



High on the Desert Cochise County Master Gardener Newsletter

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The Virtual Gardener— Finding Garden Niches for Your Plants

The term “microclimate” is much used by gardeners. It usually is used to refer to small areas on a property that provide climatic conditions that differ from the regional climate zone. In a sense, your entire property comprises a patchwork of many microclimates, some large and some small—some even very small—each having the potential to provide a special niche for a plant.

All plants are adapted to thrive in a particular environment. Sunlight, air and soil temperatures, humidity, and soil moisture are some of the environmental factors that come to mind when we think about the requirements of our plants. Let’s take a look at these factors and see how you can use or manipulate them to your advantage to grow plants with special needs or to extend the growing season.

Sunlight

Light and shadow dance across the landscape in ever-changing patterns from hour to hour throughout the day and season to season throughout the

year. But some areas receive more and some receive less total sunlight. Perpetually shady areas on the north sides of structures, under awnings or other covers, or beneath densely foliated trees or shrubs provide niches for sun-shy plants. As we shall see, sun and shade also influence other factors such as temperature and moisture. Use your digital camera to systematically explore the patterns of sun and shade at different times of the day and year.

Many of our desert trees have tiny leaves that provide a lightly shaded area under their canopies. These create a perfect environment for plants that like a little protection from the harsh summer sun but still need lots of light. Surprisingly, many cacti, agaves, and other succulents like this environment. Next time you go for a hike, take note of the plants growing in lightly shaded areas under trees and use the shaded areas under your trees as planting beds in your yard.

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Temperature

According to the USDA, Sierra Vista lies in Hardiness Zone 8a, meaning the average minimum winter temperature is in the range from 10 to 15°F, but some protected locations on your property may be as much as 10 degrees warmer, placing them in Zone 9a. (A handy interactive map showing USDA zones and other climate information for Arizona by zip code can be found [here](#)). Locate those warmer areas and take advantage of them to grow less hardy plants or extend your growing season.

Direct solar heating during the day warms the air, soil, rocks, and everything else it strikes. South or west facing slopes or walls tend to reach the highest temperatures, and darker surfaces generally warm to higher temperatures than lighter colored ones. Large rocks, concrete paving, and masonry walls heated during the day retain enough heat to create a niche that may be 8 to 10 degrees warmer overnight.

Areas shaded from the direct rays of the sun during the day are indirectly heated by convection and energy radiated from their surroundings. At night, heat energy that has been stored during the day is reradiated back into the environment. Although areas open to a clear sky lose most of their heat overnight, areas under cover lose less heat and provide another thermal shelter for tender plants.

Warm air is lighter than cold air and tends to rise. Cold air pools in low places and tends to flow downslope like a viscous liquid. The pooling of cool air in

a valley or depression displaces the warm air that was previously there creating a “thermal belt” that lies along the upper half of a channel or depression, creating another safe haven for cold-sensitive plants.

You can use a regular thermometer, an inexpensive minimum-maximum recording digital thermometer, soil thermometer, and even your digital camera to systematically explore the temperature patterns around your property. Check soil temperatures in the same way with a special soil thermometer or even a simple meat thermometer. Digital photos taken on frosty winter mornings can also help you remember where frost and snow linger after a cold snap or conversely where the soil warms more quickly.

Water

Water in the soil is important to our plants, but since techniques to capture and store rainwater have been adequately covered in many previous articles in this newsletter over the years (for example, check out my article in the [August 2012](#) issue), I won’t discuss them here. Instead, I would like to briefly discuss water in the air.

Have you ever noticed how our plants perk up during the rainy season? At least some of that perkiness is due to increased humidity. Because evapotranspiration from tree leaves both lowers the air temperature and increases the amount of water vapor in the air, relative humidity is higher under tree canopies, especially the canopies of trees with dense canopies. The cooler air temperature, increased humidity, and greater soil moisture in these locations provides an ideal environment for those shade-loving tropical or

semi-tropical plants that would not otherwise grow here.

If you would like to learn more about microclimates, click [here](#) for a list of additional resources.

Until next time, happy surfing!

Gary Gruenhagen, Master Gardener
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Cuttings ‘N’ Clippings

✿ The next CCMGA meeting will be held **Thursday, September 5 at 5:00 p.m.** in the Public Meeting Room located in Groth Hall at UASV. The public is invited to a presentation on fall/winter veggie gardening by Clinton Gray. Gray’s Garden of Eatin’ sells produce at the Saturday Sierra Vista Community Market.

