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Foreword

Ethnobotany is the study of the relationship between cultures and plants.

This condensed list of western Washington plants was created by Scott Clay-Poole, PhD.

Find information on plants in these categories:

- Herbs
- Shrubs/Trees
- Conifers
- Ferns & Fern-Allies
- Lichens
- Citations & References

The plants are listed by scientific name and common name. The plants are initially listed as those found at cultural sites along the right-of-way previous to highway safety improvements in the state of Washington.

None of the plants listed are recommended for use. But if plant material is utilized in some way by the viewer that individual species must be accurately identified by an expert and then used with caution. Various chemicals found within these plants can be metabolized differently by various individuals, some with adverse side effects. When planning to ingest or use topically, it is always advisable to test with a small amount of any new plant first.

A common additive to many of the foods listed herein as a preservative and seasoning is the rendered oil from the Eulachon (or Oolichan), the Candlefish. Raw and cooked berries, green sprouts, and cooked roots are often dipped in this oil, referred to as "grease". Sometimes it is mixed right into the food; some fruits are stored in it.

Some plants are included because of interest and/or beauty and like the rest, may be susceptible to rapid decimation in local areas. Plants such as Tiger lily, Chocolate lily, and Calypso having edible bulbs necessitates destroying the entire plant for minimal sustenance.

Please think conservatively if you feel you need to "take" a plant.

Megan White, Director
Environmental Services

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Allium Acuminatum (Hooker's Onion)

Liliaceae *(Lily Family)*

Perennial herb to 12" tall, from a small, deeply-buried egg-shaped bulb with a fibrous network on the surface. Leaves 1-2, all basal, long and narrow, grass-like, withering before the flowers appear. Rose-colored flowers, though sometimes white, with 6 stamens, 3-chambered ovary, later to become a 3-chambered capsule (fruit); tepals (6) turn back at the tips, in upright umbels with 7-25 flowers subtended by 2 bracts under the umbel.

Habitat: Usually in open, rocky sites, occasionally in dry to moist open forest; at low elevations.

Use: Onion bulbs, as a group, were eaten fresh or steamed in pits. Some gatherers would mark the growing plants in spring and come back in late summer to dig the bulbs.

[Pojar & McKinnon, 1994; Turner, 1995]; [Montana Natural Heritage Web Pages]

Apocynum Cannabinum (Indian Hemp)

Apocynaceae *(Dogbane Family)*

Perennial herb with stems ascending to erect. Leaves opposite, with petiole < 5-8 cm blade. Flower small; corolla cylindric to urn-shaped, 5-lobed, with 5 triangular appendages alternate with the stamens; stamens attached at base of tube, filaments short, wide, anthers forming adherent cone around stigma, each partly steile, sharply arrow-shaped; nectaries 5, around the ovaries; style none; stigma massive. Fruit slender, cylindric, pointed follicle generally greater than 12 cm. Seed with tuft of long hairs. Fragrant flowers in bloom from May to July due to the successive development of new clusters. Bees produce a very fine grade of honey from these. The seed pod (follicle) is an amazing affair being shaped like a smooth, curved green bean. This brownish husk splits open to allow silky seeds to escape. a thick milky juice exudes from any broken portion of the plant, and might be considered poisonous.

Habitat: Throughout eastern Washington in Sagebrush, Bunchgrass, and Yellow Pine Zones.

Use: The stems were harvested in October, just as the leaves were turning yellow. Damp areas produce the tallest, thickest plants; those on the sidehills are bushier and not as good. The harvested plants were bundled by the lower ends for carrying. The branches and leaves were cleaned off, and the stems were flattened by pulling them over a pole tied to a tree. They were then split open from bottom to top with a sharp stick. The woody, outer skin was pulled off by hand after rubbing the stems. The the fibrous parts just under the skin were bundled together and hung by the tops in the wind to dry. When dry they were brittle. The process of rubbing the hemp helps to separate the fibers. The fibers were made into twine by twisting and rolling them with the hand on the bare thigh. The hands were kept damp to increase the friction. The stem fibers were joined together by splicing; the thick (lower) end of one fiber bundle and the thin (upper) end of another were each split about one half of the length of the stem, and the pieces placed together as an interlocking "V", then rolled together until they were intertwined. An average plant yields about 2½ feet of fiber, but half of this is lost in the splicing process. By splicing the stems together, a continuous length of twine could be produced. a finer twine was made by splitting the stems in two along the entire length and using the halves as one would a whole stem. a strong rope could be made by twisting several lengths of twine together. a good Indian hemp rope is said to have the equivalent strength of a modern hemp rope with a breaking point of several hundred pounds. The twine would keep for many years if stored in a dry place.

Indian hemp twine was excellent for making fishing lines and nets because it keeps its strength under water and does not shrink. It was also used in the manufacture of many other items, including deer nets, slings for hunting small game, nooses for snaring grouse and other game birds, hide stretchers, moccasins, clothing, woven bedding for baby cradles, wheels used in a type of dart game, tump lines, and cat-tail mats. For making garments, the fiber was sometimes mixed with deer hair before spinning.

[Turner et al., 1980]

Asarum Caudatum (Wild Ginger)
Aristolochiaceae *(Pipevine Family)*

Evergreen, low-growing, aromatic perennial. Leaves heart- to kidney-shaped, emerge in pairs along the rhizome and are held on leaf stalks 2-6" long. Flowers purplish-brown to greenish-yellow, solitary, bell-shaped, petals 0 with 3 flaring lobes (sepals) that taper to long points, surrounding 12 stamens. Sepals white inside with single median stripe. The flowers are often concealed by the leaves. Fruits fleshy capsules, with several egg-shaped seeds bearing a fleshy appendage. Seeds dispersed by ants. It has been reported that fungus gnats deposit eggs in the throats of the flowers, but when the larvae eat the flowers, they are poisoned and die (Meeuse & Morris, 1984).

Habitat: Wild ginger grows in moist, deeply shaded forests, rich bottomlands, frequently lost in heavy leaf litter because of its slow growth, and often under western red-cedar. Common from low to middle elevations.

Use: The whole plant, when crushed, has a strong smell of lemon-ginger. The roots were once eaten fresh or dried and ground as the tropical ginger substitute. a tea has been made from the roots and was sipped for stomach pains by some First Peoples. Substances within the plant have been known to have antibiotic properties.

Based upon new information, the Federal Food and Drug Administration (FDA) is advising consumers of Aristolochic acid, a chemical component in the plant, to discontinue use. Consumption of products (including over-the-counter botanicals) containing aristolochic acid has been associated with permanent kidney damage, sometimes resulting in kidney failure that has required kidney dialysis or kidney transplantation. In addition, some patients have developed certain types of cancers, most often occurring in the urinary tract.

This plant is one of our pretty woodland natives to be seen, enjoyed and admired, with perhaps just a sniff of a crushed aromatic leaf between finger and thumb (gingerly, he said...).

Hashimoto, K., et al. 1999. Quantitative analysis of aristolochic acids, toxic compounds, contained in some medicinal plants. Journal of Ethnopharmacology 64(2): 185-189.

[Pojar & McKinnon, 1994]

Meeuse, B.J.D. & S. Morris. 1984. The Sex Life of Flowers. Facts on Life. New York, New York.

Balsamorhiza Sagittata (Balsamroot)
Compositae/Asteraceae *(Sunflower Family)*

Herbaceous perennial up to 20" or more tall growing from a large, deep taproot. The basal leaves are large, numerous, stalked and broadly triangular or arrowhead-shaped. Stem leaves are few, and much reduced. The entire plant is grayish due to a thick covering of fine white hairs. The bright yellow flowerheads, usually many per plant, are borne on individual stems and are large and sunflower-like, with about 25 petal-like ray flowers per head. The single-seeded fruits (achenes), which shake loose easily from the dried mature heads, are like miniature sunflower seeds. Blooming season is from April to July, depending on elevation, and these flowers provide a striking display of springtime color.

Habitat: Open hillsides and prairies (Sagebrush and Bunchgrass Zones into the Yellow Pine Zone) at low to moderate elevations east of the Cascade Mountains

Use: The large taproots, root crowns, young shoots, young leafstalks and leaves, the flower budstalks, and the "seeds" (actually the fruits....the seeds are inside) were all eaten by one group or another, and the large leaves were sometimes used in food preparation.

The taproots can grow large, and are difficult to dig. They were generally obtained in spring, although some First Peoples dug them in summer or fall. The roots contain inulin as a major carbohydrate. They also have a tendency to be woody. Cooking them, then was a challenge. The roots were peeled by pounding them to remove the "bark", then pit-cooked overnight, usually for 24 hours or longer. They could be eaten fresh or dried for storing or trade. Sometimes they were strung on skewers. Properly cooked, they are very sweet and brownish, due to conversion of inulin to fructose, and they were eaten as a treat or "sort of dessert."

The young shoots, before they emerged from the ground in early spring, were sought by many and eaten raw, or sometimes pit-cooked. After they emerge they become green and bitter.

The flower budstalks were, a favorite springtime food. They were broken off while the buds were still tightly closed, then peeled and eaten raw or sometimes cooked as a green vegetable. They have a pleasant nutty flavor, like sunflower seeds.

The "seeds" (actually achenes, the fruits with a single seed inside) were harvested from the dried heads, being shaken out into bags or baskets and spread onto mats for drying for two or three days. Sometimes they were browned by toasting on a hot rock. The chaff could be removed by winnowing - pouring from one basket to another in the wind. The seeds could be eaten whole, but more often, they were ground to a powdery meal (shells and all) with a stone mortar and eaten alone without further preparation or mixed with other foods such as deer grease, white-bark pine kernels, pounded, dried saskatoon berries, or Douglas-fir sugar. Sometimes they were formed into small cakes, and sometimes they were boiled in soup, or cooked with oil, water or broth and eaten as a porridge. Some First Peoples purportedly smoked the leaves as a tobacco substitute and for this purpose were mixed with kinnikinnick.

[(Kuhnlein & Turner, 1991; Turner et al., 1980]

Camassia Quamash (Blue Camas, Common Camas)

Liliaceae *(Lily Family)*

Herbaceous perennial with large underground bulbs up to 1½" thick and almost 2" long, covered by a membranous brown skin. The grass-like leaves are basal 3'4" wide and up to 15" long. The flower stems are up to 20" high bearing a loose terminal cluster of showy blue blossoms in late spring (sometimes odd white flowers occur).

Habitat: Meadows and grassy bluffs in soil pockets on rock outcrops, and prairies.

Use: Bulbs used for food. They were most often steamed. When cooked the bulbs taste sweet. The bulbs contain a complex sugar called inulin. Slow cooking (up to three days) promotes the conversion of inulin to its individualized components of the sweet tasting and more digestible fructose. The concentration of fructose in cooked camas is as high as 33 percent of the wet weight or 43 percent of the dry weight (Turner et al., 1980).

Blue camas is commonly called "black" camas because the bulbs turn black when pit-cooked.

After pit-cooking, the "black" camas (now soft, dark, and sweet) is either dried, ground and mixed with flour, water and a bit of butter to make a "gravy," or boiled before being eaten. Some tribes preferred to store the bulbs in the rafters of their homes. This was considered a better tasting bulb from those stored underground all winter. The larger "black" camas bulbs were reserved for elderly people; if young people ate them, it was believed that they would later marry an old person.

[Turner et al., 1980]

Calochortus Macrocarpa (Mariposa Lily, Sagebrush Lily, Desert Lily)

Liliaceae *(Lily Family)*

Perennial herb from a deep-seated bulb. Leaves few, to 4", the basal leaf generally much the largest, narrow and grasslike, and curl and wither before the plant flowers in early to mid summer. Flower petals 3, white to deep lavender, with a median greenish stripe, and a pointed tip (picture shown is the closely related C. venustus). Sepals 3, long-acuminate, mostly longer than the petals and alternate with them; gland at base of petals, bordered with a more or less continuous, fringed membrane, the surface covered with elongate, generally freely branching, thick hairs; anthers longer than the filaments; fls 1-3 on a stalk. Ovary 3-celled, superior; fruit an erect, angled and narrowly winged capsule. [Most species of Calochortus propagate freely from seeds, but it takes 3-5 years for seedlings to flower; on the other hand, collected bulbs are apt not to survive].

Habitat: Dry, sandy soils on plains and hillsides east of the Cascade Mountain range of Washington (and north to British Columbia and south to California).

Use: This plant is often called "sweet onion" by First Peoples. The bulbs were dug in the spring before the plants flowered and were eaten raw or pit-cooked with other roots to add flavoring. They have a sweetish, starchy taste. Some tribes mashed the bulbs and applied the mash directly to the skin as an antidote for poison ivy.

[Kuhnlein & Turner, 1991]

Claytonia Lanceolata (Western Spring Beauty)

Portulacaceae *(Purslane Family)*

Herbaceous perennial up to 6" tall, growing from a fleshy, globular corm which may be walnut-sized, but is usually smaller. The corm is brown-skinned and white inside. Each corm produces one to several basal leaves, which usually die back by flowering time. About midpoint on the flower stems is borne an opposite pair of lance-shaped to oval, pointed leaves. The flowers are borne in loose, terminal clusters of 3 to 20. Each flower, up to 1 cm across, has two broad sepals and five petals (which are white to pink, or white with pink veins), 5 epipetalous stamens, and 3 stigmas. The fruit is a 3-chambered capsule, with margins rolling inward and forcibly expelling the small, black and shiny seeds.

Habitat: Found in rich woods, thickets, and moist slopes and subalpine meadows.

Use: The fleshy, succulent corms of spring-beauty, often called "Indian potato," "wild potato," or "mountain potato," were an important "root vegetable" for many tribes. The round, fleshy corms are ready to be dug just as bitter-root is finished, around April or May. This is just after they have bloomed, when the leaves "start to turn a little different." They could also be dug later in summer or fall, but since the stems die down quickly after flowering, the corms are sometimes difficult to locate later in the season. The Okanogan-Colville used to have a "First Roots" ceremony for these corms, around the first of June. The corms are quite shallow, and are dug with a digging stick. The more stems a plant has, the larger its root will be; one with two or tree stems might have a corm 2.5 cm across; one with 10 stems might have a 5 cm corm, while one with 15 stems might yield a 7.5 cm corm. Indian potatoes were generally eaten when they were dug, but sometimes they were stored for a short time by burying them in a hole lined with pine needles and cottonwood bark to prevent them from freezing and to keep out rodents. More often they were steamed like bitter-roots or boiled in a little water, as one would cook potatoes. Sometimes, the corms were kept fresh until the Saskatoon berries were ripe, then cooked and mixed with mashed Saskatoons and dried in cakes for later use. Other times the cooked corms were flattened with the hand before being dried; the drying process was said to take about five days. Before use, the dried corms were simply boiled, or might be soaked for a short time. They are crisp and pleasant-tasting.

During the root-digging season, entire families and sometimes small groups of families often camped for two or more weeks in the subalpine meadow areas to dig these corms, and the bulbs of yellow avalanche lily. Women and children usually dig the corms, prying them up with a pointed, T-shaped digging stick made from a mule deer antler, or from Saskatoon (serviceberry) or some other hard wood. Often, the corms were sought from the caches of small rodents. Each family might obtain two or more large sacks (each about 10-kg size) of the corms to last them over the winter.

The dried corms were formerly an important trading item. Since the introduction of pack-horses, the job of carrying the sacks of corms from the digging sites to the permanent winter homes has been much easier.

[Hickman, 1993; Kuhnlein & Turner, 1991; Turner et al., 1980]

Clintonia Uniflora (Queen's Cup, Beadlily, Bride's Bonnet, Blue-Bead)
Liliaceae *(Lily Family)*

Perennial from slender, creeping rhizomes (underground stems). Leaves 2-3 in a basal rosette generally 7-15 cm long, oblong or elliptic with sheathing base, slightly fleshy and shiny with a noticeably hairy margin. Flowers large, white, cup-shaped, erect and solitary on a long stalk bearing 6 tepals, 6 stamens, and 3-lobed stigma. Fruit is a single, bright metallic blue berry.

Habitat: Moist forest, forest openings, clearings; widely distributed and often abundant at low to subalpine elevations.

Use: This plant was not widely recognized by coastal First Peoples, but one tribe called it "wolf's berry", believing it edible only by wolves.

[Pojar & MacKinnon, 1994; Turner, 1995]

Cornus Canadensis (Bunchberry, Dwarf Dogwood, Pigeonberry)
Cornaceae *(Dogwood Family)*

Low perennial to 8" tall, with creeping rhizomes. The leaves are elliptical 1-3-½" long, with prominent longitudinal veins. These leaves form a terminal whorl in groups of five to seven. The flowers consist of four white petal-like bracts and a central cluster of small true flowers with tiny greenish-white petals. The true flowers produce a tight cluster of bright red-orange berries the size of small peas. When ripe, they are soft with a yellowish pulp and a hard central seed.

Habitat: Commonly forms large mats in moist coniferous woods and clearcuts, especially on rotten logs and stumps.

Use: Bunchberries are slightly pulpy but sweet and flavorful and eaten raw in early autumn with Grease, or in recent times with sugar. Some First Peoples have steamed them and preserved them for winter in water and Grease (Turner, 95). The leaves have been known to be burned and powdered, then applied to topical sores.

[Lombardi, 1996]

Empetrum Nigrum (Crowberry, Curlewberry)
Empetraceae *(Crowberry Family)*

Low growing, shrubby evergreen up to 12" high, resembling a miniature fir tree, with short, needle-like leaves (grooved underneath), which are turned under at the margins, and stems with long woolly hairs. The flowers are small (3 mm), pinkish and inconspicuous, in loose clusters in leaf axils bearing 3 stamens, and 6-9 short-lobed stigma. The fruits are black to dark purple drupes, juicy and berry-like, containing up to 9 white, hard seeds.

Habitat: Low, exposed coastal heathlands and bogs; rocky mountian slopes, subalpine parkland, and alpine tundra; dry to wet sites, sea level to alpine.

Use: Crowberries ripen in August, but remain on the plants through the winter, and are available fresh or frozen into the early spring, and could be gathered even from under the snow. They are eaten raw or cooked. They are said to "contain lots of water" and have been used to slake the thirst of folks on the mountain slopes when no water was available. Some First Peoples mixed the berries with bear grease, cooked and mashed them, then dried them in the sun into cakes. Other tribes ate them plain with oil and sugar, or mixed them with cloudberries, blueberries, or whipped fat.

[Kuhnlein & Turner, 1991; Pojar & MacKinnon, 1994]

Epilobium Angustifolium (Fireweed)
Onagraceae *(Evening Primrose Family)*

Herbaceous perennial with spreading rhizomes and alternate, smooth-edged, lance-shaped leaves. The flowers are red-purple with four petals growing in long, showy, terminal clusters. Bloom occurs in summer. The seed capsules are long and narrow, splitting longitudinally on all four sides to reveal rows of small parachuted seeds. The seeds can travel on the wind for long distances.

Habitat: Disturbed areas in open areas, burns, roadsides.

Use: The inner part of the stem, especially in young plants, is sweet and succulent. Some coastal First Peoples ate Fireweed raw as a green vegetable. The fibrous outer part of the stem (after inner portion eaten) was twisted into twine for fish-nets. The shoots are said to be a good laxative, but should not be taken on an empty stomach. Other uses include steeping the young leaves to make a tea.

[Turner, 1995]

Erythronium Grandiflorum (Yellow Glacier Lily, Yellow Dogtooth Violet)

Liliaceae *(Lily Family)*

Perennial herb to 13" in height developing from an underground corm. Leaves are basal, bright yellow green to 8" in length clasping the flowering stem base. Flowers are golden-yellow, the 6 tepals strongly recurved about 6 stamens and typically single on a leafless, unbranched stem. Fruits are capsules a little over an inch in length.

Habitat: Moist open (snowmelt) areas (meadows, avalanche tracks, subalpine parkland), middle to alpine elevations.

Use: The corms were eaten raw, though it is purported that it has a bad smell. They were not eaten raw often as the corms contain the carbohydrate inulin and require cooking to modify the carbohydrate into more edible and sweet tasting fructose. The corms are reportedly as big as one's fist, and were described as "white clear tubes with the root coming out of the side". They were boiled and then either eaten fresh or dried for later use. Drying took up to two weeks. The dried corms were dried in such materials as tule sacks. Before they were eaten they were softened by soaking in water and the outer covering was removed. The dried bulbs were cooked in soups and stews with fish or meat, or in special "puddings" (including dried black tree lichen, Saskatoon berries, deer fat, salmon eggs, and tiger lily bulbs. As well as being a good food the corms were said to be a good medicine for a bad cold.

