deer range due to reduced competition (Smith 1987).

The habitat on the Refuge is more appropriate for white-tailed deer. CWT deer and Columbian black-tailed deer usually have different habitat distributions, but there is some overlap. In general, CWT deer use open “parkland” riparian forests, mixed forests, and interspersed cover. They also make use of Oregon white-oak woodlands. Blacktail deer will use riparian forest habitat and occupy most of this habitat at the Ridgefield NWR, to some extent. However, they also make use of upland forests with dense canopy and subcanopy layers dominated by Douglas-fir, and logged forestland (Brookshier 2004). Ridgefield NWR has approximately 1,200 acres of riparian and lowland forest that would provide suitable habitat for CWT deer

The diet of coyotes is varied and they can take advantage of seasonally available foods. Coyotes feed on small mammals such as voles and mice, songbirds, waterfowl, reptiles such as garter snakes, and amphibians. Seeds and berries are also important components of their diet, especially blackberries in season. Voles (*Microtus* spp.) a major part of coyote diets on the Refuge, as they are elsewhere in the coyote’s range (Andelt et al. 1987, Hamlin et al. 1984, MacCracken and Hansen 1987, Reichel 1976 and 1991, Wells and Bekoff 1982). Coyotes also prey on deer fawns and diseased or weak adult and sub-adult deer. The addition of endangered CWT deer into these areas may increase the prey base for this species on the Refuge. Coyote numbers however, are probably more influenced by small mammal and bird abundance, as this is their prey base for most of the year. Disease such as canine distemper occur periodically in Clark County and during outbreaks are likely to temporarily reduce numbers of coyote, raccoon, and other susceptible species. In addition, because coyotes are territorial, numbers are somewhat density dependent.

The threat of predation on the adult and juvenile CWT deer is highly likely since the most common CWT deer predator on the Refuge are coyotes. Because coyotes utilize all existing and improved habitats on the Refuge, the Refuge supports a healthy population. Densities and home ranges on the Refuge are unknown, but coyotes are observably common throughout the year. The frequency with which coyotes are observed and heard by visitors and refuge staff suggests that 2 or 3 mated pairs plus juveniles and non-breeding individuals are typically occupying each Refuge unit. The life history of coyote and the presences and impacts to CWT deer is fully described and is tiered from the JBH CCP/EIS (see Chapter 4).

Raccoons and opossums are small mammals that are abundant in north America and both have adapted well to urban and suburban environments. The Refuge provides habitat for both of these species and a plentiful food sources (nuts, grains, insects, slugs, snakes, frogs, bird eggs, mice, and carrion (dead animals)).

3.3 Listed Endangered and Threatened Species

Nelson’s Checkermallow—Nelson’s checkermallow (*Sydalceanelsoniana*) is listed as threatened under ESA. It is a perennial plant typically found in open moist prairies or open Oregon ash woodlands. The species grows up to 5 feet tall, is shade intolerant, and does not persist in areas with a dense canopy of trees or other over-topping vegetation such as invasive reed canary grass or Himalayan blackberry. The dark red-to-purple flowers are spike-like/elongated inflorescences or clusters. Plants have either perfect flowers (male and female) or pistillate flowers (female only). The plant can also reproduce by rhizomes. Flowering typically occurs in

June to early July. Seeds are mature between mid-June and mid-September.

In partnership with the Ecological Services Offices in Washington and Oregon as well as the Washington State Natural Heritage Program, nursery plugs were planted in grids in five sites at the Refuge. This species currently occurs at four of those sites (the Kiwa trailhead site does not support any plants). Three occupied sites are located on the Bachelor Island Unit and one site is located in Texas Island Field in the River S Unit. Threats to this species include herbivory, competition from invasive plants (i.e. Canada thistle and invasive reed canary grass) and changes in groundwater elevations related to the management of the Columbia River flows. Herbivory is most notable at the Texas Island site as it is close to a hedgerow and ash/cottonwood forest used by black-tailed deer and cottontail rabbits.

