



# High on the Desert Cochise County Master Gardener Newsletter

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## Grasses

I have discovered a new passion: Grasses. What a lovely addition to the garden and some are quite drought tolerant too. There is nothing more graceful than flowering grasses swaying in the wind. My first grass was *Muehlenbergia rigens*—our native Deer Grass. I have it planted next to my pond. It is not invasive and the only place it ever self-seeded itself was right into my pond, into my waterfall, where it lived happily in all that moisture for one year until I took it out because it got too big. Deer Grass is very drought tolerant, but it can grow just as well in the water. Deer Grass forms clumps to 4 feet high and wide with slender yellow flower spikes in late summer. Another variety that does very well here is *M. rigida* or Purple Muhly. Native to Texas and New Mexico it forms green clumps to 2 feet high and wide with purple airy flowers in late summer. Another stunning variety is *M. dumosa*—Bamboo Muhly. It is native to Arizona, grows 3 - 6 feet high and wide and resembles bamboo with slender woody stems with narrow bright green leaves.

The next grasses I want to mention are *Miscanthus eulalia*—Silver Grass or Maidenhair Grass, and the boldest and showiest *M. s.condensatus* “Cabaret,” a variegated grass. Clumps grow to 6 - 7 feet tall and 4 - 5 feet across. It has ribbon-like leaves with a broad white center stripe and green edges. Pink stems to 8 - 9 feet carry coppery pink plumes that ages to cream. The seeds are sterile. Unfortunately I have not enough room in my garden for such a beauty, but if any of you are interested, there is one on display at the Ace Garden Center.

There are several species in the ornamental grass family, but the only one I want to mention is *M. Zebrina*—Zebra Grass. It doesn't grow as tall as some of the others and is more manageable. Zebra Grass has horizontal white and green stripes and beautiful blond hair-like plumes. It likes regular watering.

The next grass family is Penisetum—Fountain Grass. These are the most graceful of ornamental grasses. They have long narrow leaves and arching

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stems that carry fox tail-like flower plumes which bloom in summer. *P. setaceum* grows to 5 feet tall and is considered a pest because it self-seeds freely and as it can grow without irrigation has threatened to crowd out native vegetation. A better choice is the purple fountain grass. It is mostly sterile, has a more manageable size, and is very pretty. It should be planted in spring because it needs a season to establish itself to be hardy in our climate. There is also a variety with almost black plumes and green leaves, *P. alopecuroides* "Moudry." *P. "Cassian"* has light brown plumes with gold fall foliage with red tints. *P. "little Bunny"* is a dwarf form growing just to 1½ feet high and wide. It is absolutely charming, but they all do self-seed.

Another pretty accent plant is *Festuca glauca*—common blue fescue. It only grows to 1 foot high and 10 inches wide. Dense tufts of fine leaves in blue-gray with summer flowers in spikes. This grass makes a good edging. All these grasses have a place in the garden and give a special interest.

Angel Rutherford, Master Gardener



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## The Virtual Gardener—Book Review

*The View from Bald Hill—Thirty Years in an Arizona Grassland.*

By Carl and Jan Brock. Berkeley: University of California Press, 2000, 197 pages

Last month the Cochise County Master Gardeners had the great good fortune to visit the Audubon Appleton-Whittell Research Ranch near Elgin and hear a talk by Assistant Director, Linda Kennedy. In the course of her talk, Linda recommended this book about the Research Ranch written by a husband and wife team of researchers, both ecologists and professors at the University of Colorado.

As soon as I returned home from the trip I fired up the computer and checked the on-line card catalog at

the Sierra Vista Public Library (<http://cochise.lib.az.us:8005/marion.htm>) to see if they had a copy of the book. I found the library does have a copy and it was available, so I checked it out the next day.

What is now the Research Ranch began as a homestead established on the slopes of Bald Hill in 1919. As time passed the property was absorbed into a larger ranch which was purchased by Ariel and Frank Appleton in 1959 and operated as part of a cattle ranch until 1967. At that time Ariel and Frank removed the cattle from the ranch and created an environmental preserve and ecological sanctuary. In 1980 the National Audubon Society became managers of the property, and using funds from an endowment provided by the Whittell Foundation created the Appleton-Whittell Research Ranch where Carl and Jane Bock have spent so many years conducting and directing research.

