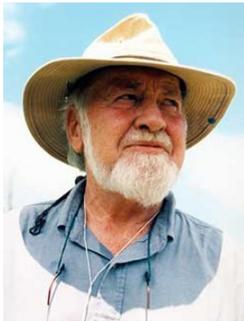




The Virtual Gardener—Bill Mollison, In Memoriam



Last month I wrote an article in memoriam of permaculturalist author Toby Hemenway and this month I'm writing one in memoriam of Bill Mollison, the "father of permaculture." I seem to have driven into a rut. But let me explain!

As I was researching Hemenway's life I unexpectedly discovered the obituary notice for another luminary of the permaculture movement—Bruce Charles "Bill" Mollison. Mollison died in Hobart, Tasmania on September 24, 2016 at the age of 88.

Bill Mollison was born in a tiny village on the northwestern tip of Tasmania, Australia's island-state that lies just off its southern coast. He described his early years as a dream life mostly spent hunting in the bush and fishing on the sea. In 1954 he joined the Wildlife Survey Section of the Australian Commonwealth Science and Industrial Research Organization (CSIRO) where he first became aware of the devastation wrought on the environment by unbridled human development and poor agricultural practices. In 1966 he

entered the University of Tasmania where he received his degree in bio-geography. He then joined the faculty of the university and taught there until 1979.

While at the university he and a student, David Holmgren, began sketching out a concept for a system of sustainable agriculture, a concept for which Mollison coined the name "permaculture." The result of this collaboration was the publication of *Permaculture One*, a seminal work that inspired a world-wide movement. (No English language editions are available for download but a French edition of the book can be downloaded [here](#).) The ideas in this book were expanded in 1988 by Mollison in his classic *Permaculture—A Designer's Manual*, which is considered the definitive reference today and can be downloaded from this [link](#). In 1997 he authored a handbook, *Introduction to Permaculture*, that summarizes the *Designer's Manual* and offers practical tips useful to home gardeners. Copies of *Introduction to Permaculture* are available from the Cochise County Library System.

When Mollison stepped down from his faculty position at the University of Tasmania in 1979 he was 51 years old. At a time of life when many men are contem-

(Continued on Page 2)

Inside this issue:

Cuttings 'N' Clippings	2
Register for Conference	3
My Dream Garden	3
Meet a Master Gardener	4
At a Glance Box	5
Four-Winged Saltbush	5
March Reminders	6
High on the Desert Registration	6



COLLEGE OF AGRICULTURE AND LIFE SCIENCES
COOPERATIVE EXTENSION
Cochise County

Cochise County Cooperative Extension

www.cals.arizona.edu/cochise/mg/

1140 N. Colombo, Sierra Vista, AZ 85635

450 S. Haskell, Willcox, AZ 85643

(520) 458-8278, Ext. 2141

(520) 384-3594

(Continued from page 1)

plating how to spend their retirement years, he stepped on to the world stage as an evangelist for permaculture. He developed and taught training courses to certify others as permaculturalists in Australia, the United States, and elsewhere. In 1981 he received the Right Livelihood Award, which is considered by some to be the equivalent of a Nobel Prize for honoring those who offer practical and exemplary answers to the most urgent challenges facing us today.

Permaculture, as defined by Mollison and Holmgren, is a design philosophy to create cooperative instead of antagonistic relationships between humans and the natural environment, especially in the production of food. The original concepts focused on agriculture, but they were soon expanded to include design considerations for entire communities, including their economic and legal aspects.

The goals sound lofty and abstract but the implementation is based on practical measures that can be put to use by ordinary home gardeners. *Introduction to Permaculture* is perhaps Mollison's most helpful book for home gardeners.

Although the book contains plenty of tips and techniques, I believe its greatest value is in teaching a way of thinking about relationships—relationships between the living things in the garden; relationships between living and nonliving things in the garden; and relationships between the gardener and the garden. What are the relationships? How do we promote cooperative relationships and suppress antagonistic ones? Here are a few of the things you will find in the book.

