



High on the Desert Cochise County Master Gardener Newsletter

Vol. 17, No. 7 JULY 2006

The University of Arizona and U.S. Department of Agriculture Cooperating

The Virtual Gardener—Free Water (A Book Review)

Rainwater Harvesting for Drylands, Volume 1—Guiding Principles, by Brad Lancaster, Rainsource Press, Tucson, 2006, 283 pp.

Drought conditions in most of Cochise county were recently regraded to *Exceptional*, meaning “exceptional and widespread crop/pasture losses, exceptional fire risk, and shortages of water in reservoirs, streams, and wells, creating water emergencies.” That’s the bad news.

But here’s the good news. Even though Southeast Arizona received only about half of its normal precipitation during the past year, an immense amount of water fell from the sky. If we consider 15 inches as the nominal average annual rainfall for the area, receiving only half that amount means that nearly 5 gallons of water still falls on every square foot of surface. For a quarter acre lot, that means about 55,000 gallons. Using the average water consumption for Tucson of 114 gallons per day per person, that represents a

third of the annual water requirements for a family of four. And this during an **exceptional** drought! In a normal year, the same lot would receive two-thirds of the annual water requirements for the family.

Although capturing, storing and using 100 percent of the water that falls on our property is not realistic, capturing and storing much of it is possible and this is the theme of Brad Lancaster’s three books on rainwater harvesting. The first volume (*Guiding Principles*) has just been published and is available in the Sierra Vista Library. The second (*Water Harvesting Earthworks*) and third (*Roof Catchment and Cistern Systems*) volumes will be published in the near future.

In Volume 1, Lancaster sets the stage for the detailed instructions to come in the next two volumes. First he inspires you with the story of Zephaiah Phiri Maseko, “the man who farms water.” Phiri is a farmer in arid southern Zimbabwe who provides all his water

(Continued on page 2)

Inside this issue:

July Reminders	2
In a Desert Garden	2
Living Rocks	3
Cuttings 'N' Clippings	3
Environmental Stewardship	4
Agent's Observations	5

Cochise County Cooperative Extension

www.ag.arizona.edu/cochise/mg/

1140 N. Colombo, Sierra Vista, AZ 85635

(520) 458-8278, Ext. 2141

450 Haskell, Willcox, AZ 85643

(520) 384-3594



(Continued from page 1)

needs from rainfall alone. While discussing Phiri's water harvesting system, Lancaster gives you a preview of all the principles and strategies described later in the book. Then he tells you how to evaluate the capacity of your property to provide rainwater for harvesting, how to assess your needs for water, and how to pick the best strategies for water harvesting. Along the way he continues to inspire you with case studies of successful water harvesting projects in Arizona.

One of the most appealing features of the book is that the techniques described can be applied on many different scales and levels of complexity. Rather than starting with an extensive and expensive engineering effort, Lancaster recommends you start small, develop incrementally, and continually re-evaluate your system as you expand it. True to his permaculture roots, Lancaster also emphasizes the principle of "stacking" in the design of water-harvesting systems. The idea is to

make every element of the system serve many different purposes. A tree, for example, can provide fruit, shade, shelter from the wind, and leaf mulch that encourages the infiltration of water into the soil.

If you would like to save some money on your water bill, make your plants happier, and help reduce the demand on our finite groundwater supplies, take a look at Lancaster's book. You won't be sorry.

To see more information about the book check out <http://www.harvestingrainwater.com/volume1>. At this site you can see the table of contents for the book, read the forward by Gary Paul Nabhan, and even download Appendix 3 (Water-harvesting Calculations) and Appendix 4 (Example Plant Lists and Water-Requirement Calculations for Tucson, Arizona).

Until next time, happy surfing!

Gary A. Gruenhagen, Master Gardener
gruenha@sinosa.com

In a Desert Garden Vitex – Chaste Tree

Vitex is a lovely small tree with blue or white flowers resembling those of the Butterfly bush. The variety mostly grown in our area is *Vitex angus-castus*. This little tree can be seen in the plantings around the Sierra Vista Mall. There is nothing more beautiful than to see one in bloom. The blue is electrifying. I have one planted next to my sun room. It is still small and they are fairly slow growing, but under good conditions it can be a tree to 20 ft high. This will probably not happen in my garden that is dry and has poor soil. There used to be several beautiful trees that size in Ramsey Canyon where the parking lot is located now. They must have been many many years old. It broke my heart to see them come down, but as they were not native they had to go. The Vitex is native to the dry Mediterranean countries reaching into Central Asia. It is a deciduous shrub that can be trained into a small multi-trunk tree. In colder regions it will freeze to the ground, but it will recover in spring and be a small shrub. It has pretty aromatic leaves resembling open hands. The flowering starts in late spring to early summer and sometimes repeats in summer. It is a butterfly magnet. It does self-seed under good conditions. There is also a white variety available, *V. alba*, but to me the blossoms are not as showy as the blue one. An evergreen variety exists as well, *V. rotundifolia*, but it is not hardy in our region. It grows into a small shrub and is found growing on Hawaii.

