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I. Introduction

I. Introduction

DNR's Habitat Conservation Plan

The Washington Department of Natural Resources (DNR) has prepared a multi-species Habitat Conservation Plan (HCP) to address state trust land management issues relating to compliance with the federal Endangered Species Act (16 U.S.C. 1531 et seq.). The plan will cover approximately 1.6 million acres of state trust lands managed by DNR within the range of the northern spotted owl.

A habitat conservation plan is a long-term land management plan authorized under the Endangered Species Act to conserve threatened and endangered species. For DNR, it means a plan for state trust lands that allows timber harvesting and other management activities to continue while providing for species conservation as described in the Endangered Species Act. Section 10 of the Endangered Species Act (16 U.S.C. 1539) authorizes a landowner to negotiate a conservation plan with the Secretary of the Interior to minimize and mitigate any impact to threatened and endangered species while conducting lawful activities such as forest practices. The HCP offsets any harm caused to individual listed animals with a plan that promotes conservation of the species as a whole. Incidental take, including the disturbance of habitat of an endangered or threatened species, is allowed within limits defined by an incidental take permit issued by the federal government.

As a trust manager, DNR has unique obligations. (See Chapter II discussion on trust duties.) Briefly, among these are acting with undivided loyalty to the interests of the trusts, recognizing their perpetual nature, managing in a prudent manner, minimizing the risk of loss, and using sound principles that will preserve the productivity of the trusts in perpetuity while striving to provide the most substantial support to the beneficiaries over the long term. An HCP will help meet these trust obligations by providing greater certainty in management, greater stability in harvest levels, and greater flexibility in operations.

According to the Endangered Species Act, the draft HCP is part of an application for incidental take permits and unlisted species agreements that will be submitted to the U.S. Fish and Wildlife Service and the National Marine Fisheries Service for review. The federal agencies will conduct a biological assessment and jeopardy analysis of DNR's HCP to determine whether the proposal complies with the Endangered Species Act. If the permits are issued, they will allow the incidental take on DNR-managed lands of northern spotted owls, marbled murrelets, and other listed upland species, and, on the west side of the Cascade Range, selected other species if they become listed. To minimize and mitigate the impacts of incidental take to the maximum extent practicable, DNR will implement the HCP.

Based on a careful review of the final HCP, Final Environmental Impact Statement, analysis of benefits and impacts to the trusts, results of the analysis by the federal agencies, other appropriate analyses, and public review, the Board of Natural Resources will determine whether to enter

into an agreement with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service.

Species Covered by the HCP

DNR's HCP provides mitigation for incidental take permits for two federally listed species — the northern spotted owl *(Strix occidentalis caurina)* and the marbled murrelet *(Brachyramphus marmoratus)*. The HCP also conserves habitat for unlisted species in western Washington for which DNR is seeking unlisted species agreements. These include western Washington runs of several salmonids, other federal and state candidate species (i.e., species proposed for listing), and other unlsted species west of the Cascade crest. In addition, although DNR does not expect to take any individuals of these species, it is requesting incidental permits for the other upland species listed by the federal government as endangered or threatened within the range of the northern spotted owl. These additional species are the Oregon silverspot butterfly *(Speyeria zerene hippolyta)*, the Aleutian Canada goose *(Branta canadensis leucopareia)*, the peregrine falcon *(Falco peregrinus)*, the bald eagle *(Haliaeetus leucocephalus)*, the gray wolf *(Canis lupus)*, the grizzly bear *(Ursus arctos)*, and the Columbian white-tailed deer *(Odocoileus virginianus leucurus)*. (See Chapter III for a discussion of habitat needs of the species covered by the HCP.)