The first chapter, *Permaculture Principles*, discusses basic garden design considerations such as placing elements where they are mutually supporting and minimizing the amount of energy required to maintain them. For example, how often do we plant each of our

vegetables in separate beds precluding beneficial interactions between them or place the vegetable garden in the far corner of a yard instead of closer to the kitchen where its produce is used? How often do we amend our soils with expensive chemical fertilizers when we could grow our own green manures or make our own compost from the things we discard in the trash?

Chapter 2, *Broadscale Site Design*, invites the reader to carefully observe the resources and limitations available on a property. Although the discussion is aimed at people who have acquired large parcels of undeveloped land, the principles discussed are equally applicable to home gardens. Too often we only look at our yards and gardens in superficial ways. Mollison invites us to take our time and really observe and record our observations in notes or photos. Learn to ask why things are the way they are and seek the causes. Learn to work with the land and not against it. Fighting nature only leads to wasted effort and ultimate defeat. Go with the flow.

Chapter 5, *Home Garden Design*, is chock full of practical ideas for the vegetable gardener. Whether you are an apartment dweller with limited space or a have a multi-acre property in the country there is something here for you. As throughout the book, the emphasis is on relationships, energy efficiency, and effectiveness. In addition to general tips, there are specific suggestions for gardening in different climate zones, including drylands. Check it out.

In this article I've only hinted at all the wisdom you will find in this book. I highly recommend you obtain a copy and take a look at it. And if you would like to learn even more about permaculture, there are dozens (if not hundreds) of YouTube videos featuring Mollison expounding on various permaculture topics.

Until next time, happy surfing!

Gary Gruenhagen, Master Gardener
virtualgardener@cox.net

Cuttings 'N' Clippings

✿ For Cochise County Master Gardeners Association information contact Valerie at:

valeriedvidson@email.arizona.edu
or the Cochise County Master Gardeners web site at:

<http://cals.arizona.edu/cochise/mg/>
You can also follow them on Facebook at:

www.Facebook.com/CochiseCountyMasterGardeners

✿ The next Water Wise presentation will be held **Saturday, March 4 from 9:00—11:30 AM** at UA Sierra Vista. Presenter Dustin Hancock, Range Monitoring Research Specialist, will tell you about the how, when, and why of pruning your landscape plants. He will discuss the best season to prune and techniques that will help your plants thrive. Contact the Cooperative Extension at 458-8278, Ext. 2141 for more information. Check out the Water Wise web site for their 2017 schedule at:

<http://waterwise.arizona.edu/>

✿ The Cochise Chapter of the Arizona Native Plant Society's next program will be held **Friday, March 17 at 5:00 PM**. They meet in the Cochise County Community Development Office conference room, 4001 Foothills Dr. Sierra Vista. The speaker will be Doug Ripley, President of the Cochise Chapter, and the title of his presentation is:

Ilha Formosa—Observations of the Natural History of Taiwan, Republic of China. He will discuss Taiwan's rich biological diversity that he and



his wife encountered during a two-week trip in the spring of 2016. For more information, follow AZ Native Plant Society on their web site:

<http://www.aznps.com/chapters/cochise/cochise.htm>

2017 High Desert Gardening & Landscaping Conference Registration Still Open!

Registration for the 2017 High Desert Gardening & Landscaping Conference is still open through March 6.

The Conference, sponsored by the Cochise County Master Gardeners and the UA Cochise County Cooperative Extension, will be held in the Student Union Building on the Cochise College Sierra Vista campus, adjacent to our UA Sierra Vista Campus.

We have five keynote general sessions, five hands-on workshops, and nine breakout sessions featuring a wide variety of great speakers and topics. We also have a Wednesday evening pre-conference get-together at Native Wings in Sierra Vista for which you can also register online.

To review the agenda and register, please go to cals.arizona.edu/cochise/mg/high-desert-conference Or, you can call 520-458-8278, ext. 2141.

Registration for either one or two days includes breakfast, lunch, and access to all workshops and sessions. Don't miss this great, once-a-year opportunity to hear wonderful speakers on a variety of relevant topics, find motivation for your gardening interests, and network with fellow gardeners!