✿ The Water Wise/Master Gardener 16th Annual fall Xeriscape tour is scheduled for **Sunday, September 8 from 1:00—4:00 p.m.** featuring urban and mountain landscapes in the Sierra Vista area. From artificial turf, colorful flowers and rain harvesting, to wild pollinator gardens, there is something for everyone to enjoy on this free self-guided tour. For details and map call (520) 458-8278, Ext 2141 or contact Joyce at:

[jwilliam@ag.arizona.edu/](mailto:jwilliam@ag.arizona.edu) See flier on Page 6.

You can visit Water Wise at:

www.waterwise.arizona.edu

✿ The 14th Annual Highlands Garden Conference will be held **Saturday, October 12** in Miami, AZ. To access the registration brochure visit the website at:

<http://extension.arizona.edu/events/arizona-highlands-garden-conference>

What's Bugging You?

This article is intended to provide a little bit of help on identifying insects in your garden. My original intent was to title it “Know Your Enemy” but that title would have sent exactly the wrong message since the vast majority of insects aren’t enemies in any sense of the word. Many insects are just “there,” neither harming nor helping. Many others are beneficial helping decompose dead matter (imagine a world where dead plants and animals weren’t disposed of) or actively eating other insects. A very small percentage of insects are truly pests—most estimates say pests are less than 5% of all insect species. As such, the important thing is to positively identify an insect before deciding how to deal with it. After all, indiscriminate killing of all insects could well worsen the problems with pest insects in the long run.

To identify insects, simple searches on an Internet search engine can be successful, especially if your search is done with “Images” so start there. Use a few descriptive words (e.g., yellow long-horned beetle). If this simple approach doesn’t succeed, use a dichotomous key. A dichotomous key, as the name implies, guides one through a series of “Is it A or B?” questions. A search fairly rapidly converges on the thing one is trying to identify. Dichotomous keys are common not only with insects but also with plants and animals, even rocks and minerals. Luckily, these keys can be found on the Internet.

Here’s a short, simple example of the use of a dichotomous key to identify an insect of the order *Lepidoptera* (moths and butterflies): Step 1A: “One pair of



wings, go to Step 2.” Step 1B: “Two pairs of wings, go to Step 3.” Our butterfly has two pairs of wings, so we go to Step 3A which states: “Front and hind wings have a similar texture, go to Step 4.” (Step 3B states: “Front wings are rigid or leathery covering for rear wings, go to Step 14). Butterfly wing pairs have similar textures, so we go to Step 4A, which says “Wings covered with powdery scales, mouthparts a coiled tube for sucking.” Since butterflies have these features, the key tells us that we are done and that we have a member of the order *Lepidoptera*. Simple, eh?

Okay, maybe not quite so simple. You probably noticed that we didn’t actually identify the particular species of butterfly. Most keys go only as far as identification of the order in which the insect is classified after which another resource will be needed. Of course, knowing the order may be enough. For instance, members of the order *Odonata* (dragonflies and damselflies) are exclusively carnivorous. Why kill them? On the other hand, if your bug ends up being in the order *Blattodea* (cockroaches), you might want to step on it.

Fortunately, there are some excellent websites that help with further identification. My favorite is BugGuide.Net at (<http://bugguide.net/node/view/15740>) Click on the “Guide” tab at the top of the page and you’ll be taken to the identification page where you can

step through the taxonomy of your insect (or arachnid), starting with order, then family, genus, and species.

Now, none of this is necessarily easy or fast. For one thing, there are well over one million insect species. Secondly, your insect may not be an adult, which can make identification much harder. Also, your insect may be tiny so you’ll need a magnifying glass or maybe even a microscope. Your specimen may also not be particularly cooperative, running away while you try to study it. An easy trick here is to catch the critter in a jar and place the jar in the refrigerator or freezer for a while to immobilize it. Yet another issue with some keys can be their use of technical jargon (words like “furcula” or “cerci”!), so you’ll need to learn some new words, but, hey, learning is what life is all about isn’t it?

