Invasive Plants of Bridgeport and the South Yuba River State Park

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Several species of non-native and invasive plants are found at Bridgeport and throughout the South Yuba River State Park. Park biologists spend as much time as possible trying to combat, control, and hopefully eradicate these plants *if* these plants are threatening to displace native wildflowers, bunchgrasses, shrubs and trees.

Most of the Sierra Nevada foothill Oak woodlands or "Oak savannas" have seen a great conversion from native perennial bunchgrasses to annual non-native European grasses within the past 500 years. Most of our weeds are derived from Europe and Asia and have arrived in California with the ever-growing world trade and travel. This is a very new phenomenon and we only are at the beginning of the "mixing" of plant species from different continents. In the distant future, some of these weedy plants might not be so widespread and successful. For example, in Northern California we have Himalayan Blackberry (actually from Armenia originally) that is so common that almost every river and creek drainage has some amount of the plant, but recently a plant disease organism known as a "rust" was found in Oregon and has slowly been making its way down the coast and may someday control these plants as nothing else can. This is a part of the evolution of plant communities and in several hundred (or thousand) years we may know which "weeds" really are adapted to live in California for the long-term.

In the meantime, some of our invasive plants are causing real-time harm to our Wildflowers, native grasses and even our trees and shrubs. Park biologists are using a combination of "timed mowing" (weed-whackers mostly), brush-cutting, and hand pulling/cutting. We found that timed-mowing and timed-cutting of most of our "weedy" plants can not only control and eradicate, but often have other beneficial side-effects. For example, after weed-eating one of the hillsides along the Buttermilk Trail for Yellow Star Thistle, the next Spring wildflowers such as Lupines and Popcorn flowers were found in abundance. The theory is that weeds are suppressing the native wildflowers (and bunchgrasses and Oak trees and Buckeye seedlings, etc…) by creating a thick, dense "thatch" layer that actually prevents anything native from sprouting. Yellow Star Thistle, Wild Oats, and Medusahead grass are all known to do this. Also, most of the weedy species germinate in November with the winter rains and can sometimes out-compete the natives for soil moisture. Our thick green carpet of annual weedy grasses actually can take up the water from the soil before Oak seedlings can really get a good drink from them.

So next time you see someone weed-eating a hillside on the Buttermilk Trail, you will now know they are trying to suppress weeds, promote flowers and help Oak trees survive!

Timed-mowing is only a short-term substitute that Park staff is using to mimic natural ecosystem processes such as frequent fires. Fire suppression has allowed the weedy grasses and thistles to flourish, and natural fires (or prescribed burns) would eliminate the thatch layer and possibly burn off some or all of the weed-seeds. Most native wildflowers, bunchgrasses and shrubs/trees are fire-adapted. In the future, Park biologists might try prescribed burning to help restore the native Oak woodlands. Late Spring burns would be the most beneficial.

WEEDY GRASSES

Barb Goatgrass (*Aegilops triuncialis*)

Barb goatgrass is a late-maturing annual grass with grey-green foliage and spikes that break apart into hardened sections called joints. When mature, the seed heads will turn a reddish brown color before drying to the typical California summer gold. Eventually the seed heads break at each joint, and the joints are then dispersed by attaching to animals, humans, or equipment such as vehicles. The plants have a high silica content that results in a persistent thatch that can suppress other species. It matures late in the growing season and is drought tolerant, though seeds can only persist in the seedbank for 2 years.

Barb goatgrass is found scattered throughout the large field at the Buttermilk Trail and is actively invading the Penn Valley/Grass Valley/North San Juan area. Management technique is weed-whacking in May.

Medusahead (*Taeniatherum caput-medusae*)

Medusahead is an annual grass that can be distinguished by the bright light-green color and long awns on the seed heads (looks like a thinner, longer and later "foxtail"). It is common in disturbed areas, grasslands, and oak woodlands. This grass forms dense stands that displace other vegetation and degrade forage quality for wildlife, as it is unpalatable except in its earliest growth stages. Once the seeds have fallen off and dispersed, the remaining plant material falls to the ground forming a dense thatch layer which prevents seeds of other species from sprouting, but seems to encourage germination of Medusahead seeds. This thatch layer can take several years to decompose, and creates a continuous fuel source that carries and even promotes wildfires. Medusahead is one of the highest priority weeds that park biologists attempt to control on park property.

