Plants of the Rogue Valley

North Mountain Park Nature Center

A division of the Ashland Parks and Recreation Department

Version 2: September 2012

About this booklet

A student journals in a garden at North Mountain Park.

This booklet is an introduction to the North Mountain Park Nature Center's interpretation of regional plants. It explores local plant communities, human plant use, and the impact of use upon the local environment. The term "local" refers to the Rogue Valley of southwest Oregon, with an emphasis on the Ashland area.

This booklet is not meant to be a technical work but rather is to be used by educators and others seeking an introduction to the topic of local plants. We hope that readers of this booklet will be inspired to use this information to help make decisions that will enhance the livability of the Rogue Valley for its people, plants and wildlife now and in the future.

A student removes invasive poison hemlock at North Mountain Park.

Sources Cited:

Donn Todt, horticulturalist,
City of Ashland, Parks and Recreation
Frank Lang, botanist, professor emeritus,
Southern Oregon University
Tom Sensenig and Patricia Martinez, ecologists,
US Forest Service
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Cover: *red-flowering currant*

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Introduction to Plants of the Rogue Valley

All living things have evolved to utilize and support each other, and nowhere is this more evident than with the relationship between humans and plants. At the most basic level, the very act of taking a breath is only possible because of the process whereby green plants convert sunlight to energy and produce a bi-product called oxygen.

Above: *Green plants convert sunlight to energy and produce oxygen.*

Below: *Baldhip rose hips provide a good source of vitamin C. They were likely used by both Native Americans and early pioneer settlers.*

In the Rogue Valley of southwestern Oregon, native peoples interacted with, used and supported native plants for more than10,000 years. As a result, the people and plants of this region evolved an interdependency which kept both the plant and human communities healthy and diverse.

These ecological and cultural relationships were drastically altered with the relatively rapid European migrations of the last 200 years and the resulting shift to a reliance on domesticated plants.

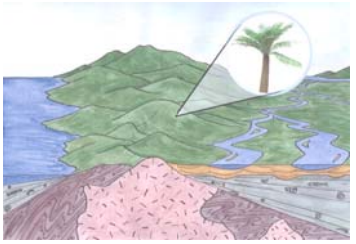
The Rogue Valley of today is a very different place, both in terms of its plants and its people, than it was two centuries ago. As a result, today, this valley supports a complex mixture of plants, some of which evolved with the local geography and climate and others that originated in very distant parts of the world. The look of this landscape will continue to change as the combined effects of people and nature continue to influence the plants of the Rogue Valley.

Pear orchards stand in contrast to the native plant communities of Table Rocks.

Plants Evolve as Mountains Rise

In order to understand the current plant communities of the Rogue Valley, it is important to remember that plants evolved and diversified while the landmass of southern Oregon itself was growing and changing. The Klamath mountain chain formed 160 million years ago, meaning that the first land plants to arrive in this region would have migrated by dispersal from the existing North American landmass to the east. During this time, the climate was warm and tropical. Non-flowering plants, such as ginkgos and tree-ferns, would have been among the first to colonize this new region.

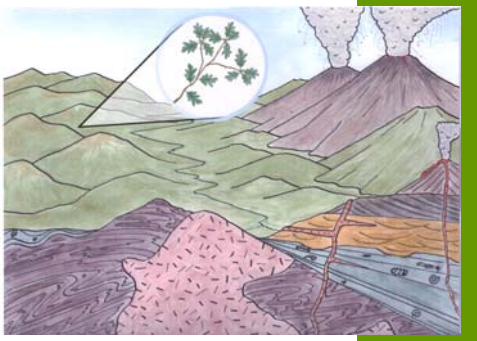
Jurassic Period, 150 MYA



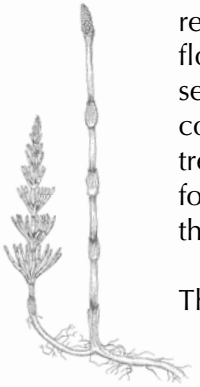
Paleogene Period, 35 MYA

Over the next hundred million years, plants continued to migrate west and become established along the new Klamath mountain chain. At the same time, rivers carrying large amounts of sand and sediment filled in the Rogue Valley floor. The climate became even more tropical while palm trees and green ferns began to dominate the landscape.

Roughly 20 million years ago, the creation of the Cascade Mountains on the east side of the valley along with a continued warming trend, led to the expansion of a heat-loving chaparral community. At the hottest period of this warming trend, ecologists believe that much of the chaparral was replaced by grasslands along the valley floor. Eventually, the Rogue Valley settled into its familiar geographic condition, and with the recent cooling trend, oak woodlands and coniferous forests became established throughout the watershed.



Neogene Period, 8,000 YA



The Rogue Valley is home to a very ancient genus of plant known as *Equisetum*. Giant horsetail and scouring rush are living fossils which have existed for over 100 million years.

Giant Horsetail *Equisetum telmateia*

Native Plant Communities

Plant communities are defined by those species that are most obvious, i.e. large or abundant, in a given environment. The species found in a particular plant community have similar requirements and tolerance for the existing conditions, including soil type, precipitation, temperature, humidity, topography, geography, fire regime, and human influences.

In the Rogue Valley, native plant communities are greatly influenced by regional geography. With the granitic and metamorphic Klamath-Siskiyou Mountains to the west, the mostly volcanic Cascade Mountains to the east, and the sediment-rich valley floor, the valley is home to a tremendously varied landscape with remarkable plant diversity.

Sub-Alpine

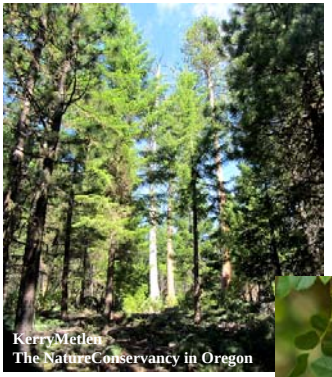
From top: *Mt. Ashland, courtesy of Patrick Alexander; Douglas-fir; Indian paintbrush;*

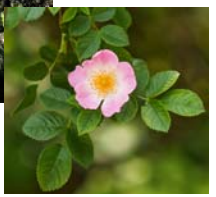
Right: *California hazelnut*

This area extends from the upper mountains to the tree line and is characterized by high elevation rugged terrain. Sub-alpine vegetation is made up of partially forested species of mostly conifers interspersed with open areas of grasses, forbs and shrubs. At the highest elevation of this zone, trees, which can grow gnarled and bent, become clumped into protective islands. From about mid-July to late August wildflowers can be seen in abundance. The best place to access the sub-alpine community is at the top of Mt. Ashland.

Species of the sub-alpine zone: white fir, Shasta red fir, Douglas-fir, incense cedar, Pacific yew, sugar pine, ponderosa pine, mountain hemlock, Douglas maple, black huckleberry, snowbrush, California hazelnut, serviceberry, wild gooseberry, green-leaf manzanita, desert trumpet, Indian paintbrush, sagebrush, white alder, and snowberry.

Mixed Conifer





From top: *Conifers; rose; green-leaf manzanita*

This zone includes a variety of conifers, which are the dominant species, with a spattering of hardwood species throughout. There is also a sparse understory layer made up of mostly shrubs. This community is adapted to frequent fire, low annual precipitation and long summer droughts.