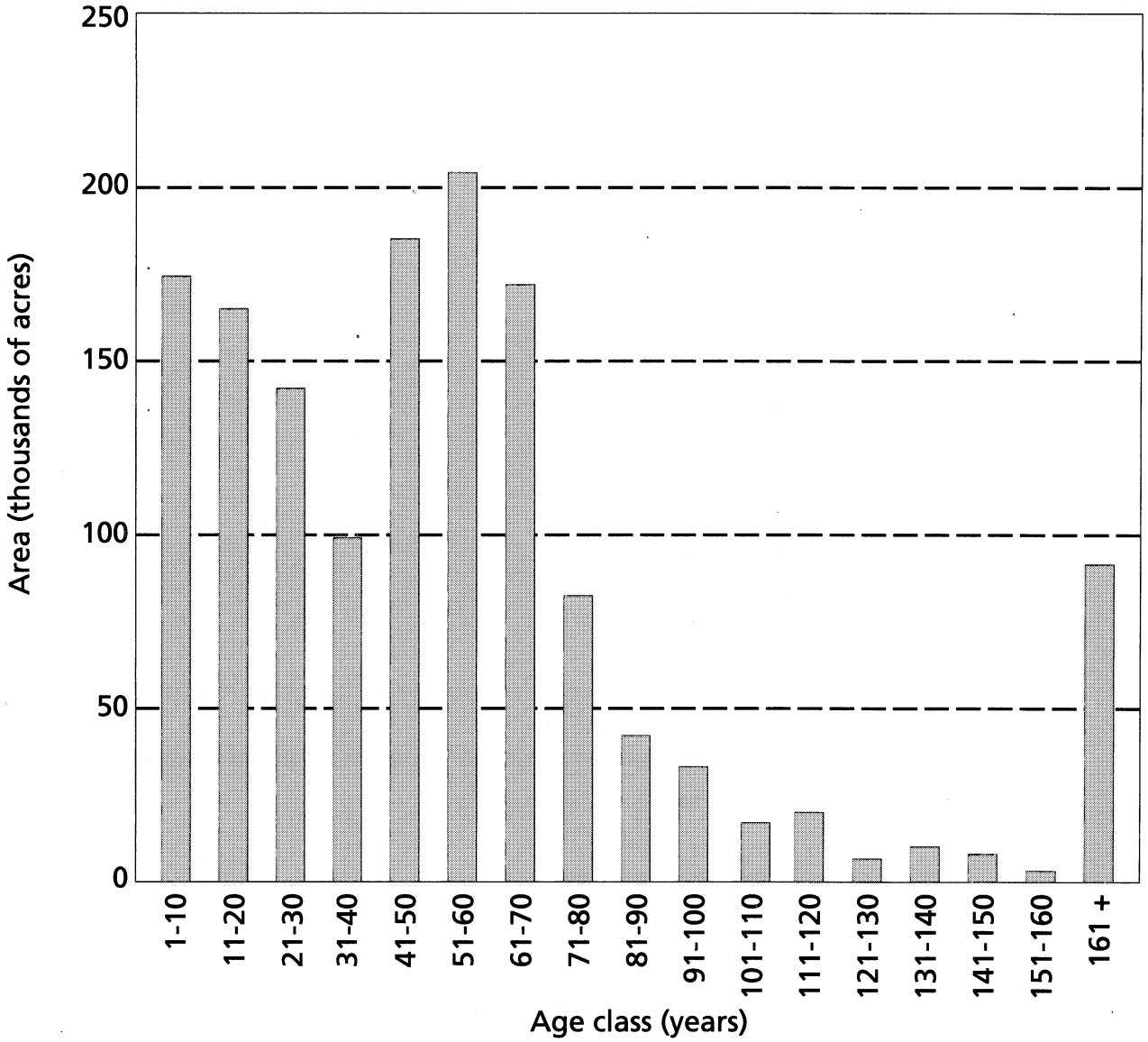
Land Covered by the HCP

In Washington, the range of the northern spotted owl includes all of the western part of the state as well as lands on the east slopes of the Cascade Range. This HCP covers all DNR-managed forest lands within the range of the northern spotted owl, excluding those lands designated as urban or leased for commercial, industrial, or residential purposes and those lands designated as agricultural. All DNR management activities on these lands are covered. The total area of trust lands covered by the HCP is approximately 1,630,000 acres, of which all but about 50,000 acres are forested. These lands range from scattered isolated parcels under 40 acres to large contiguous blocks in excess of 110,000 acres. The conservation strategies apply to lands DNR manages or will manage under the HCP; however, DNR is not precluded from buying, selling, or exchanging such lands as long as the overall integrity of the HCP is maintained. (See the Implementation Agreement for additional information.) Map I.1. shows DNR-managed lands covered by the HCP.

The majority of the forest on DNR-managed lands covered by the HCP is conifer. Less than 10 percent is in hardwood. Most DNR-managed lands have been logged at least once in the last 100 years. For DNR-managed lands covered by the HCP, approximately 1,421,000 acres are in even-aged stands and 155,000 acres are in uneven-aged stands. Map I.2 shows the location of these even-aged and uneven-aged stands. One-fourth of the even-aged stands are 20 years old or less, and more than half are 60 years old or less. Figure I.1. summarizes by age class the acreage of even-aged forests managed by DNR in the HCP area. Currently available information for uneven-aged stands describes the volume or number of trees in each of four size classes. Although most uneven-aged stands have trees in more than one size class, Table I.1 summarizes stands by the dominant size class for each stand.