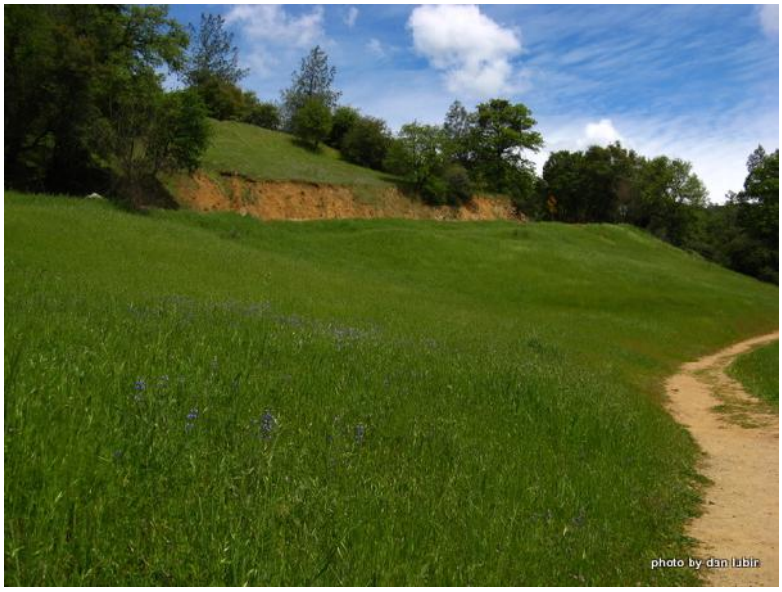
Management is mowing/weed-whacking in May. Occurs throughout the large field along the Buttermilk Trail and on top of Point Defiance / Rice Crossing Road. It occurs throughout Penn Valley as well.

Other Annual Grasses – Foxtail (*Hordeum murinum*), Bromes (*Bromus* spp.), Wild Oats (*Avena* spp.) and Annual False Brome (*Brachypodium distachyon*)

Some examples of annual Bromes are Soft Chess (*Bromus hordeaceous*), Rip-gut (*Bromus diandrus*), and Cheatgrass (*Bromus tectorum*). The Bromes along with Wild Oats and Annual False Brome have replaced the historic perennial grasslands of Bridgeport. All of these grasses drink up the soil moisture quickly, turn brown in the summer and can promote fires as well as suppress the growth of all native plants.

All of these weedy annual grasses are early and start seeding by April. Weed-whacking can help control all of them if they are cut before the seed-heads mature. Cutting them especially around Wildflower areas or Oak tree seedlings can help the native plants survive and prosper.

Foxtails, Bromes and Wild Oats along Pleasant Valley Road.



Annual grasses choking out wildflowers on Buttermilk Trail

PEA FAMILY WEEDS

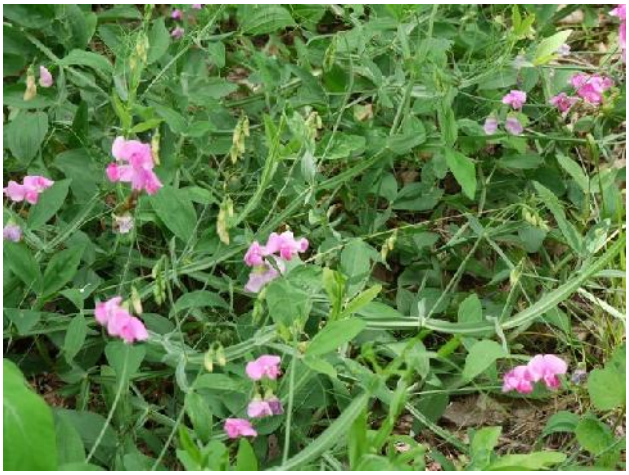
Spring Vetch (*Vicia sativa*)

Spring vetch is an annual vine that will form a spreading tangled mat over other vegetation in the spring. It has purple flowers that grow in clusters of 1 to 4 at the joint of the leaves and the stem. Once used as a cover crop due to its nitrogen fixing capabilities, it has escaped cultivation, invading grasslands, open woodlands, and disturbed areas such as roadsides and pastures. All vetch seeds are toxic to livestock when ingested in quantity, and cause a disease with symptoms similar to those of rabies.