July Reminders

- ◆ Keep the pests under control
- ◆ You can still plant something
- ◆ Keep watering!



Vitex angus-castus

Angel Rutherford, Master Gardener

Robert E. Call

Robert E. Call
 Extension Agent, Horticulture

Carolyn Gruenhagen
 Editor

Living Rocks— Greatly Overlooked

With over 200 species, lithops tend to be the face of living stones. However, these tiny plants are not usually the most popular plant picked to spotlight the kitchen window but they should be. A miniature rock garden needs very little to survive and looks great. They only need hot, preferably dry air, very little water, and plenty of bright direct sunlight to thrive.

The key to growing lithops is remembering not to water them. Other than that, they have very few needs. A window with many hours of direct sunlight, preferably south facing, is imperative to the little plants. There can be many plants in a small space since lithops are so small, take years to multiply, and have a small tap root system. The container only needs to be 3—5 inches deep and well draining with well draining soil. They don't need to be repotted often, so it is okay to splurge on a pretty pot. Rocks decorating the area around your plants not only help to prevent overwatering but can camouflage your plants.

If a lithops has wet feet or has been watered too much, especially at the wrong time of year, most likely it will turn to mush. Knowing the yearly cycle of the lithops will help you to know when it is crucial not to water. The beginning of the growing season starts near the end of summer when the hottest days have passed and grow through fall. Older lithops will flower at

the beginning of the growing season. They have to be at least three years old to flower. This is the time to water. Do not water very deep or let the plants have wet feet, and make sure there is at least a week of dry soil between waterings.

Around mid-winter you will start to see the lithops new life. They are perennials after all. At first they may start to shrivel. They may look like they need water, but they **do not**—fight the urge! Then they look like they are just barely hanging on to life from lack of water—but don't water. Finally, the old plant will look just like a mummified version of its old self. But, if you pull back that dead plant "skin," there will be a brand new plant inside! Some species have more space in between the leaves. When the new plant grows, the space between the leaves will split and you will see the new leaves inside. When a plant grows to a mature height and width, (depending of the species), the new plant emerges, and there will be two plants where the old one was! During this stage the plant will not need water. The old plant is dying and the new plant is sucking all the water it needs from the old plant. It will then become dormant until the end of summer when it starts the cycle over.

Lithops are great plants and great conversation pieces. A mature lithops can go up to two years without water (tests have been made so you don't need to try it). Just remember not to water and you will have a fantastic plant in your collection.

Alice Mason
Associate Master Gardener



Cuttings 'N' Clippings

* The next CCMGA meeting is 5:00 p.m. Thursday, July 7, 2006 at the University of Arizona South campus, Room 503. This meeting will be the General Business Meeting with the election of 2006-2007 officers and approval of the 2006-2007 Budget.

* The free *Water Wise* program on Saturday, July 8 is a *Rain Water Harvesting Tour*, visiting homes and other sites that take advantage of rainwater harvesting. For more information and a free map contact Cado Daily at the Cooperative Extension, Ext. 2139.

* CCMGA congratulates the new Associate Master Gardeners who completed the 13 week class. They were recognized at a Potluck on June 7. They will complete 50 hours of volunteer time to become Master Gardeners.

* CCMGA extends deepest sympathy to Master Gardener Angel Rutherford on the loss of her husband, Mickey. A memorial service will be held at the Elks Club on Wednesday, July 5 at 4:00 p.m.

Environmental Stewardship— A Crisis in Perception, Thinking, and Values

(Editor's Note: This is the second of two articles that won scholarships for the authors to the 13th Annual High on the Desert Conference. Congratulations to David Davis, who has just completed the 2006 Master Gardener Class.)

We are all environmental stewards. Whether or not we are conscious of this role and responsibility does not deny the effect we have on the environment. In fact, it does not deny the effect we have on each other and ourselves. Even if we are not scientists or policy makers or professional environmental stewards, our daily actions affect the environment more than we probably realize. The consequences of how we use our water or what foods we choose to consume or not consume resonate past our homes, towns, counties, states and national borders. It has been said that "we all live down stream from someone else." We all share the same limited resources. Essentially, we are all strands in the web of life.