Figure I.1: DNR-managed HCP lands by age class and area for even-aged stands

(Source: DNR GIS LULC coverage, April 1995)



CURRENT LAND USE

Of the 1,580,000 acres of forested land covered by the HCP, approximately 1,520,000 acres are in timber production. Special uses of forested land on the remaining 60,000 acres include old-growth research areas and gene pool reserves that DNR has deferred from harvest, riparian management zones, and recreation sites.

Table I.1: DNR-managed HCP lands by dominant size class and area for uneven-aged stands

Size class (diameter at breast height in inches)	Acres	Percent of uneven-aged acres
0-6	22,000	14.2
6-9	11,000	7.1
10-18	71,000	45.8
20+	51,000	32.9

ADJACENT OWNERSHIP

Although DNR-managed lands are distributed throughout the plan area, most tend to be adjacent to or near large blocks of federal land along the Cascade and Olympic mountain ranges. The major exception to this pattern is in southwestern Washington, where DNR manages more than 250,000 acres that are not near federal ownership.

DNR-managed lands covered by the HCP are interspersed among a variety of other ownerships as shown in Map I.3. Table I.2 summarizes the approximate acreage held by land owners and managers in the plan area.

Table I.2: Acreage by ownerships in the area covered by the HCP

(Source: DNR GIS MPL coverage, April 1995)

Landowner or manager	Acres	Percent of plan area
Private	9,488,000	44.4
U.S. Forest Service (national forests)	4,463,000	20.9
U.S. Forest Service (wilderness areas)	2,297,000	10.8
National Park Service	1,919,000	9.0
WA Department of Natural Resources	1,777,000[1]	8.3
Tribal lands	1,015,000	4.8
U.S. Department of Defense	123,000	0.6
WA Department of Fish and Wildlife	100,000	0.5
Municipal watersheds	101,000	0.5

Table I.2: Acreage by ownerships in the area covered by the HCP *(continued)*

Landowner or manager	Acres	Percent of plan area
State Parks & Recreation Commission	41,000	0.2
U.S. Fish and Wildlife Service	19,000	0.1
Other state lands	10,000	>0.1
U.S. Bureau of Land Management	5,000	>0.1

[1] Approximately 1,630,000 acres of this total are covered by the HCP.

NATURAL AREA PRESERVES AND NATURAL RESOURCES CONSERVATION AREAS

DNR also manages approximately 66,000 acres of non-trust lands as Natural Area Preserves and Natural Resources Conservation Areas. Natural Area Preserves provide the highest level of protection for excellent examples of unique or typical natural features of Washington. Natural Resources Conservation Areas are established to protect outstanding examples of native ecosystems, habitat for endangered, threatened, and sensitive plants and animals, and scenic landscapes.

Approximately 45,000 acres of these special lands lie within the area covered by the HCP. (See Map I.1.) Some of these lands currently provide habitat in areas identified as important for achieving the conservation objectives of the HCP. It is expected that these lands will continue to provide this habitat into the future because the legislature clearly intended for these special lands to be maintained for future generations. The purpose statement for the legislation that established Natural Area Preserves includes the following: "It is, therefore, the public policy of the state of Washington to secure for the people of present and future generations the benefit of an enduring resource of natural areas by establishing a system of natural area preserves, and to provide for the protection of these natural areas" (RCW 79.70.010). A similar commitment to the future is contained in the findings for the legislation that created Natural Resources Conservation Areas: "There is an increasing and continuing need by the people of Washington for certain areas of the state to be conserved, in rural as well as urban settings, for the benefit of present and future generations" (RCW 79.71.010). Land characteristics identified as worthy of conservation under this legislation include: areas that have high natural system and wildlife values, land or water that has flora or fauna of critical importance, and examples of native ecological communities.

While not subject to the HCP, DNR is given credit for the habitat contributions provided by these lands in terms of meeting the conservation objectives of the HCP. Whether these lands continue to provide such contributions to the conservation objectives, and the remedy if they do not, will be discussed at each of the scheduled comprehensive reviews. (See the Implementation Agreement.) DNR's management of the Natural Area Preserves and Natural Resources Conservation Areas is not expected to increase the level of take for any species covered by the incidental take permit. DNR's management of these lands shall maintain the conservation

objectives described in Chapter IV of this HCP. Should an unforeseen circumstance arise that increases the level of take, DNR will follow the process for making a major amendment to the HCP and the Incidental Take Permit as outlined in the Implementation Agreement. Management of Natural Area Preserves and Natural Resources Conservation Areas is not intended to alter DNR's obligations for mitigation as set forth in this HCP.