Winter Vetch (*Vicia villosa*)

Winter vetch is an annual climbing pea that smothers other vegetation as it grows over it. It can be distinguished from spring vetch by the flowers, which grow in one-sided clusters of 10-40 individual blooms. It was also used as a cover crop and is toxic to livestock.

Everlasting Pea (*Lathyrus latifolius*)



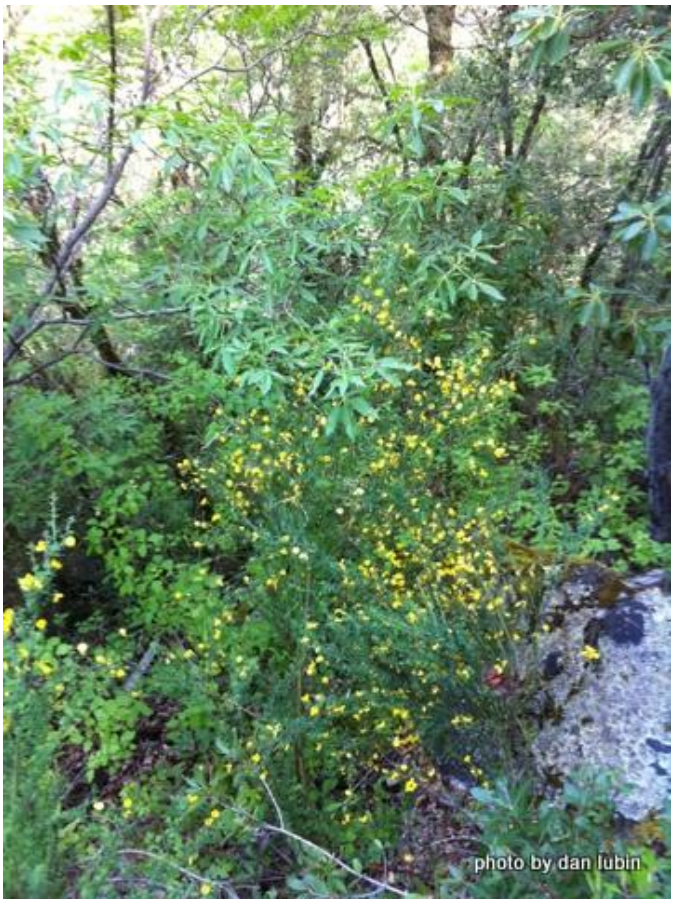
Everlasting pea is a perennial vine with grey-green foliage and beautiful pink/purple flowers. It is common in disturbed areas, such as roadsides and cut-road banks, and can form dense colonies that exclude other vegetation. Eating the flowers or foliage can be toxic to both humans and livestock over time, causing a condition known as neurolathyrism. This plant is extremely difficult to get rid of once established without the use of herbicides. Occurs at the Independence Trail and throughout the Grass Valley and Nevada City areas. Spreading fast!

Spanish Broom (*Spartium junceum*)

Spanish broom is a semi-deciduous shrub up to 15 feet tall, with smooth green stems that give the plant a leafless, wiry appearance. It produces an abundance of bright yellow, pea-like flowers at the end of each stem. The seed pods are capable of ejecting seeds several feet from the plant, and can live for up to 30 years in the soil seed bank. The seeds sprout as a result of disturbance, making this plant common along roadsides, burned or cleared areas, pasture lands, and forest margins.

Spanish broom plants grow rapidly forming dense, woody stands that are impenetrable to wildlife, slow or stop recruitment of other plant species, and can become a dangerous fire hazard. Plants in this family also fix nitrogen, which increases soil fertility and can lend a competitive edge to other non-native weeds. Each plant can live up to 30 years and produce thousands of seeds in its lifetime. Found along Highway 49 near the Independence Trail and throughout Nevada County and beyond.