[Turner et al., 1980]

Notes: The Erythroniums are beautiful wild flowers and are seldom abundant. Harvesting the bulbs destroys the entire plant. They should not be used today except in an emergency.

Fragaria spp.
Fragaria Chiloensis (Beach Strawberry)
Fragaria Vesca (Woodland Strawberry)
Fragaria Virginiana (Wild Strawberry)
Rosaceae *(Rose Family)*

Fragaria chiloensis - Beach Strawberry

Fragaria vesca - Woodland Strawberry

Fragaria virginiana - Wild Strawberry

Perennial herb bearing short, thick rootstalks connecting other strawberry plants by hairy runners. Leaves bearing 3 leaflets. Flowers white, up to 1½" wide with 5-7 petals, 5 sepals, multiple stamens. Fruits are multiple achenes spread about the surface of and expanded floral receptacle (what we commonly refer to as the fruit).

- F. chiloensis: Coastal, deep green thick leaves that are strongly reticulate-veiny beneath, rugose above.
- F. vesca: Not coastal, leaves yellow-green, relatively thin and pilose-silky above; terminal tooth of leaflets well developed.
- F. virginiana: Not coastal, leaves bluish-green, and glaucous above;terminal tooth of leaflets generally adjacent teeth.

Habitat:

- F. chiloensis: Common on sand dunes and sea bluffs, never far from sea.
- F. vesca: Openings and open forests, at low to subalpine elevations.
- F. virginiana: Similar habitats as F. vesca.

Use: Typically the fruits are eaten fresh, being too juicy to dry like other berries. The fresh leaves are used to make a clear, sweet tea. Often thimbleberry and trailing wild blackberry leaves are added to this tea. Some First Peoples chewed the leaves and applied them as a poultice on burns. Strawberry leaves are well known for their use in anti-diarrhea medicines, especially for children (Pojar & McKinnon, 1994).

Some tribes took the leaves of strawberries and dried them by a fire until brown, powdered these leaves in a buckskin bag, and applied the powder to the navel of a newborn baby to heal it and keep it from becoming infected. It was used several days in succession, until the navel had healed. Strawberry leaf powder was also dusted into a baby's mouth when it was sore and was applied to any open sore as a disinfectant. The sore was washed, the powder was applied and deer fat was smeared on over it.

[Hitchcock & Cronquist, 1990; Turner, 1980]

Heracleum lanatum (Cow Parsnip)

Umbelliferae *(Apiaceae) (Celery/Carrot Family)*

A robust, hollow-stemmed hairy perennial growing 1-3 meters tall, from a stout taproot or root cluster. The leaves are broad and compound in three large segments (one terminal and two lateral), coarsely toothed and lobed; the leaf stems are conspicuously winged at the base. The flowers are small, white and numerous, arranged in large, flat-topped umbrella-like clusters (typical of the family) up to 4-10" across its top. Fruits are egg- to heart-shaped, 7-12 mm long, flattened, with or without hairs, 1-seeded, aromatic, sunflower-seed-like, with lateral ribs and broadly winged. The plants have a pungent odor, especially when mature.

Habitat: Throughout Washington in moist, open areas, roadsides and meadows, from sea-level to above tree-line in the mountains, often in large patches.

Use: Virtually all First Peoples used Cow Parsnip as a green vegetable. They peeled and ate raw, or boiled, the young stalks and leaf stems before the flowers matured. The outer skin, actually considered to be poisonous by some groups, contains a chemical that sensitizes the skin to light, which can cause blistering of the lips. The stalks were often dipped in Grease. Despite the strong odor of the leaves and outer skin, the peeled young stems are mild and sweet, resembling celery in taste (Pojar & MacKinnon, 1994; Turner, 1995).

According to Turner et al. (1980), in mid-May, before these large plants start to bloom, the flower stalks and leaf stems were harvested, peeled, and eaten fresh. One has to be careful not to confuse this plant with similar species such as water hemlock, which are poisonous. The roots were washed, sliced, pounded, usually heated, and put in a cheesecloth to use as a poultice for sore backs, sore eyes, and other painful areas including boils. They were also boiled with red willow and chokecherry branches to make a strong cleansing medicine for the scalp. When first applied, it burns the skin, it is so strong, but it is said to be very effective by killing the "germs" and "little worms" in the scalp.

Notes: Several members of the celery family, including water hemlock (Cicuta douglasii) and poison hemlock (Conium maculatum), are violently poisonous. These plants are more slender than the Cow Parsnip, with smaller flower heads and finely divided leaves. Still, it is possible to confuse these species with Cow Parsnip, especially for inexperienced observers.

Cow parsnip and its relatives must be handled extremely carefully, because they contain phototoxic compounds (furanocoumarins), which make the skin sensitive to ultraviolet light, and therefore, to sunlight. That is why the stalks must be peeled before being eaten, and, especially for light-skinned people, even brushing up against the hairs of the leaves, and then exposing the skin to sunlight can cause severe blistering and discoloration of the skin that may remain for weeks or even months.

[Hithcock & Cronquist, 1990; Turner & Szczawinski, 1991]

Lewisia Rediviva (Bitter-root, Sand Rose)

Portulacaceae *(Purslane Family)*

A low herbaceous perennial arising from a stout, branching, fleshy taproot, which is gray-skinned with a white inner core which may turn pink on exposure to the air. The basal leaves are small, narrow and fleshy, borne in a dense cluster at the surface of the ground and usually withering by flowering time. The showy, pink (or whitish) flowers, up to 5 or 6 per plant, grow on short, leafless stalks. When fully out (May), they may grow up to 1.5" across, with up to 18 narrow, elongated petals, 2 sepals, 1 style, 3-8 stigmas, and numerous stamens. The seeds, several per flower, are black and shiny borne from a 3-5 chamber capsule. Strikingly beautiful, they close at night and reopen with the morning sun.

Habitat: Dry, sandy or gravelly sagebrush plains and slopes at low to moderate elevations east of the Cascade Mountain range.

Use: The roots of this important food plant were gathered in April and May, just before the plants were in full bloom. Certain areas, notably at higher elevations, produced larger, better tasting roots than others. Some say that the best plants grow in moist ground, not too sandy, usually among rocks. The roots are pried up with a digging stick made from the wood of the mock-orange. The tops are broken off and the outer covering is stripped off. The top part of the peeled root is split open and a small orange-red structure called the "heart" (apparently the young, developing plant of the next year's growth) is removed. Not every root has a "heart", but when present it will make the root very bitter if it is not extracted. The peeled roots are washed and laid on mats or grass for two or three days to dry. Generally, the roots are stored in sacks, or sometimes stored after being dried, in pits lined with pine needles. Care was taken to pack them tightly to prevent air from circulating, because this would make them hard and dry.

Bitter-roots, fresh or dried, are usually cooked by steaming or boiling or by pit-cooking for about half an hour. In the past, they were steamed in a birch-bark container using hot rocks. Some soaked then overnight and cooked them in soups, boiled together with saskatoon berries and deer fat, black tree lichen and fresh salmon eggs, tiger lily bulbs and ripened salmon eggs, dried gooseberries or other food combinations. They are seldom eaten dried, because they swell up in the stomach and cause discomfort. If stored alone they become very bitter, so are often mixed with dried gooseberries or dried saskatoons.

The bitterroot is the state flower of Montana.

[Kuhnlein & Turner, 1991; Turner et al., 1980]

Lilium Columbianum (Tiger Lily, Columbia Lily, Oregon Lily)
Liliaceae *(Lily Family)*

Perennial, up to 4 feet tall, from deep-seated white bulb with thick scales. Leaves narrowly lance-shaped, usually arranged in 6-9 whorls....upper stem leaves may be scattered. Flowers are bright orange tepals (6) with deep red or purple freckles near center. Large, showy and nodding. The tepals are curved backwards. There are 6 stamens and a single style. Fruits are 3-chambered capsules with low ridges, bearing numerous flat seeds.

Habitat: The Tiger lily in Washington state is found in meadows, thickets, open forest and clearings at low to subalpine elevations.

Use: The bulbs can be steamed or boiled. Though because the bulbs are bitter or peppery tasting, they have been utilized more as a flavoring or condiment than as a food by themselves. After cooking, the bulbs were usually dried for winter storage. Some tribes steam-baked the bulbs overnight, then dried them in the sun for three or four days, mashed them and spread them out in thin cakes to dry. In winter, the dried cakes were boiled and put into meat soup as a seasoning.

[Hitchcock & Cronquist, 1990; Kuhnlein & Turner, 1991; Pojar & MacKinnon, 1994]

Lomatium Canbyi (Canby's Lomatium, Biscuit-root, "White Camas")
Umbelliferae *(Apiaceae) (Celery/Carrot Family)*

This photo (Turner et al., 1980) displays the size and shape of the roots of this plant.

An herbaceous perennial with compound umbells with a taproot bearing a globose-thickened base up to 3.5 cm thick, surmounted by a short or rather elongate, more slender and cylindrical upper portion. Leaves mostly basal, greatly dissected, with small and narrow ultimate segments that do not resemble leaflets, ultimate segments of leaves relatively small, rarely any as much as 1 cm. Flowers petals 5 and white, sepals united with 5 teeth, stamens 5, inserted on an epigynous disk, alternate with petals, ovary bicarpellate, 2-celled, each cell 1-ovuled, styles 2, often swollen at base to form a stylopodium. Fruit a strongly dorsally flattened schizocarp, consisting of 2 halves (mericarps) separating at maturity, revealing a slender central carpophore to which they are attached apically; the marginal ribs of the fruit have thin spreading wings at maturity.

Habitat: Sagebrush Zone east of the Cascade Mountain range.

Use: Roots were typically dug in late April and early May. First Peoples would camp at locations of this plant and pit-cook the roots there. The roots can were eaten raw or cooked. Generally the roots were pit-cooked, the roots which turn brown, must then be boiled first before they can be eaten. "White camas" is pit -cooked the same length of time as black tree lichen, but only rye grass (Elymus cinereus) is used to line the cooking pit. Dried "white camas" can be eaten as is, or boiled.

[Hitchcock & Cronquist, 1990; Kuhnlein & Turner, 1991]

Lysichitum Americanum (Skunk Cabbage, Swamp Lantern)

Araceae *(Arum Family) (Celery/Carrot Family)*

Skunk cabbage is a perennial herb with thick, fleshy rhizomes and large, oval, smooth-edged basal leaves, often 1 m (3') or more long. It grows in clumps, with bright green leaves having a lustrous, waxy looking surface. The "flowers" appear in early spring, before the leaves have expanded, and consist of a showy, bright yellow sheath (spathe) up to 20 cm (8") or more long surrounding an elongated, club-like flower spike (spadix). The bisexual flowers consist of a 4-parted, scalelike perianth, with 4 stamens, a 2-celled ovary and a sessile, capitate stigma. At maturity the spike breaks apart to reveal berry-like and pulpy, green to reddish fruits (with 1-2 brown oval seeds) embedded in a white, pulpy tissue. The entire plant, especially when cut or bruised, gives off a sharp, pungent, skunk-like odor.

Habitat: Skunk cabbage is found in swamps and wet woods in all of western Washington at low to middle elevations.

Use: The fleshy rhizomes, which have a strong, peppery taste due to the presence of calcium oxalate crystals, were eaten occasionally by some tribes. They were roasted and eaten in early spring by some, and were steamed and eaten by other groups. These rhizomes were dug up with digging sticks, washed, and boiled or pit-cooked. Another tribe would boil the leaves in two changes of water, then eat them in spring. Also some groups dried and powdered the leaves and mixed them with berries or salmon eggs as a preservative or thickener.

More important and widespread than the actual food use of skunk-cabbage, however, was the use of the large, waxy leaves in various aspects of food preparation. They were employed by virtually all western Washington tribes like waxed paper, for wrapping food, lining cooking pits, separating foods being cooked together, and drying berries on. They were also used as makeshift plates and folded to make temporary dippers and drinking cups.

When used in drying berries, the leaves were prepared by slicing off the thick mid-rib and dipping the leaves in boiling water or holding them over a fire for a short time to "wilt" them. They were then set on a wooden drying rack and the cooked, mashed berries poured onto them, usually into a rectangular wooden frame to contain them. Although most people regarded the leaves as "poisonous," due to their rank smell and their calcium oxalate crystals, their use in food preparation apparently did not cause any tainting of the food. The waxy outer coating of the leaves protected the food.

Warning: Skunk cabbage contains microscopic bundles of needle-like crystals of calcium oxalate in their stems, leaves, and underground parts. These are apparently somewhat dispelled with cooking and/or drying, but if the plants are eaten fresh and unprocessed, they cause severe burning and irritation of the mouth, tongue, and throat. Fortunately, the initial burning almost always prevents a person from ingesting any serious toxic quantities (Kingsbury, 1964).

Notes: "In the ancient days, they say, there was no salmon. The Indians had nothing to eat save roots and leaves. Principal among these was the skunk-cabbage. Finally the spring salmon came for the first time. As they passed up the river, a person stood upon the shore and shouted:

"Here come our relatives whose bodies are full of eggs! If it had not been for me all the people would have starved." "Who speaks to us?" asked the salmon. "Your uncle, Skunk Cabbage," was the reply. Then the salmon went ashore to see him, and as a reward for having fed the people he was given an elk-skin blanket and a war-club, and was set in the rich, soft soil near the river."

Kathlamet story from Pojar & MacKinnon, 1994

[Hitchcock & Cronquist, 1973; Kuhnlein & Turner, 1991; Pojar & MacKinnon, 1994]

Maianthemum Dilatatum (Wild Lily-of-the-Valley, Snakeberry)
Liliaceae *(Lily Family)*

Perennial herb with slender, branching rhizomes. The stems are up to 10" tall, usually bearing two waxy leaves. The leaves are smooth, broad and heart-shaped. The small white flowers are borne in a terminal, cylindric cluster in May. Each flower has 4 distinct tepals, and 4 stamens and a delicate scent; the pistil has 2 chambers, with one bilobed style. Fruit is a 1-4 seeded berry that is light green and mottled brown at first, becoming red, to 6 mm in diameter.

Habitat: Shaded or moist streambanks and open to dense woods where usually moist, from sea level up to about 3500' elevation. Near the coast, Maianthemum forms the dominant groundcover in Sitka-spruce forests.

Use: Several coastal tribes ate the berries, but the berries were seldom highly regarded as food. Hunters and berry pickers occasionally ate them on expeditions. If eaten the usual method of preparation was to pick large quantities of green berries and store them in water until they were red and soft. Another method was to dry the green berries in the sun, clean them, and boil them for a few minutes in cedar boiling boxes by lowering baskets of the berries directly into boiling water. The soft-boiled berries could then be mixed with other berries, such as Salal, and dried in cakes. The roots have been pounded and soaked in water to make a topical disinfectant.

[Lombardi, 1996; Pojar & McKinnon, 1994; Turner, 1995]

Mentha Arvensis (Common Mint, Field Mint)
Labiatae/Lamiaceae *(Mint Family)*

Erect, herbaceous perennial (15-80 cm), strongly aromatic with a typical "mint" smell, growing from creeping rootstocks. The stems are squarish and the serrate leaves grow in opposite pairs along the stem. Lance-shaped to oval, the leaves are pointed, smooth or hairy, and have toothed margins. The flower petals are small and mauve (occasionally white), sepals fused into a glandular-hairy, 5-lobed tube, stamens 4 (and exserted); flowers are all borne in clusters at the axils of the upper leaves from July to August. The fruits are 4 small nutlets.

Habitat: Streambanks, wet meadows and clearings, springs, seepage areas, lakeshores, beaver wetlands; common at low to middle elevations.

Use: The aromatic leaves, with their strong "peppermint" taste and odor, were widely used by First Peoples as a beverage and flavoring. Tea was made from either fresh or dried leaves and hot water. This tea was also taken as a medicine for colds, fevers, pains, swellings, and colic in children. It was also administered to relieve 'summer complaint', symptomized by headache and bleeding nose (probably sunstroke). Some tribes used the leaves as flavoring when cooking meat. Others tied the leafy stems in bunches and dried them, then used them to flavor soups, meat and pemmican.

[Kuhnlein & Turner, 1991; Pojar & MacKinnon, 1994; Turner et al., 1980]

Penstemon Confertus (Blue Penstemon)

Scrophulariaceae *(Figwort Family)*

Perennial herb with opposite leaves, having flowers borne in whorls about the stem. Flowers have a 5-lobed calyx, a funnel-like blue corolla (to 12 mm) with two lips (bilabiate), the upper having 2 lobes and the lower with 3 lobes; there are 5 stamens but only 4 paired anthers leaving one sterile stamen (and in the genus, this sterile stamen is typically bearded...hence the name for this genus - beardtongue). Fruit a capsule with many seeds. [Some members of this species have a light yellow corolla].

Habitat: Widespread east of the Cascade Mountain range in the Bunchgrass Zone to mountain slopes.

Use: The flowers were boiled and rubbed on arrows and other items to give them a blue coloring which is indelible.

[Hickman, 1993; Kuhnlein & Turner, 1991; Turner et al., 1980]

Potentilla Pacifica (Pacific Silverweed, Pacific Cinquefoil)

Rosaceae *(Rose Family)*

Perennial hairy herb from long runners (stolons). Pinnately compound, alternate, stipulate leaves to 15" long, that are wooly (silvery) beneath. Flowers single on a stalk, yellow, calyx 5-lobed, petals 5, oval, stamens numerous, pistils numerous. Fruits are flattened oval achenes to 2 mm long.

Habitat: Wet spots (marsh edges, stream sides, estuarine flats), sandy spots (beaches and dunes), usually near the sea, but not restricted to maritime environs (also Sagebrush Zone of the "Scablands" eastern Washington); common at low to middle elevations.

Use: The long, brown-skinned roots were harvested in late fall or early spring. There are two types of roots, short, curly roots near the surface, and long, fleshy taproots. The roots were never eaten raw, because they are bitter. Steam-cooked, they taste like sweet potatoes, though they can still be bitter. The roots were also boiled and drank as a tea. The boiled roots were also mixed with fish oil and applied as a poultice. The roots were also pressed and the juice applied to inflamed eyes.

[Pojar & McKinnon, 1994; Turner, 1991]

Sagittaria Latifolia (Arrowhead, Duck Potato, Wapato, Arrow Leaf)

Alismataceae *(Water-Plantain Family)*

Perennial from tuber-producing (egg-shaped) rhizomes; plant to 3 feet tall. Leaves are all basal, with long stalks, leaf blades arrowhead-shaped, to 25 cm long; submerged leaves lance-shaped or even bladeless and linear. Flowers white, 1-2 cm across, often unisexual flowers; 3 greenish sepals, 3 petals, falling off early, ovaries and stamens numerous in several whorls of 3 in a long, terminal cluster. Fruits sharp-beaked, flattened, winged achenes that are numerous in a globular cluster.

Habitat: Marshes, ponds, lakes, wet ditches; usually emergent but often partly submerged; low elevations.

Use: Often First Peoples claimed wapato patches by clearing the area of competing growth to gain access to the tubers. Harvesting usually occurred in October and November. Since the tubers lay under water, the work was done by canoe, pulling the roots from a kneeling position, or as an alternative, by wading in the water and dislodging the tubers with the toes. Wapato tubers kept for several months if left unwashed in the raw state. They were stored and cooked as needed by baking in hot ashes. The tubers provide an excellent source of carbohydrate. The journals of Lewis and Clark relate that their diet while traveling in Oregon was elk meat and wapato bulbs, purchased from the Indians. The wapato resembles the potato in texture, but has a sweeter taste.

[Pojar & McKinnon, 1994; Turner, 1995]

Scirpus Acutus (Bulrush)
Cyperaceae *(Sedge Family)*

Herbaceous perennial growing from thick, elongated rhizomes. The stems are green, cylindrical, and leafless (reduced to prominent membranous sheaths at base of stem), with pithy insides, some 6.5' or more tall. They often grow in dense patches in shallow water around lakes. The brownish, inconspicuous flower cluster, or inflorescence is terminal, but appears to be borne at the side of the upper stem, the tip or continuation of which is actually a single, erect bract subtending the inflorescence.