VEGETATIVE ZONES

Vegetative zones are broad areas that have similar types of vegetation. The HCP area includes land in the eight zones described below. These brief descriptions are followed by Table I.3, which lists selected plant species found in each zone.

Sitka Spruce Zone

Along the Pacific coast and extending inland up river valleys is a narrow band of vegetation where Sitka spruce is considered the climax species. This is the Sitka spruce zone. In most places, it is usually only a few miles wide and occurs where summer fog and drip precipitation are common. The climate in this zone is the mildest of any Washington forest zone. Winter rains are heavy, and snow is infrequent. Trees are tall, and stands are dense. Productivity and biomass are high, and there are relatively few hardwoods. Rain forests of the Olympic National Park are a special type of Sitka spruce zone.

Western Hemlock Zone

The western hemlock zone extends from sea level to 2,000 feet throughout most of Washington. The inland boundary of this zone coincides roughly with the western boundary of the national forests in the Cascade Range. The climax trees are western hemlock, with western redcedar in wetter areas and Douglas fir in drier areas. The forest canopy is dense, tall conifers. This forest zone is the largest in the state and contains some of the most productive and intensely managed forest lands. Most state forest land in western Washington is in this zone. However, because of its extent and accessibility, most of the western hemlock zone has been disturbed, logged, or burned at least once in the past 200 years. As a result, large portions are now dominated by Douglas fir in seral stands or contain mixtures of hardwoods. Even before settlement by Europeans, there were extensive Douglas fir stands, probably the result of old fires. Remnants of these original stands are commonly referred to as old growth. Red alder is a common pioneer species throughout the zone.

Climate in the western hemlock zone is mild, wet, and maritime. Snow is common but not persistent. The Puget Sound lowlands are considered a special type; forest composition is modified by the rain shadow of the Olympic Mountains and gravelly glacial soils.

Another type of western hemlock zone occurs east of the Cascade Range. Extensive stands of western hemlock and western redcedar occur in moist localities and along streams and rivers throughout northeastern Washington, as well as farther east. The trees, understory vegetation, and high precipitation give these inland stands their distinct maritime appearance.

Pacific Silver Fir Zone

The Pacific silver fir zone extends from about 2,000 to 4,000 feet in elevation in Washington. On the west side of the Cascades, it abuts the western hemlock zone at lower elevations and extends upward to the subalpine forest in the Olympic Mountains and Cascade Range. Pacific silver fir

community types are also found east of the Cascades. Throughout the zone, the climate is cool and wet, but the growing season is short. It is common in this zone for up to half of the annual precipitation to fall as snow and persist as winter snowpacks for three to seven months. Dense forests consist of tall conifers and patches of shrubby undergrowth. Huckleberry species are common. Douglas fir is also a major component of this zone.

Subalpine Fir/Mountain Hemlock Zone

Subalpine fir/mountain hemlock forests make up the highest forest zone in the Olympics and on both sides of the Cascade Range, extending from about 4,000 feet to the timberline. Mountain hemlock predominates at the lower elevations and is replaced by subalpine fir at higher elevations. The zone ends at the high altitudes in a mosaic of tree groups, glades and meadows. East of the Cascades and in the Okanogan highlands, subalpine fir is associated with Engelmann spruce. Scattered pockets of Engelmann spruce are also found on the eastside of the Olympics and west of the Cascades in the Mt. Baker-Ross Lake area. The subalpine zone is Washington's coolest and wettest forest environment. Forests here are dense and contain short to medium-tall conifers, often with an understory mixture of shrub and herbaceous vegetation.

Alpine Zone

Alpine meadows and high-altitude barrens are found in the Olympics and Cascades above timberlines. This zone lacks timber production potential. Vegetation consists of complex mixtures of forbs, grasses, sedges, and low shrubs. The several types of plant communities on Washington alpine lands are linked to local microclimatic variations of moisture, snowpack duration, and substrate. Winters are cold and long, and summers are brief. Growth, except for spectacular floral displays, is slow.