To view this eco-region up close, hike the trails through the upper Ashland Watershed.

Species of the mixed conifer zone: Douglas-fir, incense cedar, Pacific yew, sugar pine, ponderosa pine, mountain hemlock, willow, rose, black huckleberry, snowbrush, California hazelnut, Oregon grape, serviceberry, green-leaf manzanita, wild gooseberry, and red-flowering currant.

Chaparral

The plants in the chaparral zone are adapted to a Mediterranean climate of mildish winter temperatures and hot, dry summers. The main feature of the chaparral is the collection of multi-stemmed shrubs that are adapted to growing very close together. This arrangement is most likely an adaptation which helps to eliminate understory species that would otherwise compete for essential nutrients and moisture. Most of the plants living in the chaparral have small, hard leaves which are adapted to holding moisture. Fire is essential to the health of a chaparral community and some plants help to fuel fire with their sticky resins. In return, their heat-dependent seeds are able to germinate. Hike the trail to Table Rocks to view these species.

Species of the Chaparral: buckbrush, white-leaf manzanita, mountain mahogany, rabbitbrush, deerbrush, three-leaf sumac, tarweed, lupine, and Indian paintbrush.

Clockwise from top: *Chaparral, tarweed, rabbitbrush, three-leaf sumac,*

Right: *Buckbrush*

Oak Savanna

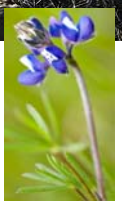
From top: *Oaks; ponderosa pine; poison oak* **Left:** *Oregon white oak*

Also indicative of a Mediterranean climate, the oak savanna foothills of the Rogue Valley are dominated by oak woodlands with a scattering of shrubs and an understory of native bunchgrasses and flowering herbs. Oak savannas are adapted to frequent, low-intensity fires. Such fires prevent encroachment from conifers and shrubs and result in the production of mature stands of oak trees. Due mainly to fire suppression, oak savannas are shrinking and being converted to oak woodlands. Savanna communities can be seen at Roxy Ann Butte, northeast of Medford, and the Whetstone Savanna, maintained by the Nature Conservancy.

Species of the Oak-Savanna zone: Oregon white oak, California black oak, ponderosa pine, incense cedar, madrone, poison oak, snowberry, buckbrush, mountain mahogany, white-leaf manzanita, bunchgrass and Indian paintbrush.

Grassland

Prior to the introduction of non-native grasses that came with domestic cattle and sheep, grassland habitats supported native perennial bunchgrass. In this drier environment, bunchgrasses produce deep root masses which allows them access to water. These grasslands, which contained very few trees, supported a variety of flowering herbs. Most of the valley's grasslands have been converted to agricultural or urban land. One area of remaining native grassland regions can be seen on the west bluff above Wright's Creek in Ashland.



Above: *Blue-eyed grass; native bunchgrass*
Right: *Miniature lupine*

Species of the grassland zone: yarrow, blue dicks, Lemon's needlegrass, Idaho fescue, blue wildrye, California fescue, and miniature lupine.

California black oak

Riparian

Moist and highly productive communities are found along the lower elevation streams of the watershed. These corridors support plants with roots that are adapted to seasonally saturated soils low in oxygen. Most of the trees that grow along the riparian corridors within the Rogue Valley are large and deciduous, providing a significant amount of shade to Bear Creek and it's tributaries. Riparian corridors and valley bottoms team with diversity and provide shelter and forage for many species of animals. To enjoy this lush habitat type, visit the riparian areas of North Mountain Park or walk or ride along the extensive Bear Creek Greenway.

From top: *Bear Creek; red-twig dogwood flower; willow; scouring rush.*

Species of the Riparian zone: coyote willow, dogbane, red-twig dogwood, big leaf maple, white alder, Oregon ash, black cottonwood, scouring rush and bulrush.

Plant Communities of the Rogue Valley

The Rogue Valley watershed supports a variety of different eco-regions defined by a mosaic of unique plant communities.

Sub-Alpine

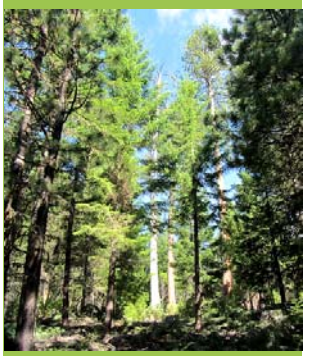
Chaparral

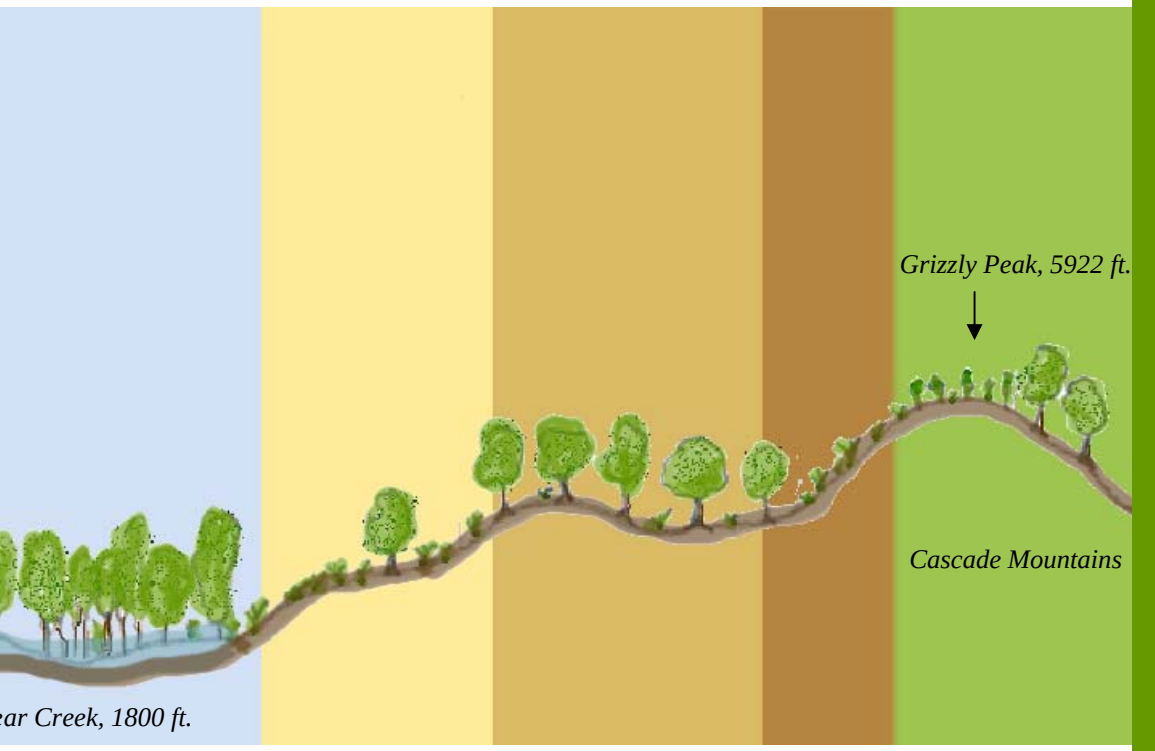
Grassland

Riparian

Oak Savanna

Mixed Conifer



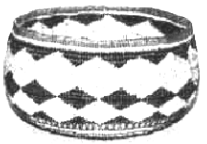


Native American Use of Local Plants

Native Americans have been a part of the landscape of the Rogue Valley for at least 10,000 years. Three tribes called the Rogue Valley home at the time of Euro-American contact: bands of Shasta inhabited the Bear Creek valley; Takelma tribes resided along the Rogue River around Table Rocks; and the Athabaskans could be found along the Applegate and Illinois rivers. Each tribe spoke its own language and had unique nuances to its cultures, but all shared a way of life based on hunter/gatherer subsistence, a "seasonal round" pattern of movement and a belief in their role as land stewards.