Water Howellia—Water howellia (*Howelliaaquatilis*) is listed as threatened under ESA. It is a winter annual aquatic plant that grows 4-24 inches high in shallow seasonally flooded water bodies associated with oxbows or geological potholes that are typically surrounded by deciduous trees. It has extensively branched, fragile submerged or floating stems and narrow, linear, alternate leaves up to 2 inches in length. Water howellia usually flowers in May and June. Flowers are white to light purple in color, and bloom near the water surface. Seeds are produced in the summer and germinate in the fall when the ponds dry. This species is known to occur in California, Idaho, Montana, and Washington and was present historically in Oregon. In the project impact area, the species occurs in four ponds within the Blackwater Island Research Natural Area in the Carty Unit of the Ridgefield NWR. Threats to this species include unsuitable water level fluctuations that could interfere with seed production or germination, excessive turbidity, and invasive plant species, specifically invasive reed canary grass.

Columbian White-tailed Deer—The CWT deer translocation has moved 37 deer to the Refuge, expanding this endangered species within its historical range. CWT deer prefer parkland forest habitat (a mosaic of forest and meadow) and deciduous or mixed deciduous habitats with moderate cover. As they utilize both browse and forage, they thrive where moderate cover, shrubs, and meadows are present on the Refuge. The habitats available and the management activities on the Refuge are suitable and adequate for CWT deer to thrive.

These deer are part of the northern, or lower Columbia, population, which is considered a Distinct Population Segment (DPS) and is listed as endangered under ESA (USFWS 1983). The current range of this DPS consists of fragmented habitat within the Columbia River floodplain from just upstream of Longview, WA to Brownsmead, OR. The DPS exists as a series of subpopulations separated by habitat barriers. The southern population occurs near Roseburg, OR in Douglas County. This herd was once considered endangered but has since recovered to over 6,000 animals and has been removed from the endangered species list.

Other ESA-listed Species—Three salmonid species have been identified in the sloughs of the Refuge. These are in order of abundance: Chinook salmon (*Oncorhynchustshawytscha*), coho salmon (*Oncorhynchuskisutch*), and chum salmon (*Oncorhynchusketa*). The lower Columbia River populations of these species are listed as threatened. Other listed species that occur in the surrounding area but not in the project areas include bull trout (*Salvelinusconfluentus*), green sturgeon (*Acipensermedirostris*), Pacific Eulachon (*Thaleichthyspacificus*), and steelhead

(*Oncorhynchus mykiss*). These species occur in the lower Columbia River drainage but do not occur on the Refuge.

3.4 Effects on Wildlife and Habitat

As described in the JBH CCP/EIS the effects to wildlife and habitat are tiered to this EA.

Alternative 1: Current Management (No Action)

By maintaining and implementing current habitat management, the newly established CWT deer subpopulation would find the necessary habitats to sustain its life-history needs for forage, browse, and cover. The habitat management activities involve mowing, disking, re-contouring wetlands and pastures through the use of equipment including tractors to maintain and improve various habitats for all-season cover and high-quality forage. By maintaining and enhancing pastures, wetlands, riparian and native forests, grasslands, agricultural croplands, and other habitats as described in the Ridgefield CCP/EA, positive benefits would provide for a variety of migratory birds and mammals, including CWT deer and a healthy coyote population.

Habitat management activities that support a healthy coyote population on the Refuge include grassland and pasture management, which offers open habitat hunting areas and supports primary prey species such as insects, rabbits, mice, and voles. Forested habitats also provide cover and additional prey species (squirrels, birds).

The Service's emergency translocation of endangered CWT deer has placed several pregnant does on the Refuge. CWT deer fawns are most vulnerable to predation during the first 90 days of life. Without predator control, high fawn predation could occur, which would lead to a low number of fawns being recruited into the adult population. When fawn recruitment is lower than the natural mortality of adults, the herd will decline over time. Continued predation pressure could lead to the virtual elimination of the herd or to a population equilibrium that is much lower than the habitat could normally support.

