

GUIDE TO CONTROLLING BACKYARD WEEDS

HABITAT AT HOME

Invasive plants, for our purposes, are ones that humans have brought, inadvertently or on purpose, from outside of the desert southwest, and that tend to spread in an uncontrolled fashion. Invasive plants can cause landscape level problems on a number of fronts. Here in the Sonoran Desert two primary problems result from priority invasive plants that carry fire in an ecosystem that has historically not been fire-prone. They burn hot enough to kill nearby saguaros and much of the native vegetation - including much of the seedbank. This causes drastic conversion of the plant community; saguaros and other plants that native birds, butterflies, and wildlife depend upon disappear. 14 species of birds nest primarily in saguaros - if they're gone, those birds have no homes.

CHEMICAL TREATMENTS TO CONTROL INVASIVE PLANT POPULATIONS

At Tucson Audubon we recognize that frequently the most important way to protect birds is to protect the landscapes and habitats that support them. These days this often means stopping the spread of invasive plants into a landscape to prevent catastrophic fires that cause the permanent loss of habitat through ecosystem conversion.

When it comes to invasive plants in the Sonoran Desert, the choice boils down to wildfire and its effects (loss of saguaros, and the 14 bird species that nest in them, people's lives and property, and vast sums of money), or treatment. We choose treatment. Tucson Audubon's treatment philosophy is to use the most ecologically appropriate alternative available for each specific context. That includes an array of tools including manual, mechanical, cultural, and yes, our last resort is chemical. Please understand we don't like using herbicides and whenever possible we try to avoid using them. However, along with all the other members of the Sonoran Desert Cooperative Weed Management Area (which includes the University of Arizona, local and federal agencies and municipal land managers, local tribes and conservation groups), we have determined that in many cases spot spraying—pinpoint herbicide application to individual invasive plants—is frequently the most ecologically sensitive and least damaging approach when considering all factors (things like erosion, germination from the residual seed bank, impacts to existing vegetation, and animals, including pollinators).

After over a decade of research and ongoing evaluation, we have determined that glyphosate is the least toxic (to the environment and our applicators) and most effective herbicide option available for buffelgrass and our best chemical option to save Sonoran Desert habitat. Glyphosate is absorbed quickly into the plant and any that dries on the soil surface is quickly degraded by UV light. Because it kills the plant, the chemicals are not translocated into seeds that any birds would be eating, nor does it produce nectar that could be contaminated. As a non-native grass, there are very few insects that eat buffelgrass foliage and any that do will eat healthy growing material, not plants that are sprayed and rapidly drying up. Among larger mammals, native grasses are generally the preferred forage over buffelgrass due to its high silica content and coarse texture. With the existing lawsuits against Monsanto and the inappropriate ways that RoundUp or other formulations of glyphosate are commonly used, people have a right to be concerned—the vast majority of the uses of these chemicals are unacceptable. Those uses (for instance, blanket spraying of crops or "weeds" in a community) are a far cry from the way we and our partners use it to target individual plants for the protection of our wild areas, natural heritage, and health and human safety.

-Jonathan Horst, Director of Conservation and Research
August 2022



GUIDE TO CONTROLLING BACKYARD WEEDS

HABITAT AT HOME

BUFFELGRASS (*Pennisetum ciliare*)

Buffelgrass is a major fire hazard due to biomass accumulation and connectivity of plants, allowing for the rapid spread of fire. It forms large, dense monocultures of grass that can be shoulder height and allow little light to reach the ground, precluding germination of other species. Buffelgrass outcompetes native plants, resulting in decreased biodiversity.

IDENTIFYING BUFFELGRASS

Buffelgrass can look very different depending on the time of year. After good rains, it can be lush and green, but quickly dries to a straw-colored plant. They can also be as short as a few inches tall, but can be shrubby and as tall as 3-4 feet.

