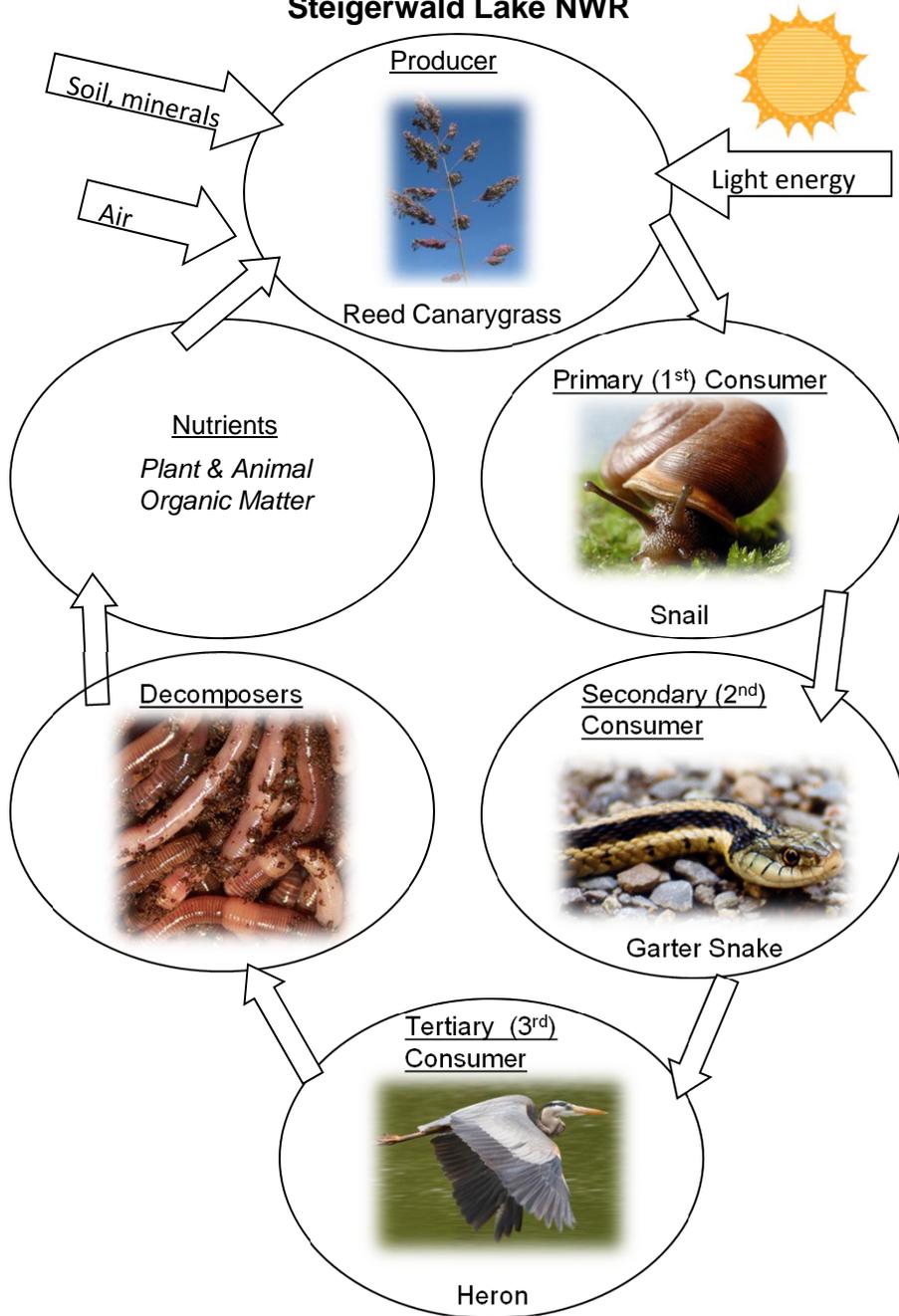


Appendix D

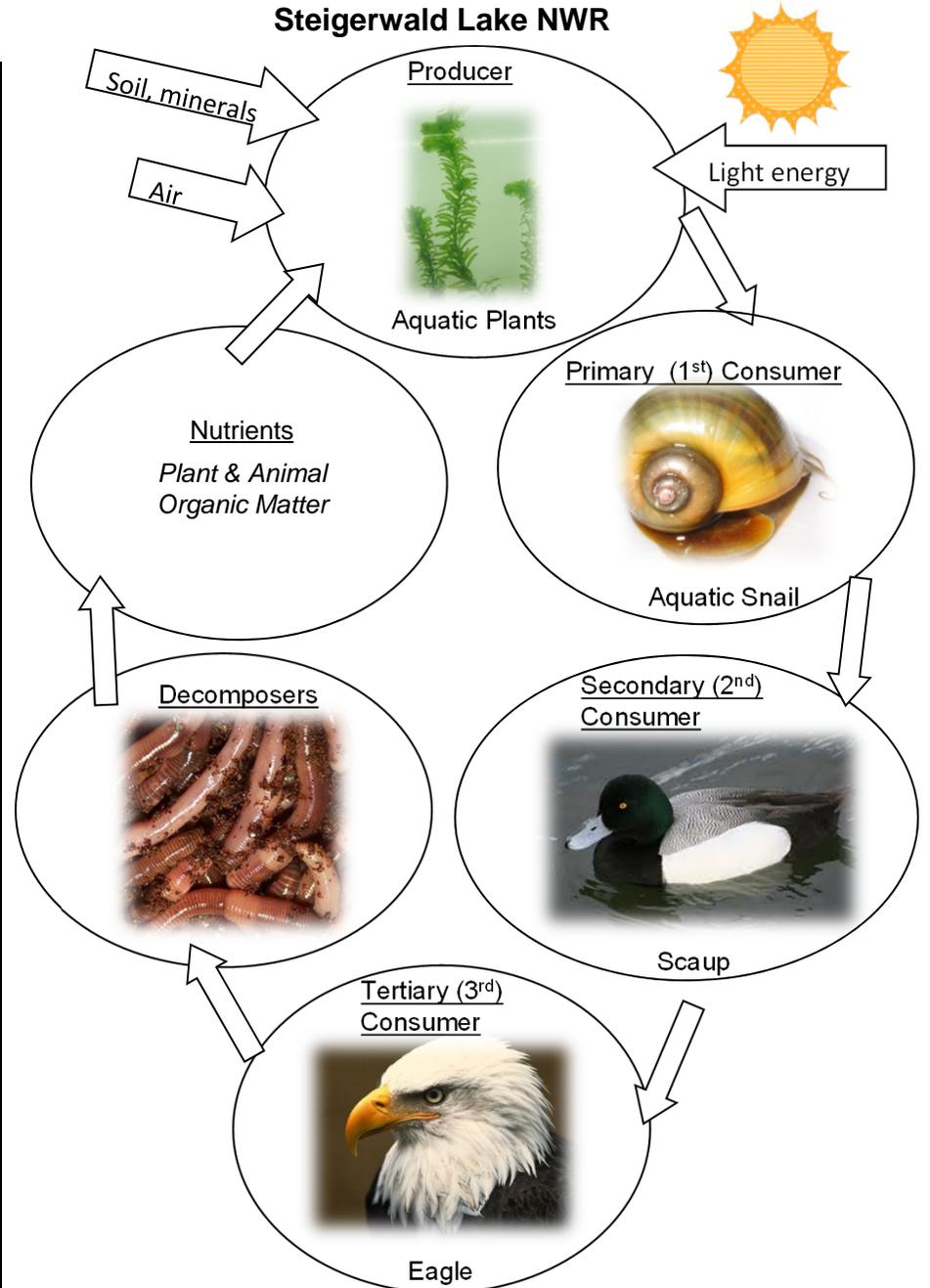
Nature Walk Resource Guides

The materials in the following section are provided within the Refuge backpacks. Feel free to print these reference copies for schoolyard activities or in the event that you do not reserve the Refuge backpacks.

