WILLAMETTE WETLANDS OF THE KALAPUYA

A NEW EUGENE MURAL AND EDUCATIONAL PROJECT

DR. EDWIN COLEMAN JR. COMMUNITY CENTER, WESTMORELAND PARK, EUGENE OR.
THE MURAL IS LOCATED ON THE EAST WALL OVERLOOKING THE WETLANDS.

The project is supported by grants from the City of Eugene Office of Human Rights and Neighborhoods, Gray Family Fund and Spirit Mountain Community Fund.

Thank you to our co-collaborators and partners in this project:
Beyond Toxics (Project lead), Friendly Area Neighborhood Equity Action Team, City of Eugene Parks and Open Space, the Confederated Tribes of Grand Ronde, and the Boys & Girls Club of Emerald Valley.

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WILLAMETTE WETLANDS OF THE KALAPUYA TRIBES — A SEASONAL ROUND

Written by Susan Applegate, Muralist and Artist in consultation with Esther Stutzman, Kalapuya Elder, Storyteller and Culture Consultant

The Willamette Valley was once an open landscape, home to vast communities of flowering plants. A mosaic of species carpeted the lower elevations according to soil type and moisture retention. The braiding, meandering, flows of the Willamette River created significant wetlands that provided natural flood control and a resource-rich environment. The wet prairie landscape in Eugene's Westmoreland Park is a small but important remnant. Some of the plants that provided food and medicine for the indigenous Kalapuya tribes are present in this park. The Kalapuya culture was deeply interwoven with every aspect of the landscape throughout the length and breadth of the Willamette River Valley.

This mural depicts and names plants currently growing at the park site. and reflects some of the harvesting and processing methods used by the Kalapuya people. This practice of following plants' flowering through completed fruiting for food gathering and back into dormancy is called, "the seasonal round." It should be viewed from two perspectives: the warmer summer and autumn months when plants mature and are harvested for their berries, nuts, roots, bulbs; and the cooler months of winter and spring when plants sequester sugars in their roots and retreat into dormancy. It is still cool as the flowering food plants re-emerge in spring when the snow melts and the days grow longer. Spring showers encourage flowers to begin their ascent into bloom. During the winter and early spring, the Kalapuya stayed close to their permanent villages where hunting excursions could take a few men away for several days. From their permanent villages, bands of Kalapuya took their baskets, harvesting tools and mats and traveled out into these plant communities during the warm and hot seasons of harvest.

The migration of enormous flocks of ducks and geese were an important food source, as they landed on the newly sprouted grasses, especially where the Kalapuya had burned the prior fall season. Intentional burning of the meadows, open prairies and through the oak groves each autumn was a way to fertilize the soil, clear out unwanted brushy vegetation and assist in the harvesting of seeds. It was an agricultural method that treated the entire landscape while supporting the ecosystem. Each panel describes some aspect of the seasonal round as native people followed the migrations of animal life and the cycles of plants.

Wetland plants depicted in the mural are shown in Kalapuya language when possible as well as commonly known English names. A newly published Kalapuya dictionary by the Komemma Cultural Protection Association provides the public with language-based insight into the relationship of the Kalapuya people to the land and among each other. These names can be found in this dictionary.

Starting from the left end of the mural, we see a Kalapuya woman dressed in soft buckskin leather as she pounds the seeds of the mule ear daisy, (Uamelk tepok in Kalapuya), and the tarweed, (Tukwa in Kalapuya). The seeds are beaten into a large gathering basket following the harvest fires. These and other seeds were often combined to create a flour from which cakes and pemmican-like bars were made.

In the late spring, the huckleberry plants (Mo' h'amo' olalla in Kalapuya) begin to produce effusive amounts of berries, which are harvested before the warmest, driest months arrive ensuring their plump and full-flavored quality is captured. Intentional or lightning-caused fires that burn through the foothills provided optimal conditions for huckleberry growth and picking. These women are wearing buckskin leggings and moccasins to protect their legs and feet from being scratched by the little native blackberries that grow low along the ground, as they traverse the hillside. The women are picking their berries into a folded cedar basket, made from the bark of the Western Red Cedar tree. To harvest the bark, a slice about 2 feet wide was made into the bark as high as a person could reach on the north side of the tree trunk. Another slice at the bottom allowed the person to pull up from the bottom of the bark, stripping it away from the tree. These bark strips were then processed to make baskets like the folded cedar basket. Through a process of soaking and separating the bark into smaller strips, the cedar could be easily folded into the bucket-like shape that could rest on the knee as the woman picked the fruit. With more soaking and and pounding the cedar bark softened and the fibers were more like fabric. The fiber strips were then made into clothing, like the cedar bark skirts and capes, worn by the women. After the huckleberries were gathered in the basket, sword fern fronds were gathered to fold over the berries to keep them fresh. Huckleberries were a prized and important food for the Kalapuya people.

