5-YEAR REVIEW
Columbian white-tailed deer [Columbia River DPS]
(*Odocoileus virginianus leucurus*)

Photo by J. Bonello/USFWS

1.0 GENERAL INFORMATION

1.1 Listing History

First Notification in the Federal Register of Endangered Status
Federal Register notice: 32 FR 4001
Date listed: March 11, 1967
Entity listed: Columbian white-tailed deer, *Odocoileus virginianus leucurus*
Classification: Endangered, under the authority of the Endangered Species Preservation Act of 1966.

Original Listing
Federal Register notice: 35 FR 16047
Date listed: October 13, 1970
Entity listed: Columbian white-tailed deer, *Odocoileus virginianus leucurus*
Classification: Endangered, under the authority of the Endangered Species Conservation Act of 1969. Species listed as endangered were automatically included in the List of Endangered and Threatened Wildlife when the Endangered Species Act was enacted in 1973.

First Revised Listing: Final Rule Establishing Two Distinct Population Segments (DPSs) of the Columbian White-tailed Deer; Delisting the Douglas County DPS and Retaining Endangered Status for the Columbia River DPS
Federal Register notice: 68 FR 43647
Date listed: July 24, 2003

Entity listed: Columbia River DPS of the Columbian white-tailed deer, *Odocoileus virginianus leucurus*
Classification: Endangered

Second Revised Listing (also serves as the most recent status review): Final Rule Downlisting the Columbia River DPS of the Columbian White-tailed Deer from Endangered to Threatened with a 4(d) Rule
Federal Register notice: 81 FR 71386
Date listed: October 17, 2016
Entity listed: Columbia River DPS of the Columbian white-tailed deer, *Odocoileus virginianus leucurus*
Classification: Threatened

1.2 Methodology used to complete the review

In accordance with section 4(c)(2) of the Endangered Species Act of 1973, as amended (Act), the purpose of a 5-year review is to assess each threatened species and endangered species to determine whether its status has changed, and if it should be classified differently or removed from the Lists of Threatened and Endangered Wildlife and Plants. The U.S. Fish and Wildlife Service (Service) evaluated the biology and status of the Columbia River DPS of the Columbian white-tailed deer as part of a Species Status Assessment (SSA) to inform this 5-year review. The SSA report represents our evaluation of the best available scientific information, including the resource needs and the current and future condition of the DPS (also referred to as the species throughout this document) and is incorporated by reference (USFWS 2025, entire). It was written by the Service's Oregon Fish and Wildlife Office (OFWO) with input from the Julia Butler Hansen (JBH) National Wildlife Refuge (NWR) for the Columbian White-tailed Deer and the Washington Fish and Wildlife Office (WFWO). Independent peer reviewers and partner representatives also reviewed the SSA report before we used it as the scientific basis to support our 5-year review. All pertinent literature and documents related to the SSA report are on file at the OFWO (see References section).

1.3 Federal Register Notice citation announcing the species is under active review:

U.S. Fish and Wildlife Service (USFWS). 2021. Endangered and Threatened Wildlife and Plants; Initiation of 5-Year Status Reviews for 77 Species in Oregon, Washington, Idaho, Hawaii, Montana, California, and Nevada. Federal Register 86: 33726-33728. June 25, 2021.

2.0 REVIEW ANALYSIS

2.1 Application of the 1996 Distinct Population Segment (DPS) policy

A complete review of how we applied the 1996 DPS policy to the Columbia River population of Columbian white-tailed deer was published in our July 24, 2003 final rule to delist the Douglas County DPS of Columbian white-tailed deer (68 FR 43647).

2.2 Recovery Criteria

The Columbian white-tailed deer, the westernmost subspecies of white-tailed deer, was once common in riparian and prairie habitats of southwest Washington and western Oregon, but by 1940 it was limited to a population of 500 to 700 deer along the lower Columbia River, and a disjunct population of 200 to 300 deer in Douglas County, Oregon (Verts and Carraway 1998, p. 480). At the time of listing in 1970, there were only about 300 to 400 deer remaining along the lower Columbia River. A recovery plan for the Columbian white-tailed deer was first published in 1976 and a revised recovery plan was published in 1983. The following information pertains solely to the Columbia River DPS of Columbian white-tailed deer; the Douglas County DPS was delisted in 2003 (68 FR 43647) due to recovery. The recovery criteria for the Columbia River DPS are:

Delisting Criterion 1: Maintain a minimum of at least 400 Columbian white-tailed deer across the Columbia River DPS.

Delisting Criterion 2: Maintain three viable subpopulations, all located on secure habitat.

- Definition of Viable: A minimum November population of 50 individuals or more.
- Initial Definition of Secure Habitat: Free from adverse human activities in the foreseeable future and relatively safe from natural phenomena that would destroy its value to the Columbian white-tailed deer. Habitat may be secured through means such as purchase, easements, leases, conservation agreements, landowner incentives, memorandums of understanding, and local land use planning or zoning ordinances.
- Updated Definition of Secure Habitat: The 5-year review conducted in 2013 broadened the definition of "secure" habitat to include locations that, regardless of ownership status, have supported viable subpopulations of Columbian white-tailed deer for 20 or more years and have no anticipated change to land management in the near future that would make the habitat less suitable (USFWS 2013, p. 11).

As discussed below, both recovery criteria have been met.

2.3 Updated Information and Current Species Status

2.3.1 Distribution

There are ten subpopulations of Columbian white-tailed deer distributed across approximately 25,000 hectares (ha) (62,000 acres) in Clatsop, Multnomah, and Columbia Counties in Oregon, and Cowlitz, Wahkiakum, and Clark Counties in Washington (USFWS, unpublished data). These subpopulations are divided into three groups based on their geographic locations and natural barriers to movement: Group A, comprised of the four most downriver subpopulations; Group B, comprised of the subpopulations in the middle of the DPS's current range; and Group C comprised of the three most upriver subpopulations (Miller et al. 2020, p. 8; Figure 1).