To get you started, here are the websites of a few dichotomous keys that I’ve found online: http://www.amnh.org/learn/biodiversitycounts/ident_help/TextKeys/arthropodkeyA.htm,

http://www.entnemdept.ufl.edu/choate/arthropod_id.pdf, and

<http://www.knowyourinsects.org/>

Once you’ve identified the order of an insect, switch over to a website like BugGuide.Net or perhaps even locate a handbook. Popular, readily available handbooks exist for some insect orders such as butterflies or dragonflies.

Remember, practice makes perfect. Go forth and identify!

Bill Schulze, Master Gardener
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In a Desert Garden

Woodhouse Toad – *Bufo woodhousei* cont'd

. . . but here they were in my pond, sitting in the water like old wrinkled men in a Jacuzzi.

I could not mistake them for anything else with their grayish-green color and the prominent white stripe along their backs that only woodland toads have. They have a thick head, horizontal pupils, a rounded snout, and a wide waist. The hind legs compared to those of a frog are short. Their skin is warty and they have large neck (parotoid) glands. The warts and the glands can extract a poison, bufotalin, which makes them not tasty for a lot of critters. People should wash their hands well after handling the toads. They still have their fair share of predators (raccoons, skunks, snakes, and the heron) but the bullfrog is not one of them.

Males have a dark throat and a vocal sac that expands like a balloon when they give off their mating call. In spring the nights are filled with their mating calls. The males arrive first and their call will attract the females. Females are bigger than males, as it is with frogs. When the female accepts the male, he climbs on her back and massages her belly until she gives up the eggs which he will then fer-

tilize. Again, just like frogs mate. The egg masses are different and one can immediately tell the difference between frog eggs and toad eggs. Frogs eggs are black and confined in a round jelly mass. Toad eggs are also black but appear to be in a string covered by a jelly-like envelope. The strings are strung along the pond weeds, attached to the vegetation, and criss-crossing each other. A frog egg mass has about 1,800 eggs and a toad envelope of eggs contains about 17 – 25 eggs, but there are lots and lots of them—up to 25,000. The tadpoles come out of the eggs in about three days and soon the pond wall is covered with these tiny black pine needle-like little creatures. They develop quickly into fat tadpoles that filter-feed decaying plant matter. In a few weeks sometimes no more than 2 – 3 weeks, the hind legs start to grow, then the front legs, the lungs replace the gills, the tail is absorbed, and one day there are tiny little toads hopping around.

Of course not all of them live to become adults. Predation is great and only very few make it to adulthood. For those that survive, and their parents, a time of constant feeding begins. They need to fatten up for the winter. Toads and frogs eat anything they can fit in their mouths. I have watched my frogs and toads eat mice. My frogs attack birds that put their heads into the water to drink, pulling the poor bird under water. I saw a toad eat a small fledgling that fell out of a nest box. That toad overdid it a bit and it took several hours to get the poor bird down the throat. Every time I checked on it, the legs were still sticking out. I have watched toads sit next to a harvester ant's nest and lap up the ants as they came out. Their main food sources

September Reminders

- ◆ Keep on watering!
- ◆ You can always plant something—try cool season veggies
- ◆ Start shopping for bulbs

are, however, small insects and cockroaches, spiders, bugs, and crickets. The toads, frogs, lizards, and some of the bird species that visit my yard are my natural insect control. It is very important to keep a natural garden for our wild critters that share our living space and we should not use any insect poisons. Keep in mind this is their land and we are the intruders.

Next time you walk along the San Pedro and come across one of the woodland toads, remember what wonderful creatures they are and how very, very useful. They can be found throughout the Southwest and into Mexico in the canyons not higher than 7,000 feet, near streams, marshes, irrigated farmland, and backyards with small water features. The toads stay all summer, burying themselves into the soil or sit in the crevasses between rocks during the heat of the day to stay cool. They will overwinter in the sandy washes where they dig themselves into the sand.

The name woodhouse toad comes from Samuel Washington Woodhouse, a surgeon and naturalist who explored the Southwest of the U.S. in the mid 1900s. Fossil records show early frogs shared the forests in the Jurassic Period with dinosaurs. The toad can be traced back to primitive fish named *Ichthyostegalia*.

Angel Rutherford. Master Gardener
Photographer



Woodland toads mating



At a Glance Box

It's a Bloomin' Cochise County Native Plant of the Month

Plant: Grasses

Description: A variety of native grasses growing in the shrub grasslands

Blooms: Varies

Use: As a natural landscape cover, as landscape accent plants, as wildlife habitat

Culture: Mother Nature!