Above and to the right of the huckleberries, we see the mule ear daisies blooming during late spring and early summer. Latin name - Wyethia angustifolia (Uamelk tepok in Kalapuya). It is sometimes mistakenly referred to as balsam root. It prefers moist soils, but is drought resistant, and once grew in large communities throughout the Willamette valley. The large root was a food source as well as the seeds. It was not uncommon for a family or band to collect from 10 to 20 bushels of seed during a season.

Here we see a woman using the woven hand-held paddle to thrash the seeds from the burned plants (left) following the intentional fire burning. From there, the seeds were mixed with others, like tarweed, and ground to make a type of flour. The intentional fires moved swiftly across the landscape, burning grasses and flowering plants at the close of summer after the seeds had ripened. These were not hot fires because there was no large buildup of fuels on the ground. Bands of Kalapuya working together would burn the flowering meadows. These fires fed nutrients into the soils, cleansed the landscape, prepared the seed bed for the coming years and made it easy to thrash the seeds from the burned seed head. During this time they also harvested the burned bodies of grasshoppers, an excellent addition to their diet. When seeds were harvested, handfuls were thrown across the charred soils to enlarge the plants' range. The mule ear daisy is a plant that evolved with fire as practiced for thousands of years by the Kalapuya.

The meadows and valley floor of the Willamette valley burst into color during the spring when many of the food plants begin to bloom.
Camas – (in Kalapuya it is 'Andip'). Latin, Camasia quamash and Camasia leichtlinii;
Biscuit root – (in Kalapuya it is 'Alu't'.) Latin, Lomatium nudicaule;
Cut-leaf microseris or commonly called **Silver Puffs**. Latin, Microseria laciniata, no Kalapuya word is known;
Willamette Valley gumweed. Latin, Grindelia integrifolia, no Kalapuya word is known;
Idaho blue-eyed grass or in Latin, Sisyrinchium, no Kalapuya word is known.

Many more flowering plants not shown in the mural provided the Kalapuya with food and medicine. Others provided material for basketry, fiber and twine, or string. Some of these fibers were strong enough to use in snares. Shown in the mural at the edge of the flowering meadow (lower left of the image above) is the sedge known as Carex tumilicola, (Ktsitan in Kalapuya). Showy milkweed (right), Latin, Asclepius speciosa, (no known Kalapuya

name) is shown at the other edge of the flowering meadow (with a Monarch butterfly resting on it). The inner layer of the stem, when dried, makes a very tough fiber - that can be twined to make string.

The Fender's Blue butterfly (below, left) is currently classified as a Threatened Species because of habitat loss. The Kincaid's lupine is no longer widely available in the Willamette Valley, which has affected this butterfly's survival. The California Sister butterfly lays its eggs on the upper leaf of the oak tree, which, because the tannin natural to the oak, makes the California Sister unpalatable to predators. Oregon Swallowtail, (Papilio oreganus), is Oregon's official insect. It has a wide range of hosts and food plants, including the lomatium, or biscuit root, which grows here.

This meadow landscape features a Kalapuya woman digging for the camas bulb, And'ip. Camas ranges in color from a light blue and white to a deep violet blue. The two camas species growing here, quamash and leichtlinii, begin blooming in April and will bloom through June, however, the bulbs are most flavorful after the seed has set. Most digging would occur from June through September. By August the leaves have withered and the stalk is but a stick with the shell casing of the ovary holding the seeds ready to be shaken to the soil. A similar appearing plant is commonly known as "death camas." It is a creamy white and is a completely different species whose Latin name is Toxicoscordian venenosum. While camas is of the genus, Camasia, the 'death camas' is from an entirely different genus, Melanthieae. It is highly toxic and will cause death if ingested. The Kalapuya never mistook the two species.

The camas bulbs are dug with a pointed, fire-hardened yew stick. The handle is the antler from the deer or elk. It is attached to the stick using sinew, with pitch and bear lard. This kept the handle from loosening its grip to the digging stick. Camas bulb tastes similar to a potato and like potato is a rich starchy food. Camas was a staple food in the Kalapuya diet. The bulbs, once dug from the ground, would be accurately tossed into the woven basket on her back. The basket was held in place on the back of the woman by a tump-line, — a piece of leather attached to both sides of the basket — placed around the forehead.