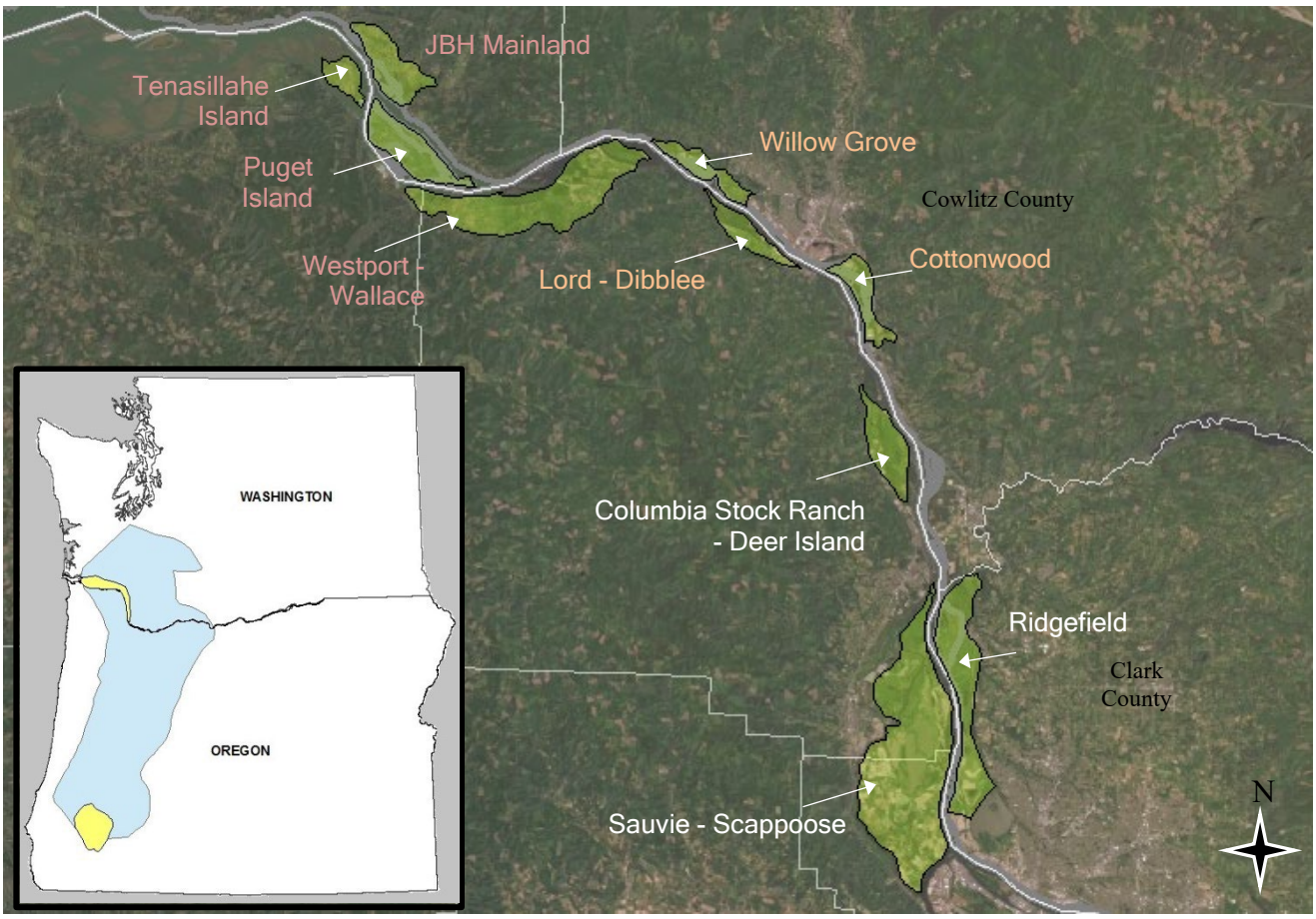

Figure 1. Current range of the Columbia River DPS of Columbian white-tailed deer (shown in green polygons), identifying the ten subpopulations. Inset map is the Columbia River DPS (top yellow), the Douglas County DPS (bottom yellow), and the likely historical range (blue).

Translocations have played a vital role in both establishing new subpopulations and augmenting existing subpopulations. Since 1985, 396 deer have been moved throughout the DPS (Table 1), a portion of which contributed to expanding the deer's distribution in the DPS by establishing the Ridgefield subpopulation. The most successful translocations were to Tenasillahe Island in the 1980s, which augmented the existing population, and to Ridgefield National Wildlife Refuge (NWR), which established a new subpopulation in 2013. The most recent translocations, which occurred between 2020 and 2022, moved deer from Tenasillahe Island to create the new Columbia Stock Ranch (CSR) subpopulation. Creation of the CSR subpopulation is anticipated to fill a critical gap in connectivity between the Cottonwood and the Ridgefield subpopulations. The recovery plan identified Puget Island and the Westport area as suitable sources for Columbian white-tailed deer translocations due in large part to their population stability. These two locations have thus been the donor source for numerous translocations over the last 35 years –none of which have resulted in any long-lasting population decreases in the donor populations (Table 2). For example, Puget Island has never dropped below 100 individuals even though it has been a donor source for 14 different translocations.

Table 1. Translocation history of Columbian white-tailed deer.