Habitat: Marshes, muddy shores, shallow water (fresh and brackish), at low elevations.

Use: The food use included eating the fleshy rootstalks and rhizomes. In the spring, the inside of the first 10 cm of the rhizome below the base of the stem is eaten. It is white, tender, and rich like fat, some eating it raw, others preferring it cooked.

Bulrush stems, after they had turned brown in November, were gathered from swamps and the edges of lakes, dried, cut into lengths, laid on the ground, alternating top and bottom, and sewed into large mats with Indian hemp twine (see Apocynum). These were used to make "teepees", for temporary shelters, for doors and window-flaps, for drying berries on, and for cutting and drying meat and fish. For teepee coverings they were woven very closely; one could see air spaces between them in dry weather, but when it rained they expanded and the matting became waterproof. They were also woven into storage bags and used to make headdresses for Indian doctors. For bags they were often woven with some other fiber, such as willow bark, or Indian hemp. These bags were used to store dried foods including meat, fish, and berries.

[Kuhnlein, 1991; Pojar & MacKinnon, 1994; Turner et al., 1980]

Sedum Divergens (Spreading Stonecrop)
Crassulaceae *(Stonecrop Family)*

The spreading stonecrop is a succulent, mat-forming perennial herb with short vegetative stems covered by round or oval shaped, fleshy leaves arranged opposite on the stems. The flowering stems are more erect, up to 10 cm (4") tall, and also leafy, with flat-topped clusters of bright yellow flowers. The stems and leaves are frequently red, especially in exposed localities. The flowers have 5 distinct petals to 9 mm in length and are lance-shaped; the sepals more or less united, 5-parted and a third the length of the petals; stamens 10; there are 5 pistils, with a single carpel (later a follicle) bearing many seeds.

Habitat: Exposed, rocky ledges, ridges, and talus slopes from sea level to alpine elevations, generally but not entirely west of the Cascade Mountains in Washington.

Use: The small, round, fleshy leaves were generally regarded more as berries than greens. The leafy stems were gathered in the spring, before the plants come into bloom, or in the fall. They were generally eaten raw, formerly with eulachon or other animal grease. They are slightly tart (due to the presence of oxalic acid), but drinking water after eating them is said to leave a pleasant taste in the mouth. One group of First Peoples chewed them as a mouth freshener after taking fish-grease laxative. Another group of people chewed them raw as a cough medicine.

[Hitchcock & Cronquist, 1973; Kuhnlein & Turner, 1991; Pojar & MacKinnon, 1994]

Smilacina Racemosa (False Solomon's-Seal, False Spikenard)
Liliaceae *(Lily Family)*

Tall herbaceous perennial growing from thick, whitish, branching rhizomes; often found in dense clusters. The leafy, arching stems grow to about 3' tall. The leaves are smooth-edged, broad and elliptical, and are borne alternately along the stem in two rows. The are distinctly parallel-veined (monocot) and often clasping. The flowers are small and densely clustered, white, strongly perfumed, in a dense, terminal cluster. The berries are small (5-7 mm diameter) and densely clustered too, at first being green or brown and mottled or striped, ripening to bright red.

Habitat: This plant grows in rich woods, thickets, and moist clearings at low to subalpine elevations all about Washington.

Use: The young greens, fleshy rhizomes, and the ripe berries of this plant were all eaten by First Peoples in various part of Washington. The rhizomes were cooked after being soaked to get rid of their disagreeable taste.....though some have eaten the rhizomes raw. The cooked rhizomes were also utilized as a poultice. The berries were eaten raw, though they are not especially palatable.

[Kuhnlein, 1991; Pojar & MacKinnon, 1994]

Typha Latifolia (Cattail, Tule, Reedmace)
Typhaceae *(Cattail Family)*

Tall perennial herb growing from thick, white, fleshy rhizomes. The alternate leaves are tightly clasping at the base, and are long, upright, flat on the inside and rounded on the outside, with a spongy interior (pithy). They are mostly about 2 cm across and up to 2 meters or more tall. The flowers are borne in a compact, terminal spike on a round stalk, familiar to most people as the "cat's tail."

The male, pollen-producing flowers are produced on the thin, upper portion of the spike, the female, seed-producing flowers (persistent) on the lower portion. In fruiting, this part turns a deep brown, bearing tiny ellipsoidal nutlets, about 1 mm long, designed to float in wind or water, and the ripe seeds are eventually released as the head breaks apart into a wooly mass of fluff (numerous long, slender hairs) in late summer.

Habitat: a common plant of shallow marshes, swamps, and lake edges, in slow-flowing or quiet water, low to middle elevations, often forming extensive patches. Cattail is found all over Washington (and North America, and Eurasia, and North Africa).

Use: Cattail is widely known for its edible shoots, rhizomes, and flower spikes (Turner & Szczawinski, 1980). The leaves are used as a mat-making material (Turner, 1979), and in food preparation. They were used as a surface on which to dry berries and "root" foods, and were also used as "plates" for serving food (Turner et al., 1990). Cattail leaves were also used as matting for bedding, sitting or kneeling on in canoes, as insulation for winter homes, or for capes, hats, blankets, or bags. The rhizomes were eaten either raw, fried in animal or fish grease, pit-cooked or roasted. Some groups ate the flowering spikes and pollen (for flour). Cattail seed fluff was used as stuffing for pillows and mattresses, as a wound dressing and for diapers.

[Kuhnlein & Turner, 1991; Pojar & McKinnon, 1994]

Xerophyllum Tenax (Beargrass, Indian Basket-Grass, Western Turkey-Beard)

Liliaceae *(Lily Family)*

Beargrass is a large perennial herb (to 1.5 m/4½' tall) that grows from short, stout rhizomes. The basal leaves are grass-like, tough, wiry, evergreen, and numerous. These leaves grow long to about 90 cm (35") and have finely toothed margins. The stem leaves are much shorter, though similar, and become shorter further up towards the inflorescence. The flowers are many in the inflorescence, a terminal raceme on a tall, erect, unbranched peduncle. Each flower is white (creamy), saucer-shaped, long-stalked (2.5 - 5 cm) and fragrant.

Each of the tepals are distinct (6-8 mm long), spreading and persistent. There are 6 stamens that are equal to or longer than the tepals. The ovary is 3-celled. The styles are elongate, and distinct. The fruits are typical of the lily family. Each fruit is a 3-lobed capsule that grows 5-7 mm long, each with a few small seeds. The flowering stems (and all their leaves) die after fruiting.

Habitat: Beargrass is found in open areas (clearings, meadows) and open to fairly dense forest from near sea level (on the Olympic Peninsula) to drier areas in subalpine meadows. Beargrass dominates the forest understorey in many subalpine forests in the Cascade Mountains.

Use: Beargrass is a very important plant to basket makers because of the thick clumps of tough, thin leaves. The leaves are gathered and dried in the sun, which turns them a cream color. Beargrass is used for basket foundations as well as dyed for imbricating designs.

Also, beargrass was useful in the making of hats and capes by the First Peoples.

[Hitchcock & Cronquist, 1973; Lombardi, 1996; Pojar & MacKinnon, 1994]

Zostera Marina (Eel-grass)

Zosteraceae *(Eel-grass Family)*

Bed of eelgrass

Eelgrass plant and roots

Eel-grass is a grass-like marine, submerged or partially floating perennial with long, bright green, ribbon-like alternate, 2-ranked leaves, about 1 cm wide. Short stems grow up from extensive, white rhizomes that are light green to white, and branching. The flowers are inconspicuous, enclosed in the sheaths of the leaf bases; the male & female flowers sessile and alternate in 2 rows on each spadix; style short with 2 stigmas. Fruits bladdery, 1-seeded achenes, flask-like, ribbed, beaked.

Habitat: Extensive beds in sand, just below the low-tide line, typically sheltered shores usually close to the open ocean, but often within the Puget Sound. Forms large colonies on muddy substrates especially in estuaries, also occurs in spray pools along the exposed outer coast and on sandy substrates where there is weak wave action.

Use: The crisp, sweet rhizomes and leaf-bases of eel-grass was eaten fresh or dried into cakes for winter food. Some placed the rhizomes in steaming pits to flavor deer, seal and porpoise meat. Some tribes preferred eel-grass with herring spawn attached to the leaves.

[Pojar & McKinnon, 1994; Turner, 1995]

Acer Circinatum
(Vine Maple)

Acer Glabrum
(Rocky Mountain Maple)

Acer Macrophyllum
(Big-Leaf Maple)

Alnus Rubra
(Red Alder)

Amelanchier Alnifolia
(Service Berry, Saskatoon Berry, June Berry, Shad-bush)

Arbutus Menziesii
(Madrone, Madrona, Madrono)

Arctostaphylos Uva-ursi
(Kinnikinnick, Bearberry)

Artemisia spp.
(Sagebrush, Wormwood)

Mahonia nervosa/Mahonia Aquifolium
(aka Berberis) (Oregon Grape)

Betula Papyrifera
(Paper Birch, White Birch, Canoe Birch)

Cornus Nuttallii
(Pacific Dogwood, Western Flowering Dogwood)

Cornus Stolonifera
(Red-Osier Dogwood)

Corylus Cornuta
(Hazelnut, Filbert)

Crataegus Douglasii
(Black Hawthorne)

Empetrum Nigrum
(Crowberry, Curlewberry)

Gaultheria Shallon
(Salal)

Malus Fusca
(Pacific Crabapple, Wild Crabapple, Western Crabapple, Oregon Crabapple)

Oemleria Cerasiformis
(Formerly Osmoronia) (Indian Plum, Oso-berry, Skunk Bush)

Opuntia Fragilis
(Brittle Cholla)

Philadelphus Lewisii
(Mock-Orange, Syringa)

Populus Tremuloides
(Quaking Aspen)

Populus Balsamifera ssp. (Trichocarpa, Black Cottonwood)

Prunus Emarginata
(Bitter Cherry)

Prunus Virginiana
(Choke Cherry)

Quercus Garryana
(Garry Oak, Oregon White Oak)

Rhamnus Purshiana
(Cascara)

Ribes spp.
(Currant, Goosberries)

Rosa spp.
(Wild Roses)

Rubus Parviflorus
(Thimbleberry)

Rubus Spectabilis
(Salmonberry)

Rubus spp.
(Blackberry, Raspberry, Brambles, Dewberry Blackcap)

Salix spp.
(Willows)

Sambucus Racemosa
(Red Elderberry)

Shepherdia Canadensis
(Soapberry, Soopalollie, Foamberry, Buffaloberry)

Vaccinium Parvifolium
(Red Huckleberry, Red Whortleberry)

Vaccinium spp.
(Blueberrys, Huckleberry, Cranberry, Bilberry, Whortleberry, Clueberry Lingonberry)

Viburnum Edule
(Highbush Cranberry, Squashberry, Mooseberry)

Acer Circinatum (Vine Maple)

Aceraceae *(Vine Family)*

Deciduous tree, to 20 meters high, it has a short, crooked trunk, with twisted, spreading limbs and a low, irregularly shaped crown. The trunk sometimes grows almost horizontally and may root if it touches the ground. Leaves opposite, almost circular, 6-11 cm wide, with 7-9 lobes; the lobes are triangular, with sharp single or double teeth, bright yellowish-green on top, pale green and downy underneath, turning red or yellow in autumn. Flowers in small loose clusters, emerging with the leaves; sepals hairy spreading, red; petals white, with acute, hooded apex. Fruit glabrous, wings spreading 180 degrees with each other, up to 50 mm long, and quite red when ripe.

Habitat: Vine maple occurs most frequently on moist soils, rich in nitrogen, particularly along the banks of streams and wet sites. It can live in the shade but also occurs in openings in the forest. Vine maple and alder are often the first trees to establish after landslides. Vine maple commonly occurs with bigleaf maple, Douglas-fir, western hemlock, grand fir, and Pacific dogwood, and sword fern underneath. Range is mostly coastal Washington at lower and middle elevations. There are though sporadic occurrences in wetter places east of Cascades.....head of Lake Chelan, also some valley bottoms north of Peshastin.

Use: Many First Peoples used vine maple occasionally for bows and frames for fishing nets. Some groups used the wood for making snowshoes and cradle frames. Its long straight shoots are appreciated for making an openwork basket with a crossed-warp twine or a broad-spaced checker board weave. These baskets are used for general household utility, such as carrying wood, clams, and fish. Some used saplings as swings for babies' cradles. Also salmon tongs were made from the wood. In many places it is used for firewood, and the charcoal was mixed with oil for black paint.

[Gunther, 1981; Pojar & McKinnon, 1994]

Acer Glabrum (Rocky Mountain Maple)

Aceraceae *(Maple Family)*

Deciduous tree/shrub to 33 feet. Leaves are opposite, 1-4 inches across divided into 3-5 lobes, coarsely toothed, and turning bright yellowish-orange to crimson in fall. Flowers are greenish-yellow, small in terminal or auxiliary clusters of about 10, appearing with the leaves. Male and female flowers on separate or same plant. Fruits are tan, paired, attached at the seed both with single wing pointing opposite in the same plane. They float from the tree as a propeller, spiraling downward.

Habitat: Dry ridges to moist but well-drained seepage sites; usually on drier, more open sites than vine maple; low to middle elevations.

Use: The wood was used for snowshoe frames. One tribe of southern Vancouver Island used the bark to make an antidote for poisoning.

[Pojar & McKinnon, 1994]

Acer Macrophyllum (Big-Leaf Maple)
Aceraceae *(Maple Family)*

Deciduous tree, 10-30 meters high, winter buds with overlapping or with 2 outer scales. Leaves opposite, palmately lobed and 15-30 cm broad, deeply 5-lobed and irregularly coarsely notched. Flowers colored yellowish or greenish in long drooping clusters appearing just before or as the leaves unfold (April); calyx 5-12 lobed; petals as many as calyx-lobes or wanting; stamens 3-12; carpels 2 or 3, with 2 ovules each; styles 2, united below. Fruit 2, long-winged (to 50 mm/wing) (samara), with yellow stiff hairs on nutlets.....floating downward as a spiral-winged helicopter.

Habitat: Dry to moist sites, often with Douglas-fir, red alder, western red-cedar and western hemlock, often on sites disturbed by fire, clearing or logging; at low to middle elevations (<3000′), mostly western Washington but found in some drainages on the eastern side (Chelan and Klickitat Counties, near Peshastin and Entiat).

Use: The fresh cambium has been eaten in small quantities. The cambium was constipating, so was eaten with oil. It was also occasionally dried in cris-cross strips for winter. The inner bark was also used to make baskets, rope and whisks for whipping soopolalie berries. Some First Peoples ate young maple shoots raw, and also boiled and ate the sprouts when they were about 3 cm tall. The leaves, like Skunk Cabbage leaves, were used as a base for drying berries. The large leaves were also used for storing food during the winter or burned in steaming pits to add flavor to food.

The wood was made into paddles. It was also used for spindle whorls and various other implements such as oars, combs, fish/duck spearheads, and fish clubs.

[Kuhnlein & Turner, 1991; Pojar & McKinnon, 1994]

Alnus Rubra (Red Alder)
Betulaceae *(Birch Family)*

Tree to 60-70 feet high, and diameter of old trees to 40 inches; bark thin, greenish on young trees, turning grey to whitish with age. The inner bark and fresh wounds tend to turn deep reddish-orange when exposed to moist air. Leaves to 6″ or more in length, ovate to oval, acute, pubescent on veins beneath, petioles and veins rusty-red. Flowers opening before the leaves, on the branchlets of last year. Male flowers are borne in long, haning, clustered catkins which ripen in early spring. Female cone catkins 4-8, are 1″ long, on short stalks, which are green at first, then turn brown and woody at maturity. This woody cone produces a narrow-winged, small, flat nutlet for a seed.

Habitat: Moist woods, swampy areas and recently cleared ground. Red alder does not tolerate shade and occupies a site quickly after disturbance. It grows rapidly, often shading out conifers such as Douglas-fir, It tends to occur on sites rich in nutrients, including floodplains and streambanks. Red alder occurs with all of the low elevation coastal tree species, including black cottonwood, grand fir, Douglas-fir, and the cedars. It tends to be associated with a dense layer of shrubs and herbs, including salmonberry, red elderberry, and several ferns.

Use: Many ate the sweet, gelatinous cambium tissue, between the bark and the wood. It was scraped off and eaten fresh, in the spring, usually with some kind of oil, or dried in cakes for winter use. Some mixed it with sugar (Turner, 95).

The wood of red alder was the preferred fuel for smoking salmon and other foods, and alder wood was often used for wooden food dishes, because it does not impart strong flavor to the food.

Alder was the main source of red and brown vegetable coloring. a piece of alder wood was boiled in water, boiled right down until the water was dark red. Then the wood was taken out and powdered ochre pigment was added to the liquid. It was boiled and stirred again until it was nearly dry, then “one or two drops” of salmon oil were added. It was stirred until it was very thick, taken off the heat and placed on a piece of bark, then left to dry. Finally, it was powdered and was then ready for use as a paint. Usually, it was the bark of the alder, steeped in water, that was used as a dye; it yielded colors ranging from red to reddish-brown. Buckskin was colored by rubbing alder bark directly on it.

The “seeds” (actually achenes, the fruits with a single seed inside) were harvested from the dried heads, being shaken out into bags or baskets and spread onto mats for drying for two or three days. Sometimes they were browned by toasting on a hot rock. The chaff could be removed by winnowing - pouring from one basket to another in the wind. The seeds could be eaten whole, but more often, they were ground to a powdery meal (shells and all) with a stone mortar and eaten alone without further preparation or mixed with other foods such as deer grease, white-bark pine kernels, pounded, dried saskatoon berries, or Douglas-fir sugar. Sometimes they were formed into small cakes, and sometimes they were boiled in soup, or cooked with oil, water or broth and eaten as a porridge. Some First Peoples purportedly smoked the leaves as a tobacco substitute and for this purpose were mixed with kinnikinnick.

[Turner et al., 1980]

Notes: Red alder is short-lived, with an average life span of 40 to 60 years. It is a nitrogen-fixer, meaning that it puts nitrogen back into the soil (eventually), unlike most plants. Small bumps, called nodules, on the roots house in a symbiotic relationship, an organism [bacterium (Nitrobacter?)] that can convert the nitrogen from the air into a form that plants can absorb from the soil. The red alder helps itself in this way, but when the nitrogen-rich leaves fall, they provide a nutritious compost on the forest floor for others to utilize.

Amelanchier Alnifolia (Service Berry, Saskatoon Berry, June Berry, Shad-bush)

Rosaceae *(Rose Family)*

Shrubs or small trees to 13 feet high. Leaves broad-oval to suborbicular, 1-2″ long, with lateral, conspicuous parallel veins in 8-13 pairs. Margins coarsely serrate or dentate to below middle or sometimes entire or with a few small teeth at the top. Flowers in upright racemes (April and May), short and rather dense, 5-15 flowered, densely silky-villous; petals white, sepals more or less pilose within, becoming reflexed in age, stamens about 20, styles 5, united below. Summit of ovary persistently tomentose. Fruit glabrous, glaucous, purple-black.

Habitat: Dry forests and open hillsides in well-drained soil. Common along rocky coastlines. If coastal then below 2000′. Abundant on rocky slopes in all drier regions of eastern Washington.

Use: The berries were picked into coiled cedar-root baskets tied to the waist and packed in larger coiled baskets carried on the back by a tump line. To dry, the berries were spread on large, flat rocks or on tulle mats or sacks laid on the ground or on long racks. They were taken in if it rained. They were never piled, but spread out only one layer deep. Drying took about a week, depending on the weather and the degree of ripeness of the fruit. When dry they were placed in Indian hemp bags for winter storage or in wooden or bark tubs for summer use.

Saskatoons were commonly mixed with other foods. Sometimes fresh berries were boiled for about half an hour with Bitter-root or salmon eggs. The dried fruits were usually mixed with Bitter-root and boiled, often along with salmon, which would be served separately. a special delicacy was salmon eggs and dried Saskatoons, boiled or eaten cold, but never mashed. The berries were also mixed with Black tree lichen deer blood and meat, the bulbs of tiger lilies, and other types of berries such as mountain blueberries.