Top: *Oregon white oak*

Right: *Basket*



Native Americans of the Rogue Valley, as indigenous people everywhere, had an intimate knowledge of the plants in their region. This knowledge was gained over thousands of years and passed on by demonstration and through the oral tradition of storytelling. Over time, the people learned that acorns were a reliable source of food but could only be eaten after leeching out the poisonous tannic acid. They also learned that the wood from pacific yew trees made strong and pliable bows, the stems of the blue elderberry plant hollowed out by an insect could be made into flutes, hazelnut and willow made beautiful and functional baskets, and dogbane and stinging nettle could be worked into strong cordage.

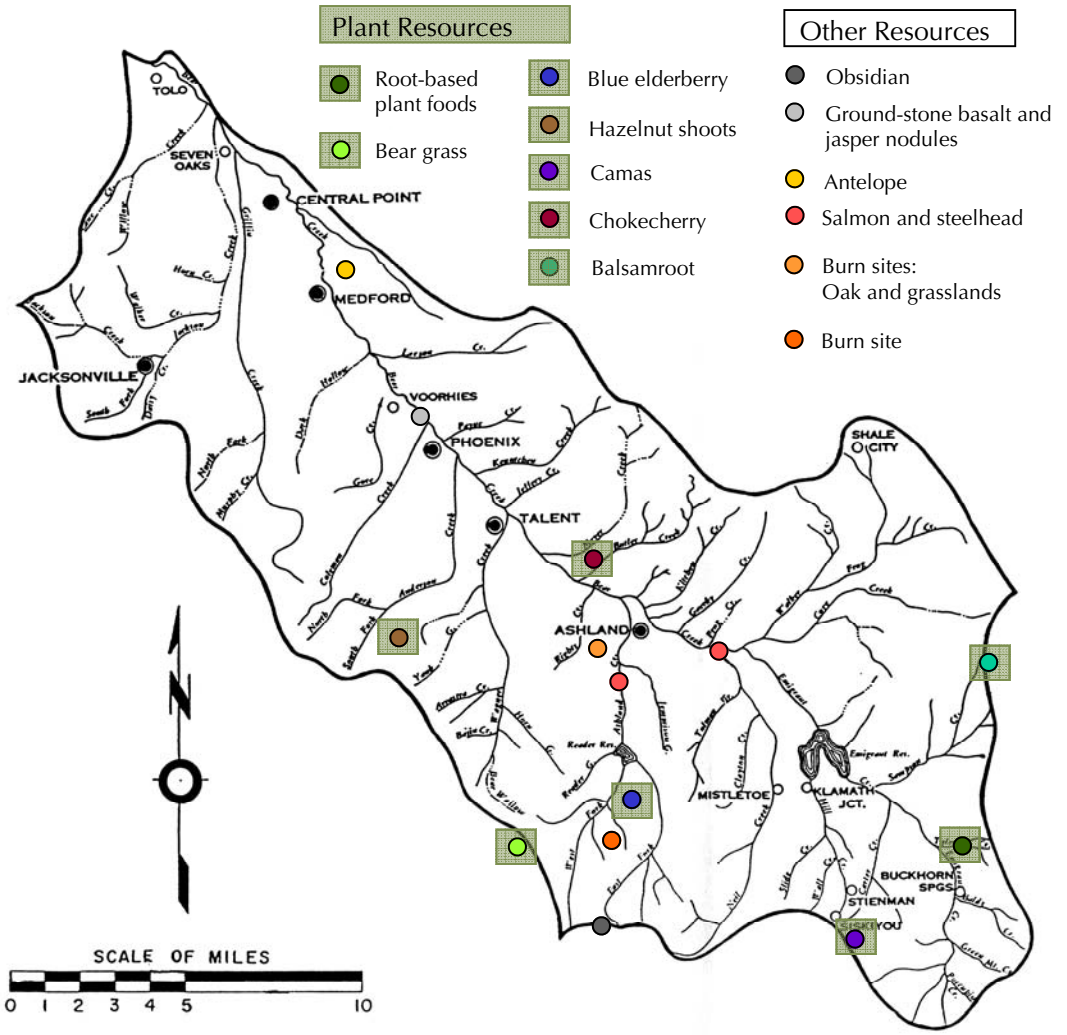
The tribes of the Rogue Valley also managed the plants they relied upon in a variety of significant ways, applying techniques such as selective harvesting, pruning, transplanting, and, in the case of tobacco, cultivation and fertilization. Of all their management tools, the most important was the use of fire. Human-controlled fire was a vital tool used to manage numerous individual plant species and entire plant communities. Fire was used throughout the valley to burn off understory trees and shrubs, creating grazing areas for wild game such as deer and elk, and to maintain open stands of oak trees, allowing easy access to acorns.

Annual burning of tarweed fields made harvesting seeds easy.

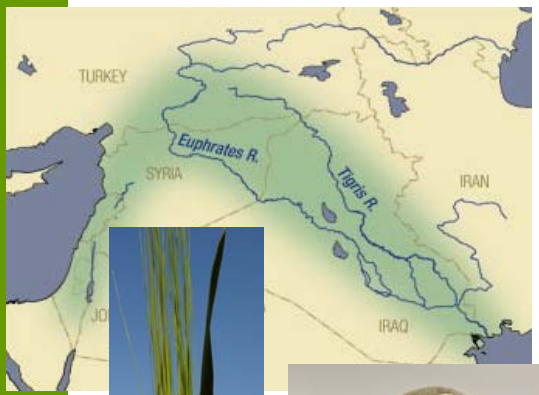
Fire was also used to burn tarweed fields before harvesting the roasted seeds, to thin thimbleberry patches, and to encourage the growth of tall straight shoots of willow and hazelnut needed for basket making.

Vegetation was also managed on a spiritual level. By ascribing spiritual powers to plants, local Native Americans encouraged the sustainable use of these resources and discouraged waste or overexploitation. The Native Americans believed that treating plants in a disrespectful or wasteful manner could result in negative consequences, such as a drought or famine. They believed that people and the plants that surrounded them were spiritual equals.

Traditional collection sites within the Bear Creek Watershed



Native Plants Become Domesticated



Clockwise from top: *The Fertile Crescent; early legumes; wheat*

Prior to the rise of agriculture, hunter/gatherer cultures around the world developed a thorough knowledge of how to find, process, use and manage the plants in their local region. Over time, people discovered that certain plants gathered in the wild could also be grown and managed so that their reproduction could be controlled and specific desirable traits chosen. Plant domestication occurred originally about 10,000 years ago in the Fertile Crescent region near present day Iraq. Some of the first plants to be domesticated included cereals (wheat and barley) and legumes (peas and lentils).