Name of Unit Receiving Deer	Year	Number of Deer Moved	Source of Deer
JBH Mainland Unit	2006	5	Puget Island/Westport
	2009	20	Tenasillahe Island
	2010	8	Roseburg, OR
Tenasillahe Island	1985	17	Puget Island
	1986	21	Puget Island
	1987	20	Puget Island
	1988	22	Puget Island
Crims Island	1999	30	Puget Island/Westport
	2000	31	Puget Island/Westport
	2006	5	Puget Island/Westport
Lord/Walker Island	2003	16	Westport
	2004	8	Westport
	2006	9	Westport
Fisher/Hump Island	2003	12	Puget Island/JBH
	2004	11	Puget Island
	2006	10	Puget Island
Cottonwood Island	2010	15	Westport
	2013	12	Puget Island
Ridgefield NWR	2013	37	JBH Mainland
	2014	21	Westport, Puget Island
	2015	29	Westport, Puget Island
Columbia Stock Ranch	2020	15	Tenasillahe Island
	2021	12	Tenasillahe Island
	2022	10	Tenasillahe Island
Total		396	

2.3.2 Population Abundance

Overall, the Columbia River DPS has maintained a total population of over 400 deer every year since 1984 with a 2025 population estimate of about 1,354 deer (Table 2). Therefore, Recovery Criterion 1 of maintaining 400 deer has been exceeded. Of the ten subpopulations within the DPS, eight are considered viable as defined by the recovery plan (minimum November population of 50 or more). Those eight are the JBH Mainland, Puget Island, Tenasillahe Island, Westport/Wallace, Lord/Dibblee, Cottonwood, Willow Grove, and Ridgefield. Of those eight viable subpopulations, four of them have exceeded the minimum of 50 deer every year for the past 30 years, which exceeds one of the requirements of Recovery Criterion 2 to maintain a minimum of 3 subpopulations that exceed 50 deer. As we discuss below (see section 2.3.4 Habitat Protections), three of the eight viable populations are on secure habitat and therefore Recovery Criterion 2 has been met.

Table 2. Estimated population size of the Columbia River DPS by subpopulation (USFWS 2016, p. 71393; USFWS 2025, unpublished data). Estimates from 1984 through 1995 were from November ground counts. Numbers from 1996 through 2025 are from February aerial surveys.

Year [a]	JBH Mainland	Puget Island	Tenasillahe Island	Westport/ Wallace	Cottonwood	Lord-Dibblee	Willow Grove	Columbia Stock Ranch (CSR)	Ridgefield	Sauvie/ Scappoose	Total
1984	360	170	40	150							720
1985	480	215	40	125							860
1986	500	195	55	125							875
1987	500	185	70	150							905
1988	410	205	80	150							845
1989	375	205	90	150							820
1990	345	200	105	150							800
1991	280	200	130	150							760
1992	280	200	165	175							820
1993	175	200	195	200							770
1994	140	200	205	225							770
1995	120	200	205	225							750
1996	51	200	125	225							610
1997	100	200	150	200							650
1998	110	200	200	200							710
1999	110	150	160	140							585
2000	120	150	135	150							610
2001	120	125	135	150							585
2002	125	125	100	140							545
2003	115	125	100	140							560
2004	110	110	100	140							555
2005	100	125	100	140							565
2006	81	n/a	86	104							
2007	59	n/a	82								
2009	74	138	97	146		7	32				593
2010	68	n/a	143	164	15						630
2011	83	171	90	n/a		18	18				603
2014	88	227	154	154[b]		70			48		830
2015	100	228	155	190		68			100		966
2016	119	228	199	205		66	47		137		1,001
2019	131	217	187	189	61	66	42		244	35	1,170
2021	116	217	216	222	60	66	42	27	244	35	1,245
2022	142	227	216	206	60	54	65	29	262	35	1,296
2024	116	227	216	211	67	63	66	35	262	35	1,298
2025	116	227	216	211	67	63	66	35	318	35	1,354

[a] Estimates between 1996-2025 are derived from Forward Looking Infrared (FLIR) camera surveys. Survey results from 2008 produced anomalous data because an alternative technique was used and results from 2017 had complications from a camera error. Thus, these data are not considered representative of actual numbers and are not included in this table. Totals are not given in 2006 and 2007 due to incomplete data, and no surveys were conducted in 2012, 2013, 2018, 2020, or 2023. If surveys were not done for a subpopulation that is regularly monitored, the last estimate is carried forward.

[b] Approximate population estimate after 2014 translocation.

2.3.3 Recruitment

In addition to population estimates, we use fawn to doe ratios to estimate the number of yearlings recruited into the population. Although not all subpopulations are surveyed for fawn to doe ratios, we do have data from across the DPS. Long-term trends of fawn to doe ratios show a generally similar pattern of variation for the four largest sites that have been continuously surveyed since 1996. Table 3 presents the last five years of ratios available. Higher numbers mean more fawns were recruited into the population. While adult female survival is the most important factor influencing white-tailed deer growth rates, even 25 percent fawn survival rates were unlikely to result in a population decline in an unhunted population (Robinson et al. 2014, p. 78). On Ridgefield NWR, the decision to conduct predator control is made on a yearly basis depending on the previous fall's fawn:doe ratios and the estimated deer population.

Table 3. Number of fawns per 100 does from seven subpopulations of Columbian white-tailed deer from 2020–2024 (USFWS 2025, unpublished data).

Year	JBH Mainland	Puget Island	Tenasillahe Island	Westport/ Wallace	Willow Grove	Lord/ Dibblee	Ridgefield
2020	12	33	14	56	44	22	43
2021	34	42	23	35	50	41	52
2022	21	41	21	58	51	13	32
2023	12	47	38	33	18	15	21
2024	32	45	34	37	27	20	20
Average	**22**	**42**	**26**	**44**	**38**	**22**	**34**

2.3.4 Population Connectivity

Connectivity among subpopulations is crucial for allowing dispersal and maintaining viability populations of Columbian white-tailed deer. Over time, agricultural, urban, and suburban development has forced the Columbia River DPS of deer into the wetter, lowland areas that are lower quality habitats, which has also limited population connectivity and population expansion. Evidence from other white-tailed deer species suggests that roads and rivers are semi-permeable barriers to dispersal that can influence dispersal behavior (Long et al 2010, p. 1247), and data from multiple studies indicate a relatively low risk of mortality from dispersing, with dispersal rates differing across landscape types (Haus et al 2019, p. 1185; Long et al 2021, p. 2735; Gilbertson et al 2022, p. 15).