Jan Groth, Master Gardener Program Coordinator



Master Gardener

Cochise County Master Gardener Newsletter Editor
Carolyn Gruenhagen

My Dream Garden

When winter gets me down, and the skies are gloomy over the mountains, I start to think about my Dream Garden. My Dream Garden would be full of bulbs, rhizomes, and tubers. They would start blooming just about now. The early Snow Iris (*Iridaceae*) and the Daffodils (*Amaryllidaceae*) would be poking their heads up and bringing a smile to my face. Then, next would come the larger Bearded Iris in their outrageous color combinations. The perennial Agapanthus, another *Amaryllidaceae*, would need just a bit of TLC, but not too much, just cleaning up the yellow leaves before the blue-purple flowers would hover over the pathway. The Allium (*Liliaceae*) would follow along behind in late spring with its own purple fireworks. And all this would happen without me lifting a finger.

I love bulbs and tubers! I love the way you just have to plant a few at first, and they will multiply on their own, year after year without any help from you! I love the way bulbs are the closest thing to immediate gratification you can get in a garden. I am not a patient person. Yes, I know that patience is a virtue, but some things just take too darn long!

I already started on my Dream Garden last November and December with the flowers I just mentioned. But that's just my spring blooming Dream Garden. Now I feel I must start on my summer Dream Garden. Luckily, now is just the right time to plant some bulbs and tubers for summer bloom!

The summer flowers in these families are the show-stoppers in the flower garden. Of course, there is my favorite, the Dahlia (*Asteraceae*). The Dahlia has numerous flower forms from formal to pompom to wild cactus formations, and in all colors of the rainbow except true blue. It ranges from 1 foot to 6 feet tall and blooms extravagantly all summer.

The Canna Lily (*Cannaceae*) is another tuber and gives your summer flower garden a decidedly tropical feel. Planted up against a fence or wall, its lush foliage and flowers will set the stage for all your other flowers. Plant Cannas after the last frost for a summer show.

Gladiolus (*Iridaceae*) are not actually bulbs or tubers, but corms. They are superb cut flowers and pair nicely with Delphiniums, Daisies, and Phlox in the garden. The best-known Gladiolus with the widest color range is known simply as Garden Gladiolus. They will bloom from spring to fall. Plant with lower annuals or behind mounding plants that cover the lower stems in shade. If you plant Gladiolus successively every 2 weeks, you will have beautiful bouquets all summer.

Of course, there are the multitudes of Lilies available. Although not a low-water plant, the Lily (*Liliaceae*) is nonetheless a lovely bulb to grow. The Asiatic hybrids are the easiest to tend and do well in filtered shade. Tiger Lilies are taller and showier with their pendulous orange flowers spotted black. Once again, they will reward you with flowers year after year. I love that! I have a special area for my more water-loving plants. It is small, but luxurious.

So now that I have started thinking about my summer Dream Garden, I feel energized, and eager to plant some bulbs and tubers! But don't get me started on my favorite perennials! That's a whole other story!

Kris Williams, RPh,
Master Gardener



Meet a Master Gardener

Deborah Hargrove, a graduate of the shining Master Gardener class of 2016 and a graduate of the Beginning Farmer's Course offered by the Cooperative Extension, is one of our star Master Gardeners. She has given generously of her skills, her time, and her talents to benefit our program. Not only does she work hard on multiple projects like the High Desert Gardening & Landscaping Conference and our Discovery Gardens, but she has also enlisted the help of her talented husband, Dave. Together, they produced a beautiful, special raised bed for the Discovery Gardens. But, we'll get to that in a moment.

Dave is a master mechanic, master fabricator, and master welder who successfully owned and operated Super Car Center in Tucson for 28 years. He dabbles in multiple hobbies and Deborah describes Dave as "a real-life MacGyver who could take a tube of toothpaste, some wire, and a screwdriver and build a beautiful rocket to the moon." Nice compliment!

