

GESTURES OF STONE AND WATER

A NATURAL HISTORY OF THE WENATCHEE WATERSHED

The craggy, windswept summit of Mount Stuart in Washington's central Cascades feels like the top of the world. Granite walls plunge into glaciers and snowfields, and surrounding peaks fall away in a dizzying whirl. When the wind eases, the rush of meltwater streams thunders softly in canyons far below.

For the Wenatchee watershed—nearly a million acres of converging ridges and flashing river canyons—9,415-foot Mount Stuart is the top of the world. From there, nearly fifty miles north to Chiwawa Mountain and half that distance southeast to Mission Ridge, a spectacular jumble of snowy peaks and ridges spills east in a grand gesture from Cascade crest to sagebrush steppe. The Wenatchee River and more than a dozen free-flowing tributaries gather the meltwaters of this mountainous country and usher them to the Columbia River. Together they drain one of the wildest, most biologically diverse and ruggedly beautiful landscapes in the Pacific Northwest.

Heavy blankets of winter snow compress into glacier ice on headwater peaks; precipitation there can reach 180 inches per year. Thirty to fifty miles east a mere ten inches of snow dusts the lowland sagebrush steppe. Between these climatic poles the watershed supports a nearly intact ecosystem with a diversity of plants and animals that is stunning.

Coastal forest species mingle comfortably with species common to the Rocky Mountains and Columbia Plateau. Endangered mammals like grizzly bear, wolf, and lynx pay periodic visits to the Wenatchee country, and threatened bald eagles and spotted owls find refuge in the lower forests. Chinook salmon and steelhead migrate 460 miles up the Columbia River to spawn in the watershed's clean-washed gravels. And sockeye return each year to their home streams above Lake Wenatchee.

The watershed harbors the highest occurrence of rare plants anywhere in the Washington Cascades. Summer brings nesting neotropical songbirds from as far south as Argentina. In winter elk and mule deer browse among valley bottoms. And year-round recreationists flock to these forested slopes and river valleys on migrations of their own.

This diversity reflects a complex interaction of geology, climate, topography and natural disturbance. Ultimately all harken back to the forces that created and shaped this dramatic landscape.

Mount Stuart and its surrounding peaks are part of a huge granite batholith, an intrusion of molten rock that cooled slowly beneath the earth's surface. Other rocks in the watershed derive from ocean bottom basalts or sediments like sandstone and siltstone. Some eroded into basins to form younger sediments such as those seen between Wenatchee and Leavenworth. Others were plunged into the earth's depths and forged into metamorphic rocks like gneiss and schist that dominate much of the central watershed.

Nearly all these rocks were part of an ancient land-mass called the North Cascades microcontinent. Formed in the ancestral Pacific and carried as part of a drifting plate, it was rafted onto the shore of North America some forty to fifty million years ago in a slow and tumultuous collision. Rocks were bent, buckled and broken. Some were moved great distances along faults or crammed miles beneath other rocks.

During the past ten million years tectonic forces lifted these rocks into a spectacular range of mountains. Botanist David Douglas noted them in 1823 as the Cascade Mountains, the range of falling water. Almost immediately as they rose the rainfall they trapped from ocean-born winds began the slow process of wearing them away.

The land's final sculpting came during the past two million years of the Pleistocene. Alpine glaciers formed high on mountain flanks and carved scenic cirques, lakes, and high-country basins like Enchantment Lakes. On at least three occasions glaciers flowed down valleys to carve the U-shaped troughs of Ingalls, Icicle, and Nason creeks and the Wenatchee, Little Wenatchee, White, and Chiwawa river valleys. Alpine ice carved Lake Wenatchee and Fish Lake, but reached only a few miles farther south. The magnificent Tumwater Canyon of the Wenatchee remains a steep, V-shaped, river-carved gorge.