The dried berries are very sweet, and in the old days they were used to sweeten “Indian ice-cream” made from soapberries and were mixed with bitter foods such as red-osier dogwood fruits.

The wood of the Saskatoon bushes is strong and straight-grained and was used to make such items as arrows, digging sticks, spears, and seed beaters. The bark was removed and the wood heated before a fire to mold and harden it. It was rubbed smooth with horsetail, tough grass, or a handful of wood shavings from itself. The young branches of Saskatoon, like those of willow and other species, were twisted into a type of rope.

[Turner, 95; Turner et al., 1980]

Arbutus Menziesii (Madrone, Madrona, Madrono)

Ericaceae *(Heath Family)*

Madrone is a small, to medium-size tree to 30 m high with heavy branches. Young bark is chartreuse and smooth, while older bark is dark brownish-red and peeling off. The leaves are alternate, evergreen, oval to 15 cm long and somewhat messy, shedding leaves and its bark most of the year. These leaves are dark shiny above, whitish-green below, hairless, leathery, and without teeth except sometimes on young growth. The flowers are fragrant, and occur in large drooping clusters. The calyx is 5-parted surrounding the urn-shaped, united petals (typical of most of the family). The petals are 6- 7 mm long. The ovary is superior. There are 10 stamens with pilose filaments near the base. The anthers are awned from the back to near the tip, and open by terminal slit-like pores. The fruits are orange-red berries, about 1 cm across, with a finely granular surface.

Habitat: On dry, sunny, often rocky sites, frequently with coarse-textured soils from low to middle elevations and associated with Douglas-fir and Garry oak.

Use: Madrone berries have been know to be eaten, but little is known about its preparation. Some First Peoples sometimes cooked the reddish, papery bark with camas bulbs to color them pink. Red-alder bark was also used for this purpose. One tribe used medicinal preparations from madrone bark and leaves for colds, stomach problems, as a post-childbirth contraceptive, and in a ten-ingredient bark medicine for tuberculosis and spitting up blood (Turner & Hebda, 1990).

Turner, N.J. and R.J. Hebda. 1990. Contemporary use of bark for medicine by two Salishan native elders of southeast Vancouver Island. Journal of Ethnopharmacology 229:59-72.

Notes: a Straits Salish myth recorded by early ethnographer Diamond Jennes: Pitch used to go fishing before the sun rose, and then retire to the shade before it became strong. One day he was late and had just reached the beach when he melted. Other people rushed to share him. Douglas-fir arrived first and secured most of the pitch, which he poured over his head and body. Grand fir obtained only a little; and by the time Arbutus arrived there was none left. Therefore, Arbutus has no pitch to this day.

[Hitchcock & Cronquist, 1973; Pojar & MacKinnon, 1994]

Arctostaphylos Uva-ursi (Kinnikinnick, Bearberry)

Ericaceae *(Heath Family)*

Kinnikinnick is a prostrate, mat-forming shrub with bright green, leathery, evergreen, obovate leaves. The young branchlets are usually finely hairy and viscid, but may become smooth later. The leaves are smooth edged, and generally smaller than those of alpine bearberry. The flowers are white to pinkish, 4-6 mm long and urn-shaped, borne in small clusters at the branch tips. The connate petals are 5-merous, with 10 stamens inside and surrounded basally by a small calyx. The filaments are broadened and hairy near the base. The anthers are awned dorsally near the tip, and release their pollen through terminal pores. The ovary is 5-celled. The fruits, when mature, are berry-like, red-skinned and globose, 7-10 mm across. The fruits are also glabrous, the inner pulp whitish, dry and mealy, with several hard nut-lets fused together as a single stone.

Habitat: Dry slopes, sand and well-drained soils in exposed areas.

Use: The berries were usually harvested in late summer, but could be obtained throughout the winter months and even into spring. Ripe berries are edible, though dry and mealy in texture. Many First Peoples soaked the berries in water, grease, seal oil, or more recently, butter, to reduce the dryness and prevent constipation. Some dumped the berries into a large pot of melted Mountain Goat grease and ate them with spoons. The berries could be dried for storage, or buried fresh in various containers. The Okanogan-Colville cooked them with venison or salmon, or dried them into cakes which were eaten ceremoniously with salmon eggs.

Kinnikinnick berries were utilized in various ways outside Washington. The Ojibwas cooked them with meat to make a broth. The Chipewyan and Woods Cree cooked them lightly in animal fat, then pounded and mixed them with jackfish or whitefish eggs, sweetened with birch syrup or sugar. The Vanta Kutchin of the Yukon ate them with pemmican and fish-eggs, and one woman noted that when eaten with fish-eggs, they help prevent the eggs from sticking to the teeth. Nlaka'pamux and other Interior Salish people of British Columbia usually cooked the berries with bear fat or fish oil, and sometimes fried them in hot lard or salmon oil, or boiled them with salmon eggs or in soups. Fried on a hot stove, they were eaten as a snack or treat by children. The Flathead of Montana used the dried, powdered berries as a condiment with deer liver to make a kind of pemmican. The Nuxalk (Bella Coola) people formerly cooked them in a pot of melted mountain-goat fat, then served them to chiefs at feasts.

Some coastal peoples smoked Kinnikinnick leaves like tobacco using hollowed-out gooseberry stems, though there was no knowledge of smoking Kinnikinnick before European influence. The leaves were generally toasted over a fire, then smoked alone or mixed with tobacco in a pipe.

[Hitchcock & Cronquist, 1990; Kuhnlein & Turner, 1991; Turner, 95]

Artemisia spp. (Sagebrush, Wormwood)
Compositae/Asteraceae *(Sunflower Family)*

Aromatic, much-branched shrub reaching a height of 4 meters. Leaves 1-4 cm long, alternate, often dissected. Young twigs covered with closely matted hairs. Flowers wind-pollinated, dull and drab and found in small heads or in large, loose terminal clusters in numerous heads of 5-8 flowers in mountains and 3-5 on plains, rayless, all perfect; corolla tubular, 5-toothed in the perfect flowers; involucral bracts in several series dry, with thin margins; flowering from mid-September to mid-October. Fruit a glabrous achene's without pappus. [This description generally follows that of A. tridentata, but is general enough for others in this genus.]

Habitat: Dry plains and hills, and upwards into timberline east of Cascades. Intolerant of alkali. Sagebrush is considered an intruding weed in overgrazed or otherwise impoverished soils. Its occurrence is almost always on soils of volcanic origin and seldom on those soils of granitic formation.

Use: The bark of the sagebrush was stripped off and braided to use as a rope, and for making quiver cases and saddle blankets, as well as dresses, skirts, aprons, and breechclouts. It was also used as tinder, for making friction fires, and the wood was used as a fuel and for smoking hides during the tanning process. To make a "slow match" for travelers, the bark was twisted tightly and tied in lengths of two or three feet.

The leaves and branches were widely used as a medicine for colds and sore throats. They were boiled to make a strong, bitter tea, which was drunk to cause sweating during a cold. It also acted as a laxative. The leaves were also mashed, held in the palm of the hand, and inhaled. They clear the nose and throat like camphor or "Vick's Vaporub". Sometimes the leaves were dried and pulverized and sprinkled on sores to hasten their healing.

[Turner et al., 1980]

Mahonia nervosa/Mahonia Aquifolium (aka Berberis) (Oregon Grape)

Berberidaceae *(Barberry Family)*

Evergreen shrubs with unarmed, crooked stems, and yellowish wood. Leaves persistent, leathery, pinnately compound with a terminal leaflet (odd pinnate) and holly-like; leaflets spiny-pointed, the lateral sessile; stipules minute, awl-shaped. Flowers in six parts, yellow, in many flowered terminal racemes springing from axils of bud-scales; perianth whorls 5, each 3-merous, the outer series bract-like, the inner 2 series generally slightly smaller than the sepals, bilobed, and glandular at the base; anthers with 2 uplifting valves. Fruit blue to black berry, and sometimes with a bloom; seeds solitary or few.

- M. nervosa: Leaflets palmately veined, 9-19, petioles 5-12 cm long & under 2′ in height.
- M. aquifolium: Leaflets pinnately veined, 3-9, petioles 2-5 cm long, and can reach 3-5′ in height

Habitat:

- M. nervosa: Lower elevations in coastal forests of Washington.
- M. aquifolium: Found in drier, more open, (often rocky) sites in sagebrush covered hills on east side of Cascade Mountain range in Washington to the coast.

Use: The tart berries of both Oregon-grapes were eaten raw after ripening in August, but generally not in quantity. Often they were mixed with salal or some other sweeter fruit. Some First Peoples squeezed and mashed the fruits in baskets and spread it all out to dry in cakes. Sometimes the fruits were boiled to a jam-like consistency and made into a juice, which was heated again later and drank (Turner et al., 1980).

The bark is bright yellow inside, due to an alkaloid, berberine. The shredded bark of the stems and roots was used to make a bright-yellow dye for basket materials, mountain goat wool, and porcupine quills. Apparently the sticks of the plant were simply boiled in water until it was almost all boiled away and all that was left was a powdery yellow substance. This could be then mixed with the resin of cottonwood buds. Often wolf “moss” (Letharia vulpine) was boiled up with Oregon grape to give an even deeper yellow.

Branches of Oregon grape, presumably because they are prickly, were placed, with those of wild roses, in a person’s grave and around the walls and on the furniture of the house where the person had died, to prevent his ghost from returning.

[Kuhnlein & Turner, 1991; Pojar & McKinnon, 1994; Turner et al., 1980]

Betula Papyrifera (Paper Birch, White Birch, Canoe Birch)
Betulaceae *(Birch Family)*

Small to medium sized trees to 100′, with bark peeling in papery strips, white to coppery-brown marked with brown horizontal lines of raised pores (lenticels). The leaves are alternate, deciduous, oval to round, glandular-hairy, sharp-pointed to 4″ long, with doubly-margined teeth on the leaf margins. Flowers are either male or female in separate catkins on the same tree. Staminate inflorescence 1-3″, bracts each subtending 3 flowers and 3 bractlets; pistillate inflorescence to 1-1′ 4″, bracts each subtending 3 flowers and 3 brachlets. Male flowers with 4 sepals & 2 bifid stamens; female flowers have a minute ovary with forked styles, and linear stigmas, on a 3-lobed bract. Flowering occurs before or during leaf-out. Mature catkins break up to release winged nutlets.

Habitat: Open to dense woods, usually moist, from lowlands to lower mountain slopes; typically on well-drained sites but also on or around bogs and other wetlands.

Use: The bark can be peeled off the tree in large, flexible, waterproof sheets. Baskets and canoes were the most common items constructed from paper birch. The inner sap was used as emergency food. Birch resin/gum could have been medicinal for some First Peoples. The chewable gum contains zylitol, a disinfectant, and some terpenes, which could give the chewer a mild buzz.

[Pojar & McKinnon, 1994]

Cornus Nuttallii (Pacific Dogwood, Western Flowering Dogwood)
Cornaceae *(Dogwood Family)*

Pacific dogwood trees grow to 65 feet in height with many branches giving the tree an irregular look. The leaves are opposite in arrangement, to 4" long, deciduous, deep green above, grayish-green below, turning pinkish-red in the fall, with characteristic curving parallel prominent veins to the leaf's edge. The 'flower' is actually an inflorescence of many small flowers bordered by 4-7 large white bracts. The actual flower has petals that are about 2.5 mm long, whitish or greenish in color and often purple-tipped. There are 4 stamens and a two-carpel pistil. The tree flowers in spring and often repeats in the fall. The fruits are clusters of bright red berries (drupes), each of which are about ⅓" in diameter, usually bearing 2 seeds.

Habitat: At low elevations, usually on moist, well-drained sites, often along streams or gullies, in open to fairly dense, usually mixed forest.

Use: Wood was considered good for bows, arrows, implement handles and clothing hooks. The bark has been boiled for a dark-brown dye. Bark preparations were made for use as a blood purifier, a lung strengthener, or as a treatment of stomach troubles. The wood is in demand for making thread spindles, piano keys, and other purposes, but its collection is prohibited by law in British Columbia.

[Hitchcock & Cronquist, 1990; Pojar & McKinnon, 1994]

Cornus Stolonifera (Red-Osier Dogwood)

Cornaceae *(Dogwood Family)*

Freely spreading shrub with many stems, 3-18′ tall; branching is opposite, young stems (and most old ones) often bright, smooth, shiny red. Leaves are opposite, deciduous, oval 5-10 cm long, with 5-7 prominent parallel veins that converge at leaf tips; white threads running through the veins can be seen if a leaf is carefully split crosswise and pulled apart. Flowers are white to greenish, small 2-4 mm across with 4 petals and stamens; flowers are numerous in dense flat-topped terminal clusters. Fruits are white, berry-like drupes, 7-9 mm long, each with a somewhat flattened stoney seed. Two subspecies occur:

- **var. stolonifera:** stone of fruit smooth; pubescence generally trailing in same direction (gen. east of the Cascade Mountains)
- **var. occidentalis:** stone of fruit grooved lengthwise; pubescence often spreading or curled (gen. west of the Cascade Mountains)

Habitat: Moist soil, typically in swamps and streamside forest and scrub, but also in open upland forest and thickets and bog-forest edges and disturbed sites; valley bottoms to mid-elevations.

Use: The fleshy drupes are known to be tart and bitter, but were nevertheless eaten by many tribes. The fruits were gathered from August to October and eaten fresh, a few at a time, or, more commonly, pounded and mixed with other fruits such as choke cherries or saskatoons. Some people mashed them and dried them in cakes; others seldom stored them. The white drupes are believed to be less bitter than those tinged with blue.

The branches were used in making fish traps, spatulas, basket rims, and other items, and the larger limbs for frame poles. Old branches were used in smoking hides. The bark, like that of various true willows, was twisted into a type of rope used to lash fish traps, raised caches, and other structures.

The powdered bark was mixed with the resin of cottonwood buds to make a red paint.

[Kuhnlein & Turner, 1991; Pojar & MacKinnon, 1994; Turner et al, 1980]

Corylus Cornuta (Hazelnut, Filbert)

Betulaceae *(Birch Family)*

Deciduous tree/shrub to 14 feet, with many stems, and densely clumped. Alternate leaves, elliptic to oval, typically with heart-shaped base and sharp tip. The leaf margin is doubly-serrated. The leaves turn yellow in the fall. The pollen from male flowers in pendant catkins is wind-disseminated. Flowering occurs before leafing. Fruits are spherical edible nuts enclosed in tubular husks in clusters of 2-3 at ends of branches.

Habitat: Moist but well-drained sites at low to middle elevations; in open forest, shady openings, thickets, clearings, rocky slopes and well-drained streamsides.

Use: The nuts were picked in early autumn, stored until fully ripe and then eaten raw, or roasted. The long, flexible shoots were twisted into rope.

[Pojar & McKinnon, 1994]

Crataegus Douglasii (Black Hawthorne)
Rosaceae *(Rose Family)*

Shrub/tree to 45 feet in height, bark brown or grey, rough; spines ½ to 1″ in length, or sometimes unarmed. Leaves deciduous, broadly obovate, more or less doubly serrate, petioles sometimes glandular. Flowers in corymbs, white, with 5 sepals, 5 petals, and numerous stamens with pink anthers, styles 5. Fruit a small black pome. The genus name comes from the Greek 'kratos' (strength) because the wood is noted for its strength and fine grain.

Habitat: Moist, open places, forest edges, thickets, shorelines, streamside areas, roadsides, coastal bluffs; at low to middle elevations.

Use: The thorns of black hawthorn had many practical uses, including prongs on rakes used for catching herring, lances for probing skin blisters and boils, or for piercing ears, fish hooks and playing pieces for games. The wood is very hard and was fashioned into tool handles and weapons. The dry, seedy fruits were eaten by many coastal groups both fresh and dried, often with oil or Grease, or salmon roe. Some First Peoples boiled the fruit for a long time in a cedar box, mashed them and stored them for winter when they were served with grease, salmon oil or the grease of marmot, black bear or grizzly bear to relieve some of the dryness. The bark of black hawthorne was used to treat venereal disease, thin the blood, strengthen the heart, or reduce swellings, and it was used in steam baths.

[Pojar & McKinnon, 1994; Turner, 1995]

Empetrum Nigrum (Crowberry, Curlewberry)
Empetraceae *(Crowberry Family)*

Low growing, shrubby evergreen up to 12″ high, resembling a miniature fir tree, with short, needle-like leaves (grooved underneath), which are turned under at the margins, and stems with long woolly hairs. The flowers are small (3 mm), pinkish and inconspicuous, in loose clusters in leaf axils bearing 3 stamens, and 6-9 short-lobed stigma. The fruits are black to dark purple drupes, juicy and berry-like, containing up to 9 white, hard seeds.

Habitat: Low, exposed coastal heathlands and bogs; rocky mountian slopes, subalpine parkland, and alpine tundra; dry to wet sites, sea level to alpine.

Use: Crowberries ripen in August, but remain on the plants through the winter, and are available fresh or frozen into the early spring, and could be gathered even from under the snow. They are eaten raw or cooked. They are said to "contain lots of water" and have been used to slake the thirst of folks on the mountain slopes when no water was available. Some First Peoples mixed the berries with bear grease, cooked and mashed them, then dried them in the sun into cakes. Other tribes ate them plain with oil and sugar, or mixed them with cloudberries, blueberries, or whipped fat.

[Kuhnlein & Turner, 1991; Pojar & MacKinnon, 1994]

Gaultheria Shallon (Salal)

Ericaceae *(Heath Family)*

Creeping to erect, to 6 foot tall shrub bearing hairy, branched stems. Leaves are alternate, evergreen, leathery, and egg-shaped to 4″ long, sharply and finely toothed. Flowers are urn-shaped, white to pink, 5-15 at branch ends and the flower stalks bend such that the flowers are oriented in one direction. Flowers with 5-lobed calyx, and corolla, and awn bearing stamens with hairy filaments; ovary 5-chambered. Flowering occurs from mid-May to beginning of July. Fruits reddish-blue to dark-purple capsule surrounded by adnate, fleshy sepal appearing as a berry and are usually mature by mid-August and continue for as long as the flowering season.

Habitat: Coastal forests to approximately 2,500′ elevation.

Use: The dark, juicy berries were in many places on the Washington coast the most plentiful and important fruit for the First Peoples. They were eaten both fresh and dried into cakes. Many groups ate the berries dipped in oolichan grease at large feasts. For trading or selling, the salal berries were mixed with currants, elderberries, or unripe salal berries. The berries were also used to sweeten other foods and to thicken salmon eggs. The young leaves were chewed as a hunger suppressant. The leafy branches were used in pit-cooking, and cooked as a flavoring in fish soup.

The usual procedure for preparing the berries for winter storage was to mash them and either boil them in boxes using red hot rocks or allow them to stand for a day or two. The thickened “jam” was then poured into rectangular cedar frames set on Skunk Cabbage leaves and dried for a few hours on a rack over an alder-wood fire. The cakes were about 3 cm thick and could be as large as 30 cm wide by 90 cm long. The cooks folded or rolled the cakes and stored them in cedar boxes in a warm area of the house.

[Pojar & McKinnon, 1994; Turner, 1991]

Among the most common forest understorey shrubs in western Washington, it forms an almost continuous shrub layer in many drier coniferous forests and is also common in some wet or boggy coniferous forests. In some areas near the coast the shrub layer can be impenetrable.

Malus Fusca (Pacific Crabapple, Wild Crabapple, Western Crabapple, Oregon Crabapple)

Rosaceae *(Rose Family)*

Shrub or small tree, to 35 feet tall, armed with sharp spur-shoots, the older bark is deeply fissured. Leaves are alternate, deciduous, lance- to egg-shaped, to 10 cm long, pointed at the end, toothed, with irregular lobes; the leaves turn red or yellow-orange in fall. Flowers are white to pink (mid-April/mid-May), showy, calyx of 5 lobes, petals 5, styles 3-4 from inferior ovary, numerous stamens. Fruits are pomes, initially green becoming yellow or reddish, to 15 mm and egg-shaped, tart.

Habitat: Moist woods, swamps, edges of standing and flowing water, upper beaches, often fringing estuaries in western Washington; low to middle elevations (up to 2500′).