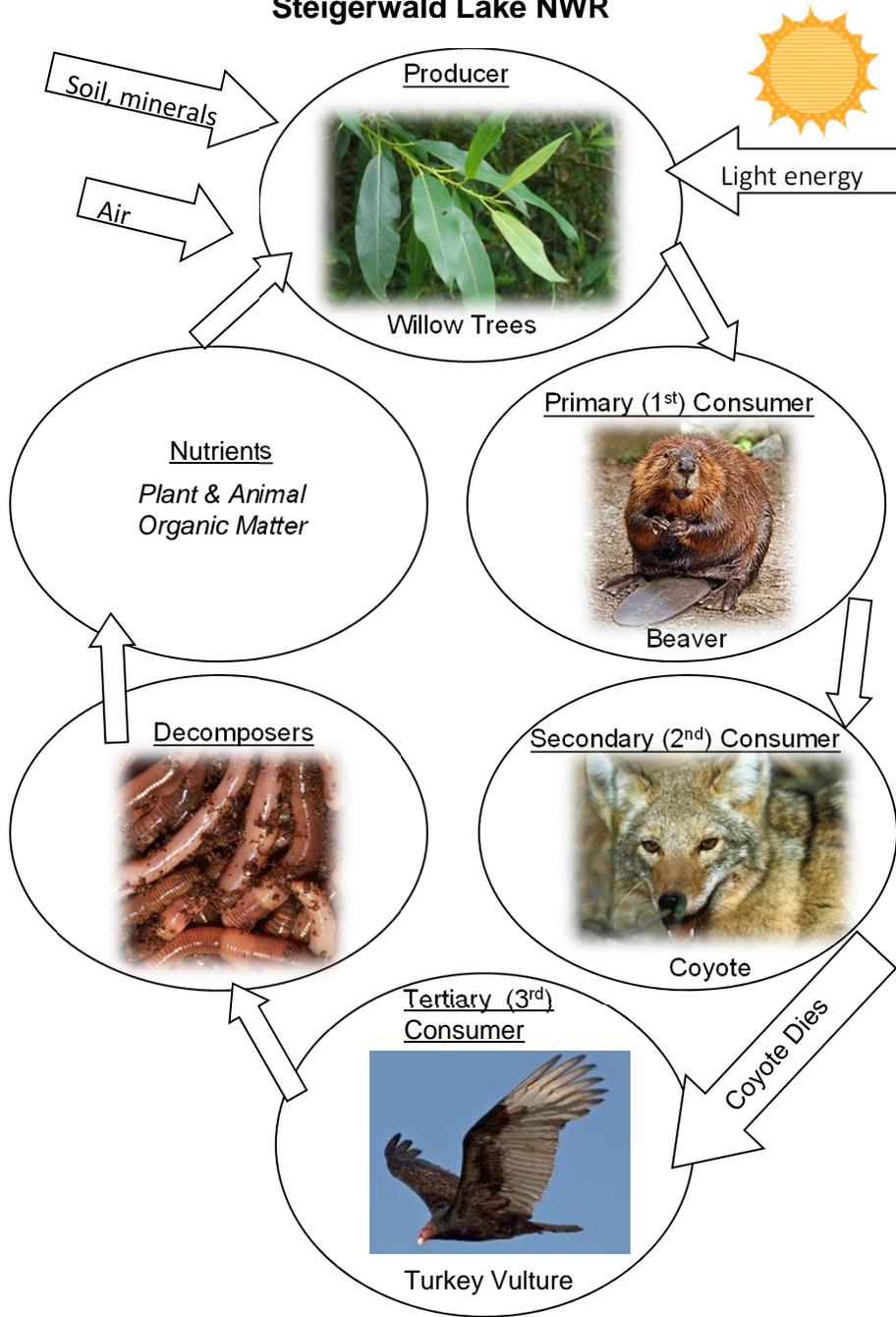
**Web-Cycle of Renewal Diagram
Steigerwald Lake NWR**