Use these characteristics to help you correctly identify buffelgrass:

- **Bottle brush seed heads:** Buffelgrass has a distinct flower that resembles a bottle brush. Flowers can range from a reddish or purplish brown when the seeds are young to a tan color when the seeds are mature.
- **Rough Rachis:** After the seeds have fallen from the plant, the central stem where the seeds were attached (Rachis) is very rough to the touch.
- **Hairy Ligule:** Look at the base of the leaf where it parts from the stem - buffelgrass will have tiny whitish/blond hairs here.



senesced buffelgrass

CONTROLLING BUFFELGRASS

Buffelgrass should be completely removed from the landscape. Since it spreads by seed; removing seed heads will slow its spread somewhat but the only way to really prevent future seed production and to reduce the threat of wildfire is to remove all buffelgrass plants. Small plants can easily be pulled up by hand. Larger plants will have to be dug out or treated with herbicide. Dispose of the entire plant after removal to make sure seeds caught in the leaves at the base of the plant do not sprout after the plant is uprooted. Seeds can remain viable in the ground for several years, so check the area periodically for buffelgrass seedlings, which are easy to pull when young. After removing buffelgrass, consider planting native species in the area so new buffelgrass seedlings will have less room to take root.



seedhead



rough rachis



hairy ligule

GUIDE TO CONTROLLING BACKYARD WEEDS

HABITAT AT HOME

FOUNTAIN GRASS (*Pennisetum setaceum*)

Native to Africa and the Middle East, fountain grass has been introduced to many parts of the world as an ornamental grass. It is popular in many countries as an ornamental plant and has dispersed into wildlands across Arizona, California, Florida, Hawaii, Fiji, South Africa, and Australia thanks to sales in nurseries. Fountain grass is apomictic, which means it can reproduce either sexually from fertilized seeds or asexually from unfertilized seeds. This perennial grass is a highly aggressive, fire-adapted colonizer that readily out-competes native plants and rapidly reestablishes after burning. Fountain grass raises fuel loads, which increases the intensity and spread of a fire, and results in severe damage to native desert species including all species of cactus.

In 2020, fountain grass was listed as an Arizona Noxious Weed - prohibiting its sale or import into the state.

IDENTIFYING FOUNTAIN GRASS

Fountain grass has a distinctive upright and graceful form with long, feathery flower spikes at the end of the stems. Leaves are narrow and flat to V-shaped and grow up to 6 feet. The blooming spikes are 6 to 12 inches long and have purplish to bright green bristles with no visible seeds. The stems all grow from crown tissue just below the ground surface. Each year the base diameter increases and the stems become more numerous.

CONTROLLING FOUNTAIN GRASS

Fountain grass infestations can form dense stands. Mowing is not recommended as it stimulates more growth from the crown. Remove individual plants by digging out all of the crown tissue at the base of the stems just below the surface. Large stands of fountain grass may require chemical treatment*. Glyphosate herbicide (e.g. RoundUp) can be spot-sprayed on green plant tissue. Respraying of plants is often necessary due to regrowth from surviving crown tissue - spring and fall applications have the best results.

*Be sure to follow proper safety protocols and applicable laws when using herbicide.



GUIDE TO CONTROLLING BACKYARD WEEDS

HABITAT AT HOME

STINKNET (*Oncosiphon piluliferum*)

Stinknet, a winter annual plant from South Africa, was first noticed in 1981 in California where it has spread from urban areas to extensive coverage of undisturbed slopes in wildlands (Wilén 2018). It began to be noticed in central Arizona around 2005. Since that time, it has spread rapidly to vacant lots, yards, roadsides, and public lands throughout central Arizona, and it has now been documented in the Tucson area where it has the capability to spread in the same manner. Stinknet has a pungent odor, can cause rashes or burning of the skin after handling, and has been attributed to respiratory difficulties.

In January 2020, stinknet was classed as an Arizona noxious weed due to its ability to cause severe allergic reactions, both dermal and respiratory.