Use: The small, clustered apples, though tart, are an important food for virtually all coastal First Peoples. They are harvested in late summer and early fall. They are eaten fresh or stored under water, or under a mixture of water and oil, in cedarwood storage boxes. Because of their acidity, they do not require further preservation; they simply become softer and sweeter over time. The bark was used, alone or with other plant products, for a variety of medicinal treatments for the eyes and for the stomach and digestive tract.

Crabapples were a common item of trade and commerce. At the turn of the century a single box of Crabapples in water might cost about ten pairs of Hudson's Bay blankets. a wedding gift between high-class families might include, among other items, ten boxes of Crabapples and five boxes of Grease to put on them. They are still eaten today in many areas, either cooked and mashed in the traditional way, or made into jelly.

[Pojar & McKinnon, 1994]

Note: Crabapple bark, like bitter-cherry bark, contains cyanide-producing compounds, and should be used only with extreme caution.

Oemleria Cerasiformis (Formerly Osmoronia) (Indian Plum, Oso-berry, Skunk Bush)

Rosaceae *(Rose Family)*

Shrub or small tree to 10 feet tall. Leaves alternate, upright, deciduous, broadly lance-shaped to 5 long, not toothed, with a strong cucumber odor when crushed. Blooming occurs just before leafing. Flowers male and female on separate plants (dioecious)(found infrequently in Rosaceae in Washington); both fls with white petals - male fls with 15 stamens, female fls with 5 carpels; inflorescence of 5-10 fls in a raceme. Fruits 1-5 drupes per pistillate fl, bean-shaped, peach-colored to ripe blue-glaucous color. Earliest flowers of season (March), considered harbinger of Spring! But by leafing out so early in the season, their leaves are the first to yellow late in the summer.

Habitat: Dry to moist, open woods, streambanks, open areas/coastal plains at low elevations western Washington.

Use: The berries were eaten in small quantities fresh, cooked or dried. The berries are astringent when immature, but are quite palatable when fully ripe. Some First People made a bark tea as a purgative and tonic. To store the fruits in winter, they were placed in tall cedar boxes, covered with hot oil, sealed and placed in a cool place.

[Pojar & McKinnon, 1994]

Opuntia Fragilis (Brittle Cholla)

Cactaceae *(Cactus Family)*

Low, mat-forming, succulent perennial, to 15 cm tall; stems flattened, broad and fleshy, in 2-5 segments, the upper segments easily broken off; spines large and barbed, and with smaller bristles. Leaves reduced to large spines, to 3 cm long, and smaller yellowish bristles from axillary white-wooley 'cushions' (areolae). Flowers yellow, showy, to 5 cm across, borne on the areolae, with numerous thin petals; sepals greenish, grading into the yellow to reddish petals; stamens numerous, filaments red; pistil 3-10 capellary, style 1, stigmas 3-10, ovary single-celled, placentation parietal. Fruits dry, pear-shaped, slightly spiny berries to 2 cm long.

Habitat: Dry, open sites on sandy or gravelly soils in local lowland Puget Sound/Gulf Islands area and east of the Cascade Mountain range at low elevation in the Sagebrush Zone.

Use: The blooming of the cactus is an indication that saskatoon berries are ready to be picked. Cactus can be gathered at any time of the year, even from under the snow. The spines were singed off in an open flame and the stems pit-cooked, or roasted in the coals or on a stick over the fire. a soup was made by mixing them with fat and boiling them. Cactus is purportedly valuable to old men; when they eat the cactus, it helps them urinate more freely. Cactus spines were used to make a fish hook when no bone was available for hooks. Two spines were joined together in the shape of a hook by tying them with Indian hemp and sealing the join with pitch. The spines were also used as needles for piercing ears. a ring of cactus was placed around the supporting poles of a cache to keep mice and other animals from climbing up.

[Strangely the fruits of the brittle cholla are not mentioned in literature as being eaten by the First Peoples - author]

[Pojar & MacKinnon, 1994; Turner et al, 1980]

Philadelphus Lewisii (Mock-Orange, Syringa)

Hydrangeaceae *(Hydrangea Family)*

Erect, deciduous, loosely branched, shrub to 10′, with flaky bark. Leaves opposite, oval to egg-shaped, 3-5 cm long, light green, margins essentially smooth, with 3 major veins from the leaf base. Flowers white (June), 2-3 cm broad, fragrant, 4 petals, sepals 4 (fully adnate to the ovary), 4 styles (more or less joined), numerous stamens and inferior ovary; 3-15 flowers in clusters at ends of branches. Fruits oval, woody, 4-chambered capsules about 1 cm long.

Habitat: From open forests and forest edges on moist rich sites to open brushy areas on dry, rocky soils; low to high elevations (seen at 7,000′ east Cascade Mtns. (Hitchcock, 1990)).

Use: The wood is strong and hard; the branches were used to make harpoon shafts, bows and arrows, arrow tips for arrows made from the stems of rye grass, digging sticks, pipestems, cradle hoops, snowshoes, and clubs, as well as for breast-plate armour. For arrows, two-year-old growth was gathered in winter. The sticks were bruised around the base with a stone knife and broken off square. The arrows were then fixed with three feathers glued on with pine pitch and lashed with sinew. The largest, oldest branches were selected in making bows. The skin of a bull snake was slipped over the entire bow while the wood was still green and allowed to dry on it.

The leaves (and flowers), when put in a basket and rubbed (bruised) with water, lather into a froth. The leaves were then discarded and the froth used for washing the hands and for shampooing the hair.

[Kuhnlein & Turner, 1991; Pojar & MacKinnon, 1994]

Populus Tremuloides (Quaking Aspen)

Salicaceae *(Willow Family)*

Small deciduous trees, declining in vigor at 80 years of age or less, with smooth green-grey bark. Bark with black “horseshoe” markings here and there. Chalk-like substance can be rubbed off. Leaves alternate, thin, 25-75 mm broad and nearly as long, broadly ovate, margins irregularly serrate, with a broadly acuminate tip; buds shiny but not resinous; petioles laterally flattened. Flowers in catkins, April to May; bracts incised and fringed with long hairs; stigmas 2; stamens 6-12 (wind pollinated and dioecious); Fruit a conical capsule, glabrous.

Habitat: Found in most of Washington state except for the Olympic Peninsula (rare), and the Sagebrush, Sub-alpine and Alpine Zones. Very sporadic in occurrence with altitudinal range from 1,000′ to 6,000′. Thrives in mineral soils and on exposed sites; often grows in dense stands in logged or burned areas. Common in riparian corridors and disturbed wetlands. Often found associated with Alnus rubra (red alder), Spiraea douglasii (Douglas spirea) and Salix spp. (willows).

Use: The white powder from the bark was applied directly to the underarms and feet as a deodorant and anti-perspirant. Aspen logs are the best on which to scrape deer hides, especially in early May when the bark peels off easily.

[Kuhnlein & Turner, 1991]

Populus Balsamifera ssp. (Trichocarpa, Black Cottonwood)

Salicaceae *(Willow/Poplar Family)*

Large, tall, deciduous tree up to 150 feet tall, the old bark dark grey and deeply furrowed. Alternate leaves thick, and oval to 6″ long, margin finely toothed, the under surface pale and often stained with patches of brown resin; the leaf stalks are round, often with a pair of glands at the junction with the blade. Male and female flowers on separate plants in catkins. Male flowers with 40-60 stamens (airborne pollination), female flowers with 3 stigmas. Flowering occurs before leaf-out. Fruits round, green, capsules that split when ripe into 3 parts: seeds covered with white, fluffy hairs (that help with seed dispersal) (fluffy hairs aid in flotation).

Habitat: On low to medium elevation (sea-level to 4500′), moist to wet sites; forms extensive stands on islands and floodplains along major rivers and on disturbed upland sites.

Use: The sweet inner bark and cambium tissues were eaten in late spring and early summer. It was eaten fresh or sun-dried with grease. Black cottonwood cambium is extremely sweet, but it sours or ferments rapidly, so it cannot be stored for winter use like that of western hemlock.

The gum from the buds was used in preparations for baldness, sore throats, whooping cough and tuberculosis. Some tribes placed the gum that exudes from the burls of cottonwood directly on cuts and wounds. The aromatic gum from the spring buds of cottonwood was used to waterproof baskets and boxes. The aromatic gum from the spring buds was used as a glue for securing arrowheads and feathers to shafts. The rich, yellow, aromatic gum from the buds was boiled in grease and mixed with other pigments (alder bark, larch, wolf lichen, charcoal) to make paint.

Young shoots were used to make sweatlodge frames. The old, rotten leaves were boiled and used in a bath for body pains, rheumatism and stomach trouble.

Cottonwood was used as a fuel for smoking fish. Some interior tribes made small dugout canoes. Soap and a hairwash were made using ashes from burned cottonwood.

Bees collect the resin, which is an anti-infectant, for their hives and seal intruders (such as mice) in the resin to prevent decay and protect the hive.

[Pojar & McKinnon, 1994; Turner, 1995]

Prunus Emarginata (Bitter Cherry)

Rosaceae *(Rose Family)*

Shrubs or small trees to 25 feet tall; bark reddish-brown or grey, with horizontal rows of raised pores (lenticels). The alternate leaves are deciduous, oblong to oval to 3″ long, finely toothed, and rounded at the tip; there are generally 1-2 small glands at the base of the leaf blade. Flowers fragrant, blooming in April/May, in flat-topped racemes (of 5-10 fls) bearing 5 sepals and 5 white petals, numerous stamens (20), 1 pistil, with elongated style, and 2 ovules. Pea-sized fruit is a bright red or darker drupe, usually 1-seeded.

Habitat: Establishes easily in moist, disturbed areas. Bitter cherry prefers open sandy or gravelly sties and stream banks. It is shade-intolerant and by being attracted to disturbed sites, soon is displaced by red alder. In western Washington found from sea level to 3500′. East of the Cascades most common in Yellow pine zone.

Use: The bitter fruits are edible, though disagreeable in flavor, and best used in jams. The cherry bark can be peeled from the tree and polished to a rich red. Strips of the bark have been woven into decorative baskets to give color to their work.

[Pojar & McKinnon, 1994]

Prunus Virginiana (Choke Cherry)

Rosaceae *(Rose Family)*

Shrubs or small trees to 20 feet tall; bark reddish-brown or grey, with horizontal rows of raised pores (lenticels). The alternate leaves are deciduous, oblong to oval to 3″ long, finely toothed, acute at the tip, and down beneath; there are generally 1-2 small glands at the base of the leaf blade. Flowers fragrant, blooming in May, in cylindrical clusters (raceme) near the ends of limbs (of 5-10 fls) bearing 5 sepals and 5 white petals, numerous stamens (20), 1 pistil, with elongated style, and 2 ovules. Pea-sized fruit is a dark red to black drupe, usually 1-seeded.

Habitat: East of the Cascades most common in Yellow Pine, Sagebrush and Bunchgrass zones. Often white clematis and poison ivy are likely to be growing in the vicinity.

Use: Although very puckery to taste the fruits make fine jams and jellies.

[Pojar & McKinnon, 1994]

Quercus Garryana (Garry Oak, Oregon White Oak)

Fagaceae *(Oak/Beech Family)*

Heavy limbed tree to 75 feet tall, or shorter in rocky habitats, bark light grey with thick furrows and ridges. Alternate, deciduous leaves to 5″ long that are shiny dark green and turn dull yellow-brown in autumn. Male and female inflorescences (catkins) borne separately on same tree. Flowering occurs as leaves come out in spring. Fruits are acorns borne within shallow rough-surfaced cups.

Habitat: Dry, rocky slopes or bluffs, sometimes on deep, rich, well-drained soil at low elevations. Garry oaks tend to open parkland and meadows with scattered Douglas-fir with a lush spring display of many herbs including camas, western buttercups, and shooting stars. Garry oak is generally found west of the Cascade Mountain range but also found in the Columbia River Gorge area and northward along the eastern base of the Cascades to Yakima County.

Use: The acorns of all the oaks are potentially edible when properly prepared. Those of the white oak group, with round-lobed, non-bristly leaves, and of the chestnut oak group, with regularly toothed, non-bristly leaves, are far more palatable than those of the red oak group, whose leaves are sharply-lobed with bristly tips to the lobes or teeth. Acorns of the latter group are usually higher in bitter-tasting tannins. Acorns, like other nuts, were commonly gathered from the ground in the fall by women and children. The nuts were cracked with a pair of rounded stones with pitted centers, and the kernals extracted.

The tannins in acorns were partially removed by boiling them in several changes of water with lye made from wood-ashes. The lye was then leached out with water, and the acorns thus treated were roasted or pounded and mixed with meat for soup. Sometimes acorns were buried in the ground over winter before being used. Acorns were also dried and made into meal for use in soups and other dishes. The acorns can be steamed, roasted or boiled for a long time to remove that bitterness.

The bark was one of the ingredients in the Saanich ‘4 barks’ medicine used against tuberculosis and other ailments (Turner & Hebda, 1990).

The foliage, shoots and bark of oaks are poisonous due to their high tannin content, and those people wishing to eat the acorns should make sure that the bitter tannins are first removed by leaching or boiling in several changes of water, since they could be harmful. High intakes of tannin have been implicated in some forms of cancer (Turner & Szczawinski, 1990).

[Kuhnlein & Turner, 1991]

Rhamnus Purshiana (Cascara)
Rhamnaceae *(Buckthorn Family)*

Erect, tall shrub or small tree to 30 feet in height, with thin, smooth, silver-grey, numbingly bitter bark. The alternate leaves are deciduous, being egg-shaped to oblong, dark glossy green to 5″ long, finely toothed, strongly pinnately veined in furrows, the surface washboardy. Young leaves and buds are coppery in color in early spring, and become yellow in autumn. Flowers in late spring have 5 sepals, petals and stamens in axillary clusters of up to 50 flowers. Fruits blue-black to purplish-black berries, enclosing 3 stoney seeds.

Habitat: Fairly dry to wet, often shady sites, most commonly in mixed woods. It is an infrequent tree often going unnoticed. Wide range but most abundant in low foothills of western Washington below 2500′. Sporadic along stream banks of Sagebrush, Bunchgrass and Yellow Pine Zones east of Cascades.

Use: The bark was boiled and the tea (or syrup) was drunk as a strong laxative by several First Peoples. The scientific community has deemed Cascara as an effective laxative. The hydroxymethylanthraquinones it contains cause peristalsis of the large intestine, with little or no effect on the small intestine in small dosages. The bark was best considered harvested in late October and early November because the sap has descended down the trunk. After the bark was harvested it was allowed to age before use because the fresh bark is said to be nauseating. Usually a handful of bark per quart of water was boiled for use.

The seedy berries are edible, but are not considered very highly.

[Pojar & MacKinnon, 1994; Turner et al., 1980]

Ribes spp. (Currant, Goosberries)
Grossulariaceae *(Gooseberry Family)*

R. sanguineum

Ribes Roezlii fruits

- **Ribes bracteosum** - Stink currant
- **Ribes divaricatum** - Coastal black gooseberry
- **Ribes lacustre** - Swamp gooseberry
- **Ribes laxiflorum** - White-flowered currant
- **Ribes lobbii** - Sticky gooseberry
- **Ribes sanguineum** - Red-flowering Currant

Perennial deciduous shrubs, with alternate palmately lobed leaves. Stems with prickles (gooseberries) or without prickles (currants). Flowers with calyx being tubular to saucer-shaped, with 5 sepals often more showy than the 5 petals. Stamens 5, ovary inferior with two styles from distinct to united. Fruit a berry.

- **R. bracteosum:** Stems unarmed; stems, leaves, flowers and fruits with yellow crystalline glands (resin dots); flowers greenish-white; skunky odor.
- R. divaricatum: Stems armed with 1-3 spines only at the nodes (where leaves attach); flowers 4 or fewer/cluster; flowers green or purple; berries purplish-black, smooth.
- R. lacustre: Stems covered with small spines, with some large spines at the nodes; 7-15 fls in drooping clusters
- R. laxiflorum: Stems unarmed; fls greenish-white, red or purple; leaves deeply 5-lobed, lobes sharp-pointed; berries purplish-black, bristly with stalked glands.
- R. lobbii: Stems with 1-3 large spines only at nodes; fls 4 or fewer/cluster, bright red (crimson), pendent, look like miniature fuchsias; leaves sticky; berries reddish-brown, sticky-hairy.
- R. sanguineum: (flower shown above) Stems unarmed; plant tall (often >1m); fls pale to deep reddish-pink; berry glaucous black.

Habitat:

- **R. bracteosum:** Moist to wet places at low to subalpine elevations.
- **R. divaricatum:** Open woods and moist clearings, particularly along the coastline.
- **R. lacustre:** Moist, open woods and stream banks, often on rotten stumps and damp rocky cliffs, from sea-level to subalpine forest.
- **R. laxiflorum:** Wet coastal woods to montane slopes; especially prevalent on rock faces and rotten stumps in logged areas or clearings.
- **R. lobbii:** Dry, open, well-drained woods and clearings.
- **R. sanguineum:** Dry, open woods, logged areas and roadsides in well-drained soils.

Use: The berries are typically eaten fresh. But because of their consistency, they might have been included in various cakes with salal or serviceberries, and included into various soups.

Rosa spp. (Wild Roses)
Rosaceae *(Rose Family)*


Dwarf Rose

- **R. gymnocarpa** - Dwarf rose
- **R. nutkana** - Nootka rose
- **R. pisocarpa** - Swamp rose

Shrubs, usually with prickly stems. Leaves alternate, odd-pinnately compound, stipulate. Flowers showy, solitary or in clusters borne on leafy peduncles; calyx-tube urn-shaped, contracted at the summit, and on its margin bears the 5 petals, 5 sepals, and numerous stamens; carpels many, becoming achenes in fruit (borne inside the 'hip').


Nootka Rose

- R. gymnocarpa: Sepals less than or equal to 12 mm in length; sepals deciduous as fruit matures.
- R. nutkana: Flowers generally clustered; petals 1.2 - 2.5 cm.
- R. pisocarpa: Flowers generally solitary; petals greater than 2.5 cm.

Habitat:


Swamp Rose

- R. gymnocarpa: Moist to dry woods, from near seal level to mid-montane.
- R. nutkana: Wooded or moist areas, often montane.
- R. pisocarpa: Generally where rather moist.

Use: Rose of various species were eaten by First Peoples across the country, although they were not generally used in quantity. The hips were gathered from late August through the winter in times of necessity. Their flavor is said to improve with exposure to frost. The outer rind could be eaten fresh, as a nibble, especially by children, but if the seeds of these and other rose hips are eaten, they cause irritation of the digestive tract, and are said to cause an "itchy bottom," due to the presence of tiny, sharp hairs on the seeds.

The hips outer rind (high in vitamin C) was eaten raw when mature in the fall. The ripe hips were also steeped, mashed and fed to babies with diarrhea. The petals were also eaten fresh, during June, and may have been used in tea as were the leaves. Boiled Nootka rose roots are combined with wild gooseberry and red cedar roots to weave fishnets. The compound leaves were boiled in water and used for bathing babies to promote strength. The chewed leaves were also applied to bee stings. a tea was made from the roots and given to women to help ease labor pains.

[Lombardi, 1996; Pojar & McKinnon, 1994]

Rubus Parviflorus (Thimbleberry)
***Rosaceae** (Rose Family)*

Erect, unarmed, shrub up to 10 feet tall with shreddy bark, forming extensive growth through rhizomes. Leaves are alternate, deciduous and large (to 10″ across), soft, maple-leaf shaped, 3-7 lobed, toothed, with long glandular stalks, and finely fuzzy on both sides. Flowers are white, to 4 cm across, petals crinkled like tissue paper, 3-1 in long-stemmed terminal cluster. Fruits shallowly domed, raspberry-like clusters or red, hairy drupelets; juicy, dull to sweet in taste.

Habitat: Open sites as clearings, road edges, shorelines, avalanche tracks or open forest as red alder; low elevations to subalpine in southern extent.

Use: Thimbleberries were enjoyed by all First Peoples fresh, or dried with smoked/roasted clams. They formed a berry cake where sticks of roasted clams were laid out in parallel fashion on a board, covering them with a layer of fresh thimbleberries, then another layer of strung clams, and so on. Then they laid a length of plank on top of the pile and pressed the clams and thimbleberries together into a compact loaf, using stones, or sometimes a woman sat on the plank. They sun-dried the flattened cake, then stored it for later use.