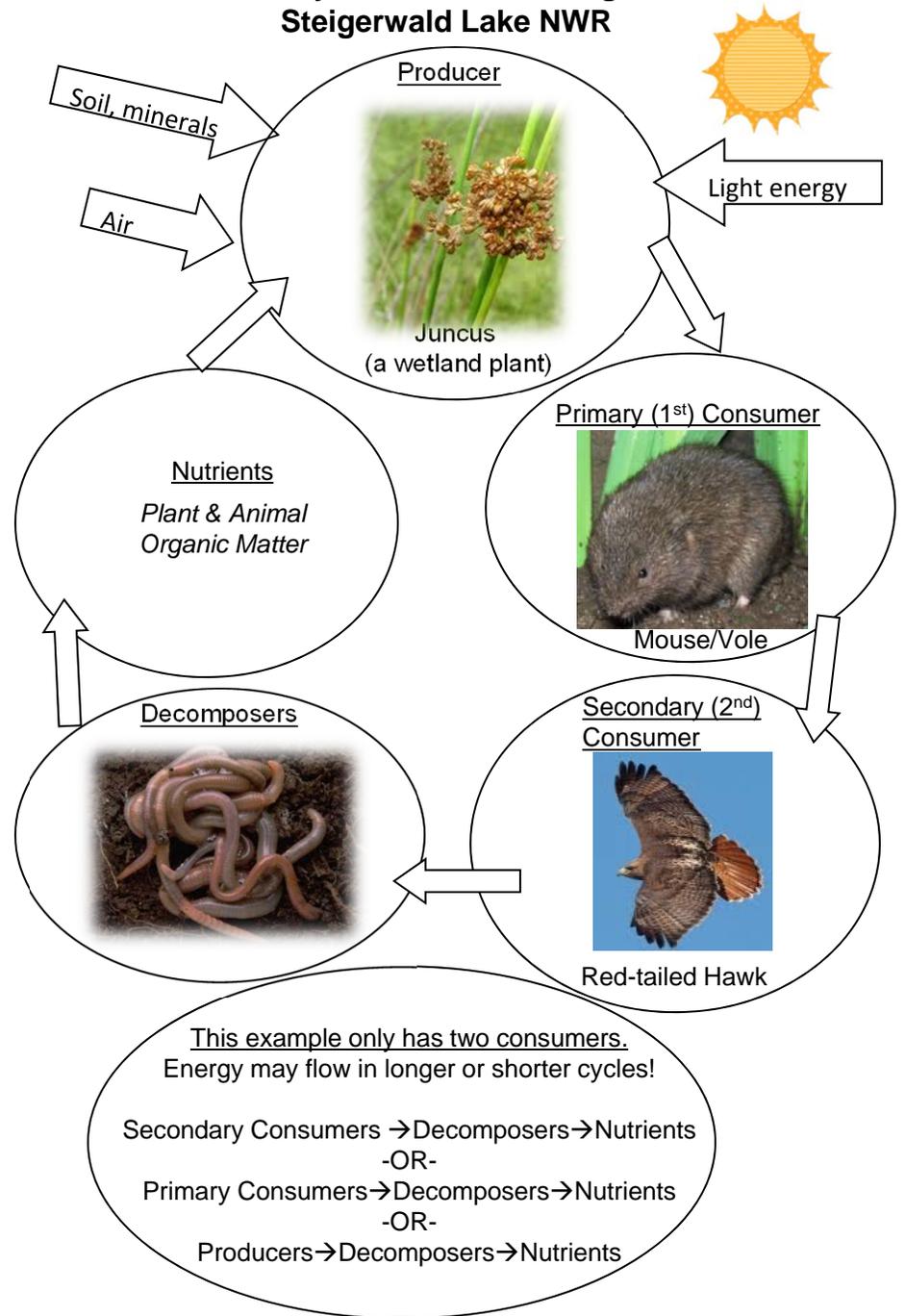
**Web-Cycle of Renewal Diagram
Steigerwald Lake NWR**



**Web-Cycle of Renewal Diagram
Steigerwald Lake NWR**



**Web-Cycle of Renewal Diagram
Steigerwald Lake NWR**



Common Trees of Steigerwald Lake NWR

Black Cottonwood: Along the trail cottonwood is the largest and most abundant tree. Leaf shape is shaped like a heart. Leaves range from several inches to nearly a foot long, depending upon the tree from which it fell. Seeds are hidden in cotton-like fiber that help distribute seeds in the wind. Seeds in 'cotton' are common along the side of the trail during the summer.