The vast Cordilleran ice sheet, which covered the northern third of Washington at the end of the Pleistocene, never reached the Wenatchee country. This allowed the area to serve as an Ice Age refuge for plants and animals that were erased from large expanses to the north. As a result of this—and the diversity of habitats and niches found here—the Wenatchee watershed harbors more rare and endemic plants (plants that occur nowhere else) than any area in the northern Cascades.

This species richness echoes throughout each of the watershed's habitats, from exposed alpine ridges through a mosaic of

mountain forest communities to bitterbrush and sage-covered steppe.

At upper elevations near the Cascade crest, moist Pacific air lends a maritime influence to alpine habitats. Winter storms and heavy snows force short growing seasons. Hardy plants like Lyall's rockcress and spotted saxifrage bloom in cracks and ledges on alpine cliffs; mosses and mountain lupine fringe boulders and talus slopes. Few animals make their homes year-round under these extreme conditions, but mountain goats browse cliffside plants in summer, migrating a few miles downslope during winter snows. Golden eagles nest on cliff faces, and colonies of pikas inhabit rockslide burrows.

As slopes lessen and ridgetops lose their snow, dazzling subalpine meadows emerge. Soft white pasqueflower, fields of bistort, beds of white and pink mountain heather, and splashes of crimson paintbrush bloom among rushes, sedges, and grasses. Marmots thrive here, hibernating through the snow-deep winter. Mule deer browse the rich summer meadows, and black bears climb to the late-summer meadows for berries.

Here the highest trees test the extremes of growth: storm-dwarfed krummholz hug rocky ridges, while whitebark pines welcome winter snows with magnificent outstretched crowns. The raspy calls of Clark's nutcracker are never far off. Subalpine larch reflect harsh conditions with craggy, wind-sculpted branches. Nearby, subalpine fir shed winter snows with short, flexible limbs. Able to reproduce by rooting its lower branches, subalpine fir dominates the high meadows. It punctuates the open landscape in islandlike clusters or forms scattered mixed stands with mountain hemlock and Engelmann spruce.

Silver fir and Alaska yellow cedar signal a transition to montane forests that mantle middle and lower mountain slopes. Moisture falls off rapidly with elevation loss and distance from west to east, and slopes are usually free of snow by late spring. Deer and elk arrive then to feed on understory shrubs, and red-breasted nuthatches and chestnut-backed chickadees sing in the forest canopy. Old-growth stands of western hemlock and red cedar shade valley bottoms in the upper watershed and provide critical habitat for a number of threatened species. Farther east, warmer, dryer forests of grand fir, Douglas-fir, western larch, and ponderosa pine dominate, home of that sharp-eyed forest hunter, the goshawk.

Wildfire plays a key role in the ecology of these dryer forests. Historically low-intensity fires burned through them every fifteen to thirty years. Wildfire rejuvenates forest ecosystems by recycling nutrients, thinning stands, reducing competition and selecting for large, thick-barked, fire-resistant trees. Some species, like lodgepole pine and Thompson's clover, are dependent on it.

With the onset of effective fire suppression in the 1930s—and intensive logging in the decades that followed—old, fire-resistant trees were replaced by crowded stands of Douglas-fir and grand fir. Low limbs and a litter of down wood now place them at risk of catastrophic fire, as occurred in 1994 when tens of thousands of acres burned in Icicle and Tumwater canyons, Peshastin Creek, and Entiat Ridge. Crowded, drought-weakened stands can become stressed and susceptible to insect infestation and disease. Restoring these stands to a healthier condition is a major challenge facing forest managers.

Along with fire, summer drought shapes the nature of plant communities, particularly in the lower watershed. Here a second timberline is demarcated by a severe lack of moisture. Historically this lower limit of forest was the realm of grassy, parklike stands of ponderosa pine. Their openness was maintained by frequent, low-intensity fires that killed young trees but left their thick-barked elders unharmed. Unfortunately the old ponderosas were prized by lumbermen and few original stands remain. Denser forests of ponderosa and shade-tolerant Douglas-fir and grand fir have taken their place. Some undisturbed ponderosa woodlands are still found in the Mission and Peshastin creek drainages and a few other areas. They are homes to flammulated owls, pygmy and white-breasted nuthatches, and rare white-headed woodpeckers.