Some collected thimbleberries when they were hard and pink and stored them until ripe in cedar-bark bags. The berries are coarse and seedy, lending themselves to drying. They were then de-stemmed and eaten fresh, or dried the same way as salal berries. Other tribes considered the thimbleberry as inferior to raspberries and blackcaps, and usually mixed these three berries together when dried in cakes. The broad, maple-like leaves can be fashioned easily into makeshift berry containers.

The young shoots were collected in bulk in early spring through early summer and were eaten raw as a green vegetable (the sprouts are sweet and juicy).

[Pojar & MacKinnon, 1994]

Rubus Spectabilis (Salmonberry)
***Rosaceae** (Rose Family)*

Erect, largely unarmed, branching, to 12 feet, from branching rhizomes. Twigs zigzag, with scattered prickles. The bark is shredding and golden-brown. Alternate, deciduous leaves (of 3-leaflets) and sharply toothed. Flowers are pink to red to reddish-purple to 1½″ across....5 sepals and petals and many stamens. Fruits yellow or reddish (orange-ish), mushy raspberries.

Habitat: Moist to wet places (forests, disturbed areas), often abundant along stream edges, avalanche tracks and in wet logged areas at low to subalpine elevations.

Use: The spring salmonberry shoots have a sweet and juicy flavor after being peeled then eaten raw or steamed. The berries are eaten raw, and too juicy to dry for winter use. Do not pile salmonberries more that 2″ deep as the pile will become mush!

[Pojar & McKinnon, 1994]

Rubus spp. (Blackberry, Raspberry, Brambles, Dewberry Blackcap)
Rosaceae *(Rose Family)*

This site covers selected Rubus species other than Rubus parviflorus and R. spectabilis, which have their own sites. Rubus laciniatus is the picture shown.

Trailing perennial, with flowers solitary to clustered, with 5 persistent petals that are typically white, 5 sepals; stamens many to greater than 100, inserted with petals at edge of hypanthium; pistils many, on more or less hemispheric, often fleshy receptacle; ovary 2-ovulate; fruit an aggregation of weakly coherent drupelets, often remaining attached to the fleshy receptacle. Stems often strongly armed with prickles or bristles, with alternate simple to ternate or pinnate, deciduous or evergreen leaves, mostly with evident stipules.

R. nivalis: Sub-Alpine blackberry. This slender, native, trailer with slightly woody stems only grows a few feet long. It is usually armed with numerous, small, weak, recurved prickles. The leaves are 3-parted. Fls are usually solitary with white or purplish petals. The fruit is a finely hairy, red berry. Found generally on dry exposed places at middle elevations of Cascade Mountains.

- **R. ursinus:** Trailing blackberry/dewberry. Native. Trailing to 5 meters or more, armed with slender, curved, unflattened prickles. Leaves alternate, more or less deciduous, with 3-leaflets, the terminal leaflet 3-lobed, dark-green, and toothed. Flowers are white to pink in flat-topped purplish-hued clusters from the leaf axils. Male and female flowers are on separate plants. It is not uncommon to find large patches of male plants without any fruit. Fruits are black blackberries. Common and often abundant on disturbed sites, thickets and dry, open forest at low to middle elevations.
- **R. leucodermis:** Black raspberry/blackcap. Native. Erect, arching (sometimes to the ground), to 2 meters tall; stems covered with a whitish bloom, armed with curved, flattened prickles. Alternate leaves are deciduous and crinkly, as 3-5 leaflets that are egg-shaped, with sharp teeth on the leaflet edges bearing shiny white undersides. Flowers are white to pink in clusters of 3-7, terminal or from leaf axils. Fruits are hairy raspberries, initially red but becoming purple to black. Disturbed sites, thickets and open forests; common and often locally abundant, at low to middle elevations.
- **R. laciniatus:** Evergreen blackberry. Same as R. discolor but differing primarily in leaf characteristics; the usual 5 leaflets of R. laciniatus are deeply incised and jaggedly toothed, hairy but still greenish on the undersurface, and of course, evergreen. Introduced from Europe. Range is similar to R. discolor
- **R. discolor:** Himalyan blackberry. Erect to sprawling evergreen; stout stems erect, then arching, then trailing along the ground to 10 meters in length and rooting at the ends, often distinctly four-angled, armed with stout, recurved prickles, often forming dense, impenetrable thickets. Alternate leaves, being more or less evergreen are trifoliate on floral shoots, to 5-foliolate on vegetative shoots; leaves toothed, oval, smooth-green above, covered with white hairs below. Flowers are white to pinkish, in clusters of 5-20. Fruits are black berries. An Asian species introduced from India via England and widely naturalized, in disturbed sites and streamside areas, at low elevations.

- **R. lasiococcus:** Dwarf bramble. Native. Low, to 10 cm tall, without prickles, the trailing (to 2 meters) stems rooting at the nodes. Alternate leaves, 1-3 in clusters at the nodes, mostly deciduous, 3-lobed (but not fully divided into leaflets), and toothed. Flowers are white, 1-2 on long stalks. Fruits are small, red, very hairy raspberries. Found in forests and open places at middle to high elevations. Dwarf bramble is a very common understorey species in high elevation forests of the Cascade Mountains.
- **R. pubescens:** Dwarf red blackberry. Native. Unarmed perennial, stems more or less trailing, scarcely woody, typically less than 0.5 meter. Flowers white, pistils 20-30, filaments broad & flattened, with square shoulder or 2 teeth near tip. Leaflets 3-foliolate. Found in clearings and burns to deep forest, generally where moist, northcentral Washington.
- **R. pedatus:** Strawberry bramble/Five-leaved bramble/Trailing rubus. Native unarmed perennial with creeping stems (runners), rooting at the nodes and producing short (to 2 cm), erect stems bearing 1-3 leaves. The alternate leaves are mostly deciduous, divided into 5 leaflets or oval lobes, and are coarsely toothed. White flowers, with petals spread or bent backwards, solitary on very slender stalks. Fruits small clusters of bright red drupelets, sometimes with just one drupelet per fruit. Found in moist, mossy forests, glades, streambanks, bog forests from low to subalpine elevations of Cascades and Olympic Mountains.

Use: The ripe berries were typically picked and eaten raw. Too, the berries were dried (often in cakes), later to be cooked in sauces and puddings, or eaten with dried meat or fish. Often certain species young shoots were peeled and eaten raw or cooked as a vegetable. The leaves of some species are sometimes used for tea. Some feel that the best leaves are harvested after the first frost when the leaves turn colors, then let to dry after picking. Often the fruits were mashed for purple stain.

[Kuhnlein & Turner, 1991; Pojar & MacKinnon, 1994]

Salix spp. (Willows)
Salicaceae *(Willow/Poplar Family)*


Sitka Willow

Willows are one of the most familiar and widespread groups of shrubs in the state of Washington. Although most grow along creeks or rivers certain species are found high upon mountain slopes where they form a shrubby mat only a few inches high.

All willows like sunlight and seek open places. Their bark is exceptionally bitter. In spring and early summer each leaf stem has two shiny, false leaves growing at the base. Most willow leaves are long and graceful with smooth or slightly toothed edges. Winter buds have a single, hood-like scale. “Pussy willows” and white, fluffy catkins are very noticeable in the spring.

Only a trained botanist can cope with the identification of the thirty or more willows in Washington. This is because many species flower before the leaves appear. Male and female flowers appear on different plants. Leaf and twig characteristics often vary greatly with age, and hybridization is common. Most of the more recognizable willows will be addressed here.

Description: Prostrate or creeping shrubs to tall trees, with usually narrow leaves which have short stems, and large to minute, persistent or deciduous stipules, if present. Individual plants are male or female. Flowers in the spring develop before leaves (precocious), with them (coetaneous), or after them (serotinous). a perianth does not exist. The individual female flower has a single 1-celled ovary, sessile or borne on a short pedicel, subtended by a single small scale; in the axil of the pedicel is a small “ventral gland,” and in some species there is a second gland dorsal to the pedicel, called a “dorsal gland.” Catkins are sessile to pedunculate, erect or spreading; bracts of the catkins entire or rarely shallowly dentate at apex. Stamens 1-8, usually 2. Styles elongate, entire or bifid. Stigmas short to long, entire to divided. Pollination can occur by wind, but often insects as bees collect and move the pollen from flower to flower. The ripened ovary forms a capsule which splits down two sides from the apex, freeing large numbers of small seeds, wind-borne by a mass of silky-down.

Selected Species

Tree Size to 45' in height

- **Peachleaf Willow (S. amygdaloides):** Lvs 2-4″, lance-shaped, >3x longer than wide, finely serrulate, gradually tapering to a very fine tip, pale beneath. Streambanks, widespread eastern Washington.
- **Pacific Willow (S. lasiandra):** Lvs length/width ratio at 5-6/1, glands/processes at base of petiole. Along streams, lowlands to moderate elevations Widespread Washington

Alpine Willows to 6" high, shrubby, mat-like

- **Cascade Willow (S. cascadensis):** Lvs ¼-¾", glossy green. High Cascades, Mt. Rainier
- **Snow/Dwarf Willow (S. nivalis):** Lvs ⅛-½", silvery beneath. Olympics, High Cascades, Mt. Rainier

Shrubs to Small Trees - leaves wide, roundish

- **Scouler Willow (S. scouleriana):** Lvs 2-4″, ⅓ as wide, rounded or broad tip. Smooth on both sides Sagebrush to Yellow Pine Zones, Olympics
- **Sitka Willow (S. sitchensis):** Lvs 2-4″, ⅓ as wide, rounded tip. Velvety w/fine hairs beneath. Watercourses to middle elevations. Eastern & Western Washington.
- **Hooker Willow (S. hookeriana):** Lvs 2-6″, ½ as wide, dull-pointed. Woolly hairs beneath. Wet or dry land. Coastal forests.
- **Bebb Willow (S. bebbiana):** Lvs to 2″, ½ as wide, round-pointed. Wet places. Sagebrush and Bunchgrass Zones

"Sand Bar" Willows to 15' high, slender limbs, narrow leaves

- **Silverleaf Willow (S. argophylla):** Lvs 2-3″, silvery w/white hairs. Banks of Snake River & tributaries. Sagebrush & Bunchgrass Zones
- **Coyote Willow (S. exigua):** Lvs 2-4″, ⅛-¼″ wide Silvery green. Banks of Snake River & tributaries. Sagebrush & Bunchgrass Zones

Miscellaneous Willows

- **Barclay Willow (S. barclayi):** Variable lvs, 2-4″, ovalish, sharp-pointed, hairy above, bloom beneath. Subalpine, Mt. Rainier, Olympics
- **Arroyo Willow (S. lasiolepis):** Young lvs silky, old lvs hairy beneath. Stream banks at low elevations of SE Washington

Vegetation key of willows in Washington State (pdf 194 kb).

Use: Particularly Hooker's willow (but others too), the bark was peeled in May or June, removed the outer part, split the inner tissue into thin strands, and twisted into long ropes. This rope was used to make fishing lines and various types of nets, including gill-nets, reef-nets, purse-nets, bagnets, and duck-nets. The bark was used to 'shingle' baskets. Also made were slings and harpoon lines. Others used the branches of young Hooker willow as poles for fish weirs because they were said to take root wherever they were 'planted' in the river.

Sitka willow bark was used to make a grey dye for mountain goat wool. The shredded bark was used for diapers.

Willows are the source of the natural precursor to aspirin, salicylic acid, found in the leaves and bark.
[Hitchcock & Cronquist, 1990; Pojar & McKinnon, 1994; Turner, 1995]

Sambucus Racemosa (Red Elderberry)
Caprifoliaceae *(Honeysuckle Family)*

Shrub to small tree, deciduous, to 20 feet tall. Bark is warty. Leaves opposite divided into 5-7 leaflets. Leaflets lance-shaped, 2-6″ long, pointed, sharply toothed, and often somewhat hairy beneath. Flowers are white to creamy in color, small, many, in a rounded or pyramid-shaped cluster. Fruits are bright-red drupes, each with 3-5 seeds, which are not palatable when raw.

Habitat: Stream banks, swampy thickets, moist clearings and open forests from sea level to middle elevations.

Use: Raw fruits are unpalatable and will cause nausea (let's just consider them toxic!). The fruits are boiled to make a sauce or cooked with the stems intact. The stems and seeds were then thrown out together. The berries make an excellent tangy jelly. Caches of red elderberries have been found in archaeological sites dating back hundreds of years. The stems, bark, leaves and roots, especially in fresh plants, are toxic due to the presence of cyanide-producing glycosides.

[Hitchcock & Cronquist, 1990; Kuhnlein & Turner, 1991; Turner & Szczawinski, 1990]

Shepherdia Canadensis (Soapberry, Soopalollie, Foamberry, Buffaloberry)

Elaeagnaceae *(Olive Family)*

Dioecious, deciduous shrub usually under 6′ tall, with opposite, oval or oval-lance-shaped, smooth edged leaves. The undersurface of the leaves and the twigs are covered with a combination of silvery hairs and rusty brown spots. The flowers are unisexual, small, greenish, and inconspicuous, blooming in early spring often before the leaves expand. The berries, borne singly or in clusters at the leaf axils, are small, and translucent, ranging in color from orange to deep red, and covered with small dots.

Habitat: Generally east of the Cascades but isolate occurrences in Olympics and Gulf Islands. Dry to moist open woods and thickets; from lowlands to middle elevation forests.

Use: The berries, which generally ripen in early July to early August, are extremely bitter. The berries fall off the bushes easily when ripe. The usual method of gathering them was to place a container or mat under a berry-laden branch, and then, holding the branch at the end, whack it sharply with a stick, dislodging all the ripe berries. The berries can then be used fresh, but were generally dried individually or in cakes, on mats or layers of dried grass. Sometimes they were boiled first, using red-hot bricks.

A special confection was developed by the First Peoples, often called “Indian ice-cream,” by whipping the berries with an equal amount of water, with something as a sweetener, into a light froth. The whip was often sweetened with other berries such as saskatoons and salal. Whipping is done with the hands, with salal or thimbleberry branches, fireweed stems, bunches of timbergrass (Calamagrostis rubescens), or with a specially made whipping instrument consisting of loops of clusters of inner bark of silverberry or maple tied onto a stick. Special baskets, bowls or birch-bark vessels were used to make the whip. Specially carved, paddle-like wooden spoons were used to eat it, and in some households, each person had his or her own spoon, which was carefully hung up when not being used. Care must be taken in picking and preparing soapberries so they do not come in contact with oil or grease of any kind, or they will not whip. Upon eating, the whip has to be swished in and out of the mouth to get the air out of it before being swallowed.

Soapberry froth was traditionally eaten at feasts and family gatherings. Special dishes and wooden spoons were used to eat it and a party-like atmosphere prevailed at such times. The taste of soapberries is acquired, as is beer. Few people enjoy the “ice-cream” the first time. Even when sweetened, there is still a sour-bitter taste, but still worth the try.

[Kuhnlein & Turner, 1991; Pojar & MacKinnon, 1994]

Vaccinium Parvifolium (Red Huckleberry, Red Whortleberry)

Ericaceae *(Heath Family)*

Erect shrub to 12 feet tall bearing bright green strongly angled branches. Leaves are alternate, mostly deciduous (but with a few persistent) and a little over an inch long with smooth edges. Flowers are bell- or urn-shaped about 5 mm, and single in leaf axils. The connate petals are 5-merous, with 10 stamens, subtended by a small calyx. The anthers are awned. The fruits are bright red round berries 6-9 mm across.

Habitat: Red huckleberry is found in coniferous forests, often at forest edges or under canopy openings, in soils rich in decaying wood, often on stumps or logs where birds have deposited their seeds, at low to middle elevations in western Washington.

Use: These berries were an important fruit for coastal peoples. They were used by virtually all within the range of the plant, and were eaten fresh. Some people harvested the berries by clubbing the branches on the hand and letting the ripe berries fall into a basket. Like other fruits, they were often eaten with some type of oil or animal/fish grease, and were often mixed with other berries such as salal. Some First Peoples smoke dried the berries using the branches of the bush as part of the fuel. Sometimes the fruits were dried singly like raisins, mashed and dried into cakes for winter use, or stored soaked in Grease or oil. The juice, though watery, was consumed as a beverage to stimulate the appetite or as a mouthwash.

The leaves and bark were used in a decoction that was gargled for sore throats and inflamed gums. Some tribes used the leaves for tea (Gunther, 1981). The fruits were also used as fish bait in streams.

[Hichcock & Cronquist, 1990; Kuhnlein & Turner, 1991; Pojar & MacKinnon, 1994]

Vaccinium spp. (Blueberrys, Huckleberry, Cranberry, Bilberry, Whortleberry, Clueberry Lingonberry)

Ericaceae *(Heath Family)*

v. ovatum

v. caespitosum

v. uliginosum

Erect, vine-like, or low shrubs, with usually small, deciduous or evergreen leaves. Leaves entire or serrate, alternate. Flowers solitary or in racemes; calyx fully fused, petals generally 4-5 more or less ⅔ fused and cup or urn-shaped, lobed; stamens 8-10, anthers awned or awnless, poricidal opening at the apex of prolonged terminal tubes; ovary inferior, chambers 4-5, placentas axile. Fruit a many-seeded berry, coloring from high content of anthocyanin (reds/blues).

- **V. alaskense (Alaskan blueberry):** Erect shrub 20-80″ tall, leaves deciduous, twigs angled, particularly when young, fruit bluish-black to purplish-black. Moist coniferous forests, low to subalpine elevations.
- **V. caespitosum (Dwarf clueberry/blueberry/bilberry):** Tufted, mat-forming shrub 6-12″ tall, deciduous leaves that are toothed from the tip to midpoint or below, prominently veined below, twigs nearly circular in cross-section, flower white to pink, twice as long as wide, single in leaf axils, awned anther, fruit blue. Low elevation bogs, subalpine meadows, alpine tundra.
- **V. deliciosum (Cascade huckleberry):** Low, mat-forming shrub 6-12″ tall, leaves deciduous, twigs nearly circular in cross-section, flowers pink, solitary in leaf axils, anthers awned, fruit blue. Subalpine meadows and open forest, alpine tundra.
- **V. membranaceum (Black huckleberry, Black mountain huckleberry):** Upright spreading shrub 20-60″ tall, leaves serrate, twigs somewhat angled/yellowish-green, flowers solitary in leaf axils, pinkish, anthers awned, fruit purple or reddish-black. Dry to moist coniferous forests, middle to alpine elevations.
- **V. ovalifolium (Oval-leaved blueberry, Oval-leaved bilberry, Grey blueberry, Mouldy blueberry):** Upright spreading shrub 16-48″ tall, leaves deciduous, twigs strongly angled and grooved, flowers pinkish, longer than wide, single in leaf axils, blooming before plant in leaf, anthers awned, fruit blue-black, on curved stalks. Bogs and moist coniferous forests and openings, low to subalpine elevations. Associated with Vaccinium parvifolium at lower elevations.
- **V. ovatum (Evergreen huckleberry, Shot huckleberry, Black winter huckleberry):** Upright spreading shrub, evergreen, leaves leathery, sharply toothed the entire length, in two opposite rows, twigs slightly hairy, grey not angled, flower pink bell-shaped in clusters of 3-10, in axils of leaves, anthers short-awned to awnless, fruit purplish-black, with musky flavor. Coniferous forests near the ocean.
- **V. oxycoccus (Bog cranberry, Wild cranberry, Moss cranberry):** Creeping shrub (vine-like) to 6″ long, evergreen, the leaf margins entire and rolled under, flowers deep pink, nodding atop long pedicel, petals sharply bent backwards, and stamens protruding (like miniature shooting stars) fruit red. Bogs and wet subalpine meadows. The word cranberry comes from the fact that the open flowers looks something like the head of a crane.

- **V. uliginosum (Bog blueberry, Bog bilberry, bog huckleberry, Sweet-berry, Whortleberry):** Erect to prostrate much-branched shrub 3-10″ tall, leaves deciduous, not toothed and strongly veined below, twigs nearly circular in cross-section, flowers with awned anthers, fruit blue. Low elevation bogs, rocky alpine tundra.
- **V. vitis-idaea (Low-bush cranberry, Mountain cranberry, Rock cranberry, Lingon berry):** Creeping shrub to 10″ tall, evergreen leaves with the margins rolled under, twigs thin, smooth to slightly hairy, flower pink, 1 to several in terminal clusters, anthers not awned, fruit pale pink to dark red. Bogs and subalpine meadows.