Oregon Ash: Along the trail, ash are generally smaller than cottonwood. These two trees grow in the same conditions and can be found growing near each other. Ash have a short growing seasons and are bare of leaves when other surrounding trees are fully leafed. Ash are easily identified by their (brace for nerdy stuff...) compound leaves. See the picture, this is one deeply divided leaf not seven separate leaves.



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Pacific Willow: Often grows with cottonwood and ash, but often in very wet locations (e.g, on the edge of streams and lakes). Its size is generally even smaller than ash with only very mature plants reaching tree stature. Leaves are long and narrow shaped like long blades or feathers. The active chemical in aspirin was originally extracted from willow bark.



Red Alder: Alders can be found early along the trail. Not an especially large tree. Leaves of alder are easy to identify by their serrated or saw-like edges. Catkins, structures which make the pollen and seeds, are often visible on the plants looking like very small pine cones or longer drooping pipe cleaners depending upon if the structure produces seeds or pollen.



Oregon White Oak: No oak trees occur along the trail. All other trees on this list thrive in moist soils. Conversely, oaks grow in well drained soils above the floodplain. Therefore, to see an oak look for the common deciduous tree on the hills to the northeast. Leaves shape is lobed. Also look for acorns, the seed to oak trees, hanging from branches or scattered under the tree in fall. Oak acorns are eaten by many animals (deer, birds, and small mammals). Acorns were also an important food for Native Americans. Before consuming them, Native Americans would scak acorns to remove their bitter flavors.



Common Shrubs of Steigerwald Lake NWR

Pacific Willow: Often grows with cottonwood and ash, but often in very wet locations (e.g, on the edge of streams and lakes). Very mature Pacific willows can be tree sized, but younger plants may be shrubs in the understory of the forest. Since willow often grows next to water, it is a common food for beavers. Beaver cut plants will often sprout new shoots from the roots adding to the shrub-like appearance of the plant. Look for long leaves in the shape of blades or feathers.



Rose: Quite common near the trailhead. In the summer look for pink blossoms which in the fall become red rose hips. Rose hips contain the seeds for rose plants. Other than blackberry, rose is the only thorny shrub you should encounter along the trail. Rose hips are consumed by songbirds and can be steeped into teas.



Douglas' Spirea: Spirea can be found along the trail near the trailhead. Numerous tiny pink flowers clustered on a common stalk are very identifiable, appearing like little feather dusters. Later in the season, the flower die leaving a brown seed head very much resembling the flower. Spirea grows in moist areas along creeks and near lakes.



Red-osier Dogwood: In spring look for white flowers are in a flat-topped cluster. The bark of the tree is quite red which helps in identification of the plant in all seasons. Red-osier is a shrub often planted in restoration sites. To locate dogwood you might look in restoration sites along the trail.



Snowberry: Most easily identified by the white berries that may remain on the plant well into winter. The flowers that produce the berries are small white or pink flowers. The white waxy looking berries were considered poisonous by many Native Americans and given the names like 'corpse berry' and 'snake's berry'.



Common Plants of Steigerwald Lake NWR

Common Mullein: A non-native weed that is common along the edge of the trail. Mullein is a biennial plant meaning it lives for 2 years. In the first year, the plant grows from seed and produces an array of low laying velvety leaves. Sun energy gathered from the leaves are stored overwinter in a large taproot. During the second year the plant produces a tall stalk that may be up to 5 feet tall. The stalk grows yellow flowers that produce seeds to start the growth cycle over again. Even after the plant is dead, the tall dried out stalk remain.