Significant domestications also occurred in China (millet, rice and soybeans), West Africa (sorghum, yam, watermelon), India (black beans, flax, cucumber), the Andes (quinoa, lima bean, peanut, potato) and MesoAmerica (corn, beans, squash). It took several hundred years, but eventually migration, trade and conquest made all of these domestic plants available to people around the globe.

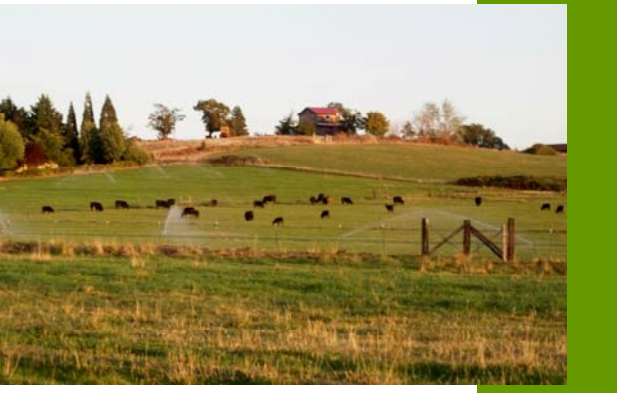
Left: *Wheat*
Right: *The Early cultivators,* *Field Museum of Chicago*

Domesticated Plants Arrive in the Rogue Valley

Squash

Although several plants were domesticated in the Americas — including corn, squash and beans — the Rogue Valley and Southern Oregon were not regions where domesticated plants were developed or adopted before EuroAmerican settlement, with the exception of tobacco. Two different explanations for this are possible: either there was such an abundance of resources that could be gained by hunting and gathering that it was not worth the effort to try to cultivate plants, or there simply were not enough suitable plants to domesticate.

Unlike the Fertile Crescent, the west coast of the United States had very few wild grains or legumes with the right combination of growth and reproductive characteristics for easy domestication. There were also geographic barriers, in the form of mountains and deserts, to regions that did have cultivated plants, so domesticated plants from nearby regions were never imported by the indigenous people of the west coast. As a result, the Native Americans of Oregon, including the people of the Rogue Valley, maintained an exclusively hunter/gatherer way of life until their abrupt contact with EuroAmericans in the 19th century. For the Shasta, Takelma, and Athabaskan people living in the Rogue Valley, this contact led to a rapid change in the relationship that they had maintained for thousands of years with the plants of their local environment.



Above: *Farming quickly became established in the Rogue Valley.*

The new immigrants who came over the Applegate and Oregon trails knew very little about the plants of their newly-adopted region, but they did know how to farm. Consequently, the pioneer settlers began converting their adopted homeland into a place reminiscent of Ohio and Missouri. Quickly, these new settlers turned fields of tarweed and camas into fields of wheat and corn, hillsides of native bunchgrass into fields of Mediterranean annual grass, and oak savannas into grazing areas for cattle and sheep. It took only six years to transition from a landscape made up of almost exclusively native vegetation and people to a landscape teeming with imports of both.

Agriculture Grows and Changes

Since the first pioneer settlers established roots in the Rogue Valley, this region has supported a thriving, yet changing, agricultural community. From the early days of dry-farm hay fields, to the era of the grist mill when wheat was a mainstay, through the transition to fruit orchards and up to the modern era that favors vineyards, the Rogue Valley has continued to be agriculturally productive.

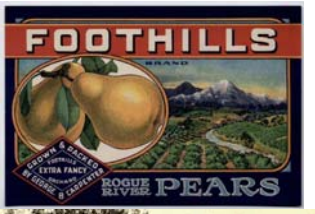
Above:
Apples

Right:
Pears

In the early years of orchard production in the Rogue Valley, growers experimented with many different varieties of fruit and nut trees. Cherries, prunes, pears, apples and walnuts were all brought into the valley by early settlers and quickly became part of the landscape. Initially, apples proved to be the most productive, with over 10,000 acres in production in the Rogue Valley at the turn of the 19th century.

Eventually, most of the valley's growers, converted the majority of their acreage into pears. Pears are better suited to the Rogue Valley's warm summer days, cool nights, and clay soils and thus more profitable than other fruits. At the peak of production, Rogue Valley growers produced more than 20 different varieties of pears.

The invention of refrigerated rail cars in the early 20th century opened up the market for Rogue Valley pears. With an extended shelf life, pears were shipped across the nation, and people soon became familiar with Southern Oregon orchard labels.



As their orchards grew, many growers struggled with a limiting factor plaguing most growers in the region: a lack of adequate summer rain. Unlike areas of the eastern and mid-western United States, the Rogue Valley receives little to no rain from June through September. As a result, most crops require irrigation. Until the formation and development of Water Districts in the late 1920s, growers used horses and wagons to water their crops.

Photo courtesy of Hillcrest Orchard

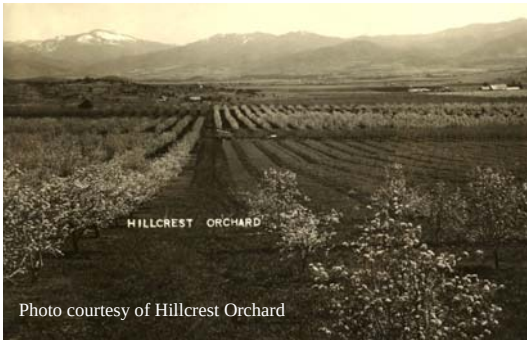


Photo courtesy of Hillcrest Orchard

Eventually, the Talent and Medford Irrigation Districts, and their delivery systems of canals, brought needed and reliable irrigation water to orchards and ranches throughout the Rogue Valley. With access to refrigerated rail cars and dependable irrigation water, Rogue Valley orchardists maintained a high level of production until the Great Depression of the 1930s.

Although the pear industry continues to be productive in the Rogue Valley, it never quite rebounded from the Great Depression. One reason for this has been the changing eating habits of Americans as more and more processed food was introduced into their diet after Word War II. Another reason has been competition from foreign countries, such as Chile and China, which can grow and process pears with much lower labor costs than in the United States.

From its peak in the 1930's when the valley's pear industry supported 400 growers, the number of local growers dropped to just 15 in 2007.

Just as early growers shifted from apples to pears because they were more suited to the climate, farmers in the Rogue Valley today are making a shift to vineyards. Pears are traditionally irrigated using flood irrigation, and they require the fertile soil found on the valley floor, but this is not true of grapes. Vineyards are more suited to the region's climate because they require less water, and can be planted on hillsides, which utilizes less fertile soil. Along with the shift from pears to grapes, and other crops such as hops, many farmers in the Rogue Valley are adopting sustainable farming techniques.


Hillcrest Orchard today

Logging and Fire Suppression

Clear-cut logging

The forested lands of the Rogue Valley have provided a readily available source of timber since the first sawmills were built in the mid 1800s. Early policies favored converting mature old-growth forests to re-timbered land. Because old-growth forests were viewed as "unproductive" they were targeted by early foresters and quickly began to disappear from the landscape. With the invention of chainsaws and the use of logging trucks, almost all of the surrounding forests began to be dismantled. Clear-cutting, a process whereby all of the harvestable trees in a given area are cut at the same time, became the favored method of operation, especially during the highly productive 1950s and 60s.