Use: The berries of these plants were typically eaten fresh. Preservation was usually by drying into cakes. The mashed berries were packed in a 1 to 2″ layer on a cedar bark mat and dried about 3′ above a fire for two to three days. The juice could be collected separately when the berries were being cooked, then drunk as a beverage or slowly added to the berries as they dried.

[Hitchcock & Cronquist, 1990; Kuhnlein & Turner, 1991]

Viburnum Edule (Highbush Cranberry, Squashberry, Mooseberry)

Caprifoliaceae *(Honeysuckle Family)*

Deciduous shrub, or small tree. Leaves opposite, roundish in outline, lightly 3-lobed above the middle, irregularly serrate, glabrous or slightly pubescent beneath, palmately veined, 2-4 inches long. Flowers white, 5 parted calyx and corolla, all perfect and of equal size, stamens 5 and shorter than corolla. Fruit is a red 1-seeded drupe, with seeds like flattened stones.

Habitat: Moist forests and forest edges, thickets, rocky slopes, margins of wetlands streambanks, river terraces; low to middle elevations.

Use: The tart, clustered berries were harvested in late summer and early fall often while still green, but also after the first frost. The berries will remain on the shrub well into winter. The berries were stored in boxes with water and oil. The bark was often chewed and the juice swallowed for lung colds. It is said that these berries and commercial cranberries mixed half-and-half make an excellent Thanksgiving cranberry sauce.

[Pojar & McKinnon, 1994]

Chamaecyparis Nootkatensis

(Yellow-Cedar, Yellow-Cypress, Alaska-Cedar)

Cupressaceae *(Cypress Family)*

A shaggy tree growing up to 80 feet in Washington (to 150′ elsewhere), with an often slightly twisted trunk, the tip droops at the top, the flattened branches tend to hang vertically and appear limp; the bark is dirty white to greyish-brown, in vertical strips but not tearing off very long. The leaves are opposite, scale-like in 4 rows, 3-6 mm long, bluish-green, with sharp-pointed, spreading tips (prickly to the touch when stroked "against" the grain). The pollen cones are about 4 mm long; seed cones beginning as round, bumpy, light-green 'berries' covered with a white waxy powder, less than 1 cm long, ripening (September/October) to brownish cones with 4-6 woody, mushroom-shaped scales; seeds are winged. If you do not have cones to fully identify this tree relative to the western redcedar, expose the inner bark; if it is yellowish and smells like raw potatoes, the tree is yellow-cedar.

Habitat: In moist to wet sites; often in rocky areas, avalanche chutes, rocky ridge tops, to timberline; at middle to high elevations, southern limit is Mt. Adams northward above the Canadian border.

Use: The tough straight-grained wood of yellow-cedar was used to make implements by virtually all northwest coast peoples. Yellow-cedar bows were popular and were common trading items. Also paddles and carved masks as well as dishes, fishing net hoops digging sticks, and adze handles were made from the wood. One tribe made a tea from the branch tips to treat insanity and boiled them with spruce roots to make a drink for curing kidney ailments. For a contraceptive, some women chewed the green cones and swallowed the juice. Yellow-cedar was used with a sweatbath as a cure for rheumatism or to 'scare away' a disease.

Preparation of the bark was used especially for weaving and blanket making. The bark had to be soaked and boiled to remove the pitch, then pounded until it was soft. Often it was interwoven with duck down or mountain-goat wool, or it was trimmed with these materials. Woven robes, hats and capes made from the fine, soft yellow-cedar bark repelled water and protected people from the rain. They used shredded bark as bandages, washcloths and towels.

In areas with more open area and access to the new more pliable roots, they removed the outer root bark and split it lengthwise in preparation for weaving baskets and cradles. These coiled cedar-root baskets, of a wide variety of shapes and sizes and often beautifully decorated with geometric patterns of reed-canary-grass stems and natural-colored and black-dyed bark of bitter cherry, are still made.

[Hickcock & Cronquist, 1990; Pojar & MacKinnon, 1994]

Larix Occidentalis (Western Larch, Tamarack, Hackmatack)
Pinaceae *(Pine Family)*

A tall forest tree, up to 230′ high, with flaky, brownish bark and long, straight trunks. The needle-like leaves are pale green, 1 - 1.8″ long, triangular[1] in cross-section, without resin ducts*, and borne in dense clusters of 15-30. The needles, unlike those of most conifers, are deciduous, turning golden yellow in fall an dropping. The pollen cones are small and yellowish, the seed cones up to 1.6″ long, at first purplish-red, later reddish-brown. The thick bark of mature western larch and its habit of shedding lower branches make this species resistant to fire.

Habitat: Western larch usually grows in mixed forests but can occasionally be found in pure groups of trees after a severe wildfire. It demands full sunlight and grows well on fire-blackened soil. Fire releases nutrients which it uses to grow faster than its companion species. Generally east of the Cascades and occurring most frequently in the Mountain Forest zone of northeastern Washington. Also in the Blue Mountains. Altitudinal range approximately 2,000′ - 4,500′.

Low temperatures limit the distribution of western larch. It is quite sensitive to frost damage because it continues to grow from bud-burst in spring through to September; most evergreen conifers stop growing in mid-July.

Use: Most First Peoples know this tree as tamarack. Larch sap, when it runs out of the tree and hardens, can be eaten like candy. It is sweet and is available at any time of the year. The stumps of burned or fallen trees yield good gum for eating. Some First Peoples placed pieces of larch gum in baskets and dissolved them with hot rocks and water, skimming off conifer needles and other extraneous matter, to make a syrup.

From the ages of 9 to 16, Northern Okanogan girls covered their faces with red paint. This was made with either red earth or pigment from larch trees. a “lump” of pitch was taken from the tree, heated in the fire, then rubbed with a stone until it became a fine powder. a mortar and pestle could be used to grind it down. The powder was mixed with grease and smeared on the face. Its purpose was to hide a girl’s face from men and also to improve her complexion. Larch paint for other purposes was made by mixing the powder with the sticky resin from cottonwood buds.

[Kuhnlein & Turner, 1991; Turner et al., 1980]

[1] Larix lyallii (Alpine Larch) not discussed here, has quadrangular needles in cross-section, and bears 2 resin ducts on those needles.

Picea Sitchensis (Sitka Spruce)
Pinaceae *(Pine Family)*

Sitka spruce is a large tree up to 200 feet in height. The bark is thin, silvery-grey or brownish, with characteristic long deciduous scales about 2″ across. The needles are yellowish-green or bluish-green, sharp-pointed, stiff, diamond-shaped in cross-section (4-sided and flattish), and tend to project from all sides of the twigs. The needles also bear 2 white lines of stomata on the upper surface, and usually 2 narrower lines on the lower surface. The male cones bearing the pollen are reddish. The female cones bearing the seeds are reddish-brown becoming brown, with thin, wavy, irregularly toothed scales hang down from the branches and are cylindrical. The female cones are generally up to 2″ long.

Habitat: In pure or mixed stands, often on moist, well-drained sites such as alluvial floodplains, marine terraces, headlands, recent glacial outwash, avalanche tracks; also on old logs or mounds on boggy sites and typically at low to middle elevations (<2000′) in western Washington.

Use: The sharp needles of spruce were believed to give it special powers for protection against evil thoughts. Some tribes used the boughs in winter dance ceremonies to protect the dancers and to ‘scare’ spectators. Among other First Peoples the inner bark (cambium) was eaten fresh or dried into cakes and eaten with berries. Some were said to eat the young shoots raw; these would have been an excellent source of vitamin C. The inner bark was eaten fresh as a laxative by others. The pitch was often chewed for pleasure and was also used as medicine for burns, boils, slivers and other skin irritations. Sitka spruce pitch was also used as a medicine for colds, sore throats, internal swellings, rheumatism and toothaches. The roots of Sitka spruce were used to make beautifully twined water-tight hats and baskets. The roots were carefully pulled out from sandy ground in the early summer, briefly ‘cooked’ in the fire to prevent them from turning brown, then peeled, split and bundled for later use.

[Pojar & McKinnon, 1994]

Pinus Albicaulis (Whitebark Pine)
Pinus Contorta (Lodgepole Pine/Shore Pine)
Pinus Monticola (Western White Pine)
Pinus Ponderosa (Yellow Pine)

Pinus Albicaulis

P. albicaulis needles

A small, often gnarled, tree or sprawling shrub seldom over 30′ high, with thin, light-gray bark and yellow-green needles up to 3″ long (upper right-hand corner here), in clusters of 5. The seed cones are oval, up to 3″ long, deep red, purplish, to gray, and often very pitchy. They tend to remain closed, shedding seeds slowly, and seldom falling from the tree intact. The seeds are large (8-12 mm long), brown, and wingless, containing a large, ovoid kernel.

Habitat: a timberline tree growing in rocky exposed situations - the only pine in Washington which can be found at elevations above 5,000′ in the Cascade Mountains.

P. albicaulis cone

Use: The seeds were gathered in the late summer and fall from local mountain ridges, and were regarded as a special treat. The cones were picked intact, by people climbing the trees, or the seeds were obtained by shaking the branches until the cones fell apart and seeds and scales dropped. Intact cones were dried slightly by spreading them out in the sun, or were roasted in the coals of a fire or overnight in cooking pits, then pounded until they broke apart and the seeds could be extracted. The seeds were occasionally eaten fresh and raw. Preferably, they were roasted, then stored in bags or underground caches for winter use. Sometimes they were crushed and combined with dried Saskatoon berries or some other fruit, or were dried/roasted, pounded to a fine flour with a mortar and pestle, then mixed with water or sometimes animal fat to form a mush. The seeds were a common trading item, often traded for hazelnuts.

Pinus Contorta

P. Contorta - Tree

A medium-sized tree, up to 100′ tall, with thin limbs often confined to the top third of the tree when it is growing in a dense stand. There are two varieties of this species: shore pine (var. contorta) a smaller tree, of more scrubby growth, usually with twisted, much forked branches; and lodgepole pine (var. latifolia), with taller, straight, relatively slender trunk. Both varieties have thin, scaly, reddish brown to grayish brown bark, needles in pairs (2), usually <3 inches long, and cones up to 2 in. long, which remain closed for many years, sometimes opening only after a fire. The thick cone scales are often spiny tipped.

P. contorta cone

Habitat: Highly adaptable, tolerant of low-nutrient conditions; found from dunes and bogs to rocky hilltops and exposed outer-coast shorelines. At low to middle elevations, occasionally to upper montane/subalpine.

Use: The pitch was chewed for pleasure, to waterproof canoes and baskets, and to fasten arrowheads onto shafts and as a glue to provide a protective coating for Indian-hemp fishing nets. The seeds were eaten too. Some First Peoples ate the young shoots of the branches when at the bud stage; these were said to be very sweet. Some groups also made a tea by boiling the needles* (Turner et al., 1990).

The most important food derived from lodgepole pine was the inner bark, including the cambium and secondary phloem tissues (cambium is tissue that produces more phloem; phloem transports photosynthate/sugars from sites of photosynthesis [needles] to other sites requiring the sugar's energy for growth/metabolism). The edible tissue is said to be at its prime for harvesting only for a very limited time in spring (May/June), the exact interval being determined by elevation and local weather conditions. This is about the time when the new needles are expanding and the pollen cones are in full production.

For harvesting, the bark is removed and the ripe cambium tissues scraped off the exposed wood in long, fleshy ribbons about 1″ wide and up to 2 feet or more long. Special prying implements were used to remove the bark and scrapers, traditionally made of caribou antler, deer ulna or rib, or shoulder blade of deer or bear, were used to harvest the edible tissue. a basket or container placed at the bottom of the tree was often used to "catch" the edible ribbons, or "pine noodles" as they fell. The practice of harvesting inner bark has been discouraged by forestry management officials, and few First Peoples still use this food.

The edible tissue was usually eaten fresh, as it was gathered, or shortly afterwards. When freshly harvested, it is reportedly sweet, juicy, and somewhat resinous, but when left it is said to discolor quickly and "go sour." Sometimes, it was dried for winter, when it would be soaked in water before use. Some people like to add sugar to this food, making it even sweeter.

Pinus Monticola

Medium-sized tree, beautifully symmetrical, occasionally to 120′; bark initially smooth, sometimes with resin blisters, becoming scaly, dark grey to nearly black, cinnamon-colored underneath. Needles in bundles of 5, light bluish-green, slender and flexible, 2-4″ long. Pollen cones yellow, to ½" long; seed cones cylindrical when closed, 4-10″ long, yellow-green to purple when young, becoming reddish-brown and woody, scales without prickles.

P. monticola needles

Habitat: Moist valleys to fairly open and dry slopes, from near sea level to subalpine.

Use: a tea from the bark was made for stomach disorders, and to purify the blood, and it was applied externally on cuts and sores. The pitch was used for stomach aches, coughs and sores, for waterproofing and as a cleansing agent. Its gum was chewed to give women fertility. Sheets of the bark was used to make baskets and small canoes.

P. monticola cone

Pinus Ponderosa

P. ponderosa needle

A medium to large forest tree, occasionally exceeding 100′ in height, with thick, splendid cinnamon-colored scaly bark that smells of vanilla in the hot sun and long needles, often over 10″ long, in clusters of 3. The seed cones are broadly ovoid, up to 6″ long, reddish purple when young and brown at maturity. When ripe, after two years, the prickle-tipped scales open to release prominently winged seeds (6-7 mm long).

P. ponderosa cone

Habitat: Most common tree in the lowest forested part of central and eastern Washington. Usually between elevations of 1500′ - 3500′. Often extends into the Bunchgrass Zone as scattered individuals. West of the Cascades, it occurs in a few local places on dry gravelly soils.

Use: The inner bark (cambium and secondary phloem tissue) was harvested in similar manner as P. contorta (see above). Also the seeds were harvested and eaten in similar manner.

Dried ponderosa pine needles were used in food processing, for drying berries on or lining the bottom of a cooking pit and interspersing between the layers of food being cooked (Turner et al., 1990).

Ponderosa pine needles and branches may cause abortions and stillbirths in pregnant cows browsing them, and a tea of needles is reputed to cause miscarriages in pregnant women (Turner et al., 1980).

[Kuhnlein and Turner, 1991; Pojar & MacKinnon, 1994]

Pseudotsuga Menziesii (Douglas-fir)

Pinaceae *(Pine Family)*

Tall, straight, symmetrical tree with a dense cylindrical or conical shape to 180′ tall. Older trees have a branch-free trunk. Smooth, grey-brown bark with gummy resin-filled blisters when young, the bark becomes very thick with age and deeply grooved, with dark reddish-brown ridges. The needles are flat with a pointed tip. The upper surface is bright yellowish-green with a single groove down the center; the lower surface is paler, bearing two parallel white bands of stomata. The needles appear to stand out around the twig. Cones are 5-11 cm long, turning from green to grey as they mature. Between each scale, long three-pronged bracts are easily seen (look for the 'mice' hiding in the cones - the bracts are their hind feet and tail). Seeds are winged at the tip.

Habitat: Douglas-fir is a widespread forest tree, from extremely dry, low elevation sites to moist, well-drained montane sites.

Use: Douglas-fir wood and bark was thought by most of the coastal groups to be an excellent fuel, but it had the reputation of throwing sparks and giving slivers to those handling it. The wood was also used to make items such as spear handles, harpoon shafts, spoons, dip-net poles, harpoon barbs, fire tongs, salmon weirs, caskets and halibut and cod hooks. Its pitch was used for sealing joints of implements such as harpoon heads, gaffs and fishhooks, and for caulking canoes and water vessels. The pitch, like that of many coniferous trees, was used to make a medicinal salve for wounds and skin irritations. One tribe prepared dogfish by stuffing it with rotten, powdered Douglas-fir and burying the fish in a pit lined with the same material and roasting.

The small, pitchy seeds were occasionally eaten, especially when they could be located in rodent caches. a beverage tea was made from the needles and twigs. Some tribes chewed the pitch as gum.

The most intriguing food use of this tree, however, was of a type of white, crystalline sugar, called "Douglas-fir sugar" or "wild sugar," which was gathered from the branches of certain individual trees and was formerly a popular confection and sweetener. This substance is described in detail in an article by John Davidson (1919) and was also mentioned by early ethnographers such as James Teit and George Dawson. The sugar was produced from the branch tips of certain fir trees having abundant exposure to the sun and good soil moisture during the hottest days of midsummer. It appears as white, frost-like globules on the branches, and is composed of sucrose and reducing sugars, and over 50 percent by weight of a rare trisaccharide sugar, melezitose (Davidson, 1919). The sugar was gathered and eaten immediately as a confection, or, if enough could be obtained, taken home in a container and used as a sweetener for other foods such as black tree lichen and balsamroot seeds. (Davidson, J. 1919. Douglas-fir sugar. The Canadian Field Naturalist 33:6-9 (April).

Because the Douglas-fir is not a true fir, the common name is hyphenated. It was named after David Douglas, the Scottish botanist who introduced many of British Columbia's native conifers to Europe.

[Hitchcock & Cronquist, 1990; Kuhnlein & Turner, 1991]

Taxus Brevifolia (Pacific Yew, Western Yew)

Taxaceae *(Yew Family)*

Evergreen shrub to small tree, to 45 feet in height, with drooping branches and a twisted and fluted trunk; bark is reddish, papery, scaly to shreddy. Needles are flat, up to just over an inch long, dull green above, striped below with stomata; needles end abruptly to a fine point, arranged in 2 rows in flat sprays. Pollen is released from inconspicuous male cones (bearing a stalked cluster of 4-8 stamens) from a male tree to a female tree's cones where the seed ripens in two seasons in September. The yew is a conifer but it produces a single bony seed almost completely surrounded by a bright red, fleshy cup (aril) that looks like a large red huckleberry with a hole in the end (poisonous). Since the seed is not completely enclosed by the red aril the tree is classified as a conifer or gymnosperm (gymno=naked, sperm=seed).

Habitat: Moist mature forest at low to middle elevations often with Douglas-fir and western hemlock in productive old-growth forests as a small understorey tree. Grows from sea-level to near 5,000′ in Cascades and mountains of northeast Washington. Although very widespread as scattered individuals its optimum range is west of the Cascades.

Use: The hard wood is ideal for carving and takes on a high polish. Many implements were made from yew wood, including bows, wedges, clubs, paddles, digging sticks, adze handles, harpoon shafts, spears, mat-sewing needles, awls, dip-net frames, knives, dishes, spoons, boxes, dowels and pegs, drum frames, snowshoe frames, canoe-spreaders, bark scrapers, fire tongs and combs.

The needles are chewed and put onto wounds to promote healing. Peeled bark is made into a tea for the lungs and for internal pains.

Western yew seeds are poisonous and humans should avoid the fleshy 'berries', although a wide variety of birds consume them and disperse the seeds.

A new, potent and apparently very promising anti-cancer drug, taxol, has been identified in the bark and other parts of this tree. It is being tested against a variety of types of cancer, including ovarian, breast and kidney cancers. There are, however, concerns that the slow-growing western yew may be endangered by overharvesting of this tree for this purpose.

[Hitchcock & Cronquist, 1990; Kuhnlein & Turner, 1991; Pojar & MacKinnon, 1994]

Thuja Plicata (Western Redcedar)
Cupressaceae *(Cypress Family)*

Large tree up to 185 feet high, with drooping top, with branches tending to droop or spread slightly and then turn upwards (J-shape); the branchlets are flattened horizontally; the bark is grey to reddish brown, tearing off in long fibrous strips; wood is aromatic. Leaves are scale-like, opposite pairs in 4 rows, the leaves in one pair folded, the leaves in the other not, closely pressed to stem in overlapping shingled arrangement that looks like a flattened braid; glossy yellowish-green. Pollen cones small, numerous, reddish; seed cones with 8-12 scales, egg-shaped, about 1 cm long, in loose clusters, at first green then turning brown, woody and turning upwards; seeds are winged.

Habitat: Western redcedar grows best in moist to wet soils, with lots of nutrients. It is tolerant of shade and long-lived, sometimes over 1,000 years. It frequently grows with western hemlock and Douglas-fir. The forest redcedar grows typically in a lush layer of ferns, huckleberries, and Devil's club, with a thick carpet of mosses on the forest floor.