References: Ruyle, George and Deborah Young, Editors. *Arizona Range Grasses: Their Description, Forage, Value and Grazing Management*. College of Agriculture and Life Sciences. University of Arizona.

For an in depth article on grasses, see below

Cado Daily

Water Resources Coordinator, Water Wise Program

University of Arizona Cochise County Cooperative Extension

Grasses

Been sneezing lately? Guess what's blooming? The beautiful, wind pollinated grasses. Living in the wide-open shrub grasslands is wonderful for much of the year—until the grasses start to bloom. We love to see the seed heads swaying in the breeze, but with a good rainy summer, we get a good crop of pollen too.

If you have ever seen a grass flower, you may wonder how such a tiny flower can cause so much havoc in your sinuses. If you get a hand-lens or other magnifying glass and look at a grass flower, you will see stamens covered with pollen ready to be blown by the wind to a receptive flower pistil or into your nose.

Despite the allergenic quality of grasses, grasses are quite interesting and varied. Once you get an eye for their differences (it may seem like grasses are no more different from each other than sparrows are from

other little brown birds—but they are!), you will begin to appreciate the variety of grasses in the shrub grasslands.

The dominant grass you see covering the valley is, unfortunately, not a native grass. It is Lehmann lovegrass (*Eragrostis lehmanniana*); a South African grass that was introduced in the 1930's to help restore southwest rangelands. It did so well in this area that it outcompeted the native grasses and took off.

Some of the easily distinguished native grasses you will see in Cochise County are sideoats grama (*Bouteloua curtipendula*), cane beardgrass (*Bothriochloa barbino-dis*), Arizona cottontop (*Digitaria californica*), green sprangletop (*Leptochloa dubia*) and tanglehead (*Heteropogon contortus*.)

These grasses have well-assigned common names. The spikelets (the part of the grass that contains the flowers and seeds) of the sideoats grama look like small oats hanging on to the sides of the stem. The seed

head of the Arizona cottontop contains white, cotton-like hairs, the top (inflorescence) of the green sprangletop grass kind of "sprangles" out in all directions, the dark awns on the tanglehead seeds get really tangled, and there is a beard around the nodes (the joints on the stem) of the cane beardgrass. However, cane beardgrass should really be called "Blueberry Pop Tart grass" because if you rub the seed head between your fingers, it really does smell like a blueberry pop tart!

Range grasses provide valuable land cover by reducing wind and rain erosion and by helping water percolate into the soil. When rain hits the upper portion of the plant, the raindrop breaks up into smaller drops reducing the velocity of its impact on the soil. If you have ever been caught in a heavy rain, you know how rain can hurt! When rain hits the soil hard, it can compact the soil particles making

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it difficult for the moisture to penetrate. The fibrous roots of the grasses help to make channels into the soil that increase its porosity.



Canebeard Grass

Grasses also provide seed for animals, nesting materials, and even food for caterpillars (have you seen clusters of dark orange caterpillars munching on some grasses lately? They could be the larva stage of Bordered Patch butterflies!)



Green Sprangletop

Although you may not have considered adding native range grasses to your landscape, there are so many great choices that can attract wildlife, add color (ever seen grasses shimmer silver when they are backlit by the sun?) and movement, that you may want to not just add them to your landscape plant palette, but give them a special place.

Ms. Cado Daily, M.A.
Water Resources Coordinator

Don't miss the *Water Wise* and Cochise County Master Gardeners

16th Annual Fall Xeriscape Tour



Sunday, September 8
1 to 4 p.m.

Beautiful low water landscapes in the Sierra Vista area will be open to the public for this self-guided tour.

Cochise County Master Gardeners will be at the sites to answer questions and point out the features of each landscape.

For a map to this free tour, call *Water Wise* at 458-8278 x 2141
or email jwilliam@ag.arizona.edu.

Maps will also be available during tour hours at 1867 Brentwood, Sierra Vista and
10359 S. Thicket Place, Hereford.



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waterwise.arizona.edu



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Did You Know . . .

The Cochise County Fair will be held at the fairgrounds in Douglas on September 26—29. For information go to

cochisecountyfair.org



Ask a Master Gardener

Cochise County Master Gardeners are available to answer your gardening questions either by telephone call to the Cooperative Extension Office or on-line on our web site at: www.ag.arizona.edu/cochise/mg