To estimate dispersal rates for Columbian white-tailed deer, we used a Population Viability (PVA) model to predict annual dispersal probabilities. The model defined dispersal rate as "the probability that an individual of the qualifying age and sex in the source population will disperse to a neighboring subpopulation in a given year of the simulation" (Miller et al 2020, p. 9). The PVA predicted an index of connectivity assuming that dispersal would more likely occur between nearest-neighbor subpopulations. Results demonstrated that every subpopulation had some level of connection between at least two other subpopulations, and several connect to three

other subpopulations (Miller et al 2020, p. 10). The likelihood of movement between subpopulations is the same in some instances, such as between JBH Mainland and Tenasillahe Island. In other instances, likelihood of movement varies depending on the starting point. The most difficult route for deer dispersal appears to be from Group B subpopulations to the Group C subpopulations. Dispersal also appears challenging from CSR in Group C to other Group C subpopulations. This may represent a pinch point in the area near Longview, Washington, where there is substantial industrial activity.

2.3.5 Habitat Protections

Currently, there are 2,912 ha (7,196 acres) of protected, and therefore secure, habitat in Oregon and 4,482 ha (11,075 acres) in Washington across a variety of land owners. Combined across both states, 33 percent of deer habitat is protected and secure. The majority of protected and secure habitats are on National Wildlife Refuge System lands. In addition to formal protection, habitat is also considered secure, regardless of ownership status, if it has supported subpopulations of at least 50 or more Columbian white-tailed deer for 20 or more years, with no anticipated changes to land management that would make the habitat less suitable to deer (USFWS 2013, p. 11). Therefore, an additional 2,023 ha (5,000 acres) is considered secure on Puget Island. This brings the percentage of protected or secure habitat in the DPS to 42 percent, supporting approximately 959 deer (71 percent of the deer in the DPS) (Table 4). Of the eight viable subpopulations, Puget Island, Tenasillahe Island, and Ridgefield—all of which are considered viable per the definition in the recovery plan—are located on secure habitat per the recovery plan and the previous 5-year review. Therefore, Recovery Criterion 2 has been met.

Table 4. Number of Columbian white-tailed deer located on secure habitat and amount of secure habitat by subpopulation as of 2025.

Subpopulation Name (Group)	Number of deer on secure habitat	Number of deer on unsecured habitat	Amount of secure habitat (hectares)	Percent of habitat considered secure
JBH Mainland (A)	80	36	1,191	42
Puget Island (A)	212*	15	2,023^	98
Tenasillahe Island (A)	216	0	1,049	98
Westport/Wallace (A)	53	158	369	6
Cottonwood (B)	25	42	327	28
Lord/Dibblee (B)	17	46	253	29
Willow Grove (B)	7	59	109	12
CSR (C)	31	4	0	0
Ridgefield (C)	298	20	2,890	77
Sauvie/Scappoose (C)	20	15	1,206	47
Total	959	395	9,417	40

*Deer are located on private land that is considered secure.
^Considered secure although land is under private ownership.

2.4 Threats Analysis

In 1983, the recovery plan identified the greatest anthropogenic threat to Columbian white-tailed deer as the continued degradation of riparian habitats through logging and brush removal followed by poaching, vehicle collisions, entanglement in barbed wire fences, and competition with livestock (USFWS 1983, p. 18). Flooding was identified as the most significant natural threat followed by high tides, disease, competition with other ungulates, and hybridization with black-tailed deer (USFWS 1983, p. 18).

Some of the threats identified in the recovery plan have not come to fruition or have had minimal impacts on the Columbia River DPS. For instance, vehicle collisions and fence entanglement occur in limited instances, affecting some individual deer, but not threatening the existence of a subpopulation. Additionally, Refuge staff occasionally see Columbian white-tailed deer with black-tailed deer characteristics such as a short tail, but hybridization was likely an historical occurrence rather than a recent event (Hopken et al. 2015, p. 644, also see USFWS 2025, pp. 12, 26–27). Competition with livestock and other ungulates occurs, but land managers have developed strategies to reduce this likelihood. For instance, since deer generally avoid grazed pastures (Heale 2018, p. 28), land managers implement seasonal grazing regimes to reduce livestock presence in deer habitat. Other management practices to maintain or enhance Columbian white-tailed deer habitat include: controlled elk hunts in areas where the species overlaps; mowing and seeding to provide palatable foods; planting native species to increase the

amount and distribution of woody vegetation; performing weed control and removal of nonnative plants; and fence removal or installation depending on the usage. Competition may increase if sea level rise forces Columbian white-tailed deer to move into areas dominated by livestock or other ungulate species. This would only occur however, where tides influence the Columbia River in the western portion of the range.

Factor A: Present or Threatened Destruction, Modification or Curtailment of Its Habitat or Range

It is hypothesized that the extirpation of Columbian white-tailed deer over most of its range occurred by the early 1900s from conversion of brushy riparian land to agriculture, urbanization, and uncontrolled sport and commercial hunting (USFWS 2003, p. 43647). These anthropogenic factors forced the Columbia River DPS into wetter lowland areas where urban, suburban, and agricultural development and activities limit connectivity and natural population expansion. Though limited access to high-quality upland habitat in the Columbia River DPS remains the most prominent hindrance to Columbian white-tailed deer expansion today, most habitat loss and fragmentation has already occurred, and connectivity remains on the landscape. The most dramatic land use changes occurred during the era of hydroelectric and floodplain development in the Columbia River basin, beginning with the construction of Willamette Falls Dam in 1888 and continuing through the 1970s (Northwest Power and Conservation Council 2013, p. 1). Historical habitat loss was largely a result of development and while this activity is still a limiting factor, we now understand that the type of development influences how Columbian white-tailed deer respond. Stable populations of the species do persist in habitat that was previously dismissed as inadequate for long-term survival such as the subpopulation on Puget Island, Washington. Areas such as Puget Island have been and are expected to continue experiencing the breakup of large agricultural farms into smaller hobby farms with a continued focus on low- to medium-density rural residential development. This type of change has not inhibited the ability of Columbian white-tailed deer to maintain a stable population on Puget Island. Therefore, this type of development is not expected to impact Columbian white-tailed deer on Puget Island in the foreseeable future. In contrast, areas like Willow Grove will likely see a continued change from an agricultural to a suburban landscape; this type of development may have a negative impact on Columbian white-tailed deer depending on the density of development. Significant future changes are not anticipated to currently available habitat for the Columbia River DPS from residential or agricultural use.