Grand Fir Zone

An extensive grand fir zone occurs below the subalpine forest in eastern Washington. From a management point of view, the grand fir zone and Douglas fir zone, with which it merges, are usually considered together. However, in an ecological sense, they should be considered separately. The grand fir zone is cooler and wetter than the lower Douglas fir zone, but warmer and with less snow accumulation than subalpine forests.

Douglas Fir Zone

The Douglas fir zone in eastern Washington is particularly dominate in the northern portion of the state. Subtle limitations of temperature and moisture are probably important in separating this zone from the moister grand fir zone and the drier ponderosa pine zone. At lower and drier elevations in Washington, Douglas fir is commonly bordered by a band of ponderosa pine that separates it from shrub steppe and grass communities of the Columbia Basin. Forests in both the grand fir and Douglas fir zones consist of dense medium and tall conifers. Where overstory density permits, understory vegetation may be of extensive brush or grass, depending on soil moisture content.

Ponderosa Pine Zone

The ponderosa pine zone, lowest of the forest zones in eastern Washington, occurs between 2,000 and 4,000 feet elevation. It typically borders the shrub-grassland zone, but in south central Washington, an Oregon white oak community is located between the two.

This zone is the driest of the Washington forest zones. Precipitation is low, especially in summer. Winter precipitation commonly falls as snow, which accumulates as a result of low temperatures. Summer days are hot and summer nights cool. The effective growing season is short and probably moisture-limited. Soil moisture regulates the distribution of understory vegetation, which ranges from brush to grass. The forest consists of dense to open stands of tall trees.

Table I.3: Vegetative zones in the area covered by the HCP

(Source: Franklin and Dyrness 1973)

Vegetative zone	Elevation range (feet)	Average precipitation (inches)	Major tree species	Common shrubs	Herbaceous plants
Sitka spruce	0 - 500	80 - 120	Sitka spruce, western hemlock, western redcedar, Douglas fir, grand fir, Pacific silver fir, red alder	red huckleberry, devil's club, salmonberry	sword fern, Oregon oxalis, false lily-of-the-valley, evergreen violet, Smith's fairybells
Western hemlock	0 - 3,000	60 - 120	Douglas fir, western hemlock, western redcedar, red alder, bigleaf maple	vine maple, Pacific rhododendron, creambush ocean-spray, California hazel, western yew, Pacific dogwood, red huckleberry, Oregon grape, salal, trailing blackberry	deerfoot vanillaleaf, evergreen violet, white trillium, sword fern, twinflower, Pacific peavine, common tarweed, white hawkweed, snow-queen, common beargrass, Oregon iris, western fescue, western coolwort, Hooker's fairybells, wild ginger, ladyfern, deerfern, Oregon oxalis
Pacific silver fir	2,000 - 4,500	80 - 120	Pacific silver fir, western hemlock, noble fir, Douglas fir, western redcedar	vine maple, salal, Oregon grape, red huckleberry, Alaska huckleberry, oval-leaf huckleberry, devil's club	beargrass, twin-flower, bunchberry dogwood, deerfoot vanillaleaf, queencup beadlily, dwarf blackberry, western coolwort, white trillium, ladyfern

Table I.3: Vegetative zones in the area covered by the HCP *(continued)*

Vegetative zone	Elevation range (feet)	Average precipitation (inches)	Major tree species	Common shrubs	Herbaceous plants
Mountain hemlock and subalpine fir	4,000 - 6,000	65 - 110	mountain hemlock, subalpine fir, lodgepole pine, Alaska-cedar	big huckleberry, oval-leaf huckleberry, Cascade azalea, blueleaf huckleberry, rustyleaf	beargrass, one-sided wintergreen, dwarf blackberry, Sitka valerian, evergreen violet, avalanche fawnlily
Alpine	4,000+	60-120		western cassiope, blueleaf huckleberry, red mountain-heath, luetkea	Alaskan clubmoss, mountain hairgrass, American bistort, Sitka valerian, showy sedge, feathery mitrewort, American false hellebore, arctic lupine, fireweed, black alpine sedge, alpine willowweed, slender hawkweed, fanleaf cinquefoil, smallflower paint-brush, western pasqueflower
Grand fir	3,500 - 6,500	25 - 50	grand fir, ponderosa pine, lodgepole pine, western larch, Douglas fir	common snowberry, shineleaf spirea, woods rose, Nootka rose, mallow nine-bark, creambrush oceanspray	pinegrass, north-western sedge, elk sedge, broadleaf arnica, kinnikinnick