Alternative 2: Manage and Protect the Columbian White-tailed Deer sub-population in concert with existing resource and public use management (Preferred Alternative)

Alternative 2 includes maintaining the current management activities, including the habitat management program as proposed in Alternative 1. Management actions that directly benefit CWT deer (including predator control) would be included to ensure herd health and long-term sustainability and viability of the subpopulation on the Refuge. The mammalian predator control program would be implemented to stabilize and maintain a viable subpopulation of at least 80 endangered CWT deer.

Once the minimum objective population goal is established or exceeded, continuing predator management may no longer be necessary, and the coyote population on the Refuge would likely increase rapidly as transients would move into vacant territories (Windberg and Knowlton 1988) and reproductive rates would increase in response to lower densities (Connolly 1978, Knowlton 1972). The coyote population would likely increase in size (possibly to pre-control levels),

consistent with habitat conditions and the small-mammal prey base. Even though some coyotes would be removed on the Refuge, removal would not be expected to negatively affect coyote populations on and adjacent to the Refuge.

The primary methods of control are trapping and shooting. These methods are reasonably selective methods when properly conducted, but trapping may result in incidental capture of non-target mammals such as opossums and raccoons. The number of lethally removed non-target mammals would be small—probably less than 20 opossums and 10 raccoons per year. The removal of such small numbers would have no effect on opossum and raccoon populations locally, regionally, or nationally.

These predator management activities would target specific predators as described and would have no effect on fish or fish habitat.

Moreover, a predator control program (implemented when necessary based upon subpopulation criteria) would maximize the recruitment of CWT deer fawns, as well as the survival of yearlings and adults. High survival rates are needed to achieve the Refuge subpopulation objective of 80 deer. Under Alternative 2, the Refuge is most likely to achieve CWT deer population objectives. Whether this can be obtained under Alternative 1 is uncertain. In either case, it is likely that it can be obtained in fewer years under Alternative 2.

3.5 Archaeological and Cultural Resources

The Refuge encompasses 17 known prehistoric sites (this number includes a site on private property on Bachelor Island) and 11 historic sites (USFWS 1997). The Ridgefield CCP/EA provides greater detail on the archaeological resources.

Effects on Archaeological and Cultural Resources

No cultural sites would be affected by either action. Implementing the proposed goal, objective, and implementation strategies for management of endangered CWT deer and the proposed predator control measures are not expected to adversely affect cultural resource sites on the Refuge. Any future ground disturbance or excavation that may be necessary will be reviewed by the Service's Cultural Resource Branch to protect cultural resources and ensure compliance with all applicable regulations.

3.6 Wildlife-Dependent Recreation

The Refuge offers a variety of wildlife-dependent recreation opportunities; hiking trails, an auto-tour route, fishing, and a waterfowl hunt in the fall. Annually the Refuge coordinates and hosts a community-wide Bird Festival for two days. The Refuge receives approximately 120,000 visitors annually and is located within a 15-20 minute drive of the Portland and Vancouver metro areas. This EA tiers the wildlife-dependent recreation information and effects from the Ridgefield CCP/EA.

Effects on Wildlife-Dependent Recreation

Alternative 1: Current Management (No Action)

All wildlife-dependent recreation programs, including waterfowl hunting, would continue as described in the CCP/EA. It would be reasonable to assume that habitat management/improvements as proposed in the CCP/EA would improve opportunities for wildlife viewing and photography of CWT deer. Monitoring of CWT deer population would continue by staff and would consider disturbance from human presence and visitor uses on CWT deer. Activities implemented under this alternative are not likely to result in any adverse effects to the wildlife-dependent recreation on the Refuge.