I share the understanding with Capra¹ and other thinkers² that we have a crisis in our perception, thinking, and values but there is a simple, practical and spiritual solution. As environmental stewards, it is urgent that re-evaluate our connection with nature and what it means to 'love' the earth, ourselves, other human beings, all living species, and even inanimate forms.

It is not necessary for us to read Carson's³ book about our indiscriminate use of pesticides. By now we are probably aware of how DDT almost eliminated many birds, the magnificent osprey being one of them. It is

not even necessary to read more about global warming as Kolbert⁴ reminds us again of how we are changing the world. Nor is it necessary to read the State of the World, a series of reports published by the Worldwatch Institute in Washington, D. C. What is necessary for us to do is to look beyond our limited perception of an anthropocentric worldview, to think and 'feel' a deeper connectedness with nature, and act as if we value that which we love. In short, we need to become enlightened and compassionate stewards of the Earth.

I believe our philosophical worldview or how we view our relationship with the Earth affects our thinking, and therefore how we value the Earth. From an anthropocentric or human-centered perspective, humans are above or are separated from nature. Nature, in this view, is simply given value by humans. Nature is there for our use; something for us to consume.

From a spiritual viewpoint such as the Christian mystics, the Buddhists, or the cosmology of the Native Americans there is no separation of man and nature. The concept of 'deep ecology' as biologist and philosopher Arne Naess⁵ gives value to all beings. With this practical and spiritual approach, there is respect for the essence of all species, even inanimate objects. We need to realize that we are just part of that web. Each individual can feel a sense of belonging and participate in the connectedness to the cosmos. With awareness we cannot help but change our perceptions, our thinking, and values. It is in our own self-interest and of generations to come to take care of

the Earth.

Naess even questions the concept of 'steward.' He states that we are no more than part of the Earth. I agree with him that the term makes it seem as though we have more knowledge than we really do. It sort of gives us the feeling of being ruler or in control of nature. Surely, we can acknowledge that humans have been short-sighted, ignorant of much, and have ruined many things. It is only humans that seem to be able to perceive the situation and it is only us who can help. We do this by practicing sustainability.

But even this concept has been questioned and argued over. In fact, marketers have already geared products toward LOHAS, an acronym for Lifestyles of Health and Sustainability. We should ask ourselves is this another marketing ploy. Is it really responsible capitalism (i.e. Seventh Generation) or is this an oxymoron? Are we fooling ourselves into thinking we are helping or are we just being part of the problem without questioning our thinking and values?

Perhaps our egos or emotional maturity have not allowed us to effectively be judicious stewards of the Earth. Perhaps another term such as 'trusteeship' would emphasize the vital role and responsibility inherent in that task. Perhaps some 'checks and balance' are also needed. Maybe we need to combine being trustees with being partners of the Earth and participants in the community. So the new formula for environmental stewardship could have three legs: trusteeship, partnership, and participation.

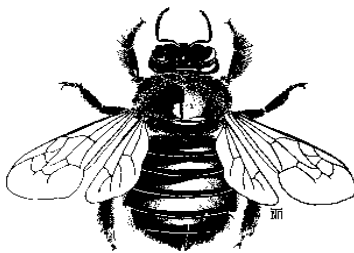
We can ask ourselves two questions: 1) What is nature? and

(Continued on back page)

The Agent's Observations

Q There hundreds of black beetles flying around my property. They are boring into and making holes in the fascia boards of my house roof. The State needs to do something about this, who should I call?

A The black flying insects are carpenter bees, *Xylocopa* species. The State will not do anything about this native bee! They are a robust insect, about one inch long. They differ from bumble bees and have a metallic blue-black abdomen fringed with hairs that may look green to purplish in reflected light. Males of some species may vary in color from golden to buff. Female carpenter bees bore into sound wood, preferring softwoods, decaying wood, and dead yucca or agave flower stocks. Sound, undecayed wood without paint or bark is usually selected for nests. They avoid most hardwoods. The presence of carpenter bees around buildings and wooden structures can be annoying or even frightening; however, males cannot sting and females rarely attack. Nests usually consist of tunnels ½ inch in diameter and 6 to 10 inches deep that are partitioned into several chambers, each containing an egg and a supply of food (pollen). Carpenter bees may use old tunnels for their nests which they sometimes enlarge. Several



Carpenter Bee (*Xylocopa* species)

bees may use a common entry hole connecting to different tunnels. Over a period of time, tunnels may extend as far as 10 feet into wood timbers. Tunnels are vacated after the broods larval and pupal stages complete their development. Development from egg to adult may take about 3 months. Carpenter bees overwinter as adults, often in old tunnels, with one generation a year. The nests weaken structural wood and leave unsightly holes and stains on building surfaces.