Table I.3: Vegetative zones in the area covered by the HCP *(continued)*

Vegetative zone	Elevation range (feet)	Average precipitation (inches)	Major tree species	Common shrubs	Herbaceous plants
Douglas fir	2,000 - 4,500	30-60	Douglas fir, ponderosa pine, lodgepole pine, western larch	baldhip rose, Oregon boxwood, prickly currant, big huckleberry	Columbia brome, sweetscented bedstraw, starry solomonplume, western meadow-rue, heartleaf arnica, sideflower mitrewort, bigleaf sandwort, white hawkweed, twinflower, trail plant, Piper anemone, Lyall anemone, wood violet, white trillium, queencup beadlily, wild ginger, broadleaf lupine, dwarf blackberry
Ponderosa pine	2,000 - 4,000	15 - 30	ponderosa pine, western juniper, quaking aspen, Oregon white oak	Saskatoon serviceberry, chokecherry, blackhawthorn, creambush oceanspray, common snowberry, woods rose, Nootka rose, mallow ninebark, shinyleaf spirea, creeping western barberry, Wyeth buckwheat, snow eriogonum, yellow leafless mistletoe	bluebunch wheatgrass, Idaho fescue, Sandberg's bluegrass, western yarrow, western gromwell, yellow salsify, largeflowered brodiaea, beauty cinquefoil, purple-eyed grass, spreading dogbane, arrowleaf balsamroot, sagebrush, buttercup, low pussytoes, slender fringecup, littleflower collinsia, miner's lettuce, Japanese brome, cheatgrass brome, narrowleaved montia, smallflower forget-me-not, vernal draba, autumn willowweed, Nuttall's fescue, little tarweed, pink annual phlox, shining chickweed

CLIMATE

Washington's climate is controlled by three factors: (1) location on the windward coast of the Pacific Ocean; (2) the north-south Cascade Range that runs through the center of the state; and (3) the semi-permanent high- and low-pressure regions located over the north Pacific Ocean. These factors combine to produce dramatically different conditions within short distances. The Cascade Range, for instance, blocks the initial thrust of Pacific storms into eastern Washington while protecting western Washington from the polar-continental influence. Thus, western Washington has a marine climate and eastern Washington has a marine-continental climate.

Successive moisture-laden storms move into the Pacific Northwest during late fall, winter, and early spring. They are intercepted first by coastal ranges (the Olympic Mountains and Willapa Hills) and then by the Cascade mountains, leaving most of eastern Washington in a rain shadow with an almost desert-like climate. From late spring to early fall, the Pacific high pressure area moves progressively farther north, weakening storms and limiting rainfall.

Annual precipitation ranges from 75 inches along the coast to 175 inches along the western slopes of the Olympic Mountains and nearly 100 inches in the Willapa Hills. The rain-shadow effect of the Olympic Mountains results in only 16 to 25 inches on the northeast part of the Olympic Peninsula and in parts of the San Juan Islands.

From the Puget Sound lowlands south to the Columbia River, the mean annual precipitation is 40 to 60 inches. Precipitation increases along the west slopes of the Cascades, reaching 120 inches annually in some places. Striking gradations in precipitation totals are also noted on the eastern slopes of the Cascades, decreasing to an annual mean of 12 inches 40 miles from the crest and down to only 8 inches in the southern part of the central basin.

Approximately 80 to 85 percent of the annual precipitation falls between October and April in western Washington. The driest months are typically July and August. Above 2,500 to 3,000 feet, precipitation generally falls as snow from about November through March. Maximum snow accumulations in higher elevations normally occur in the last part of March or early April. Snow above the 5,000-foot level in western Washington may remain into July. Snowfall decreases rapidly on the east slopes of the Cascades as distance east of the crest increases.

The influence of the Pacific Ocean provides generally mild temperatures in western Washington. Winter minimums are 25° to 30° F and maximums are 40° to 45° F. July is the warmest month, with maximum temperatures of 65° to 75° F in the coastal areas and 75° to 80° F inland. Minimum temperatures average near 50° F. Temperatures are more extreme in eastern Washington because of the continental influence. January maximums there average generally between 30° and 40° F and minimums between 15° and 25° F. July maximums average 85° to 90° F and minimums 45° to 55° F.

Prevailing winds are generally southwesterly over the state from late fall to early spring and northwesterly and lighter during the rest of the year.

The most intense storms take place in late fall and early winter. Wind velocities range from 50 to 70 miles per hour or higher along the coast almost every winter. Speeds approaching or exceeding 100 miles per hour have been observed occasionally on coastal ridges. Wind speeds inland are lower during these storms but have been observed at 50 to 60 miles per hour.