The Service‘s recovery efforts involving habitat acquisition and restoration have led to a corresponding increase in the amount and quality of habitat specifically protected for the benefit of Columbian white-tailed deer. Habitat enhancement efforts have been focused primarily on the JBH Mainland Unit, followed by Tenasillahe Island and Crims Island where attention has been focused on increasing the quality of food and cover. There is also a new habitat enhancement program at Ridgefield NWR that is focused on increasing the amount of browse and forage available to Columbian white-tailed deer. Finally, Columbian white-tailed deer now have access to the upland areas at Ridgefield NWR, and they have responded positively to the higher quality habitat.

Factor B: Overutilization for Commercial, Recreational, Scientific or Educational Purposes

Overutilization for commercial, recreational, scientific, or educational purposes is not known to pose a substantial risk to the Columbian white-tailed deer. Although legal harvest of Columbian white-tailed deer in the Columbia River DPS ceased when the species was federally listed as endangered, historical overharvest in the late 1800s and early 1900s contributed to population decline. Public understanding and views of Columbian white-tailed deer have gradually changed, however, and poaching is no longer considered a threat. A study analyzing causes of mortality found 8 incidents of poaching out of 101 adult mortality events between 1974 and 1977 (Gavin et al 1984, p. 30). Other studies or anecdotal occurrences of poaching are not available. There is one known incident of a hunter accidentally shooting a Columbian white-tailed deer in Oregon while pursuing black-tailed deer in 2024. The ODFW confiscated that carcass. The threat of poaching identified in the 1983 recovery plan has likely not been realized because several alternative ungulate species are available to hunt. Additionally, Departments of Fish and Wildlife in both Oregon and Washington have hunting regulations in place to manage the species (discussed further under Factor D). They also have cooperative agreements with the Service that allow for take of Columbian white-tailed deer for scientific and public safety purposes. We are not aware of any ongoing scientific research requiring deer to be captured, and there have been two recovery permits issued, both of which went to the Service for deer translocations and associated activities. Therefore, overutilization does not pose a threat to the viability of the species.

Factor C: Disease or Predation

Within the Columbia River DPS, there are several types of disease that occur: necrotic stomatitis and foot rot (collectively known as hoof disease); epizootic hemorrhagic disease virus (EHDV); bluetongue virus (BTV); and adenovirus hemorrhagic disease (AHD). Of the 37 deer captured on Tenasillahe Island and released on Columbia Stock Ranch, none displayed evidence of hoof disease (USFWS, unpublished data). Antibodies to EHDV were detected in 1 out of 42 Columbian white-tailed deer captured for translocation on JBH in recent years, while BTV antibodies were detected in 1 out of 37 deer on Tenasillahe Island (USFWS, unpublished data). It is possible that these deer may have been carrying remnant antibodies from a previous encounter with a virus. In Washington, the most recent outbreak of EHDV and BTV killed at least 39 Northwest white-tailed deer (*O. v. ochrourus*) across the state in 2021 (WDFW 2021, website); however, viral outbreaks have not been detected within the range of the Columbia River DPS. In Oregon, AHD was confirmed as cause of death in a Columbian white-tailed deer in December 2019 near Clatskanie with periodic localized outbreaks occurring in nearby surrounding areas (K. Licence 2019, pers. comm). Antibodies indicating exposure to AHD were identified in 3 out of 37 Columbian white-tailed deer captured on Tenasillahe Island in recent years (USFWS, unpublished data). These deer may have encountered a virus in previous years and still carried antibodies; however, they did not show any signs of disease. Overall evidence of mortality from these diseases in the DPS is limited and appears low.

Chronic wasting disease (CWD) is now considered to be the most important disease threatening North American cervids; however, it has not been found in the DPS. CWD is an always-fatal transmissible neurologic disease caused by abnormally folded proteins called prions. The disease

is contagious, with infectious prions passed through direct animal-to-animal contact, as well as indirectly through prion-contaminated environments. Once infected, the animal sheds prions through saliva, urine and feces, and infected carcasses contribute to environmental contamination. In 2021, CWD was detected in Idaho for the first time, near the border with Washington. In response to this detection, the Washington Department of Fish and Wildlife (WDFW) instituted a program to test deer that were harvested, road-killed, and opportunistically found dead in eastern Washington. In summer 2024, Washington's first confirmed case of CWD was detected in Spokane County in a Northwest white-tailed deer. As of December 2024, there are now six confirmed detections in two Washington counties, all within Northwest white-tailed deer. While sampling of all animals is currently limited to the incident response area, WDFW continues to sample suspect cases statewide and tests all Columbian white-tailed deer samples that are collected (T. Ott 2024, pers. comm). This disease has not been detected in Oregon and it has not been detected in Columbian white-tailed deer. The Oregon Department of Fish and Wildlife (ODFW) began testing for CWD in 1996, sampling over 30,000 deer and to date from hunter-harvest animals, roadkill, and animals found dead or sick in the field (https://myodfw.com/CWD). The disease was not detected during recent testing of multiple samples collected from deer over several years on Tenasillahe Island including five live deer in 2020, three dead deer in 2020, and three dead deer in 2023 (USFWS, unpublished data).

In 2023, the Service created and signed a Disease Contingency Plan (DCP) with assistance from the Wildlife Health Office (part of the NWR's Natural Resource Program Center) and input from our State partners and Tribes. The DCP includes both JBH and Ridgefield NWRs, as well as information about lands adjacent to the Refuges. Although there is no cure for CWD, having a plan in place for prevention, surveillance, and response may minimize the likelihood that CWD enters the DPS and reduce the impacts of the disease if it is confirmed present on the landscape. In addition to the DCP, both Oregon and Washington States have CWD plans that follow similar guidelines and regulations in place (discussed further under Factor D). While CWD does not pose a threat at this time, it may rise to a population-level threat if it is detected in the DPS.