When large amounts of camas were collected, they were baked in large dug out pits that were lined with rocks. A fire was made atop the rocks that was kept burning until the rocks were hot throughout. Soil and moist plant material was placed over the hot rocks, and then the camas bulbs were placed on top of the smoldering and steaming mass, covered with some plant material such as bracken and sword ferns and more soil to hold in the heat and steam. After a day and night, or more, when the "oven" had lost its heat, the camas bulbs were finished baking. Mashed bulbs were made into a paste and often mixed with other ingredients to make flat cakes.

Among the flowering plants growing in Westmoreland Park, one of the more interesting is tarweed, or Madia, (Kalapuya word is Tukwa). Two species of tarweed thrive in the park. Their Latin names are Madia glomerata and Madia sativa. Tarweed provided a most important seed for the Kalapuya. Tukwa, (tarweed), has glandular filaments, or hairs throughout which naturally wick out plant oils. Touching the leaf and slightly pinching it to gather some of the plant's oils, brings out the tar-like odor. These oils were very important to the Kalapuya for food and for ceremony. Fire was an important tool for managing the vast meadows of Tukwa. Following the burn, the seeds were collected with a woven or wooden paddle and a large gathering basket. The burned seed heads were hit to shake loose the seeds which would land in the basket, as described for mule ear daisy. These two flowering plants often occupied the same landscape type.

Once collected the seeds were poured into conical baskets which were carried on the backs of the women to their camps by leather tump lines. Once at the camp, they often continued to roast the seeds on boards made from the ash tree, placing them on hot rocks or over coals from the fire. Once roasted, the seeds were pounded in a mortar, or stone bowl with a pestle to create a rather sweet, finely granular flour which was often combined with other ground seeds to produce a flour from which cakes were made. This flour was then mixed with cooked mashed camas, hazelnuts, dried service berries, dried huckleberries and sometimes dried animal meat to make a type of pemmican. This was very useful food when traveling and for eating during lean winter months.

Tarweed was so important a plant for the Kalapuya that family groups or bands held claim to certain Tukwa patches, each plot large enough to average a yield from 10 to 20 bushels of seed for a season.

Oils were collected from the plant to be used in cooking. But also, oils were used in ceremony. The Tukwa oil was rubbed on the skin for ceremonies of offering in appreciation of nature's bounty, and to promise that care would be given to all the plants and animals that had been hunted and gathered.

The dancer in the center circle depicts this ceremony. He holds a rattle made of deer hooves and wears leather bands holding red tail hawk feathers. Sometimes eagle feathers were used by the dancer. The bright red head feathers of the Pileated woodpecker were attached to hides of river otter or mink and were worn as a head piece for the ceremonial dancer. In this dancer's leather headband are flicker feathers. The dancer's body carries a sheen and the scent of Tukwa oil. Ceremonies were traditional and ancient in their practice through cycles of the seasons. Viewing the circle of the dancer implies and references other cycles of nature and of community life, of night to day, cycles of the moon and stars in the dark heavens, as though traveling through the cycle of seasons — as generation after generation follow the ways of living with the land, (il'hi, or Illihi in Kalapuya).

Tukwa blooms in the spring as the dragonflies emerge near streams, ponds, lakes and rivers. Newly leafed out willows are found near these damp places, where rushes, reeds and cattails grow. You might find a dragonfly emerging from its exoskeletal shell about the same time as the Tukwa begins to bloom.

Above the spring meadow in bloom, it is summer and the Kalapuya bands have moved out from their permanent villages into the gathering places, in family groups. They collect basket and twine making materials as well as dig for roots and bulbs. We see the summer hut which can be made on the spot, from branches laid out on a loose structure of small poles, or a simple pole structure covered with mats made from tule or cattail fronds. Woven mats were commonly used for summer shelters and for beds, sitting rugs and as divisions between family groups in the winter long houses. On the ground outside the summer hut are materials gathered for twine and basket making and bulbs and roots to be ground in the stone bowls by the stone grinding rocks, also known as pestles.