Rain usually accompanies lightning storms. Western Washington has 10 to 12 such storms each year, mostly along the western slopes of the Cascades. There are about 25 lightning storms each year in eastern Washington, but they are usually accompanied by less rain. However, an outbreak of "dry lightning" typically occurs two to three times each year in eastern Washington and on rare occasions in western Washington.

In western Washington, the sun shines about 24 percent of the time in December. In July, the figure is typically about 61 percent. In eastern Washington, the sun shines 25 to 30 percent of the time in December and January, but the figure increases to 80 to 85 percent in July and August. Frost-free days in western Washington begin in late April and continue to early November, while in eastern Washington the frost-free period begins in late May and ends in late September.

Organization of the Planning Area

NATURAL SYSTEMS

As discussed earlier in this chapter, DNR-managed lands covered by the HCP include a complex mix of parcel sizes and configurations, vegetation types, and species of concern. To tie the minimization and mitigation more closely to the natural systems and geographic variations in habitat, to gain economies of scale, and to provide greater efficiency in planning, the area covered by the HCP has been divided into nine planning units based on watersheds. (See Map I.4.)

These planning units are delineated by clustering Water Resource Inventory Areas (as defined by the Washington Department of Ecology and commonly referred to as WRIAs) that drain to common water bodies. (See Maps I.5 - I.13.) For example, WRIAs that drain into Grays Harbor and Willapa Bay define the South Coast Planning Unit, WRIAs that drain into the Straits of Juan de Fuca define the Straits Planning Unit. Some planning units are modified to accommodate administrative boundaries; one example is the Olympic Experimental State Forest. Watershed-based boundaries have been recognized in making these adjustments by using Watershed Administrative Unit (as defined by DNR in cooperation with other agencies, tribes, and the public and commonly referred to as WAU) boundaries when possible. There are two exceptions: (1) the boundary separating the Straits and the Olympic Experimental State Forest planning units makes a short deviation due north from near Lake Crescent to the Strait of Juan de Fuca, and (2) the eastern boundary of the three planning units east of the Cascade crest is the eastern boundary of the range of the northern spotted owl. Planning units are named on the basis of where they drain (North Puget Sound) or general location (Klickitat).

The three east-side planning units form the east-side planning area and are included only in the conservation strategies and mitigation for the northern spotted owl and other federally listed species. (The marbled murrelet is not known to cross over the Cascade crest into the east-side planning area, and the unlisted species including salmon are not covered by this HCP in the east-side planning area.) Because of the unique history and role of the Olympic Experimental State Forest Planning Unit, its conservation strategies and mitigation for the spotted owl and riparian areas differ from the other planning units. (See the next subsection for a full explanation.) The remaining planning units west of the Cascade crest are referred to as the west-side planning area. Table I.4 describes major features and acreage of DNR-managed land for each planning unit and planning area.

Table I.4: Major features and acreage of DNR-managed lands by planning unit and planning area

Planning unit name and planning area	Counties and parts of counties containing DNR-managed lands in the area covered by the HCP	Major rivers	Acres of DNR-managed lands covered by the HCP
Chelan (east side)	Chelan and western Okanogan	Wenatchee, Entiat, Stehekin, Twisp, and Methow	15,000
Yakima (east side)	Kittitas and northwestern Yakima	Tieton, Bumping, Naches, Yakima, and Teanaway	81,000
Klickitat (east side)	southwestern Yakima, western Klickitat and southeastern Skamania	White Salmon and Klickitat	132,000
North Puget (west side)	Whatcom, Skagit, Snohomish, northern King, San Juan, and Island	Nooksack, Skagit, Sauk, Stillaguamish, Skykomish, and Snoqualmie	362,000
Straits (west side)	eastern Clallam, eastern Jefferson, and northwestern Mason	Elwha, Dungeness, Dosewallips, Duckabush, Hamma Hamma, and Skokomish	112,000
South Puget (west side)	southern King, Pierce, eastern Thurston, north-central Lewis, Kitsap, and eastern Mason	Cedar, Green, White, Carbon, Puyallup, Nisqually, and Deschutes	144,000
South Coast (west side)	Grays Harbor, western Thurston, Pacific, and western Lewis	Quinault, Humptulips, Chehalis, Hoquiam, Wishkah, Wynoochee, Satsop, Black, Skookumchuck, Newaukum, North, Willapa, and Naselle	234,000
Columbia (west side)	eastern Lewis, southeast Pacific, Wahkiakum, Cowlitz, Clark, and Skamania	Cowlitz, Toutle, Coweeman, Kalama, Lewis, Washougal, Wind, and Grays	286,000
Olympic Experimental State Forest (separate planning area)	western Clallam and western Jefferson	Hoko, Quileute, Soleduck, Calawah, Bogachiel, Hoh, Clearwater, and Queets	264,000