Factor D: Inadequacy of Existing Regulatory Mechanisms

Hunting Columbian white-tailed deer has been prohibited since 1970. Additionally, state agencies have regulations in place to manage wildlife. Requirements include developing species management plans, setting and tracking harvest rates of game species, and monitoring populations of game and non-game species. In Washington, the Columbian white-tailed deer is listed as a State threatened species, protecting them from direct take and making it illegal to hunt, possess, or control the species (WAC 220-610-010) anywhere they occur. In Oregon, Columbian white-tailed deer were removed from the state Endangered Species List in 1995. Hunting of Columbian white-tailed deer in the Columbia River DPS is not authorized. Information to distinguish a Columbian white-tailed deer from a black-tailed deer is available on ODFW's website.
States have made regulatory changes to potentially slow the spread of CWD. In Washington, changes have been made to state rules that impact hunters, game salvagers, and people who feed wildlife. On March 24, 2025, the WDFW director approved proposals to (1) ban feeding deer, elk, or moose statewide, including baiting while hunting; (2) limit transporting harvested deer, elk, and moose (cervids) in Washington, importing meat and other cervid parts into Washington, and using scent lures derived from cervid urine or glandular materials; and (3) make CWD

testing mandatory of harvested and salvaged cervids in any WDFW region where CWD has been detected (https://wdfw.wa.gov/newsroom/news-release/wdfw-approves-new-rules-limit-spread-chronic-wasting-disease). Since 2002, ODFW has focused on prevention and surveillance of CWD guided by a team of biologists and veterinarians following an internal CWD plan not available to the public. In 2019, the HB 2294 banned all commercially produced deer and elk urine (scent lures) that contain or are derived from any cervid urine. In January 2022, the HB 3152 in Oregon began requiring hunter check station stops so that carcasses could be tested for CWD. It is also illegal to bring certain body parts of deer harvested in other states or provinces into Oregon.

Factor E: Other Natural or Manmade Factors Affecting Its Continued Exist

Of the various climate change-induced impacts predicted to affect habitats in the Pacific Northwest, climate change-induced sea level rise (SLR) is expected to be the most immediately impactful to coastal habitats and tidally influenced river systems (Jay et al. 2018, p. 43). The lower Columbia River and estuary are influenced by ocean tides. Tidal wetlands are created where the influences of ocean tide and subsequent upstream river flow result in periodic inundation by water. As sea levels rise, the range of tides would shift higher in elevation resulting in permanent, rather than temporary, inundation and permanent habitat loss for deer. Thus, rising sea levels over the next century and subsequent inundation and habitat loss could force Columbian white-tailed deer to move out of currently occupied habitat along the Columbia River into marginal or more developed habitat.

Climate changes may also increase the risk of large flooding events. Flooding influences Columbian white-tailed deer viability when grazing and fawning grounds become inundated for prolonged periods. For instance, the JBH Mainland Unit has experienced three storm-related floods since 1996. These flooding events have been associated with a sudden drop in population numbers followed by a recovery over the next few years. In 1996, deer were in poor condition prior to flooding, resulting in an estimated loss of 50 percent of the deer, with starvation due to the flooding of habitat being the major cause of death rather than drowning (USFWS, unpublished data). Rising sea levels and flooding represent long-term stressors for Columbian white-tailed deer occupying low-lying habitat that is not adequately protected by well-maintained dikes.

2.5 Viability Analysis

Using the SSA framework (see Smith et al. 2018, entire), we evaluated the viability of Columbia River DPS of Columbian white-tailed deer (i.e., the ability of the Columbian white-tailed deer to sustain subpopulations within the DPS ecosystem over time) by characterizing the population's ability to withstand random fluctuations in demographic or habitat parameters (resiliency), to withstand catastrophic events (redundancy), and to adapt to long-term changes in the environment (representation). Details of this assessment are provided in the 2025 SSA (USFWS 2025, entire).

The best available information indicates that the status of Columbian white-tailed deer has improved since the most recent status review. In our SSA, we developed specific demographic

and habitat metrics by which to assess the resiliency of subpopulations and characterize current condition (Table 5). See Section 5.2 *Methodology* in the SSA for more detailed information.

Table 5. Condition metrics for assessing resiliency of subpopulations of Columbian white-tailed deer.

	Demographic Metrics			**Habitat Metrics**	
Condition Rank	Number of Deer	Fawn to Doe Ratio^	Annual Dispersal Probability (%)	Habitat Quantity (ha)	Protected or Secure habitat (%)
High	≥ 80	≥40	≥ 5	≥ 3,000	≥ 70
Moderate	50-79	20-39	2-4.99	1,000-3,000	40-70
Low	<50	<20	<2	<1,000	<40

^Based on most recent 5-year average. Data not available for every subpopulation.

Results indicate that 7 out of 10 subpopulations have a high or moderate level of resilience. Subpopulation conditions, however, still vary considerably. Some subpopulations, like Ridgefield, respond positively to active management by increasing in abundance and expanding over time. Others, like Cottonwood, are not doing as well despite management efforts and the availability of what appears to be suitable habitat for the species. The latter situation indicates there is a stressor acting on the species that we do not yet recognize or have not sufficiently addressed at these particular locations. Subpopulations with low resilience all occur in the middle portion of the range (Group B), which could indicate a bottleneck or pinch point of some kind. Given that deer have only recently been translocated to CSR in the middle of their range (Figure 1), we anticipate that the subpopulation there will expand and grow in the next several years as habitat restoration continues.