Stinging Nettle: Grows along the trail often wooded areas. This native plant is an annual meaning it grows from a seed every year then dies in the fall. So early in the spring the plant may be low to the ground but at maximum height the plant may be up to 8 feet. Much of the plant is covered with stinging hairs, especially the leaves. If rolled between the fingers the stems feels square. The plant has long strong fibers that were used for making cords and nets. The plant is also edible after it is cooked or boiled to remove the sting.



Cattail: Cattail is a native wetland plant. It occurs in large patches in the wetland near the trail. The mature plants can be many nine feet tall and are capped with a brown seed head that resembles a burned corn dog. The stems of cattail were used by Native Americans to make mats for bedding, seating, or kneeling. From pollen to roots, cattail is edible. Cattail is habitat and food for many animals including wrens, blackbirds, rails, waterfowl, and muskrats.



Wapato: This plant is also called arrowhead due to the shape of its leaf. Wapato is an aquatic plant that grows in shallow water. During the winter, wapato dies back and overwinters as a underwater bulb, called a tuber. The starchy tuber is consumed by various animals, especially swans who grub tubers from the wetland bottom with their long necks and bills. The potato-like tubers were a popular food for Native Americans in this area. Wapato grew locally in such abundance that it was an important trade item. Local Native Americans traded wapato with other Tribes throughout the region where wapato was more scarce.



Common Plants of Steigerwald Lake NWR

Reed Canarygrass: An invasive wetland plant found in nearly all moist soils of the Refuge. Practically any grass surrounding the lake is reed canarygrass. This grass is an aggressive plant that often dominates local wetlands. Reed canarygrass grows in dense patches with individual plants occasionally exceeding 6 feet tall typically displacing many desirable native wetland plants that are important to wildlife. Each year the grass dies back leaving a thick mat that deters other plants from establishing. Reed canarygrass can sprout from either seed or underground root-like structures, called rhizomes. The rhizomes survive the winter, with new plants emerging along their long shared rhizome network early in the spring.



Canada Thistle: This thorny non-native plant often grows in fields, meadows, and roadsides. Despite many volunteer hours removing thistle, it is also found within the landscaping near the trailhead. Flowers are pink to purple with plants growing up to several feet high. The thorny portions of the plant are rarely eaten by wildlife increasing their survival. Plants spread by fluffy seeds that are carried in the wind. Thistle also has underground root-like rhizomes that spread underground. New plants can spring up along the rhizomes as it creeps. A Scottish legend is that a barefoot soldier from the Danish army stepped on a thistle (probably not this species) and loudly yelled waking the Scottish warriors to defeat the Danes. Thistle has since been recognized as the guardian of Scotland.



Himalayan Blackberry: Very few are a stranger to blackberry. Blackberry is a non-native shrub that has invaded many local fields, forests, roadsides, and even residential lots. Once established, blackberry can blanket an area and out compete the native shrubs, grasses, and other plants that once existed. The presence of blackberry prevents young trees from getting established. Overtime, the lack of young trees effect the forest with nothing present to replace mature trees when they die. Considerable effort has been invested to fight blackberry at the Refuge. Before the Reuge trail was open, blackberry lined lower Gibbons Creek with vines climbing into the trees 10-15 feet high. The plants were removed with equipment and controlled with herbicide. Now the trail is lined with new native trees and shrubs to restore the forest and streamside.



Tansy Ragwort: A non-native plant that blooms midsummer to fall. It grows from 1 to 6 feet tall. Leaves are dark green and deeply lobed. Flowers have many petals and are yellow. This plant grows prolifically in pastures, road/trail sides, and clearings. This plant is toxic to cattle and horses, causing irreversible liver damage.



Common Mammals of Steigerwald Lake NWR

Black-tailed Deer: If lucky, black-tailed deer can be seen along the trail. While deer may eat any plant material, deer commonly browse on the leaves and small branches of young trees and shrubs. If you don't see deer look for evidence of deer. Examine shrubs for signs of damage from deer 'browse'. Also look for deer rubs on young trees. Each year as antlers grow on male deer, they are covered in 'velvet', a thin hairy covering. The 'velvet' is removed by rubbing the antlers against young trees. Deer rubs appear as shredded dangling bark or scars low on the tree.