WHY THE OLYMPIC EXPERIMENTAL STATE FOREST PLANNING UNIT IS UNIQUE

The Olympic Experimental State Forest Planning Unit (also referred to as the OESF and the Experimental Forest) is unique among planning units in this HCP because of its experimental nature, integrated approach to management, and planning history. The long-term vision for the Experimental Forest is of a commercial forest in which ecological health is maintained through innovative integration of forest production activities and conservation.

This vision evolved from recommendations of the Commission on Old Growth Alternatives before the listing of the northern spotted owl and marbled murrelet. The Commission's intent was for DNR to avoid management disruptions from future listings and conservation issues by learning to manage for healthy ecosystems that included older forest features. A look back at the Old Growth Commission's original recommendation reveals this visionary nature of the OESF, looking beyond the needs of individual species to the ecological values of old-growth forests as a whole and to the relationships between forest management activities and the complex ecosystem relationships within forests:

> The Commission believes that the ecological values of old-growth forests include but go beyond spotted owl habitat. Scientists are only just beginning to understand the complex ecosystem interrelationships in these forests, and the comparatively lower elevation mature forests remaining on state lands have particularly rich diversity. Forest scientists and managers are increasingly discussing the ability to sustain key elements of ecological diversity within managed commercial forests as an alternative to past approaches. The Commission sees a clear need for further research in this area and a great opportunity to conduct it on state-owned lands. The intent is to experiment with harvest and regeneration methods to enhance habitat characteristics and commodities production. The Commission believes this recommendation may lead to entirely new models of forestry including workable alternatives which balance production with ecology (Commission on Old Growth Alternatives for Washington's Forest Trust Lands 1989 p. 2).

The OESF was included in the 1992 Forest Resource Plan as a "state forest that will be managed separately from other lands in western Washington" (DNR 1992 p. 21). See Chapter II for a discussion of the Forest Resource Plan.

The Experimental Forest's planning history has led to a strategy that differs from the other planning units in both concept and detail by combining conservation, production, research and monitoring, innovative silvicultural techniques, and communication and education in a unified effort. The aim will be to learn how to manage the forest so that habitat conservation and timber production are melded across the landscape, rather than separated into designated areas.

In addition to providing income and other benefits to the trusts, the OESF will help find field-tested solutions to forest management issues related specifically to integrating production and conservation. Through the Experimental Forest, DNR will actively question its knowledge about the relationships between forest ecosystem functions and forest management activities. It will explore these questions through monitoring and research and by sharing knowledge with and seeking insights from other profession-

als and publics around the world. As the research provides new information, management activities will be adapted accordingly. Ultimately, what is learned in the OESF can be applied where appropriate to other DNR-managed forest lands. (See also Section E of Chapter IV on the OESF Planning Unit.)

The Experimental Forest is included as a planning unit of this HCP in order to fulfill one of the stated purposes of the proposed action:

> To enable DNR to conduct management and research activities within the OESF in areas currently occupied by listed species in order to build new knowledge relevant to trust management obligations and species conservation. (See also the Draft Environmental Impact Statement.)

There are three components of this experiment: (a) habitat conservation strategies based on an experimental concept of an "unzoned" forest, that is, a forest without areas deferred from timber management; (b) a commitment to monitoring, research, and information sharing as the basis for experimental management; and (c) creation of a process for integrating intentional learning with management decision making and course adjustments.

The following points summarize the objectives of the Experimental Forest:

(1) The OESF is DNR's focal point for experimentation. Information gained from the experimentation will be applied to other DNR-managed lands where and when appropriate. DNR will share the information gained with other interested parties in order to ensure that the maximum benefit is achieved through DNR's investment in the Experimental Forest.

(2) In the OESF, DNR will seek to answer questions about integrating conservation and production. DNR will explore the links between management activities and ecological processes and functions at both the landscape and the stand levels.

(3) DNR will acquire knowledge to enhance trust land management through active monitoring, a targeted research effort, and the promotion of cooperative research projects.

(4) Through time, DNR will demonstrate a process by which trust land management activities in the Experimental Forest can respond to new information.