Deborah is a super-passionate vegetable gardener with many years of diverse, successful gardening to her credit, all filled with a variety of challenges and successes. During her earlier years in California, she practiced Square Foot Gardening, carefully calculating and planning each square inch of her bountiful garden there. She then moved to Tucson and adapted to the unique demands of gardening in the Tucson desert for 28 years. Deborah finished her career with the Postal Service by moving to Colorado for 5 years where she was determined to overcome the challenges of gardening at 7,400 feet. After that, retirement for Deborah and a new job for Dave brought them to Sierra Vista.

They bought property in Hereford where old garden spots reflect

ed 2 years of cruel abandonment with waist-high weeds and a profusion of "cancer trees." Deborah and Dave did some heavy cleaning and built 13 raised beds – yes, 13, and filled them with Tank's compost and garden soil mix. Deborah started a variety of seeds in an old tool shed for protection, and 6 weeks later began planting and nurturing the 13 beds.

Well, she obviously adapted beautifully to our High Desert gardening! She produced enough harvest for 55 quarts of tomato sauce, 50 quarts of pickles, numerous gallon bags of green beans and carrots for the freezer, endless jars of dried herbs, and countless eating cucumbers, squash, melons . . . the list goes on. Shall we say Deborah did very well for her first year here?!!

During a planning meeting for the Discovery Gardens, we identified that one of the concepts we wanted to display was a provision for handicapped gardening. Deborah immediately spoke up with her positive smile and stated, "Dave and I can do that!" They built a very special raised bed made for wheelchair accessibility which will be set up and planted with vegetables and flowers as a demonstration to help inspire wheelchair-bound folks to be outdoors and garden. This specially designed bed provides the ability for someone in a wheelchair to reach and more easily and effectively dig in soil, plant seeds and plants, and harvest them.

Deborah and Dave researched the specifications for height, width, and depth of a raised bed which would allow for a person in a wheelchair to reach into and

across a bed, while fitting their legs under the bed as if sitting at a table.

They built the raised bed at their home and delivered it to the Discovery Gardens. A few days later, we entertained a group of folks for a tour of the Gardens. This group included a gentleman in a wheelchair. We asked him to be our first test gardener for the bed and simulate how he would approach and utilize this special raised bed. He very studiously pulled up to each side of the bed and successfully fit beneath. But when we asked him to reach into and across the bed, we discovered that the side walls might be a bit high for a shorter person to comfortably maneuver.

Without blinking an eye, Deborah and Dave picked up the bed, returned it to their workshop, and shaved 2 inches off the sides in a pattern that gave the bed a new, "Santa Fe" type architectural look. It's gorgeous. They then delivered the lovingly created, wheelchair accessible raised bed to the Discovery Gardens where it will be painted, planted with veggies and flowers, and on display for Spring! Many grateful thanks to Deborah and Dave Hargrove!

Jan Groth, Master Gardener Program Coordinator



Glance At a Glance Box

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

Plant: Four-winged Saltbush, *Atriplex canescens*

Description: Perennial shrub

Blooms: Nondescript, but fruits have wings

Use: Excellent Xeriscape plant

Culture: Full sun, low water, well-drained soil that can be salty

Learn more: Cochise County Herbarium, www.cochisecountyherbarium.org

For an in-depth article, see below.

Four-winged Saltbush, *Atriplex canescens* Old Salts Do Well with Little Water

Nothing much is blooming now, so let's consider a plant that looks about the same all year, never has showy flowers because it's wind pollinated, but is a good xeriscape plant, attracts beneficial insects and thrives on salty soil in full sun. In good monsoon years, it bears lots of fluffy fruits with wings that help the seeds tumble on the wind to new places to germinate, in addition to traveling on animals or being swept away by summer floods.

Four-winged Saltbush, *Atriplex canescens*, is a grey-green shrub that loses its leaves only under the driest conditions. Usually dioe-



Photo: Ginny Bealer

cious, its range of habitats includes desert scrub at 2,500' and pinyon-juniper woodland at 8,000' elevations in California north to Washington, east to North Dakota and south into Mexico. White scales on the narrow, typically one-inch long leaves help it conserve water. Accumulating salt in structures in its leaves helps it absorb water from salty soils, enabling it to thrive even in alkali sinks. Susceptible to root rot, four-winged saltbush does poorly when water is plentiful. This species can live over 100 years, as documented by photo records.