Alternative 2: Manage and Protect the Columbian White-tailed Deer sub-population (Preferred Alternative)

Wildlife-dependent public uses would continue as proposed in alternative 1. Refuge staff would coordinate all monitoring efforts including the timing and location of any predator management activity, which would likely occur when the Refuge is closed and/or in areas in areas that are off-limits to public access. Refuge visitors engaged in wildlife-dependent public uses are not likely to come in contact with the activities proposed. Because public use activities have clear management guidelines, regulations, and boundaries in which they operate on the Refuge (waterfowl hunting areas with designated hunt blinds, wildlife viewing platform and blind, auto tour route, and hiking trails), general CWT deer management activities as described in the proposed goal, objective and implementation strategies would not likely adversely affect wildlife-dependent public uses.

3.7 Social and Economic Environment

The nearest community is the town of Ridgefield, WA, which adjoins the Refuge and has a population of about 5,000 people. The Refuge is located in Clark County, approximately 15 miles north of Vancouver, Washington. Clark County is one of six counties included in the Portland-Vancouver, Oregon-Washington, and Metropolitan Statistical Area.

Clark County is growing rapidly, according to the U.S. Bureau of the Census the human population in 2012 was estimated at 438,287 (<http://quickfacts.census.gov/qfd/states/53/53011.html>). This area was recently considered to outpace many areas in the nation in terms of both population and economic growth. Most of that growth has occurred in Battle Ground, Camas, Washougal, and Vancouver, but a significant amount has occurred in Ridgefield. Ridgefield is currently transitioning from a rural to an urban community and the main economic driver is as a bedroom community for the Vancouver-Portland metro area. Because of this, property values have been rising in recent years, which have caused repercussions for industries such as farming. A significant portion of the area surrounding the Refuge, however, still contains rural and agricultural landscapes.

Effects on Social and Economic Environment

Alternative 1: Current Management (No Action)

Visitation on the Refuge is expected to increase in the coming years due to the steady projected population growth in the community and popularity of outdoor recreation pursuits. Service wildlife biologists would continue to survey and monitor CWT deer and other wildlife and their habitats to maintain the necessary balance with current public uses and access. Management activities and programs as proposed in the CCP/EA and implemented on the Refuge would not likely have any adverse effects on the social or economic environment.

Alternative 2: Manage and Protect the Columbian White-tailed Deer sub-population (Preferred Alternative)

As in Alternative 1 there would likely be an increase of Refuge visitors in the coming years as the community grows. The adoption of the proposed management goal, objective, and implementation strategies including predator management would not likely have any adverse effects on the social or economic environment. Habitat management/improvements and predator control as proposed, would likely improve opportunities for wildlife viewing and photography of CWT deer.

3.8 Cumulative Impacts

The proposed action, Alternative 2, is expected to maintain the recovery status of endangered CWT deer at a level that is similar to the current status. The success of the predator control on the Refuge is expected to eventually lead to herd expansion, thereby reducing or eliminating the need for predator management due growth in the CWT deer population. Overall, the Service expects a positive effect on the subpopulation including expansion and growth resulting from the predator management activity. Once the predator management is no longer necessary, coyote populations would be expected to return to previous population levels within the Refuge.

Expansion represents a return to the CWT deer historic range, but also may lead to human/animal interaction in areas away from the release sites of the Refuge. The Refuge staff would coordinate with the state and local landowners in development of a depredation plan to address issues.

Currently black-tailed deer occur in nearly all areas of the Refuge. As CWT deer expand, it is expected that a certain level of habitat partitioning will occur, and that black-tailed deer will be replaced in their marginal habitats that are more suited to CWT deer. Both species are expected to represent about the same level of human/animal interaction, and as such, there is no expectation of an increased cumulative impact. With a surplus of CWT deer the Service could translocate deer in the future to areas within its range.

The habitat management activities (use of equipment and tractors) may affect CWT deer, but is not likely to adversely affect CWT deer, because short-, long-, and cumulative effects to the deer population would be wholly beneficial by providing additional all-season cover and high-quality

forage.