IDENTIFYING STINKNET

Emergence starts in late November and plants can continue to germinate and emerge through the month of May in wet years. Leaves appear “carrot-like”, dark green and twice dissected and have a strong odor. Flowering starts in February and can continue through May. Flowers are bright yellow and ball shaped. Plants grow in dense clusters and easily displace native vegetation. Infestations spread rapidly along roadways and open fields in residential areas. After flowering, it dries out and remains as a continuous carpet of standing biomass that is extremely flammable.

CONTROLLING STINKNET

To manage the spread of this weed, control must take place before it goes to seed. If infestations are allowed to propagate over the course of several seasons, they will form dense stands with prolific seed production. In residential areas stinknet can be manually dug out and bagged as soon as it is recognized. It is important to remove the plants before they develop mature seeds. But once stinknet is established for a second year, chemical control becomes necessary. Repeated site visits January - May for removal is necessary.



Julia Rowe



John Scheuring

GUIDE TO CONTROLLING BACKYARD WEEDS

HABITAT AT HOME

RUSSIAN THISTLE (*Salsola tragus*)

Dry Russian thistle plants are a serious fire hazard. This plant spreads easily because it breaks off at ground level and tumbles across the landscape, scattering its seeds for miles. It quickly takes over a habitat of native plants, reducing the plant diversity that is very important to wildlife and pollinators.

IDENTIFYING RUSSIAN THISTLE

This plant's dispersal mechanism is a fundamental characteristic. In the fall, the central stem can become quite woody and brittle near the base, making it break off easily in the wind. Because of its many branches, it can tumble around in the wind and become tangled up with other tumbleweeds, growing larger as it disperses itself across the landscape. Flowers typically develop in solitary, replacing leaves at the axils near the top of the plant and forming a small spike at the topmost bud. Flowers are small, flanked by a pair of spiny bracts and having a 5-parted calyx that develops wings. Flowers from June to the first frost. Seeds are flat discs or cones. Quite small, seeds can number in the hundreds of thousands per plant.

CONTROLLING RUSSIAN THISTLE

Hand pull, starting when seedlings that are about 1½ to 2 inches tall. Prior to then, seedlings compete for resources and many die off naturally. Seeds germinate well in loose soil, so be careful not to disturb the soil. Monitor population frequently and pull any new plants and bag those that are in flower. Large populations can be chemically treated from April to July, with no seed production concerns.



Max Licher



Anthony Mendoza

GUIDE TO CONTROLLING BACKYARD WEEDS

HABITAT AT HOME

SAHARA MUSTARD (*Brassica tournefortii*)

Sahara mustard takes early advantage of fall and winter soil moisture and can develop dense, monotypic stands resulting in lower diversity of flora and fauna species. It is an aggressive weed of roadsides, disturbed soil, abandoned cropland, and hayfields primarily below 3500'. As the foliage and flower stalks dry up, the litter material can become a fire hazard capable of spreading fire into areas where native plants are typically fire intolerant. Following wet winters, it behaves as a tumbleweed when winds blow plant skeletons across the landscape, spreading seed.

IDENTIFYING SAHARA MUSTARD

Sahara mustard is a medium to large winter/spring annual forb that appears between January and May. It has large seed heads that turn woody when dry.

FLOWERS:

Tiny yellow flowers
(~1/2 in) with four
petals



YOUNG LEAVES:

Leaves of young plants
radiate from the base of
the plant



MATURE LEAVES:

Mature leaves are highly
serrated and very hairy.
Each hair forms a bump
on the leaf surface



MATURE PLANT:

Mature plants can reach 3+
feet in height and spread



CONTROLLING SAHARA MUSTARD

This species can be eradicated by pulling plants before their seeds mature. Green seedpods on pulled plants can continue to develop and produce viable seeds. Therefore, bagging pulled plants or burying them deeply may be an effective way to handle seeding plants. An alternative yet time consuming solution is to remove green seedpods from the plant. Doing so reduces the available nutrients that support seed development after the plants are pulled. Large populations can be chemically treated. Repeat site visits throughout the growing season are necessary. January - May.