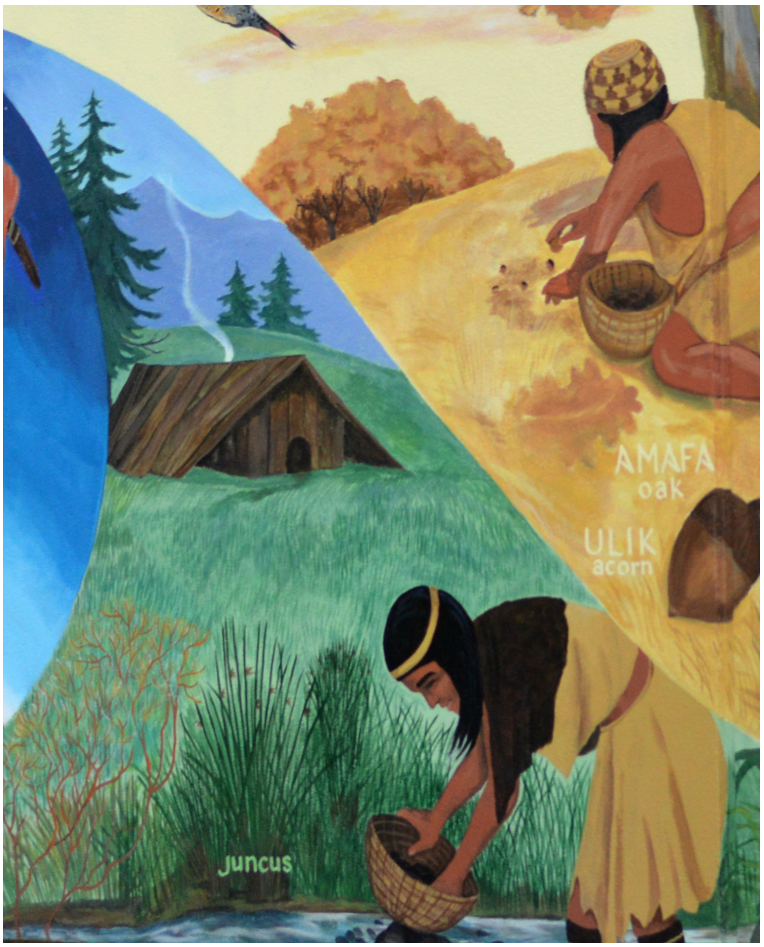
Circling above is the hawk, whose feathers adorn the arm band of the ceremonial dancer. The red tail hawk was a special bird for many Kalapuya people. Its sharp vision, quick strike and flash of red as light passes through the tail feathers, gives this hawk its honored place among the pantheon of animals whose beauty and habits the Kalapuya admired and respected.

Opposite the red tailed hawk, a northern flicker is flying. Northern flicker feathers were used by the Kalapuya as decorative elements worn in hats, headbands, sewn onto clothing and in nose piercings. The tail feathers of the flicker shine with a brilliant red-orange set off against the black pointed top. Flicker feathers could be worn as a symbol of status. The dancer is wearing flicker feathers in his head band. Women who honored status as leaders wore flicker feathers in their woven hats.

In the mural, the northern flicker flies over the landscape as summer has turned to autumn and the oak trees are shedding their acorns. Sometimes climbers would ascend into the trees to prune branches full of acorns that then fell to the ground with perfect acorns ready to be gathered. Pruning helped maintain the shape and health of the oak tree. Collecting acorns from the pruned branches before they rest on the ground made collecting easier and secured them before the deer, squirrels and bear could eat them. It also prevented the long snouted acorn weevil from boring a hole in the acorn shell and moving out onto the ground before harvest, where it tunnels into the soil for two years to emerge as an adult weevil ready to begin the whole process again of laying its eggs in newly formed acorns.

Acorns were an essential food for the Kalapuya although the processing of them is very arduous. From the nut-meats came flour and oils. The Southern range of Kalapuya harvested and prepared more acorns than the northern bands. Raw acorns are poisonous from the bitter tasting tannins. Processing the acorns removed the tannins from the nuts so they could safely be eaten. In the mural we see women gathering acorns and placing them into baskets which then will be cracked, the nut-meats removed and then ground into a fine meal with the mortar and pestle. The pile of ground acorn meal was then immersed in hot water or steamed in a basket until the water dissolved the tannins from the nut-meat meal, leaving a palatable mush. Another way to process the acorns was to bake the acorns on hot rocks, then bury the baked nuts in clay. The water in the clay absorbs the tannins from

the nuts. When done this way, the nuts could be dug up in winter when food was scarce. Washed and ground, they provided good nutritious hot mush or, mixed with other flours, could be baked into cakes.