Cumulative Effects from Predator Control

The authority for managing coyote population rests with the state of Washington, Department of Fish and Wildlife. There are an estimated 50,000 coyotes in Washington (<http://wdfw.wa.gov/living/coyotes.html#facts>). There is year-round hunting for coyote, and no bag limit. Coyotes can be taken for fur and damage control by shooting or trapping, although leg-hold traps are banned in Washington (there is an exception on the trap ban for removal of animals that are causing damage). There are no known population estimates of the number of coyotes in the county, although they appear to be abundant and likely number in the hundreds, if not thousands. In response to damage complaints, the U.S. Department of Agriculture's Wildlife Services removed eight coyotes on JBH Refuge, eight from Clark County and 421 statewide in 2012 (pers.com. Woodruff, USDA 2012).

There is no data available on the numbers of coyote taken by sport hunters and in private control efforts. Given the abundance of coyotes in the state, it is unlikely that the total number taken on the Refuge to protect the CWT deer each year is enough to negatively impact the population.

Coyote populations are able to compensate for high annual losses by increasing their rate of reproduction. Connolly and Longhurst (1975) found that through compensatory reproduction coyotes could withstand an annual control level of 70 percent. Although the total numbers of coyotes taken each year by hunting, trapping and damage control efforts in Washington are unknown, it is reasonable to conclude that they are much less than 70 percent of the states' populations, and probably less than 10 percent. The expected annual take from the Refuge under the preferred alternative would be a maximum of about 50 individuals. The Refuge predator control program would have a negligible effect on local and regional coyote populations.

Coyotes occur throughout most of North America. They are not migratory wildlife; therefore, the removal of coyotes from the Refuge would have no effect on national coyote populations.

Coyotes are plentiful in Washington. The small annual take resulting from the Refuge predator control program would have negligible cumulative effects on local, regional, and national coyote populations.

Other Predators of Deer

Both cougars and black bears— although the Refuge is within the home ranges of both of these species, their presence has never been documented on the Refuge. Due to the transient nature of these species, movement and large home range, these predators do not pose a direct threat to CWT deer. Washington State manages cougar and black bear populations on a sustainable basis and offers annual hunting seasons for both species.

Other Mammals

The Refuge predator control program would have a negligible effect on local and regional raccoons or opossums populations.

Chapter 4. Coordination, Consultation, and Compliance

4.1 Agency Coordination and Public Involvement

Post-translocation management of CWT deer at Ridgefield NWR will be the same as occurs Julia Butler Hansen Refuge as described in the 2010 Lewis and Clark National Wildlife Refuge and JBH Comprehensive Conservation Plan and Environmental Impact Statement. Since this CCP Amendment/EA has been tiered from the 2010 Lewis and Clark National Wildlife Refuge and JBH Comprehensive Conservation Plan and Environmental Impact Statement, the effects of predator management were thoroughly analyzed and researched and subject to public review and comment. The Service has thoroughly coordinated translocation of CWT deer to Ridgefield NWR and post-translocation management strategies at Ridgefield NWR with WDFW, ODFW, and Cowlitz tribe. The Ridgefield NWR CCP Amendment/EA will be posted on the Refuge website.

4.2 Environmental Review and Coordination

In conducting a post-translocation CWT deer management and predator control, the Service would comply with Federal laws, regulations, and executive orders. The following section describes how the proposed action is in compliance with the National Environmental Policy Act; Endangered Species Act; National Historic Preservation Act; Comprehensive Environmental Response, Compensation, and Liability; and other relevant Federal executive orders.

National Environmental Policy Act

As a Federal agency, the Service must comply with provisions of the 1969 National Environmental Policy Act, as amended (42 U.S.C. 4321-4347). An environmental analysis is required under NEPA to evaluate reasonable alternatives to meet a specified purpose and need for action. An environmental assessment (EA) serves as the basis for determining whether implementation of the proposed action would constitute a major Federal action significantly affecting the quality of the human environment. The planning process for developing the environmental assessment facilitates the involvement of government agencies and the public.