Though economically efficient, clear-cutting is harmful to the environment because it opens up large patches of land to erosion and invasion by non-native plants and insects. Roads built to access timber have also had a significant impact on the forests of the Rogue Valley through soil compaction, erosion, and invasive plant introductions. Because of these factors, it is hard to find an area of forest land within the Rogue Basin that has not been impacted to some degree by logging.

A prescribed burn

When the U.S. Forest Service and federal forests were established around the turn of the twentieth century, the policy of fire suppression (extinguishing fires as quickly as possible) was established to protect timber interests and private property. Although fires can obviously cause damage, they also play a vital role in the health of natural ecosystems. Plant communities in the Rogue Valley evolved under a historical regime of fires. Fire, either from lightning strikes or purposeful ignition by Native Americans, occurred in an area every 15 to 25 years. These frequent, low-intensity fires prevented the build-up of dense undergrowth, reduced insect infestations, released nutrients into the soil, and prevented large, catastrophic fires. Today, after more than 100 years of fire suppression by public and private land managers, forests have become choked with an overabundance of trees and shrubs competing for limited resources. Federal and local agencies now recognize the positive role of fire and are working to increase ecosystem health through prescribed fires and thinning.

A New Plant Mosaic

Beginning with the original Donation Land Claims in the 1850's, the Rogue Valley has become subdivided as native plant communities have been converted to other uses. Private lands have seen the biggest impacts, but native plant communities on public federal lands have also been greatly impacted. The result has been a new mosaic of plants, resulting from the following land uses.

Forestry: Nearly sixty percent of the Bear Creek Watershed is forested land. These lands, which are at the higher elevations of the valley, include a mix of private and public ownership. Principal uses of these lands include the extraction of forest products (logging), grazing of livestock, and recreation (hiking, skiing, biking). Two of the biggest impacts to the native vegetation on forest lands has been the suppression of fires and logging, both of which have resulted in the loss of healthy open stands of mature conifers.

Ranching: Slightly less than 20% of the Bear Creek Basin is used for livestock grazing on private ranches and on public lands. Because the Rogue Valley had not been home to large grazers since the time of the wooly mammoths, the introduction of cattle and sheep has had an enormous impact on the valley's native plant communities, especially with regard to the native bunchgrasses.

Agriculture: Agricultural uses account for approximately 15% of the Bear Creek Basin. Over 22,000 acres of Jackson County are dedicated to the production of hay alone. Agriculture uses include the production of orchards (mainly pear), vineyards, vegetables, forage crops, cereal crops, and horticultural plants. Lands used for agricultural purposes have mainly replaced the native grasslands and lower elevation oak savanna habitats.

Urban Development : Development has followed from the land use patterns of the original settlers; farmers who located on the rich bottom lands. The result of this pattern of growth is that today, the great majority of development is located within one mile of the Bear Creek corridor. The associated channelization of Bear Creek and the filling in of connected wetlands has had an enormous impact on the low-lying riparian plant communities.

Who Manages Plant Communities Today?

The federal government manages a significant portion of this region's natural resources and protects a number of unique and beautiful plant communities. Management priorities are ever-changing with public interest and policies. The land surrounding the urban centers of Ashland, Medford, and Grants Pass, is a checkerboard of private and Bureau of Land Management (BLM) ownership sandwiched between nearly contiguous tracts of US Forest Service land.

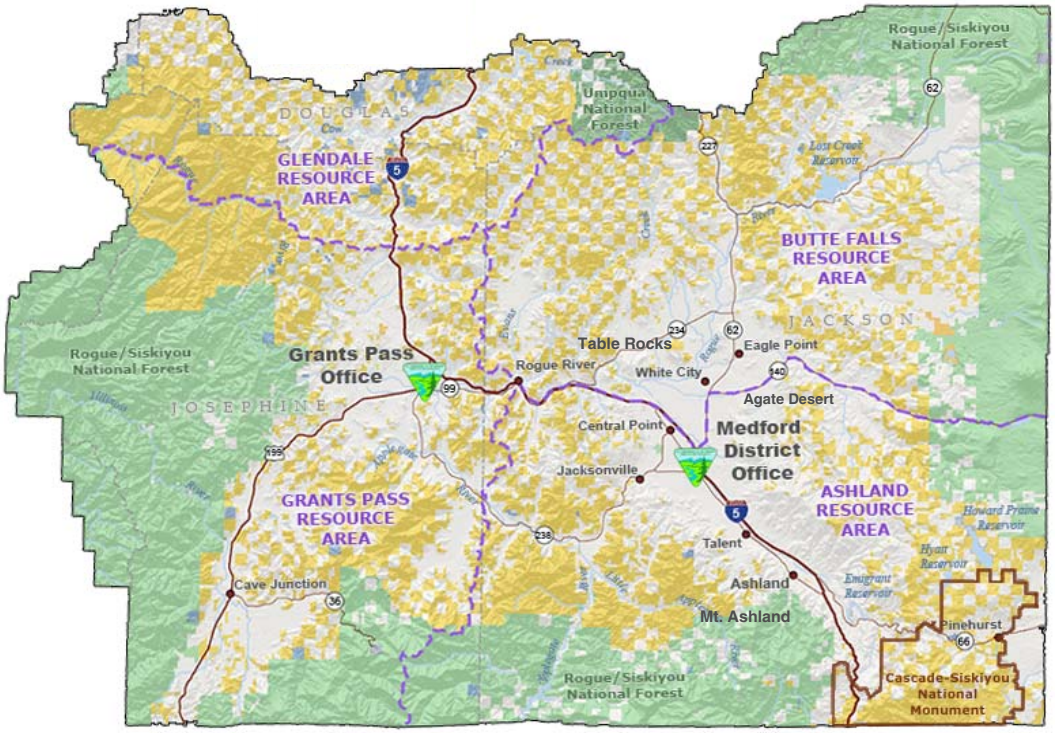
US Forest Service: The Rogue Valley is situated between two tracts of the Rogue-Siskiyou National Forest, managed by the US Forest Service. The Rogue -Siskiyou National Forest covers 1.8 million acres of land from the crest of the Cascades, through the Siskiyou Mountains and extends nearly to the Pacific Ocean. It contains 324,000 acres of designated wilderness areas in which vehicles, chainsaws and other machines are prohibited.

Ashland Forest Resiliency Stewardship Project (AFR): AFR is a 10-year collaborative restoration project between the City of Ashland, Lomakatsi Restoration Project, the Nature Conservancy, the US Forest Service and other local organizations, working to improve the health of 7,000 acres of forest in the Ashland Creek Watershed. The restoration project includes prescribed burns, some commercial thinning, community outreach and monitoring by conservation groups. The goals of AFR are to protect the City of Ashland from high-intensity forest fires, protect the city's source of drinking water and restore ecological health to the forest.

Mt. Ashland

Mt. Ashland: Atop Mt. Ashland and along the Siskiyou Crest, the Forest Service maintains an 800-acre botanical area. High altitude meadows give rise to diverse sub-alpine flora, including lupine, monkshood, hot rock penstemon, western pasque flower, Henderson's horkelia and the Mt. Ashland lupine, which is found nowhere else in the world. The Mt. Ashland Association, a recreation non-profit, operates a 200-acre ski area on the mountain's north-facing slopes under a special-use permit from the U.S. Forest Service.