In dry country, the bands of moist leafy growth that border streams, lakes and wetlands are invaluable nesting and resting sites and important migration corridors for a wealth of wildlife. Deciduous trees like cottonwood and maple, and leafy shrubs such as willow, service berry and red osier dogwood provide food and cover to innumerable songbirds, amphibians, and mammals small and large. Deer and elk seek these areas in spring for fawning and calving; in summer they rest in the leafy shade. Beaver, mink, and raccoon are found here. Wood duck and goldeneye nest in cavities of cottonwood snags along with a surprising number of birds and denning mammals like pine martin and river otter. Overhanging brush shelters salmon and trout and nourishes the insects that feed them. These moist corridors occupy only a fraction of the landscape but may offer seasonal habitats to as much as ninety percent of forest wildlife.

Beyond the trees stretches a transition zone of bitterbrush that grades into the sagebrush steppe of the Columbia Plateau. Spring brings an explosion of bright yellow balsamroot to this low, rolling country, and migratory songbirds set it noisily to life. Snowshoe hares peer from the shade of shrubs, and pocket gophers riddle the ground with burrows. During winter, sulfur buckwheat and bitterbrush, service berry and other shrubs provide critical browse for deer and elk. Few true sagebrush grassland communities remain in the watershed but they dominate the plateau country east of the Columbia.

The exceptional diversity of the Wenatchee country extends well beyond habitat types and elevational zones. The watershed also harbors unique environments where a confluence of geologic and climatic factors have created pockets of natural extravagance. Fish Lake Bog, the only sphagnum bog in the watershed, features a garland of rare plants and serves as a Noah's ark for wildlife. The wetland is home to beaver, otter, and muskrat as well as sandhill cranes, osprey, nesting bald eagles, turkey vultures, Canada geese, wood ducks, goldeneyes, rough-skinned newts and Cascade frogs, to name a few. Not far away, Tumwater Botanical Area hosts lovely flowering displays of Tweedy's lewisia and other rare plants. West of Leavenworth groves of quaking aspens and surrounding pines grace Camas Lands, open meadows where the endemic Wenatchee larkspur is found along with the equally rare and endangered Wenatchee checker mallow. These meadows also supplied Native Americans with camas and wild carrot root, food sources second only in importance to salmon.

Evidence of people in the Wenatchee River country goes back thousands of years. Early inhabitants mastered the use of native materials for tools, clothing and shelter. They learned the habitats and uses of plants and the ways of animals. A seasonal round of fishing, hunting, gathering, and storing allowed the people to thrive.

Their season began in March with root gathering from winter pit houses or mat lodges along the Wenatchee River. As spring progressed they turned to early season salmon runs that filled the rivers. By midsummer, lowland berries were ripening: service berry, elderberry and wild current. In late summer mountain huckleberries were ripe, and deer, bear, and marmot were growing fat in the windy meadows. Winter was a time for tool making, artistic basketwork, and of course, songs and stories.

Descendants of the Pisuouse people live on the nearby Colville and Yakama reservations. Some still return to the Wenatchee watershed to gather, fish and hunt. They are joined now by thousands who come from near and far to immerse themselves in the beauty and richness of this remarkable country. A century ago the first steps were taken to conserve the resources of this country with the establishment of the Wenatchee National Forest. Since then more than a third of the watershed has been preserved within three congressionally-designated wilderness areas. By statute, wilderness is a place "where the earth and its community of life are untrammelled by man."

Today, careful stewardship by the Forest Service, local residents, and appreciative visitors continues a 5,000-year heritage of human involvement with this stunning landscape. And the beauty of its life forms, its gestures of stone and water continue to find voice in the stories, songs and artwork of the human hearts they touch.

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