Saltbush is consumed by grasshoppers, geometrid moth caterpillars, rabbits, deer, and pronghorn. It also attracts brown and green lacewings which lay their eggs on it, where their larvae will find aphids, mites, and other insects' eggs to eat. Ladybugs also favor the saltbush for egg laying, and the plant is targeted by hoverflies as a source of aphids and mealybugs. Quail, doves, towhees, and finches are said to eat saltbush seeds. Sheep

and cattle browse on saltbush, and the seeds are scarified by passage through cattle, promoting germination.

Saltbush is now classified in the *Amaranthaceae* family, along with spinach, Swiss chard, and beets. Southwestern Native American tribes ground the leaves and seeds of *A. canescens* to make a meal rich in niacin. Navajos boiled the leaves and twigs with alum to make a yellow dye. Zunis used crushed male flowers mixed with water as soap and a balm for ant stings.



Photo: Ginny Bealer

Described as "the most widely distributed native woody species in North America," four-winged saltbush is being used in dry rangelands around the world as forage for domestic animals. Once established, saltbush's extensive root system serves to control erosion. Because of its tolerance for high salinity, low rainfall, and a wide range of temperatures, the species has become naturalized in deserts worldwide. Seedlings have a high germination rate in disturbed deserts. Since this species is slow to ignite in fires, fires may select for its dominance where they occur frequently.

(Continued on page 6)

Issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Jeffrey C. Silvertooth, Associate Dean & Director, Economic Development & Extension, College of Agriculture and Life Sciences, The University of Arizona. 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.

Cochise County Master Gardeners Association in Conjunction with
The University of Arizona Cooperative Extension presents.....

The 24th Annual High Desert
Gardening & Landscaping
Conference

March 9 & 10, 2017
Sierra Vista, Arizona

www.cals.arizona.edu/cochise/mg/



High on the Desert



An educational experience for everyone with an interest in gardening. Contact U of A Cooperative Extension 1140 N. Colombo, Sierra Vista, AZ (520) 458-8278, Ext. 2141. <http://www.cals.arizona.edu/cochise/mg/high-desert-conference> Registration fee \$75.00 for one day or \$110.00 for two days and includes a hot breakfast and lunch each day plus all Workshops and Breakout Sessions. Conference held on Cochise College Sierra Vista Campus. Registration opens in January 2017 and ends March 2, 2017.

(Continued from page 5)

Two species of saltbush are recommended for gardens in our climate zone in *Sunset Western Garden Book*. *Atriplex confertifolia* has shorter, broader leaves than *A. canescens* and its fruits have no or two wings. Its branches are spiny. Where the two species are found together, hybridization can occur.

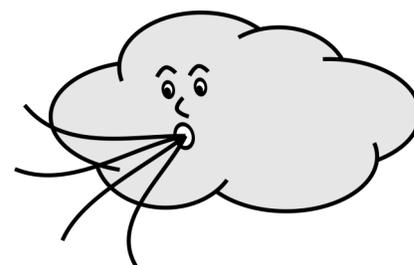
Saltbush seedlings don't transplant well, so you're not likely to find them in a plant nursery, but the seeds germinate easily if collected from late summer to early winter and are planted within 6 years. Best rates of success result from removing the fruit's wings and breaking open the shell containing the seeds to separate them. They should be covered, but by no more than an inch of soil. We had a bumper crop of seeds last sum-



Photo: Ginny Bealer

mer, and many are still on the female plants, so if you want to add this native species to your garden or yard, it's not too late to try.

Virginia Bealer, Guest Author
Herbarium volunteer



March Reminders

- ◆ Prune roses
- ◆ Start seeds indoors
- ◆ Check cactus for fungus
- ◆ Plant cool-season veggies
- ◆ Reconsider your water usage
- ◆ (Call Water Wise for a free audit—520-458-8278, Ext 2139)
- ◆ Remove and replace winter mulches