Oregon State: Oregon State manages some lands, indicated by the small pockets of blue on the map. These lands may be leased for grazing, agricultural use, or commercial industrial development.



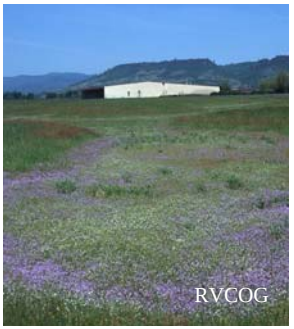
Map of Land Management

US Bureau of Land Management: In southern Oregon, the Bureau of Land Management (BLM) covers four distinct resource areas (noted in purple on the map) spanning Douglas, Josephine and Jackson counties. The regional district of the BLM, located in Medford, oversees 8,682 acres of public land between the Cascade and Siskiyou Mountain Ranges. BLM manages land for multiple uses including recreation, energy, forestry, fire management and cattle grazing. Features of the BLM lands include 85 miles of Wild and Scenic Rogue River, as well as Table Rocks.

Cascade-Siskiyou National Monument: Managed by the BLM, this 52,947-acre National Monument was federally designated in June 2000 by an executive order signed by President Bill Clinton. It was the first monument to be set aside for the sole purpose of preserving biodiversity. The Monument contains 25,340 acres of valuable late-successional habitat and old growth forest, managed for habitat quality and connectivity of old growth-associated species. The monument also maintains, protects, and restores 27,610 acres of "diversity emphasis areas" such as wet meadows, hardwood, and shrub grass communities. Hyatt Lake and the Pacific Crest Trail provide recreation opportunities within the monument.

Lupine

The Nature Conservancy: The Nature Conservancy protects and manages ecologically important lands such as the Table Rocks and the Agate Desert Preserve, both located north of Medford. Working collaboratively with the BLM, the Nature Conservancy monitors and preserves 1,881 acres on the Table Rocks mesas. The Agate Desert is a 53-acre complex of vernal pools and seasonal wetlands containing a suite of rare plants, such as dwarf wooly meadowfoam, and Cook's lomatium.



Clockwise from top: *Lower Table Rock; dwarf wooly meadowfoam; Emigrant Lake; Agate Desert.*

Southern Oregon Land Conservancy: This non-profit organization has been protecting local lands since 1978. The Conservancy works collaboratively with land owners to set up conservation easements for the protection of forest land, riparian areas, and rural farmland in perpetuity.

County Parks: Jackson County maintains ten parks in the region and manages land surrounding both Emigrant and Howard Prairie lakes. The lands are maintained primarily for active recreation including boating, fishing, rafting, racing and organized sports, but they also support a variety of more passive recreational activities such as camping, hiking, and birding.

Ashland Parks and Recreation Department: This city department manages about a thousand acres of land, much of which includes a high proportion of native vegetation. About one half of the 100 acres of Lithia Park is comprised primarily of native plants, and Siskiyou Mountain Park protects 270 acres of woodland. North Mountain Park Nature Center showcases a variety of native plant communities and heritage gardens for public education and enjoyment.

Bridge over Ashland Creek in Lithia Park

Blue wild rye

Current Issues Facing Native Plants

Issue: *Broken mosaic of plant communities.*
A fragmented habitat mosaic disrupts animal migration and increases the threat of invasive plant species migrating into natural areas from elsewhere, especially from private landscaping.

A backyard blends into a wildlife corridor.

Solution: Humans can design their gardens and landscaping to create corridors of habitat connectivity. In residential areas, land owners can grow native plants which create valuable habitat and require less water and care. A few simple backyard landscaping tricks can attract an array of wildlife and insects. Imperiled animals may then use this area if it provides food, water, shelter and a diversity of native plants. The National Wildlife Federation offers information and certification for home gardens that provide vital habitat islands.

Himalayan blackberry

Issue: *Non-native and invasive plants*
Plants that grow in the Rogue Valley, but are native to other parts of the world include Scotch broom, English ivy, purple loosestrife, poison hemlock, hairy vetch and teasle. Some non-natives were introduced intentionally, as ornamentals or crops, and some were introduced unintentionally. Because these foreign species don't encounter natural predators and diseases, they can quickly become established. Some non-native plants, including Himalayan blackberry and star thistle, thrive so well and out-compete the surrounding native plants to such an extent that they are invasive. Today, many of these invasive plants have taken over entire stretches of formerly native plant habitat.

Solution: The eradication of non-native and invasive plants is so difficult they can only be controlled in targeted areas. Control techniques include hand or mechanical removal, selective use of herbicides, and controlled landscape burning, followed by re-planting the area with native plants. At Ashland Pond, the Ashland Parks Department and students from Helman Elementary School have worked together to restore the riparian habitat by removing non-native plants and planting native plants.

Issue: *Loss of plant genetic diversity.* In both agriculture and resource extraction, humans have long favored a narrow selection of plants to the exclusion of others. Modern society's inclination toward highly productive monocultures has caused a great loss of genetic diversity. A population of plants can only be resilient if it contains a wide variety of genes that may allow certain individuals to survive in changing environmental conditions.

Solution: Heirloom seed saving is a worldwide endeavor to preserve genetic variety and resilience in the world's food crops. The preservation of global seed diversity is taking place on a huge scale in Norway with the Svalbard Global Seed Vault project. The vault can store up to 4.5 million seed samples deep in the permafrost. Individual gardeners can also do their part. Rather than buying genetically identical seed stock, gardeners can get seeds from organization like the non-profit Seed Saver's Exchange and cultivate their own heirloom garden.

Issue: *Pollinator decline (bees, etc.)*
Roughly ¾ of the world's flowering plants and 100 of our most important agricultural crops rely on the help of pollinators, which are experiencing a nearly catastrophic decline. Honey bee populations declined 40% between 1947 and 2005, and experienced a major crash in 2006; if this trend continues, honey bees could be extinct by 2035. There is evidence that native pollinators are also declining, potentially affecting both wild and agricultural plant communities.

Solution: Plant community restoration is one of the most important tools in maintaining pollinator numbers. While human-managed honey bee populations should be conserved, it is also important to maintain a diversity of native pollinators. Improving habitat for pollinators includes restoring native floral communities, leaving soil untilled for ground nesting species, and reducing the use of pesticides and herbicides.

Consumers can support organic farms, which are more beneficial for pollinators and their environment. In 2007, Oregon supported 432 USDA certified organic farms, and the number is steadily increasing. Citizens can help by purchasing locally grown, seasonal organic foods.

Issue: *Global climate change*
Since the Industrial Revolution, humans have been adding an unprecedented amount of greenhouse gases to the atmosphere, causing average temperatures to rise. In addition to a warming pattern, we will most likely also experience changes in precipitation patterns, more intense storms, and changes in surface winds. Southern Oregon will most likely experience a rise in average temperatures, with more precipitation coming later in the year, which will cause a diminished snowpack. The current pattern of climate change is certain to influence the existing matrix of plant communities. Exactly how this pattern will play out in Southern Oregon is unknown, although it is almost certain that the changes that have begun to be seen will have a significant impact on the region's native plant communities.