The Brocks detail studies of how many plants, insects, birds, reptiles, and mammals on the Ranch relate to the physical environment and to one another. The studies are fascinating by themselves, but collectively they

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## Cuttings 'N' Clippings

\* The next meeting of Cochise County Master Gardeners Association (CCMGA) is 5:00 p.m. December 3, 2003, Room 106 at the University of Arizona South campus. The scheduled speaker is Mark Pretti of Ramsey Canyon Preserve.

\* There will not be a *Water Wise Workshop* in December.

\* The Bisbee Farmer's Market in Bisbee is closed for the season.

### November Reminders

- ◆ This is a good time to install a drip system
- ◆ Replace summer mulch with fresh mulch
- ◆ Start a winter herb garden
- ◆ Protect plants from frost (The bulletin *Frost and Frost Protection* is available from the Cooperative Extension offices.)

## Container Gardening

Gardening in the arid Southwest can be challenging to say the least. Lack of abundant water resources, poor soil quality, high alkalinity, and high water salinity levels are just some of the many challenges gardeners face here. Many of these problems can be overcome by container gardening.

I grow quite a variety of plants in containers and have found only a limited number that can't be grown that way. For example, I wouldn't try to grow a large oak tree or palm in a container. I am sure that it could be done if you had a large enough container for a limited time before transplanting, but it would take Herculean effort that is in short supply at my age. I currently have annuals, perennials, vegetables, roses, cacti, and miniature trees in containers.

Most any container can be used as long as it allows for sufficient drainage. If you want to use a container without drainage holes, get out your handy dandy drill and drill enough holes in the bottom of the container to insure excellent drainage. I always find nice flat rocks to cover the drainage holes (there is definitely an abundance of these on my property) before putting in a layer of pebbles. The rocks serve to keep the drainage holes from being plugged up by the potting medium over time. If you select clay pots be aware that our saline water will slowly cause them to deteriorate over time necessitating repotting in the future. You can extend the life of these type pots by coating both the inside and outside of the pots with a pottery sealant. I find Italian pots vastly superior in quality to Mexican pots due to the way they are fired but you may have to mortgage the farm to afford very many.

One of the greatest advantages to container gardening is that you—not Mother Nature—can control soil content. There are many excellent “complete” potting mixes available on the market. I find, however, that I prefer to make my own. I use native soil, compost, and pumice. Commercial mixes, particularly those high in peat, if not watered properly can shrink from the sides of the container allowing water to escape along the sides of the pot and out the bottom. This makes thorough watering of plants difficult. The main thing to remember is whatever you use it must provide water retention capability along with good drainage, provide good aeration (plants don't do well in concrete) and enough organic material to support the type of plants you wish to grow. I renew my planting medium annually to insure good fertile soil for my plants.

Due to the poor quality of our groundwater, I don't put catchment dishes under my containers. Doing so allows saline levels to increase to the toxic level. I always water sufficiently to where water drains out the bottom of the container thus leaching any accumulating mineral salts from the soil. If you must use catchment dishes, huff and puff and take your containers monthly to an area where you can flush irrigate them during the growing season. The only other option is to use rain water exclusively or desalinated water sources.

If you have made a good soil mix, additional fertilizer requirements will be minimal to insure good results. As I have stated, I prefer to renew container soil annually by adding compost and manure. You can use low nitrogen, time release fertilizers with excel-

lent results. Avoid high nitrogen fertilizers to minimize the possibility of over fertilization and salt accumulation. I find foliar sprays of iron to be quite helpful in combating the occasional bit of chlorosis that may occur in certain susceptible plants.

Water requirements in containers will vary. Different types of pots can effect this. Clay pots allow the soil to dry more rapidly than plastic for example. Soil mediums vary in their water retention capabilities. The water requirements of the plants themselves will dictate frequency of watering. Container placement (i.e. full sun or shade; exposure to wind, *etc.*) must be considered. But remember, plants in containers will always require more frequent water than those planted in the ground. Observe your plants as they will tell you when it's time to water. If you don't mind getting your pinkies dirty, you can jab a finger into the container soil - the top inch may be dry but below that the soil should be moist but never, ever soggy.

I hope all of this has been of help to you. I must run out now and gather another mess of tomatoes, hot peppers, bell peppers, okra and a few lemons from my container garden. Happy Gardening!

*John Phillips, Master Gardener*



## The Agent's Observations

**Q** I have some long slug-like worms in my vegetable garden that I have never seen before. They have stripes down the middle of them. Since they have been in my garden the earthworms have seemed to be less common. What are these creatures and what can I do about them?