Beaver: Because beavers are active at dawn and dusk (crepuscular), they are not often seen on the Refuge. However, beaver evidence near the creek is everywhere. Many trees are damaged or have been fallen by beaver. Some snags along the trail were killed because beaver removed the lower bark, severing the roots from the tree's canopy. Watch for tree tubes and cages intended protect plants from damage. Tree falling allows beavers to access to twigs/leaves to eat and branches for building (dams/lodges). Many streamside plants are adapted to survive beaver damage. Cottonwood, willow, ash, and dogwood are capable of sprouting young saplings (suckers) from the roots remaining after the tree has fallen and may survive regular beaver cuttings.



Coyote: Coyotes are both predators and opportunistic scavengers. As scavengers, they may consume eggs, dead animals, and seasonally berries. Generally, coyotes hunt for small mammals (mice, rabbit, voles) but prey may include birds and even deer fawns. Coyotes are highly mobile in their pursuit of food and might be seen at a distance anywhere along the trail. Coyotes have acute vision and hearing and may entirely elude your detection.



Vole: Voles are common on the Refuge but rarely seen. Voles create elaborate networks of shallow runs through the grass. Should you encounter a run, careful examination may reveal an interconnect maze throughout the field. Voles are very valuable in the food web of the Refuge. Patiently, the heron, kestrel, hawk, harrier, and coyote survey the ground for a vole to mistakenly expose itself.



Nutria: Our most commonly seen aquatic mammal. Nutria are non-native and commonly confused with beaver. Unlike beaver, nutria have round rat-like tails and have grey whiskers. To some degree, nutria have displaced our native muskrat. Like a muskrat, nutria eat wetland plants. Nutria borrow tunnels and dens beneath the ground. When these dens occur under roads and trails, they may collapse causing expensive repairs. Nutria complicates water management in wetlands, as water moves unpredictably through underground tunnels between locations.



Nature Trail Resource Card

Steigerwald History Memory Triggers	Nature Walk on Wildlife Art Trail Memory Triggers
Former Floodplain of the Columbia River, cottonwoods near river are on sandbars.	Willow Tunnel–Fire, Birds (flycatcher, warbler, yellowthroat)
10-30-1792, First European, LT. William Broughton, of Capt. Vancouver's exploration of the Columbia River. Here he claimed the river and all that it drains for England, and named Mt. Hood	Reed Canarygrass – Non-native, bitterns & rails
11-3-1805 and 3-31 to 4-5-1806, Lewis & Clark, camped along the nearby shoreline	Cattail – Red-winged/yellow-headed blackbirds, fluff/nests
1847, Joseph Gibbons settled near the mouth of the creek that bears his name after having crossed the Great Plains	Reed Canarygrass – Early Columbia River floods
1906, Steigerwald Dairy, outlet store in Portland shaped like milk bottle and later converted to a 7-Up Bottle	Steigerwald Lake Overlook – Wetland management – Drawdown/flood
1964, dike built	Cottonwood Cavity – Cavities in trees- Woodpeckers looking for insects like beetles and nesting cavities.
1975, Vancouver Audubon formed, Steigerwald was their first environmental cause	Purple Martin Cavities – Field survey site
1980, Preservation efforts here and in other local areas lead to coalition to preserve the entire Gorge	Native Tree/shrub Planting – Volunteers planted, tube protection, canarygrass control
1987, NWR established	Gibbons Creek Bridge – Invertebrate art on bridge rail, salmon hanging below bridge –use of creek by salmon
2009 Gibbons Creek Trail opened	Vegetation Survey – Field survey site
10-5-2012 Grass fire	Basalt bench – Beaver damage to trees, dam nearby
	Red-tailed Pond Boardwalk – Water birds (ducks, geese, Bitterns)
	Migratory Crossroads – N/S and E/W, 200/300 bird species