The Columbia River DPS is characterized by the presence of multiple highly and moderately resilient subpopulations distributed across the geographic range. This redundancy increases the likelihood that the species will be able to withstand catastrophic events. Two subpopulations Group A has two moderate and two highly resilient subpopulations. It also has the largest overall number of deer, the most deer on protected land, and the most available habitat. Group C also has high numbers in these three aforementioned categories, yet subpopulation condition is more variable with one in low, one with moderate, and one with high resilience. Group B has lower numbers of deer, few deer on protected land, and less habitat than the other groups, putting it most at risk of impacts from catastrophic events. With respect to current representation, although no direct measures of genetic or ecological diversity are available, there are multiple subpopulations distributed relatively evenly across the geographic range of the DPS (four in Group A, three in Group B, and three in Group C), and with representation of all known habitat types (upland, wetland, and oak savannah). Each subpopulation has some level of connectivity to another subpopulation, which increases the species' ability to move if habitat becomes unsuitable in the future (see Section 5.4 *Viability Summ*ary in the SSA for more information).

We also considered the viability of Columbian white-tailed deer 50 years into the future. Based on population modeling and climate change models, we anticipate that resiliency, redundancy, and representation will remain intact, albeit at possibly lower levels for some subpopulations, in the future. The PVA determined that there is a 97 percent probability that the Columbia River

DPS would maintain a population with over 400 individuals in the next 50 years even when accounting for the possibility of severe flooding and additional habitat loss (Miller et al 2020, pp. 26-33). The subpopulations in the middle of the DPS were at greater risk due to less habitat (both currently and into the future) and fewer deer, though modeling indicated that at least some connectivity decreased extinction risk. The PVA also showed that increasing habitat capacity 25 percent notably improved the probability of persistence as a result of higher abundance and greater connectivity (Miller et al 2020, p. 45). Thus, habitat enhancement and management could decrease the risk of extinction. Potential impacts from sea level rise and related tidal influence would be greater in the westernmost portion of the DPS but would decrease with distance upriver. Given that Group A subpopulations are all in moderate or high condition currently and sea level rise is a gradual change on the landscape, it is unlikely that these subpopulations would all decrease to low condition or extinction even with environmental changes on the landscape. Much of the habitat currently used by Columbian white-tailed deer in Group A is below the high-tide level and is protected by flood control and drainage infrastructure. Keeping Group A subpopulations in moderate or high condition will be dependent upon maintaining, or potentially raising, the existing dikes and levees. Nevertheless, our recommendation to delist the Columbian white-tailed deer does not depend on this future action because (1) we anticipate Group A subpopulations have the adaptive capacity to rebound from stochastic and catastrophic events as they have demonstrated in the past; and (2) we do not anticipate sea level rise will impact the entire DPS. See Chapter 6 of the SSA for additional information.

3.0 SYNTHESIS

The best available information indicates that the status of Columbian white-tailed deer has improved since it was listed as an endangered species under the Endangered Species Conservation Act on October 13, 1970 (35 FR 16047) and since it was reclassified to a threatened species in 2016 (81 FR 71386). The improvement in status is due in part to the maintenance and augmentation of existing subpopulations, and the establishment of new subpopulations via successful translocations within the DPS. At the time of listing, only 300 to 400 Columbian white-tailed deer were thought to reside in the Columbia River DPS in five subpopulations. The recovery criteria established in the 1983 recovery plan were to maintain a minimum of at least 400 Columbian white-tailed deer across the Columbia River DPS and maintain three viable subpopulations (50 or more deer), all located on secure habitat. By 2016, the minimum population size of 400 had been met or exceeded for more than 20 years, and there were three viable subpopulations, two of which were considered secure. We determined at the time that the Columbia River DPS was no longer at imminent risk of extinction and no longer met the definition of an endangered species. However, we noted that additional viable and secure subpopulations were needed to achieve the recovery of the DPS (USFWS 2016, entire).

Columbian white-tailed deer are now even more abundant and better distributed throughout the lower Columbia River Valley. We estimate the current DPS to contain approximately 1,354 deer across 10 subpopulations in just under 23,000 ha (56,834 acres) of habitat. Of those deer, 959 (71 percent) reside on secure habitat. The majority of subpopulations – 7 out of 10 – have either a high or moderate level of resilience. There are currently three subpopulations considered both viable and secure: Puget Island and Tenasillahe Island in Group A on the western side of the

range, and Ridgefield in Group C on the eastern edge of the range. Therefore, the species has met the recovery criteria identified in the recovery plan.

Additionally, the presence of Columbian white-tailed deer in new areas, such as Ridgefield NWR, increases both the geographic range of the species and connectivity throughout the landscape. This in turn has increased species redundancy and representation. An increased number of subpopulations, composed of a greater number of individuals and with expanded distribution and connectivity across the species range, means the Columbian white-tailed deer has a greater chance of withstanding stochastic events (resiliency), surviving potentially catastrophic events (redundancy), and adapting to changing environmental conditions (representation) over time. Columbian white-tailed deer have repeatedly shown their adaptive capacity following both translocation and flooding events. Additionally, a PVA analysis estimated that even under low growth conditions and severe flooding from climate change and habitat loss, 800 deer would still occur in the DPS at year 50, with a 7.5 percent risk that the DPS would fall below the threshold of 400 deer set in the recovery plan (Miller et al 2020, p. 26). The results suggest that Columbian white-tailed deer are not in danger of becoming an endangered species in the foreseeable future. In conclusion, the Columbia River DPS of the Columbian white-tailed deer's status has improved to the point where it no longer meets the definition of a threatened or endangered species under the Act.

4.0 RESULTS

Recommended Classification:

____ **Downlist to Threatened**
____ **Uplist to Endangered**
____ **Delist** (*Indicate reasons for delisting per 50 CFR 424.11):*
____ *Extinction*
__X__ *Recovery*
____ *Original data for classification in error*
____ **No change is needed**

5.0 RECOMMENDATIONS FOR FUTURE ACTIONS

- Recommend delisting the Columbia River DPS of Columbian white-tailed deer.
- Develop and implement a post-delisting monitoring plan.

6.0 REFERENCES

Gavin, T.A. 1979. Population ecology of the Columbian white-tailed deer. Ph.D. dissertation, Oregon State University, Corvallis, Oregon. 168 pp.

Gavin, T.A., L.H. Suring, P.A. Vohs, Jr., and E.C. Meslow. 1984. Population Characteristics, Spatial Organization, and Natural Mortality in the Columbian White-tailed deer. Wildlife Monographs 91:1-41.