Control: Prevention is the main approach to managing carpenter bees. If possible, susceptible exterior parts of a building should be constructed out of hardwoods not normally attacked by the bees for nests. On all buildings, fill depressions and cracks in wood surfaces so they are less attractive. Paint or varnish exposed surfaces regularly to reduce weathering. Fill unoccupied holes with steel wool and caulk to prevent their reuse. Wait until after bees have emerged before filling the tunnels. Once filled, paint or varnish the repaired surfaces. Protect rough areas, such as ends of timbers, with wire screening or metal flashing. Carpenter bees are generally

considered beneficial insects because they help pollinate various crop and non-crop plants. Under most conditions they can be successfully controlled using the preventive measures described above. If infestation is high or risk of damage is great, insecticides may be used to augment other methods of control. To do this, treat active nests (those containing eggs, larvae, or pupae) with liquid or dust formulations of insecticides or desiccant dusts. Liquid formulations containing permethrin and cyfluthrin and dusts containing boric acid are currently labeled for use against carpenter bees. Desiccant dusts are inert dusts combined with absorptive powders (diatomaceous earth or boric acid) that destroy insects by abrading their protective outer body cover causing them to dry out. Desiccant dusts are low in toxicity to people and animals and do not lose their effectiveness over time, so long as they do not get wet. Avoid inhaling these materials, however, because they can cause serious lung irritation. After the brood is killed, repair holes with steel wool and wood filler, then repaint or varnish the repaired surfaces.

Reference: <http://www.ipm.ucdavis.edu/PMG/PESTNOTES/pn7417.html>

(Continued on back page)

Issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the United States Department of Agriculture, James A. Christenson, Director, Cooperative Extension, College of Agriculture and Life Sciences, The University of Arizona and Arizona Counties cooperating. The University of Arizona is an equal opportunity, affirmative action institution. The University does not discriminate on the basis of race, color, religion, sex, national origin, age, disability, veteran status, or sexual orientation in its programs and activities. The information given herein is supplied with the understanding that no discrimination is intended and no endorsement by Cooperative Extension is implied. Any products, services, or organizations that are mentioned, shown, or indirectly implied in this publication do not imply endorsement by the University of Arizona.

The University of Arizona
Cooperative Extension
Cochise County
450 S. Haskell Avenue
Willcox, AZ 85643-2790

PRSR STD
US POSTAGE PAID
WILLCOX, AZ
PERMIT NO. 70

(Continued from page 5)

A Brief Note: Many questions have been received over the past month concerning pine trees drying up. Affected trees include ponderosa, elderica and aleppo pines. Upon further investigation the cause, in nearly every case, has been lack of water. We are currently in a prolonged drought. Most trees can survive in the high desert if watered. They are not drought resistant, however! Water deeply—at least two feet deep in the soil and at the drip edge of the trees. As the trees grow the irrigation system must also grow. Many natural pines growing at higher elevations are dying because of the drought. The bark beetle outbreaks is a secondary cause of tree death. The primary cause is insufficient moisture to maintain tree health and vigor. Healthy pines can produce enough pitch to “pitch-out” or flood bark beetles. Stressed trees can not. So water your plants properly or they might “give it up!” Then all the time, water, and money invested in them will be for not.

Robert E. Call
Extension Agent, Horticulture

(Continued from page 4)

2) What is love? How we answer those two simple questions will determine the impact we have as stewards. Those answers will demonstrate our love for the Earth, ourselves, and others too. That love will be demonstrated not by exclusivity or ownership, but in a renewed connection to all. If we connect to nature and the nature within us, we will never be alone. In fact, we are connected to all life

on Earth.

In summary, I have offered a simple, practical and spiritual solution to how best to be stewards. It is in our lifestyle: the way we express our thinking and values. The well-known scientist Goodall⁶ prefers the term ‘sustainable lifestyle.’ That is all we need to aim for.

David Davis
Associate Master Gardener

¹The Web of Life. Fritjof Capra. Anchor Books. New York. 1996.

²Science, Soul, and the Spirit of Nature: Leading thinkers on the restoration of man and creation. Irene van Lippe-Biesterfeld. Bear and Company. Rochester, Vermont. 2005.

³Silent Spring. Rachel Carson. 40th anniversary edition. A Mariner Book. Houghton Mifflin Co. New York. 2002.

⁴Field Notes from a Catastrophe: Man, Nature, and Climatic Change. Elizabeth Kolbert. Bloombury Publishing. New York. 2006.

⁵Ecology, Community, and Lifestyle. Arne Naess. Cambridge University Press. London. 1991.

⁶The Ten Trusts: What we must do to care for the animals we love. Jane Goodall and Mark Bekoff. Harper Books. San Francisco. 2002.