Below the acorn gathering of late summer and fall, we see the permanent winter lodge where several families commonly occupied one house. The winter house was rectangular and made from wooden planks hewn from cedar or fir on a structure of poles dug into the ground. It was not uncommon for some houses to reach 60 feet in length. Some Kalapuya bands dug down several feet into the earth and built the house on top of the excavated hole to use the ground as insulation against the cold of winter. The roofing material varied from band to band, using large columns of cedar bark, with a dirt layer over the bark. Others used split cedar planks. Cedar splits more easily than any other conifers and provides a stable roofing. The Yoncalla Komemma band of Kalapuya were identified by other bands as the *people with high roofs*.

The permanent houses were built on higher ground a safe distance from a small stream or spring that did not flood, but where water was easily accessible. Food stores hung from rafters in the long house and a fire pit was located beneath the hole in the roof through which smoke was allowed to ascend while warming the interior. Here, before the fire, stories were told, meals were cooked, baskets repaired and arrows flaked. Stories could only be told in winter. To tell stories in the summer, invited such bad luck as the bee to sting or the snake to bite.

Occasionally men would venture out for fresh meat. Here in the mural, a woman collects a few fresh water mussels to add to a winter's meal. She wears a fur skin cape, leggings and moccasins made from otter skin which keep her feet and legs somewhat protected from the cold water. Soon enough she will be back into the house where she can remove her leggings and moccasins and hang them up to dry.

In the winter and early spring, when the first signs of skunk cabbage began to show, runs of salmon also began to appear in the valley's streams and rivers. This was the time to fish and hunt. A Kalapuya man is climbing a small waterfall whose rock sides provide a perfect place for the Pacific lamprey eel to cling. Although cold, these men braved the frigid waters, leaving their fur capes and leggings on the bank. With a quick snap at the base of the head, they could break the spinal cord, and toss the dead lamprey to the bank for collecting later. The Pacific Lamprey Eel was an important and nutritious food source for the Kalapuya people. It travels from the ocean with the salmon up into the tributaries of the rivers, through creeks and streams. Today the numbers of both Pacific lamprey eel and all of the salmon species are in drastic decline. Prior to European settlement, they were very abundant.

Above the river scene, we see a woman at her grinding bowl. She is wearing a skirt made from rushes and long grasses, sewn with sinew around the top of the skirt. It is a cool type of clothing for the hottest time of the year. Her tunic is made of softened deer skin. She is grinding the flowers and leaves of the gumweed. Gumweed flower and leaves were used as medicine and food. The flower is shown beside her.

Beyond, an elderly woman is digging the biscuit root with her shortened digging stick. Barestem lomatium, or Lomatium nudicaule, ('Alu't' in Kalapuya language) was an important food source. Not just the roots of the biscuit root were used as food, but also the seeds and the leaves. She is an elder, and until no longer able to, worked side by side with the younger women. Children learned from these elder women how to recognize and know the plant, harvest and process

Below, during winter, the story teller uses the dark and cold evenings to teach and entertain with stories of how the plants and animals lived and grew amongst the people. Animals played a large role in the stories. There were stories of how things began— stories of a time before human beings arrived. There were stories of the transformation from an unformed world to one of human beings and other animals and plants present upon the land. Coyote was portrayed as the transformer or trickster. Stories of how to behave and consequences for not behaving well were played out by various animals — as the forces of nature in the forms of animals, weather or spirits, react to foolishness or selfishness, pride or arrogance. Some plants, such as skunk cabbage, play a lead role in stories about the arrival of salmon to the tributaries of the big rivers, how they stand like torches, lighting the way for the salmon on their migration upriver.

In this scene, a contemporary Kalapuya storyteller is telling a story to a group of people, of various ages, races and backgrounds. Some will be descended from Kalapuya and some, outside of lineage, are invited to listen. It is winter and most are wearing warmer clothing, although the story teller, wanting her arms and hands free to show expression, wears only a shawl over her clothing. Animals who are featured characters and behavioral models in many of the stories, either for good or for mischief, are present to hear descriptions of themselves. Story time is dream time, and the listener is transported to an earlier time when this place was new, led by the plants and animals that helped in transforming the world of today. The story teller may be pointing to something that the people did long ago as they harvested or hunted, or narrate how some aspect of nature was created in the long ago. Coyote, wolf, deer, grizzly bear, raccoon, raven and rattlesnake, and human beings, all played a part in the story of life in the Willamette valley wetlands since time immemorial and for time reaching into the future.