GUIDE TO CONTROLLING BACKYARD WEEDS

HABITAT AT HOME

LONDON ROCKET(*Sisymbrium irio*)

London rocket matures earlier in the year than native species, giving it a competitive advantage. It is widespread in cultivated agricultural fields within its range and can replace native annuals in wildland settings with its seed bank taking many years to exhaust. Like other mustards, London rocket can harbor diseases and pests that attack closely related crops in the mustard family.

IDENTIFYING LONDON ROCKET

London rocket is an erect winter/spring annual forb that grows up to 2 to 3 ft tall, more commonly to around 20 inches. Its stems are glabrous or slightly pubescent and have several branches near the base of the plant. They are green and sometimes have a purple tinge. The basal leaves are about 6 inches long with a pronounced midvein. They are deeply lobed, ovate to lanceolate, and alternately positioned along the stem. Leaves along the upper stem are smaller and are narrow or oblong in shape.

The flowers are 1/4 inch (6 mm) wide and have 4 tiny, oblong petals. The older flower clusters are surrounded by a ring of long, slender seedpods that flare outward and resemble exploding fireworks. The leaves are green, mainly basal, larger near the base of the plant, triangular in shape, and pinnately lobed

CONTROLLING LONDON ROCKET

Hand pulling while bagging plants in seed is effective on small populations. Applying herbicides early in its life cycle can be used on large infestations. Reduce soil disturbances and maintain groundcover to proactively prevent the establishment of London rocket.



Max Licher

GUIDE TO CONTROLLING BACKYARD WEEDS

HABITAT AT HOME

PUNCTUREVINE (*Tribulus terrestris*)

This plant easily outcompetes native plants, resulting in dense monocultures and a reduction in native plant diversity very important to wildlife and pollinators. The seeds germinate quickly and can lie dormant in the soil for many years, prolonging the life of an established population. Sharp burrs cause serious injury to people, pets, wildlife, bicycle and vehicle tires, and livestock, and are easily spread by vehicles, pedestrians, and animals, resulting in even larger populations.

Puncturevine is classified as a non-native, and is included on the Arizona Noxious Weed List as a Class C noxious weed, which means it is widespread and “may be recommended for active control based on risk assessment.”

IDENTIFYING PUNCTUREVINE

The prostrate stems, often reddish, are lined with spreading, silky white hairs. Leaves are pinnately divided into closely-spaced leaflets, around a third of an inch long, and are also hairy, especially along the margins and on the undersurfaces. Flowers are formed of five lanceolate sepals, hairy underneath, and five slightly longer oblong yellow petals. At the center are ten yellow stamens and a five-ridged style.

CONTROLLING PUNCTUREVINE

Do not let puncturevine flower and go to seed! Prevent the seeds from spreading. Seedlings are easy to remove by hand pulling, and older plants can be pulled or dug out. Rake or sweep up any burrs that may have dropped. Tilling can be effective before seed production. Frequently monitor a population for new plants. Plant desirable native species to outcompete invasives.



Max Licher

GUIDE TO CONTROLLING BACKYARD WEEDS

HABITAT AT HOME

MATTHIOLA PARVIFLORA

This small-flowered stock is an annual forb native to the Mediterranean. It was first discovered in the Western Hemisphere at the Desert Laboratory on Tumamoc Hill in 2008 (Horst et al. 2014). In one location where it was found, there were 576 individuals in an area of about 150 meters squared; in 2010, there were 4,018 individuals in the same location (Horst et al. 2014). It was found in Saguaro National Park in 2015 (Walton 2015). In 2016, it was found on Pima County's Cienega Creek Natural Preserve. This species emerges in the spring in response to winter rains. Research suggests that Pima County is ideal habitat for *Matthiola parviflora*, and that it will probably continue to spread (Horst et al. 2014).