Scotch Broom (*Cytisus scoparius*)



Scotch broom is a highly invasive and fast-growing shrub that invades roadsides, shrublands and forests where ground disturbance has occurred. Mature shrubs can reach 10 feet tall and have bright yellow, pea-like flowers. Scotch broom can be differentiated from Spanish broom because it has leaves on the stems that are present throughout the growing season, whereas Spanish broom appears to be leafless. Like Spanish broom, Scotch broom plants may live up to 30 years and produce countless numbers of seed, which can persist in the seed bank for 30-80 years.

Scotch broom is considered one of the most invasive plants in Nevada County. It will form thickets that crowd out native vegetation and is very flammable, creating a fire danger. Scotch broom flowers and seeds can be toxic to both humans and livestock. Removal of this plant is very difficult, because pulling or “weed-wrenching” the shrubs can create soil disturbance which may stimulate the seed bank. Stumps will resprout if cut during the wet season.

Found along Kneebone Beach, Point Defiance Trail and scattered throughout the Independence Trail area. Broom management by Park biologists is to pull smaller plants during the wet season using “weed wrenches” and then cut large plants at the base during the dry summer months from late July-early October. We have found that Broom’s often do not survive cutting when the soil is extremely dry.

THISTLES

Italian Thistle (*Carduus pycnocephalus*)

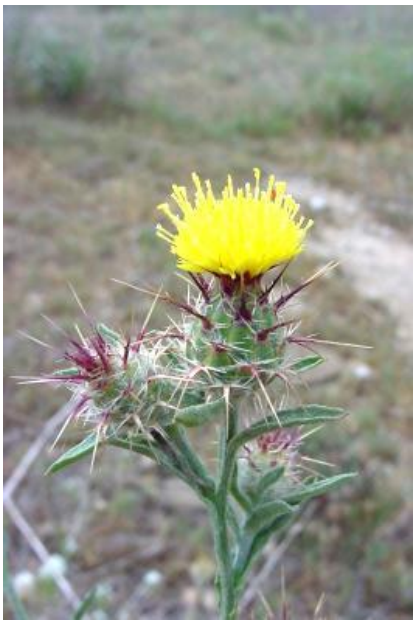
Italian thistle is a common annual weed of disturbed sites in the foothills of the Sierra Nevada. It is quite common underneath deciduous oaks in oak woodland communities. Plants can grow up to 6.5 feet tall and produce purple to pink flowers, which become thousands of wind borne seeds in the early summer. Large populations crowd out native vegetation and may discourage wildlife from entering and grazing.

This thistle is present in small numbers scattered throughout the park. You can usually see individuals on the Pt. Defiance trail between the trail and the river.

Milk Thistle (*Silybum marianum*)

Milk thistle is a tall spiny annual that can produce a basal rosette about 3 feet in diameter and grow 6 to 9 feet in height. The large basal rosettes block light to nearby vegetation and suppress germination of other species, and the extremely spiny flower heads can cause injury to wildlife. Though it is not a horribly invasive thistle in comparison to several other species it is considered a nuisance plant. There are only two small populations at Bridgeport, which you will likely not see flowering due to control measures by parks biologists.

Tocalote (*Centaurea melitensis*)



Tocalote is a small grey-green bushy annual with spiny, yellow-flowered heads. It closely resembles Yellow starthistle but is generally much shorter – only about 3 feet tall – and flowers much earlier. The plants do not persist into the summer months, which is typically when Yellow starthistle blooms. Another good way to tell them apart is that the spines on Tocalote flowers heads are typically much shorter than the spines on Yellow starthistle flowers and are purple- or brown-tinged. Though not as invasive as Yellow starthistle, Tocalote can increase erosion and reduce water percolation and dense stands can displace native plants. It can usually be found in open disturbed sites such as open hillsides, grasslands, fields, and roadsides. There are several populations that can be found on the slopes both above and below the Buttermilk trail at Bridgeport, and another at Highway 49 Crossing near the picnic area.