**A** A sample of the creature was requested and brought to the office. A Master Gardener received the sample and did some research on-line and found that these worms were land planarians included in the phylum Platyhelminthes. Almost all specimens belonged to the genus *Bipalium*. They are a type of flat worm. I had not encountered such a creature before and find them quite fascinating! We are checking with Florida and this might be the first samples of land planarians in the desert.

The land planarian *Bipalium kewense* (Moseley) was first described from a greenhouse at Kew Botanical Gardens near London, England in 1878. This species is believed to be native to Indo-China, and has been found commonly in American greenhouses since 1901. *B. kewense* exhibits a disjunct distribution pattern. In Australia and in the USA a similar pattern of occurrence is evident. Records also include Barbados, Colombia, Costa Rica, El Salvador, Indonesia, Madagascar, Malaysia, Mauritius, Mexico, Puerto Rico, Tahiti, Taiwan and Zimbabwe.

The species appears to be dispersed with rooted plants. The natural range of *B. kewense* extends from Vietnam to Kampuchea, possibly extending to Malaysia. Elsewhere it has been introduced by humans. Land planarians thrive in high temperature and humidity, thus they are widely distributed in tropical and subtropical areas. They have been detected in natural habitats in Florida, Louisiana, and most recently Texas and southern California. They have been reported in greenhouses in the South, Mid-West and East. Land planarians have not been detected in mountain or desert areas. This species is spreading northward along the Atlantic Coast and is able to endure freezing when in protected sites such as under boards (Hyman 1940). The widespread occurrence of land planarians is a result of horticultural practices and dispersion of potted plants in commerce. In tropical and subtropical areas, once planarians are established in a greenhouse they disperse to the adjacent environment.

### Description and Identification

Land planarians are soft, bilaterally symmetric, flattened worms, 3 to 50 cm long by 0.2 to 0.5 cm wide. They lack a respiratory and circulatory system, a skeleton, and an anus. Heads of many land planarians are expanded lunate or tapering to a blunt point. Eyespots may be present on the head. Colors of species range from greenish-grey to brown with dark narrow stripes on the dorsal side. A mouth, which also serves as an anus, is present near mid-body on the ventral surface. Circular and longitudinal muscles are present. A cerebral ganglion serves as a brain, with a ladder-shaped nerv-

ous system. Excretion of fluid wastes is accomplished with a primitive proto-nephridial system (Esser 1981). Median stripes are very narrow and may be absent in young specimens. Lateral stripes are very conspicuous, black, sharply defined, beginning at level of eyes and continuing to posterior tip. *B. kewense* is recognized by its pale color, dorsal dark median line, dark patch in neck region, and expanded lunate head. This species may attain lengths up to 30 cm. (Chandler 1974).

### Life History, Reproduction and Development:

Reproduction is principally by fragmentation at the posterior end. Lateral margins pinch in about 1 cm from the tail tip. Severance occurs when the posterior fragment adheres to the substrate and the parent worm pulls away. The posterior fragment is motile immediately, and within seven to 10 days a lightly pigmented head begins to form. One to two fragments are released each month. Eggs are deposited in 0.6 to 9.7 cm cocoons that are bright red when deposited. Within 24 hours the cocoons turn black. Planarians emerge in approximately 21 days.

**Habitat:** Because land planarians are hidden during daylight hours and require high humidity, they are found in dark, cool, moist areas under objects such as rocks, logs, in debris, or under shrubs, and on the soil surface following heavy rains. Land planarians are also found in caves. Movement and feeding occur at night. High humidity is essential to survival. They can survive desiccation only if water

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loss does not exceed 45 percent of their body weight. Land planarians are most abundant in spring and fall.

**Locomotion:** Land planarians glide smoothly by means of a medial ventral strip (creeping sole), on a thin coat of mucus secreted on the substrate by glands opening into the creeping sole, similar to snails and slugs. Land planarians that migrate on plants or objects above the ground sometimes regain the ground by lowering themselves down by a string of mucus.

**Nutrition:** Land planarians devour earthworms, slugs, insect larvae, and are cannibalistic. Prey are located by chemoreceptors located in a single ciliated pit under the head or in a ciliated ventral groove.

Struggling prey are held to the substrate and entangled in slimy secretions from the planarian. The pharynx is protruded from the mouth and into the prey. Food is

reduced to small particles prior to entering the gastrovascular cavity. Planaria store food and can survive many weeks shrinking slowly in size without feeding. They are capable of utilizing their own tissues such as reproductive tissue for food when reserves are exhausted.

**Enemies:** Other animals rarely devour land planarians, since surface secretions appear distasteful, if not toxic. Protozoans, including flagellates, ciliates, sporozoans, and nematodes have been detected in land planarians. Because of their cannibalistic habit, land planarians may be their own worst enemy.