Solution: Most people agree that global climate change is an issue that needs to be addressed but disagree on how to deal with the problem, which slows progress. Reducing our dependence on fossil fuels for electricity and transportation is the most important thing we can do to address this problem. A shift to renewable sources of energy, such as solar and wind power, will greatly reduce greenhouse gas emissions. Driving more fuel-efficient cars, taking mass transit or simply riding a bike or walking is something everyone can do to reduce the impact of global climate change. Home and business owners can make their buildings more energy efficient by using efficient appliances, weatherizing and using passive solar heat.

Native plants make traditional and modern baskets.

Issue: *Imperiled cultural diversity and loss of ethnobotanical knowledge.*
The recent age of human development has been characterized by monocultures. Industrial farms have grown genetically similar crops, just as western civilization has dominated and subsumed cultural diversity. As cultural uniqueness dwindles, a great amount of native plant knowledge becomes imperiled.

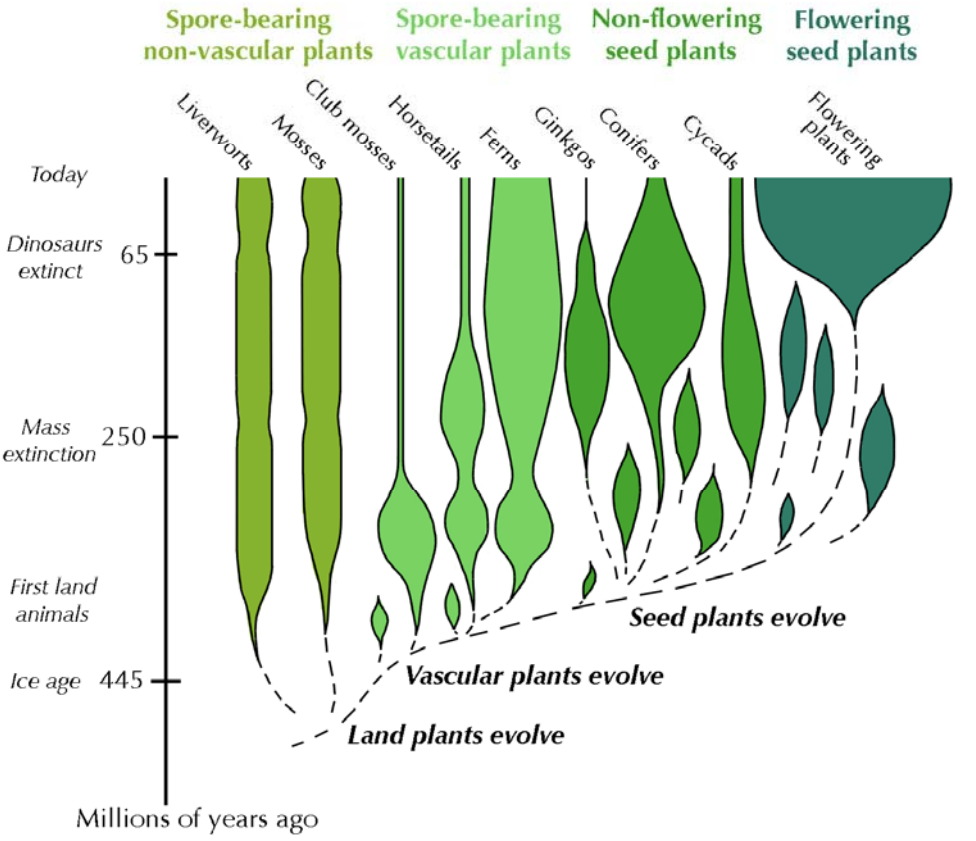
Solution: North Mountain Park Nature Center is working extensively with local Native American elders to record and share their ethnobotanical knowledge. Visit the Ethnobotanical Trail to recognize and appreciate native plants and their uses. As we discover indigenous relationships to plants, we may also learn their principles of interconnectedness and sustainability. Education is the foundation for cultural and ecological respect.

Camas

Appendix A: Plants Through Time

From their earliest beginnings in the sea, plants have evolved and diversified into the stunning complexity we see today. All living plants are related to a common ancestor through descent with modifications. For example, the common ancestor of flowering plants and ferns lived roughly 350 million years ago, and all plants share a common ancestor that lived an estimated 1.3 billion years ago. Over time, each branch on the plant family tree has weathered mass extinctions, shifting continents and changing climate to reach its current diversity and distribution.

This diagram shows our current understanding of the time of origin and evolutionary relationships between major plant groups. Diversity within a plant group is indicated by relative width. Dashed lines indicate uncertainty. Note that many plant groups are now extinct.

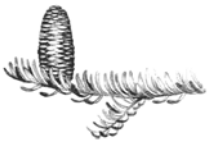


Appendix B: Plant Taxonomy

Taxonomy is the science by which all forms of life are named and classified based on their unique morphology (external structure), genetic and evolutionary history, and degree of relatedness. Botanists use this classification system to understand plants in terms of their relationship to each other.

Sometimes scientific names give us insights that cannot be gleaned by comparing common names. Douglas-fir and white fir are a good example. These two trees are related all the way down to their family level; they are both in the pine family. However, by looking at their taxonomy, we can see that these two plants begin to differ at the genus level: one is a true fir and the other is not. The Douglas-fir is not actually a "fir" at all, which is why it is often written with a hyphen. Because of its similarity to other conifers, botanists were uncertain how to classify it for many years. At various times, it was called a pine, a spruce, a hemlock and a true fir. However, its distinctive cones, with three-pointed bracts sets it apart. In 1867 it was given its own genus, *pseudotsuga* (literally "false hemlock").

What's In a Name?



Kingdom: Plantae – Plants
Subkingdom: Tracheobionta – Vascular plants
Super Division: Spermatophyta – Seed plants
Division: Coniferophyta – Conifers
Class: Pinopsida
Order: Pinales
Family: Pinaceae – Pine family

Genus: Abies – Fir
Species: concolor

White fir
Abies concolor

Genus: Pseudotsuga - False hemlock
Species: menziesii

Douglas-fir
Pseudotsuga menziesii

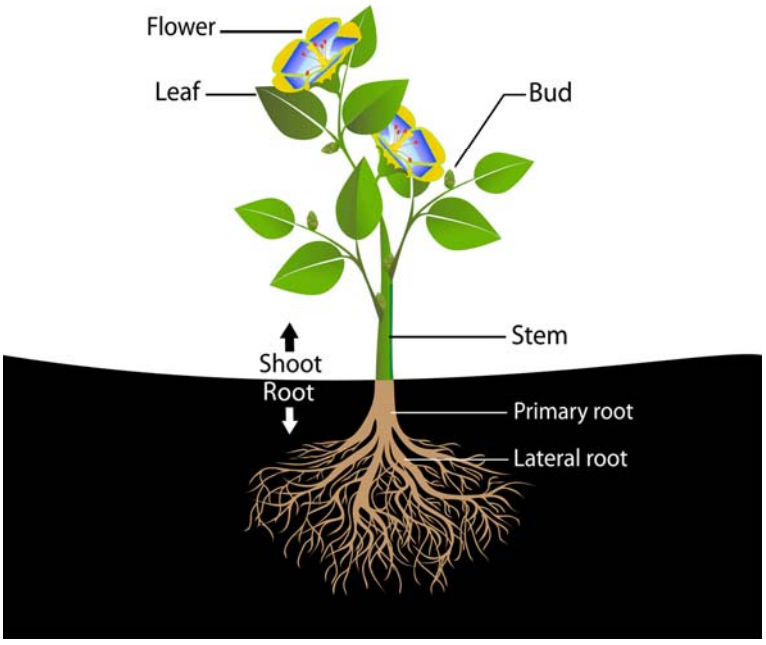
Appendix C: Plant Structure and Function

Green plants everywhere are united by one extraordinary quality: the ability to harness the sun's energy. Plants use chlorophyll, sunlight, water, and atmospheric carbon dioxide to create their own energy and to grow and maintain their life processes. Although plants can look completely different from each other, they share many structures in common.