Yellow Starthistle (*Centaurea solstitialis*)

Yellow starthistle is an annual herbaceous plant with gray-green to blue-green foliage. It grows from 6 inches to 5 feet in height and has deep taproots, allowing it to stay green well into summer. Flowers are bright yellow with sharp spines surrounding the base. It is a highly competitive species that typically forms dense, impenetrable stands which displaces other more desirable vegetation. It is particularly a problem in rangelands, since a compound in the plant will cause chewing disease in horses. Yellow starthistle cannot tolerate areas of low light or shade, so it is generally found in open disturbed sites, grasslands, fields, pastures, and along roadsides.

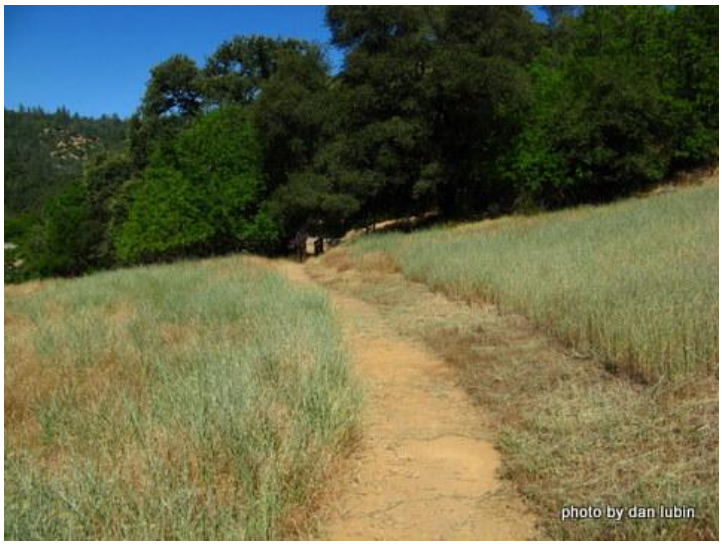
Control of yellow starthistle is one of the greatest success stories in the South Yuba River State Park. Three to five successive years of weed-eating fields of yellow starthistle (during flowering in June-July) has resulted in a significant decrease in population density, and almost complete elimination in certain areas. If you go for a walk on the Buttermilk trail, check out the large open meadow with the new parking lot. The small grey patch in the center is the last remnant of a population that used to extend from the road all the way to the river.

2010 Yellow Star Thistle at Bridgeport (much reduced now in 2013)

OTHER INVASIVE WEEDS

Himalayan Blackberry (*Rubus armeniacus*)

Himalayan is a climbing or mounding evergreen shrub that grows up to 10 feet tall. It has woody canes with sharp thorns that are thicker at the base, and compound leaves with 3 to 5 leaflets. It is commonly found in moist, disturbed sites such as ditches and canals, and can often be found growing in riparian corridors. It is a highly competitive plant that spreads quickly and can crowd out native species.



2010 Yellow Star Thistle choking out Buttermilk Trail (with weed-wacking strip on side of trail)

It forms dense thickets that allow little light to penetrate, reducing the growth of understory plants. It can also prevent access to water sources for wildlife when growing in riparian areas. The berries are favored by wildlife, which can spread the seeds into new areas.

Himalayan blackberry is so common that it is present in every park unit of the South Yuba River State Park. Large populations can be found along the Kentucky Creek and Cemetery trails at Bridgeport, although volunteer efforts have been helping to slowly reduce the infestation here. Hand cutting with loppers or brush-cutting with large weed-whackers (plastic blades so we do not start a fire!) starting after nesting songbird season ends (August 15th) has been found to be very effective at controlling Blackberry and thereby promoting the survival of native riparian plants such as Willows, California Grape, and Mugwort.

Vinca (*Vinca major*)

Vinca (also known as Big Periwinkle) is an herbaceous perennial groundcover with milky sap and trailing stems up to 3 feet long with shiny green leaves. It produces very showy, blue/purple flowers that are easily identified. The plant can spread invasively by tip rooting, forming dense ground covers that can choke out native vegetation. It grows in riparian corridors, moist woodlands, and disturbed sites, but can also tolerate full sun. Introduced from Europe as an ornamental homestead plant and for medicinal uses it has since spread to become a dominant woodland understory plants in many areas.

There is a very large population along Kentucky Creek at Bridgeport, along the sides of the Kentucky Creek trail. Eventually Park biologists want to eradicate this population as it threatens native riparian vegetation.