**Detection:** In daylight look for flat worms under rocks and logs only where cool damp areas exist. Slime trails are telltale evidence of land planarians, but might also indicate slugs or snails. In worm beds, look for land planarians attached to earthworms by mucus membranes. Collected specimens should be placed in a vial of 70% alcohol or 4% formaldehyde.

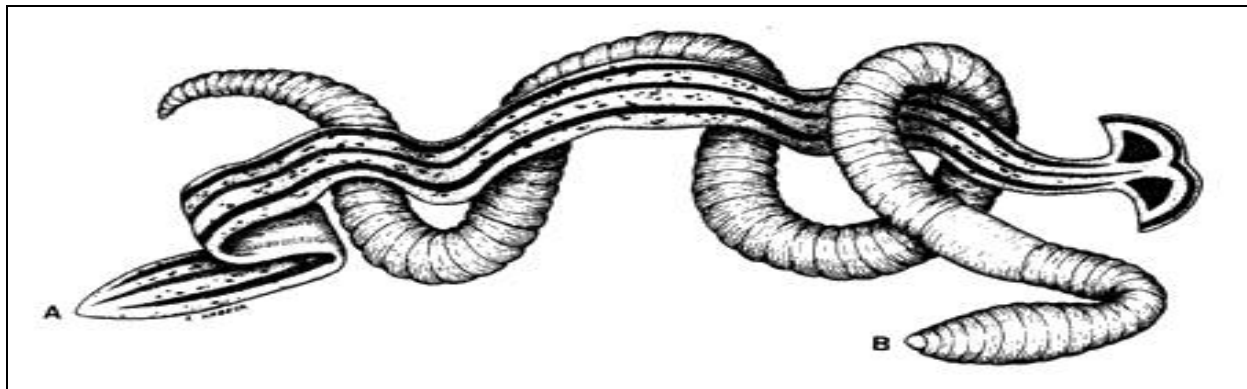
**Economic Importance:** Planarians are voracious predators on earthworms, and two species, *B. kewense* and *Dolichoplana striata* (Moseley), have been reported as nuisances in the Southern USA in earthworm rearing beds. (Hyman, 1954). They were reported as being capable of eradicating entire earthworm populations on farms. In greenhouses, although some collectors believe they might damage plants, they are considered harmless.

**Control:** Dry out planting areas and the planarians will dry up also. No other control methods are recommended.

**Source:** University of Florida Institute of Food and Agricultural Science

[http://creatures.ifas.ufl.edu/misc/land\\_planarians.htm](http://creatures.ifas.ufl.edu/misc/land_planarians.htm)

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**Planarian attacking earthworm- A. Planarian B. Earthworm. (From Esser 1981)**

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provide a broad view of the Web of Life at the Ranch and provide the reader with insights into the importance of grassland ecology.

The authors point out that because the Ranch has not been grazed by cattle for nearly forty years, it serves as a valuable reference area for researchers studying the long-term effects of cattle grazing on the natural environment. Many of the research projects are so-called “cross-fence” studies where the size, abundance, distribution, and other characteristics of a plant or animal population on the Ranch are compared with the population on neighboring properties “across the fence” where cattle graze today. Cross-fence studies help shed light on the long term effects of grazing and provide

ranchers with knowledge to help them better manage their properties.

According to the authors droughts, grazing, and fire are the three major forces impacting grasslands worldwide. How does fire affect the High Desert grasslands of Southeastern Arizona? Answering that question presents some difficult issues for researchers on the Ranch because of the “hands-off” philosophy in managing the property. Some would like to conduct studies of controlled burns, but setting fires is definitely not a hands-off experiment. Others would like to let any natural or man-made fires that start burn uncontrolled, but that could jeopardize valuable facilities on the Ranch as well as on neighboring properties. From studies of areas that have burned on the Ranch, the Brocks conclude that periodic burning of grasslands on a

three- or four-year cycle would be beneficial to the ecology.

Environmentalists and conservationists have traditionally feared the ecological effects of grazing in the Sonoita Valley, but a new threat is emerging—urbanization. The Brocks returned to the Ranch in 1995 after a four year break and were slightly dismayed to see the amount of development that had occurred in the valley since they left in 1991.

Whether you’re looking for a serious book on the ecology of grasslands in Southeastern Arizona or simply looking for an entertaining read, I highly recommend *The View from Broken Hill*. Until next time...happy surfing!

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