Most plants are vascular and have special tissues called xylem and phloem that transport water and nutrients to roots, shoots, stems, leaves, and buds. These plant structures tend to benefit all plants in the same way, no matter the shape and size of the plant. In the rare case that a plant lacks a specific structure, another part of the plant often fills the role of the "missing" part.

Roots anchor the plant in the soil, where they absorb water, nitrogen, and minerals necessary for growth. The roots then transport these vital elements of survival to the shoot, the part of the plant that grows above the ground. Roots can also store nutrients. For example, a potato is a type of root called a tuber.

Plant stems support the plant and are conduits between nutrient-absorbing roots and the energy-producing leaves.



Through this vascular system, plants are able to obtain everything they need to live and grow while staying in one fixed location, unlike most animals, which require mobility for their existence.

Stems can be soft and fleshy, or

hard and woody, depending on the type of plant. If stems are green, they can carry out photosynthesis. Cacti, for example, lack leaves, so photosynthesis occurs entirely in the stems of the plant. Buds emerge from the stems, and produce new growth.

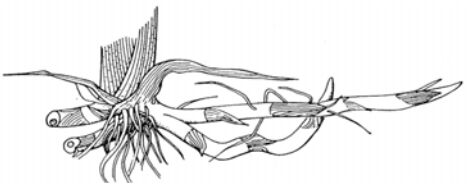
Leaves take many shapes and sizes, but they all are made to collect sunlight, and it is here that photosynthesis occurs. In the leaves, green chlorophyll absorbs and transforms light energy into chemical energy that can be used by the plant to grow and reproduce. Pores, or stomata, on the surface of the leaves and green stems, allow for the exchange of water, oxygen, and carbon dioxide with the environment.

There are also a number of non-vascular plants, including mosses, liverworts, and green algae. These small plants usually grow in damp places because, without vascular tissues, they must absorb and transport water by diffusion.

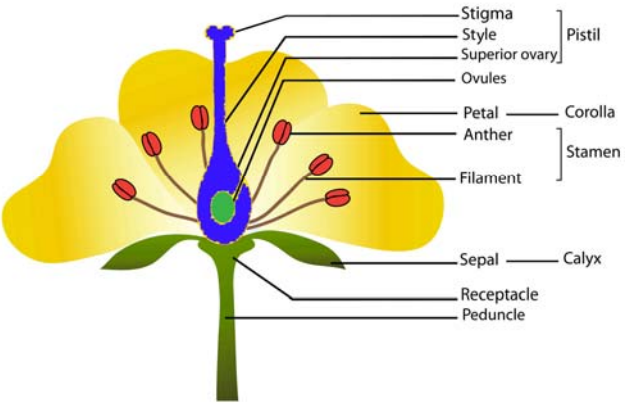
Above: *The distinctly veined leaves of the Cascara plant*

Right: *The fiber-rich stems of the Dogbane plant*

Above: *Cattail plants*
Inset: *Mosses must grow in damp places.*



Cattail roots grow downward into the soil, while the rhizomes, which produce new shoots, grow laterally.



Horsetail

Appendix D: Plant Reproduction

Vascular plants are classified according to their different reproductive strategies, which include the use of spores, cones and flowers.

Spore-producing plants, or *Pteridophyta*, were among the earliest evolutionary forms. Scouring rush, giant horsetail and all fern species belong to this division. These plants reproduce by spores which can travel by wind, water or animals to new locations. However, spores do not store nutrients like seeds do and thus need more favorable conditions in order to germinate.

Dispersal methods

Growing throughout the Rogue and Bear Creek Watersheds is another division of plants called gymnosperms. These are cone-bearing seed plants and include sugar pine, incense cedar, and white fir. Unlike flowering plants, these conifers bear "naked seeds." Gymnosperms have male and female cones that produce pollen and ovules, respectively. Once fertilized, seeds develop on female cone scales.

Flowering plants, known as angiosperms, make up the majority of familiar plants. Angiosperms produce flowers that must be fertilized by pollen to produce seeds. Some flowering plants, such as maple trees, are wind pollinated. However, many plants have evolved a symbiotic relationship with insects and other pollinators, such as hummingbirds and bats, that transfer pollen from one flower to another. These plants attract pollinators usually with showy and colorful flowers. Two examples of this type of angiosperm are fruit trees and roses.

Although these three types of plants reproduce differently, their offspring share a similar challenge; in order to complete its lifecycle, a plant's seed must germinate in a suitable environment. If all seeds fell adjacent to the parent plant, they would soon be competing for light, water, and nutrients. As a result, seeds and fruits have evolved dispersal strategies that carry them far and wide. These strategies include using the natural currents of wind or water, hitching a ride with animals in their fur or in their stomachs, and being buried by animals, such as jays and squirrels, that store food for later use.

Plant Index

Places to Visit


BLM

Cascade-Siskiyou National Monument, southeast of Ashland, is known for its botanical diversity. The monument can be accessed through a variety of locations. There is a small interpretive center near the summit on Highway 66.

Grizzly Peak, which can be accessed via Dead Indian Memorial Road, has a hiking trail along where you can see many varieties of native plants. The Siskiyou Chapter of the Native Plant Society of Oregon has put together a colorful Wildflowers of Grizzly Peak guide.

Lithia Park in Ashland provides a brochure-guided tree walk that highlights a variety of both native and non-native trees and shrubs. There is a also a series of interpretive walks through the park each summer.

Mt. Ashland, which can be accessed by driving to the Mt. Ashland Ski Area, supports a rich mosaic of native wildflowers. The Siskiyou Chapter of the Native Plant Society of Oregon has put together a colorful guide to the wildflowers of Mt. Ashland and the Siskiyou Crest. The best time to view the flowers in bloom is between mid-July and late August**.**

North Mountain Park in Ashland provides a variety of interpretation related to local native plants. The park contains a native plants garden, an interpretive ethnobotanical plant walk, and a variety of cultural exhibits related to plants and their uses.

OSU Extension Service in Central Point maintains a variety of interpretive gardens highlighting vegetables, herbs, fruit trees, and a variety of native plants.


Interpretive gardens at North Mountain Park

Upper and **Lower Table Rocks** in Central Point provide well-marked trails where you can see a variety of wildflowers from March until June. The slopes also support a diversity of tree and shrub habitats, including oak and pine woodlands and chaparral. The BLM offers a series of interpretive hikes on the Table Rocks each spring.

Denman Wildlife Area in Central Point features a self-guided interpretive trail that takes visitors through a variety of wetland, riparian and grassland habitat areas.