IDENTIFYING *MATTHIOLA PARVIFLORA*

The flowers are in short racemes that are often below the leaves. The individual flowers are small, about 1/2 inch (1 cm) wide, non-fragrant, and have 4 narrowly egg-shaped petals with smooth, non-rippled margins. The flowers are followed by long, slender, woolly siliques (seed capsules) that are tipped with 2 horns that together look like a dolphin's tail. The leaves are green, woolly-haired above and below, basal and alternate, coarsely toothed or pinnately lobed, and oblanceolate in shape. The stems are green, leafy, mostly erect, and covered in woolly hairs.

CONTROLLING *MATTHIOLA PARVIFLORA*

Early, proactive management of this species before it spreads over large areas is advisable to minimize adverse impacts and costs associated with control. Small populations can be removed manually (bagging any flowering plants). Large populations can be chemically treated.



Jonathan Horst

GUIDE TO CONTROLLING BACKYARD WEEDS

HABITAT AT HOME

BERMUDA GRASS (*Cynodon dactylon*)

Bermuda grass has the ability to spread above and below ground with modified stems, and it can grow from seed. The ability to grow with modified stem tissues enables it to spread and invade new territory, even if it gets mowed down before it drops the seed. This plant regrows from tubers that are often 5 inches below the surface. Manual removal is typically insufficient as a management plan if you want to eradicate this plant. If the tuber is not removed, the plant WILL return.

IDENTIFYING BERMUDA GRASS

Bermuda grass is a low-growing, wiry perennial consisting of two types of shoots: aboveground stolons and belowground rhizomes. These shoots are capable of taking root, creating new plants as they grow from the original plant or when they are cut and left on moist soil. In undisturbed areas, rhizomes reside 1 to 6 inches underground and deeper in disturbed areas that have been spaded or irrigated. Flowering stems are upright with three to seven spike-like branches usually originating from a single whorl on the tip of the stem.

CONTROLLING BERMUDA GRASS

Complete manual removal is challenging for bermuda grass as any bit of the rhizome left behind will resprout. Solarization is a method that works well in southern Arizona for bermuda grass treatment. The basic concept is to cover the ground with sheets of plastic, intensifying the heat from the sun and baking the ground below it. This will effectively kill the bermuda, but it will also damage other plant roots and it will sterilize the soil, so it really depends on the suitability of the area you are treating. Normally June and July is a great time for solarization, but the abundance of cloudy and cooler days would make it less effective at the moment.

Herbicide treatments can occur any time of the year as long as the plant is green and actively growing. Repeat treatments are necessary to eliminate a site.



Max Licher

GUIDE TO CONTROLLING BACKYARD WEEDS

HABITAT AT HOME

SALTCEDAR (*Tamarix chinensis*)

Saltcedar spreads as seedlings mature, rapidly producing small, white or pinkish flowers often by the end of their first year of growth. A single large tamarisk tree produces a half million seeds a year. Seeds will resprout after fire, severe flood, or herbicide treatments and is able to grow in a wide variety of soils.

Saltcedar increases the deposition of salts on the soil surface, which makes the area nearly uninhabitable by native vegetation. Saltcedar has been blamed for increasing flooding because it changes the way water flows through a habitat, sending floodwater to disperse and inundate areas that otherwise would not be flooded. With the invasion of saltcedar there has been an increase in the frequency of fire in riparian ecosystems.

IDENTIFYING SALTCEDAR

A many-branched shrub or tree that grows less than 26 ft. tall with small, scale-like leaves. The leaves have salt glands and salt crystals can often be found on them. Small white to deep pink flowers are densely arranged. The bark is reddish brown with smooth stems.

CONTROLLING SALTCEDAR

Mechanical control methods include mowing, burning, chopping, chaining, and disking. However, these methods usually only suppress saltcedar temporarily and will not eradicate infestations. Saltcedar is also able to resprout vigorously from the root crown following mechanical control methods. These methods can be labor intensive and expensive and may be more effective on small infestations. Hand pulling can be an effective way to control salt cedar in situations where plants are small, where access is difficult, or where herbicides cannot be used. Cut-stump treatment with glyphosate is effective for larger plants (though stumps should be monitored for re-growth and new seedlings).