In this Amendment/EA, the Service evaluated two alternatives to meet the Service's purpose and need to maintain the status of CWT deer: Alternative 1—Current Management (No Action), and Alternative 2—Manage and Protect the Columbian White-tailed Deer sub-population, that would include the addition of a CWT deer management goal, objective, and implementation strategies including predator management.

Endangered Species Act

The post-translocation management plan would not represent a federal action that would affect species listed under the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1544). The section 7 consultation (USFWS 2013) concluded that the proposed action described in this Amendment/EA may effect but is not likely to adversely affect listed species Nelson's checkermallow, water howellia, and Columbian white-tailed deer on the Refuge.

National Historic Preservation Act

The Service would follow established procedures for protecting archaeological and cultural resources if encountered during CWT deer management activities. The Service would avoid damaging cultural and historic resources and would comply with the National Historic Preservation Act of 1966 (16 U.S.C. 469) and other cultural resource preservation laws. The Service would consult with the State Historic Preservation Office and appropriate Native American tribes for any future restoration and management actions, which may have the potential to affect historic properties or cultural resources.

Comprehensive Environmental Response, Compensation, and Liability Act

Under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) (42 U.S.C. 9601 et seq.), the Service determined that the proposed project areas are not on the Environmental Protection Agency's National Priority List or in their CERCLA System.

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 Managers.

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 Amendment/EA.

Other Federal Executive Orders

In implementing the proposed action, the Service would comply with the following Executive Orders: Protection of Historical, Archaeological, and Scientific Properties (Executive Order 11593); Management and General Public Use of the National Wildlife Refuge System (Executive Order 12996); Departmental Policy on Environmental Justice (Executive Order 3127); and Consultation and Coordination with Indian Tribal Governments (Executive Order 13175).

Tribal Consultation

USFWS Secretarial order #3206: American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act.

The JBH CCP/EIS (2010) included Tribal Consultation in section 2.3.11, "Tribal Coordination: Coordination with Native American Tribes that have an interest in the Refuges will occur. We will coordinate and consult with the Cowlitz Tribe and the Shoalwater Bay Tribe regarding issues of shared interest". The Service may expand and seek assistance from other Tribes for future issues related to cultural resources education and interpretation, special programs, the NHPA, and the Native American Graves Protection and Repatriation Act.

The Ridgefield CCP/EA 2010 includes Tribal consultation in section 2.3.1, reading "Tribal Coordination. The Service will coordinate and consult with the Cowlitz Tribe and the Chinook Tribe on a regular basis regarding issues of shared interest. Other Tribes with interests relating to the traditionally shared resource corridors along the lower Columbia River will also be included in consultations affecting those resources. Local Tribes include the Confederated Tribes of the Grande Ronde, the Shoalwater Bay Tribe, the Confederated Tribes of Warm Springs, and the Yakama Tribe. Currently, the Service seeks assistance from Tribes on issues related to cultural resources education and interpretation, special programs, and the National Historic Preservation Act (NHPA). Cowlitz Tribal representatives did participate in the development of the Ridgefield CCP, dated 2010, and endorsed the idea that Ridgefield NWR was suitable habitat and destination for translocation of CWT deer.

The Cowlitz Tribe's MOA with the Refuge (dated 2004) ensures " ... equal participation in the development, planning, and production of educational and interpretive materials relevant to the presence of Cowlitz Indians in the area of the Refuge, where supported by historical and archaeological evidence ... " As CWT deer are a significant cultural resource to the Cowlitz Tribe, the novel presence of CWT deer on Refuge lands should provide excellent opportunities for the Cowlitz Tribe to assist with the development of outreach materials.

Distribution and Availability

Copies of the Amendment/EA are available and this Finding of No Significant Impact is on the Refuge website www.fws.gov/ridgefield. Hardcopies of the document are also available at the following location:

Ridgefield National Wildlife Refuge
28908 NW Main Avenue
Ridgefield, WA 98642
360/887-4106

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