Gilbertson, M.L.J., A.C. Ketz, M. Hunsaker, D. Jarosinski, W. Ellarson, D. P. Walsh, D.J. Storm and W.C. Turner. 2022. Agricultural land use shapes dispersal in white-tailed deer (*Odocoileus virginianus*). Movement Ecology 10:43.

Haus, J.M., S.L. Webb, B.K. Strickland, J.E. Rogerson, and J.L. Bowman. 2019. Land use and dispersal influence mortality in white-tailed deer. The Journal of Wildlife Management 83(5):1185-1196.

Heale, J.D. 2018. Habitat selection by Columbian white-tailed deer (*Odocoileus virginianus leucurus*) along the lower Columbia River. Masters Thesis, Washington State University, Pullman, Washington. 99 pp.

Hopken, M.W., T.M. Lum, P.M. Meyers, and A.J. Piaggio. 2015. Molecular assessment of translocation and management of an endangered subspecies of white-tailed deer (*Odocoileus virginianus*). Conservation Genetics 16:635-647.

Jay, A., D.R. Reidmiller, C.W. Avery, D. Barrie, B.J. DeAngelo, A. Dave, M. Dzaugis, M. Kolian, K.L.M. Lewis, K. Reeves, and D. Winner. 2018: Overview. In Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II [Reidmiller, D.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, K.L.M. Lewis, T.K. Maycock, and B.C. Stewart (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, pp. 33–71.

Long, E.S., D.R. Diefenbach, B.D. Wallingford, and C.S. Rosenberry. 2010. Influence of roads, rivers, and mountains on natal dispersal of white-tailed deer. Journal of Wildlife Management 74:1242-1249.

Long, E.S., D.R. Diefenbach, D.L. Lutz, B.D. Wallingford and C.S. Rosenberry. 2021. Risky movements? Natal dispersal does not decrease survival of a large herbivore. Ecology and Evolution 11:2731–2740.

Miller, P.S., S. Jonker, S. Sullivan, J. Copsey, and K. Goodrowe (eds.) 2020. Columbian White Tailed Deer (*Odocoileus virginianus leucurus*) Columbia River Distinct Population Segment: Population and Habitat Viability Assessment. Apple Valley, MN: IUCN/SSC Conservation Planning Specialist Group.

Robinson, K.F., D.R. Diefenbach, A.K. Fuller, J.E. Hurst, and C.S. Rosenberry. 2014. Can managers compensate for coyote predation of white-tailed deer? Journal of Wildlife Management 78:571–579.

Smith, D.R., N.L. Allan, C.P McGowan, J.A. Szymanski, S.R. Oetker, H.M. and Bell. 2018. Development of a species status assessment process for decisions under the U.S. Endangered Species Act. Journal of Fish and Wildlife Management 9:1–19.

U.S. Fish and Wildlife Service (USFWS). 1983. Revised Columbian white-tailed deer recovery plan. U.S. Fish and Wildlife Service. Department of the Interior, Portland, Oregon. 86 pp.

U.S. Fish and Wildlife Service (USFWS). 2003. Endangered and Threatened Wildlife and Plants; Final Rule To Remove the Douglas County Distinct Population Segment of Columbian White-Tailed Deer From the Federal List of Endangered and Threatened Wildlife. Federal Register 68:43647-43659.

U.S. Fish and Wildlife Service (USFWS). 2013. Columbia River Distinct Population Segment of the Columbian White-tailed Deer (*Odocoileus virginianus leucurus*) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service. Oregon Office of Fish and Wildlife. Portland, Oregon. 51 pp.

U.S. Fish and Wildlife Service (USFWS). 2016. Endangered and Threatened Wildlife and Plants; Reclassifying the Columbia River Distinct Population Segment of the Columbian White-Tailed Deer as Threatened With a Rule Under Section 4(d) of the Act. Federal Register 81:71386-71410.

U.S. Fish and Wildlife Service (USFWS). 2025. Species Status Assessment Report for the Columbia River Distinct Population Segment of Columbian white-tailed deer *(Odocoileus virginianus leucurus)*. U.S. Fish and Wildlife Service, Oregon Fish and Wildlife Office, Portland, Oregon. 71 pp.

Verts, B.J., and L.N. Carraway. 1998. Land mammals of Oregon. Berkeley: University of California Press. 668 pp.

Washington Department of Fish and Wildlife (WDFW). 2021. Deer Hemorrhagic Diseases. Accessed November 19, 2021. Available online at: https://wdfw.wa.gov/species-habitats/diseases/hemorrhagic

Personal Communications

Licence, Kurt. 2019. Wildlife Biologist, Oregon Department of Fish and Wildlife. Email dated December 6, 2019.

Ott, Tessa. 2024. Wildlife Biologist, Washington Department of Fish and Wildlife. Email dated November 20, 2024.

U.S. FISH AND WILDLIFE SERVICE
5-YEAR REVIEW of Columbian white-tailed deer [Columbia River DPS]

Current Classification:

Recommendation resulting from the 5-Year Review:

____ Downlist to Threatened
____ Uplist to Endangered
__X_ Delist (Indicate reasons for delisting per 50 CFR 424.11):
____ Extinction
__X__ Recovery
____ Original data for classification in error
____ No change needed

FIELD OFFICE APPROVAL:
Lead Field Supervisor, Oregon Fish and Wildlife Office, Fish and Wildlife Service

Approve KESSINA LEE Digitally signed by KESSINA LEE Date: 2025.08.05 09:08:22 -07'00'

REGIONAL OFFICE APPROVAL:
Assistant Regional Director – Ecological Services, Fish and Wildlife Service

Approve BRADLEY THOMPSON Digitally signed by BRADLEY THOMPSON Date: 2025.09.02 11:56:50 -07'00'

COOPERATING FIELD OFFICE APPROVAL:
We emailed this 5-year review to the Washington Fish and Wildlife Office for their review and concurrence prior to finalizing the document. We will retain any comments that we received, as well as verification of concurrence, in the project file for this 5-year review.