Liz Markings



Sue Carnahan

GUIDE TO CONTROLLING BACKYARD WEEDS

HABITAT AT HOME

AFRICAN SUMAC (*Rhus lancea*)

Promoted widely as a low water use landscape tree, African sumac threatens riparian areas by diverting channel flow, thus enhancing the potential for streambank erosion and can displace native mesquites. African sumac produces an abundance of seeds and can also spread via suckers creating competition for water with native plants.

IDENTIFYING AFRICAN SUMAC

Dioecious, evergreen tree or large shrub up to 10 m tall. The tiny, green flowers are clustered in axillary and terminal panicles amidst the leaves. The flowers on the female plants are followed by drooping clusters of small, rounded, resinous, green maturing to yellow or reddish and then brown fruits. The leaves are shiny, leathery, dark green above, pale green below, hairless, alternate, and trifoliate with 3 often curved, narrowly lance-shaped to almost linear leaflets. The distinctive bark on mature trees is rough and dark gray with rusty orange fissures. Younger trees have red-brown bark. The twigs are reddish. The trees have a spread equal to their height and a dense, rounded crown.

CONTROLLING AFRICAN SUMAC

For immediate and effective results, removal of the root ball is necessary. African sumac will continue to sucker around the base for years if the roots are not removed. If the root ball cannot be removed, cutting into the trunk and treating the stump with glyphosate is the most widely approved technique for reliable sumac control. Glyphosate has an extremely high soil adsorption factor so it won't spread through the soil to do anything to other surrounding plants.



Bri Weldon

GUIDE TO CONTROLLING BACKYARD WEEDS

HABITAT AT HOME

GIANT REED (*Arundo donax*)

In riparian communities, giant reed competes with cottonwood and willow trees for soil moisture and suppresses native seedlings. Giant reed provides less shade which increases water temperatures, alters aquatic wildlife habitat, and increases fire risks and interferes with flood control. Giant reed is native to India and was introduced into the United States in the early 1800s for ornamental purposes.

IDENTIFYING GIANT REED

Giant reed is a bamboo-like grass with stems that grow over 20 feet tall. It has robust, hollow, stems up to 2 inches in diameter with knotty nodes. Pale green to blue-green, alternate leaves are 1 to 2 inches wide and 1 to 2 feet long that grow at 180 degree angles from one another. The lower part of the leaf is yellow, has fine hairs, and clasps the stem in a distinctive "S" wave. Flowers June through November, depending on location. Inflorescence is a dense, plume-like panicle, 1 to 2 feet long. Seed viability is very low, and seedling establishment from germinated seed is quite rare. Its primary reproduction is vegetative; sprouts from disturbed stems or rhizomes, even those buried 3 to 10 feet deep.

CONTROLLING GIANT REED

For smaller stands, giant reed can effectively be removed by digging up the roots with a shovel. Excavating using a backhoe or excavator and grapple can be used to remove small, dense stands of giant reed. Precutting is not necessary since the long stems may be an aid to pull up roots. Giant reed is not easily managed. Mechanical control options for giant reed are limited, and there are no classical biological control agents (insects, pathogens, etc.) currently available. In general, the most effective treatment to control giant reed is to spray a foliar systemic herbicide when plants are green and actively growing. Control efforts will usually require 3 to 5 years of persistent, repeated treatment.



Max Licher

GUIDE TO CONTROLLING BACKYARD WEEDS

Seedlings

BUFFELGRASS



FOUNTAIN GRASS



STINKNET



RUSSIAN THISTLE



GUIDE TO CONTROLLING
BACKYARD WEEDS

Seedlings

SAHARA MUSTARD



LONDON ROCKET



PUNCTUREVINE



MATTHIOLA PARVIFLORA



GUIDE TO CONTROLLING BACKYARD WEEDS

Seedlings

SALT CEDAR



BERMUDA GRASS



AFRICAN SUMAC



GIANT REED