Use: The western redcedar has been called "the cornerstone of Northwest Coast aboriginal culture," and has great spiritual significance. Coastal people used all parts of the tree. They used the wood for dugout canoes, house planks, bentwood boxes, clothing, and many tools such as arrow shafts, masks, paddles, dishes, arrow shafts, harpoon shafts, spear poles, barbecue sticks, fish spreaders and hangers, dip-net hooks, fish clubs, masks, rattles, benches, cradles, coffins, herring rakes, canoe bailers, ceremonial drum logs, bombs, fishing floats, berry-drying racks, fish weirs, and spirit whistles (to mentiona a few). The wood is an excellent fuel, especially for drying fish, because it burns with little smoke. The inner bark made rope, clothing, and baskets. The long arching branches were twisted into rope and baskets. It was also used for many medicines.

The bark of the redcedar was an integral item for the First Peoples. To strip the bark from the tree, a horizontal cut was made in the bark, a meter or more from the ground, for a third of the circumference of the tree. a large wedge was used to pry up the bark, then pulled upward and outward until it came free of the tree, leaving a long scar in the shape of an inverted V. The strip pulled from the tree might be as long as nine meters. The bark was hung upt to dry, then beaten until it separated into layers ready for the making of articles such as baskets, rope or mats.

[Pojar & MacKinnon, 1994; Turner, 1991]

Tsuga Heterophylla (Western Hemlock)
Pinaceae *(Pine Family)*

Evergreen tree, to 180 feet in height with a narrow crown bearing a conspicuous drooping leader. Bark is rough, reddish-brown, scaly, thick and furrowed in old trees; twigs slender, roughened by the peg-like bases whose needles have fallen. Needles are short, flat, blunt, widely and irregularly spaced, of unequal length, producing feathery flat sprays, yellowish-green on top, whitish with 2 fine lines of stomata beneath, twisted at the base to appear 2-ranked. Pollen cones numerous, small. Seed cones numerous, oblong, 2 cm long, purplish-green when young light brown when mature.

Habitat: Fairly dry to wet sites; well adapted to grow on humus and decaying wood, also found on mineral soil; shade-tolerant; very common from low to middle elevations (to 4000′) in western Washington. Also occurs on moist east slopes of Cascades from 2,000 - 4,500′ elevation and in northeastern Washington. Western hemlock usually grows with Douglas-fir, red cedar, and Sitka spruce.

Use: Western hemlock bark has a high tannin content and was used as a tanning agent, pigment and cleansing solution. Some First Peoples used a hemlock-bark solution for tanning hides and soaking spruce-root baskets to make them water tight. a red dye made from hemlock was used as a facial cosmetic and hair remover. One group steeped the bark in urine to make a black dye, and others used the bark steeped in water to color fish nets brown, making them invisible to fish. a yellow-orange paint was prepared from mashed hemlock bark mixed with salmon eggs; this was used to color dip-nets and paddles.

Western hemlock wood is moderately heavy and durable and fairly easy to carve. It was carved into implements such as spoons, roasting spits, dip-net poles, combs, spearshafts, wedges, children's bows and elderberry picking hooks. Halibut and cod hooks were fashioned from the circular grain of the trunk which surrounds the limbs, or from the dense knots. Large feast bowls were made from the wood of bent hemlock trunks.

Hemlock branches were considered an excellent bedding material. During herring spawning season, from March to June, the boughs of hemlock were tied in bundles and lowered into the ocean near river estuaries. Later the spawn was collected by scraping it off the boughs, to be eaten fresh or dried. Some First Peoples threaded eulachon and herring on hemlock boughs for drying, and used the boughs for lining steaming pits. Some tribe dancers wore skirts, headdresses, and head-bands of hemlock boughs, and young women lived in hemlock-bough huts for four days after their first menstruation.

Hemlock pitch was applied topically for poultices, made into linaments placed on the chest for colds, and when mixed with deer tallow as a salve to prevent sunburn. The inner bark (cambium & secondary phloem) is also edible.

[Hitchcock & Cronquist, 1990; Pojar & MacKinnon, 1994]

Bryoria Fremontii Letharia Vulpina Usnea Longissima

Bryoria Fremontii

Black Tree-Lichen, Black "Moss", Bear Hair

A dark-colored, filamentous lichen hanging from the branches of coniferous trees; 4-24″ long. When dry, the thallus is stiff and wiry, when wet, it is soft and limp. The individual branches, or filaments are round to flattened, smooth, and much entangled. Bryoria fremontii differs from several closely related, inedible species with which it may grow by its characteristically twisted dark, reddish-brown to chocolate-brown main branches, often flattened or pitted here and there, with short, much more slender, perpendicular side branches. Spore-bearing structures are uncommon. The greenish-yellow pigment in this and related species is a bitter, potentially toxic pulvinic acid derivative unique to lichens called vulpinic acid.

Habitat: On branches of (usually) coniferous trees such as Douglas-fir, lodgepole pine, ponderosa pine, and western larch (shown above) in montane forests.

Use: This lichen is often referred to in ethnographic literature as Alectoria jubata. Most First Peoples call it "black moss". Populations of the lichen vary in taste. Some are bitter due to high concentrations of lichen acids. The taste is also affected by the type of tree the lichen is growing on. Some prefer the lichen from larch or Douglas-fir, though some prefer the lichen from the pines mentioned. The lichen could be gathered at any time of the year, but usually it was in late summer or early fall after the work with other foods was done.

Typically the lichen was harvested using any large pole, preferably with some kind of hook for grasping and twisting off.

Most First Peoples are said to boil the lichen and eat it with fish, grease, or berries. Many would taste test the lichen first to determine if it was too bitter. The harvested lichen was cleaned of debris, then soaked in running water and pounded in an attempt to remove the bitter, greenish vulpinic acid. It was then cooked in layers in underground steaming pits for as long as 24 hours. It could be eaten freshly cooked, or dried for winter use. Resembling gelatinous licorice in appearance after cooking, it is bland tasting. It was sometimes cooked with nodding onions (Allium cernuum) or other "root" foods to flavor it. Sometimes Saskatoon berry juice was added to it before drying. Because it could be gathered in relatively large quantities, and was available for harvesting year-round, it was an important emergency and famine food. At present this lichen is rarely used.

According to Okanogan-Colville (northeast Washington) mythology, black tree lichen is said to have originated from Coyote's hair. Coyote had attempted to capture some swans, but instead they flew into the air, taking him with them. The swans let go of Coyote when they were up high. He fell and became lodged in the branches of a tree. Finally he was able to free himself, leaving much of his hair entangled in the branches. Coyote then transformed this hair into black tree lichen, saying "You, my hair, will not be wasted. The coming people will gather you and make you into food." Thus he changed it to its present form and it has been used as food ever since (Turner et al., 1980).

[Kuhnlein & Turner, 1991; Turner et al., 1980]

Photo credit of lichen from North American Lichen Project,
Lichens of North America, Irwin M. Brodo, Sylvia Duran Sharnoff and Stephen Sharnoff, Yale University Press. 1998.

Letharia Vulpina
Wolf "Moss"

There are two species of Letharia that are not easily distinguished; L. vulpina and L. columbiana. These two species are chemically very similar but different sexually. L. vulpina is usually not sexual and always has soredia (clonal symbiotic propagules, made of a weft of fungal hyphae surrounding a nest of algal cells), and L. columbiana is always sexual and does not have soredia. The size of L. vulpina can be as small as 1 cm to as large as 12 cm. L vulpina is heavily branched, L. columbiana less so. The branches are irregularly round and rather wrinkled, and quite so under very dry conditions. The thallus is more or less upright, standing out from the sides of tree trunks or branches. It often occurs in a thick, solid cover, particularly on dead trees and limbs. It is more abundant in edgier habitats where sunlight is more abundant. In Washington, it is often tangled with Bryoria.

The color ranges from a brilliant yellow green to a duller yellow ochre under drier conditions. It is the easiest lichen to spot, noticible even when driving at fast speed from the highway.

The apothecia (fruiting bodies, producing sexual spores) are light to dark brown, from 2 mm to 2 cm. The soredia are abundantly produced and rub off easily when examined.

Habitat: Letharia vulpina is most commonly found in dry coniferous forests. The species also occurs in Europe southward to North Africa. The species is found on twigs and stumps of most conifers. In Washington, you won't find it in coastal Douglas-fir rain forests, but in drier inland Douglas-fir stands, where it can be very abundant. It seems to be adapted to summer dryness [in fact, the alga's photosynthetic maximum is 7°C, and doesn't drop much even to 0°C, (the freezing point)]. So it is active mostly during winter precipitation. There are, however, instances of the lichen found on bark of other trees, and human made substrates like houses and fence posts. It sometimes occurs on rocks.

Letharia vulpina seems to be restricted to localities with long ecological continuity, and often grows on old trees. While other lichens of old-growth forest seemingly prefer more or less productive forests where they get some kind of shade or shelter, though wolf moss thrives on wood even in sunny situations, also outside forests. The species is extremely photophilous, intolerant of canopy shade, and finds a niche in very open stands where waterlogged soils, nutrient-deficient soils and/or low temperatures limit growth and survival of trees.

Use: Used as a yellow dye. For this purpose it was boiled in water, alone or with Oregon grape bark. This dye was used mainly for basket materials and fibers. As a medicine, this lichen was boiled and taken in a weak solution for internal problems and, in stronger solution, was used to wash external sores and wounds.

This lichen is so poisonous that the Achomawi in Northern California used it to make poison arrowheads.

And how did the common name come about? It deals with the European usage, which (barbarians that they were) was destructive. It was mixed with ground glass and meat and used to kill wolves. The vulpinic acid is toxic, although it is not clear if the ground glass may have been enough to do the job. Perhaps it caused stomach perforations and allowed the vulpinic acid (note the name) to be readily absorbed.

Photo credit of lichen from North American Lichen Project, Lichens of North America, Irwin M. Brodo, Sylvia Duran Sharnoff and Stephen Sharnoff, Yale University Press. 1998.

Plant and habitat description, as well as the source of the common name from Europe comes from Scott Kroken, a Ph.D. candidate at the University of California, Berkeley, who is currently working on his dissertation and Letharia.

Usnea Longissima
Methuselah's Beard

A large, hanging hair lichen, 15-35 cm or more long, pale yellowish-green, consisting of a single, unbranched (or sparsely branched) central strand and numerous short lateral branchlets; white central cord becoming in part exposed (decorticate); soredia absent; central cord white.

Habitat: Over various trees and shrubs in open, well-ventilated forests; infrequent, but locally abundant. This species disperses mostly, if not entirely, from small pieces carried to new localities. It is best developed in old-growth forests and will probably not persist in short-rotation second-growth forests.

Use: Some First Peoples utilized the fibers of this plant to strain impurities from hot pitch before the pitch was used as medicine.

[Pojar & MacKinnon, 1994]

Photo credit of lichen from North American Lichen Project, Lichens of North America, Irwin M. Brodo, Sylvia Duran Sharnoff and Stephen Sharnoff, Yale University Press. 1998.

Blechnum Spicant (Deer fern)

Polypodiaceae *(Polypody Family)*

Medium-sized, evergreen, tufted fern growing from a short, stout rhizome. Fronds of two kinds: sterile fronds often pressed to the ground, green and leathery; stipes purplish-brown, leaflets progressively reduced towards the top and bottom. Fertile fronds upright, arising from center of clump, deciduous and with much narrower leaflets that are sometimes rolled in near-tubes around the sori. Sori are continuous, distributed near the margin, and protected by a continues translucent brown indusium attached close to the leaflet edge.

Habitat: Moist to wet forests, wet slide areas under alder, stream-banks, occasionally in bogs; lowlands to subalpine elevations of western Washington.

Use: The young leaves of deer fern were chewed by some as a hunger suppressant. The leaves were used as a medicine for skin sores.

[Pojar & McKinnon, 1994; Turner, 1995]

Dryopteris Expansa

(Spiny Wood Fern, Shield Fern (aka Dryopteris Austriaca)

Polypodiaceae *(Polypody/Common Fern Family)*

Fronds clustered, erect and spreading to 3 feet tall. Rhizomes stout, ascending to erect, clothed with chaffy, brown scales. Frond stipes scaly at the base; blades broadly triangular to egg-shaped to broadly oblong, 3 times pinnate; leaflets 5-20 pairs, the lowest pair broadly triangular and asymmetrical; ultimate segments toothed; the 2 basal ones much larger than the others and spur-like. Sori are rounded, partially covered by the rounded indusium.

Habitat: Moist forests and openings, scree slopes, from low elevations to subalpine on the western side of Washington.

Use: Raw rhizomes are bitter, but when cooked, they are said to be sweet-tasting. Details of the use of this important fern and of the difficulties identifying it are provided in a recent article by Turner et al (1993)(see Note). The rhizomes of the spiny wood fern were dug up around the end of September. At this time, the rhizomes are surrounded by scaly, finger-like projections, which are actually the beginning of next year's growth. If the projections are flat and dark inside, the rhizomes are not good to eat; but if they are round, fleshy and light-colored, the rhizomes are edible. They were cooked overnight in steaming pits, or steamed in kettles. The finger-like projections could be broken off, peeling like bananas and eaten with Grease or "stink egg" (fermented salmon roe). Some First Peoples compare the taste of spiny wood fern rhizomes to that of sweet potatoes.

The rhizomes of this species or Male fern (Dryopteris filix-mas) can also be eaten raw. But the rhizomes are bitter and have strong laxative properties. People of European background have used them as a vermifugant (de-worming medicine).

[Turner, 1995]

Turner, N.J. & A. Davis. 1993. When everything was scarce: the role of plants as famine foods in northwestern North America. Journal of Ethnobiology 13(2):1-28.

Equisetum Telmateia (Giant Horsetail)

Equisetaceae *(Horsetail Family)*

Herbaceous perennial growing from deep, branching rhizomes. The stems are annual, jointed, hollow, except at the joints, and rough or scratchy to the touch. They are of two types (as shown in the photograph): light-colored, non-branching fertile shoots about 20 cm (8″) high (with cone 4-10 cm long), which appear early in spring and die back as soon as the spores are produced; and green vegetative shoots having 20-40 vertical, epidermal ridges that grow up to 45 cm (18″) or more, with many slender branches borne in whorls from the nodes. The latter appear after the fertile shoots, and remain until fall. Leaves are reduced to papery sheaths surrounding each node.

Habitat: Moist to wet places, stream-banks, swamps, seepage areas, gullies, roadside ditches, usually near standing or flowing water, often forming dense colonies at low to middle elevations west of the Cascade Mountain crest.

Use: The succulent shoots - both spore-bearing and vegetative - were eaten raw or boiled. To eat the shoots, the papery sheathing leaves and, on the vegetative shoots, the young branches, were peeled off, and the stem portion, especially the tender inside part on the lower part of the stalk, was eaten, usually with a dressing of seal oil or some other type of oil. Tough, fibrous portions were chewed and discarded. Additionally, small “bulbs” attached to the root-stock were eaten cooked, or occasionally raw, by some First Peoples with salmon eggs or with whale/seal oil. The hollow stems of this species and others frequently contain water, and this was believed to be safe for drinking even when nearby water was contaminated.

Within the cell walls is silica. The stalks were used for polishing dishes, shining finger nails, and polishing arrow shafts. Portions of the black roots were often woven into baskets for designs.

Horsetails are known to be toxic to livestock, and contain thiaminase, an enzyme that destroys thiamine and hence can cause thiamine deficiency. They also contain silicates, especially in the cells of mature plants, making them “scratchy” to the touch, and too tough to eat except in their young stage. However, there is no evidence that giant horsetail caused any problems for First Peoples in the quantities used and at its young growth state when normally eaten. But to be safe, never eat the green vegetative shoots, and eat the fertile shoots only in small quantities with extreme caution.

[Hitchcock & Cronquist, 1973; Kuhnlein and Turner, 1991; Lombardi, 1996]

Polypodium Glycyrrhiza (Licorice/Polypody Fern)

Polypodiaceae *(Polypody/Common Fern Family)*

Licorice fern is a small fern up to 12 inches. It is named for its licorice-flavored rhizomes. The rhizomes are perennial, often more that 6″ long, roundish, about 5 mm thick, branching and shallow, and yellowish-green. The fronds are once-pinnate, coarse and light green, often deciduous in the dry summer, bearing new fronds in the autumn. The pinnae are generally in 10 to 20 offset pairs, toothed, pointed and diminishing in length at the tip of the frond but otherwise about equal in length. The sori are round, orange, lacking indusia, occurring in two rows along the underside of the pinnae.

Habitat: On wet mossy ground, logs and rocks, sometimes forming large sheets over rock slabs, or more commonly on tree trunks and branches, often Bigleaf Maple; at low elevations.

Use: The sweet licorice-flavored rhizomes were chewed for the flavor by many First Peoples. Occasionally the rhizomes were dried, steamed, scorched or eaten raw. The rhizomes were an important medicine for colds and sore throats. The rhizomes were also mixed with bitter medicines as a sweetener.

[Pojar & McKinnon, 1994]

Polystichum Munitum (Sword Fern**)**

Polypodiaceae *(Polypody/Common Fern Family)*

Large (to 3 feet tall), evergreen, with erect fonds forming a crown from a stout, woody, scaly rhizome. Stipe is dry-scaly, blade is lance-shaped, erect to arching, singly-pinnate, with alternate pinnae, having sharp teeth with incurved spine-tips, each with a small lobe pointing forward at the bottom. Sori are large, circular, located about halfway between the midvein and the margin giving the underside of a frond an orange color from the twin rows of these spore cases. The indusium is round with fringed margins, and centrally attached.

Habitat: Moist forest at low to middle elevations (Coastal Forest Zone); abundant and widespread.

Use: Sword fern fronds were usde by First Peoples as a protective layer in traditional pit ovens, between food in storage boxes and baskets and on berry-drying racks. The fronds were also used as flooring and bedding. The large rhizomes were dug in the spring (with some tribes the rhizomes were only eaten as a starvation food). The rhizomes were roasted over a fire or steamed in a traditional pit oven, then peeled and eaten. Some tribes ate the cooked rhizomes to cure diarrhea.

[Pojar & McKinnon, 1994]

Pteridium Aquilinum (Bracken, Brake-fern)
Polypodiaceae *(Polypody Family)*

Bracken are often up to 5 feet tall. The rhizomes are perennial, often 8″ deep, running horizontally for long distances, often branching. The rhizomes can be as thick as 2 cm, black outside with numerous hairs, and white and glutinous inside with tough longitudinal fibers in the middle. The fronds are borne individually along the rhizome (unlike most ferns that cluster their fronds from a central compact base), and have tall, smooth, light-green stems and coarsely branching pinnae. The fronds and lower pinnaae are broadly triangular in shape. The pinnules are numerous and deeply toothed, and the sori, when present, are marginal and mostly continuous, covered by an inrolled leaf margin.

Habitat: Meadows, roadsides, clearings, sterile sandy soils, burns, avalanche tracks, dry to wet forests, acid sites such as lake-shores and bogs; often weedy, at low to subalpine elevations. Rhizomes are deep giving it the ability to survive even intense fires.

Use: Several groups boiled and ate the fiddleheads of Bracken. Virtually all coastal groups use the rhizomes as food. Most dug them up in late fall or winter. They coiled up the rhizomes and allowed them to dry. Later, they roasted them in an open fire until the outer skin could be peeled off, then pounded the inner parts with a stick. After removing the tough, central fibers, they ate the whitish starchy inside, usually with fish eggs or oil, because it was constipating. One tribe broke the rhizomes into pieces four finger-widths long and ate them with salmon eggs or Grease. Another group also steamed the rhizomes in pits, when there were too many to roast.

Another tribe made a type of bread by pounding the roasted rhizomes into flour, mixing this with water, and forming the dough into flat cakes, which were then roasted.

More about the Bracken and its use as a food with First Peoples can be learned from Norton, H.H. 1979a. Evidence for Bracken Fern as a food for aboriginal peoples of western Washington. Economic Botany 33:384-396.

Bracken leaves and hay contaminated with Bracken are known to be poisonous to livestock when eaten in large amounts. The toxic ingredient is an enzyme, thiaminase, which destroys the animals' thiamine (B-vitamin) reserves.

[Pojar & McKinnon, 1994; Turner, 1995]

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