



GOOD WATER MASTER NATURALIST
WILLIAMSON COUNTY

RIPPLES

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UPCOMING EVENTS

Bats every Friday evening
NPSOT 7/11 (no AT)

Check the website for the many opportunities coming up---way too numerous to even think about posting here!

Congratulations to the five new class members who by class end completed certification.

- MaryJo Kleinert**
- Glenn Kleinert**
- Barbara Stewart**
- Lori Morino**
- PattyOzga**

NOW YOU KNOW

A diverse landscape has fewer pests.

¾ of the world's flowers need a pollinator.

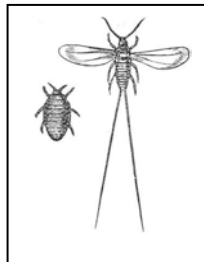
Ravens walk on the ground, crows hop.

BUG JUICE from the *Dactylopius coccus*

Gail McAdoo

The tropical and subtropical *cochineal* is a sessile parasite that feeds on the moisture and nutrients of prickly pear cacti. The wingless female has a soft oval-shaped, segmented, purplish-red, flat body. She produces carminic acid that deters predators and other insects. This chemical can be extracted from the body and eggs then mixed with aluminum or calcium salts to make carmine dye. In the 1550s, it was as big a hit in Europe as gold or silver. The dye, used as a food coloring in many foods and cosmetics, may be listed as *cochineal extract*, *carmine*, *crimson lake*, *natural red 4*, *C.I. 7547*, *E120*, or even as *natural coloring*.

To produce dye cochineals are collected when approximately 90 days old.



Harvesting the insects is labor-intensive as they must be brushed, or picked from the cacti and placed into bags. Produced almost exclusively in Oaxaca by indigenous producers, it became Mexico's second most valued export after silver.

The insects are killed by immersion in hot water, then dried or exposed to sunlight, steam, or oven heat. Each method produces a different color that results in the varied appearance of commercial cochineal. The insects must be dried to about 30 percent of their original body weight before they can be stored without decaying. It takes 70,000 insects to make one pound of cochineal dye, valued at \$25-40/pound. The dye may include the dried crushed bodies of the insect (cochineal extract), or the bodies may be filtered out (carmine). Purity of color is insured by the absence of iron.

The dye is used in meat, sausage, processed poultry products, red marinades, fruit preparations, jams, gelatin desserts, juice, beverages, non-carbonated soft-drinks, baked goods, confections, icings, toppings, dairy products and alcohol drinks. It seems to be everywhere! In the United States meat products colored must be labeled as such. Makes me want to read the labels!

Cochineal dye was used by the Aztec and Maya peoples of Central and North America. Eleven cities conquered by Montezuma in the 15th century paid a yearly tribute of 2000 decorated cotton blankets plus 40 bags of cochineal dye. During the colonial period the production of cochineal (*grana fina*) grew rapidly. The Spanish kept the source of the color secret until Antoni van Leeuwenhoek used a microscope to analyze the scale insect in 1704.

Continued on back page

With broad wings and tails, purple martins are the largest of the eight species of swallows in North America. Adult males are a beautiful glossy, blue-black color; females have gray foreheads, necks and underparts. Young males resemble females, getting adult plumage the second winter.

The primary diet is insects, but they also eat berries and seeds. During drought they may eat mealy worms, dead crickets and scrambled eggs on elevated platforms. Being day feeders they eat only a few mosquitoes.

Martins originally nested in cavities and trees, tree snags, saguaro and other large cactus, however, Native Americans used hollow gourds to attract purple martins making them the longest actively managed North American songbird. Early European settlers continued to provide housing. Martins now are dependent on humans to provided nesting cavities in colonies. Colonies provide safety and also genetic advantages as males often father offspring in multiple nests in the colony. Most western birds still use natural cavities and reject colony nesting.

The first martins to arrive each spring are older birds returning to previous nests. Younger birds looking for new nesting sites return several weeks later. To attract martins, use either wood or metal houses or hang plastic or natural gourds. Martins prefer white houses because white reflects heat that can be deadly to the chick, and dark entrance holes are easier to see. Cavities must be at least 6 inches wide, deep, and high, but larger cavities 7" wide, 6" high, and 12" deep are preferred. Gourds need to be at least 6" in diameter but again larger is preferred.



(stock photo)

Martin homes need to be accessible individually for good management. Commercial gourds usually have screw-off access doors; natural gourds can use jar

tops. It is important to monitor the nests to prevent starlings and sparrows from taking over. It does not disturb martin nesting to lower the cavities to monitor the eggs and chicks and to discourage other species from using the nests. Circular entrance holes should be 2 1/8 inches in diameter.

Martin housing should be 10 to 20 feet tall and preferably 40 feet from trees or buildings taller than the martin house. Interestingly, martin houses more than 100 feet from human housing are less likely to be occupied. Crushed egg or oyster shells provide supplemental calcium increasing the egg numbers. Nesting materials include wheat, straw, twigs, coarse grasses, pine needles and even mud. For the determined human, playing a recording of the male's "dawn song" beginning around 4PM may encourage young martins to choose your nesting site.

IN MY NEIGHBORHOOD

One Mother's Day eve my grandchildren snuck over to my house and drew me all kinds of pictures and love messages in my driveway. What a surprise the next morning when I went out for my paper. Unfortunately the chalk décor eventually washed away.

Walking in my neighborhood recently I was fascinated with another octogenarian's driveway and native landscaped yard. She was out working, so we got to talking. I was not surprised to learn she is an artist. As I exclaimed about her lovely driveway she said, "I was just trying to disguise the cracks in the concrete."

I regret I had to piece the flowers, but the alternative would have been to carry a stepladder to her yard and climb onto it, and I don't do that anymore! I'm confident you can figure it out.



FROM MY GARDEN

SUNFLOWER----Another Useful Indian Plant

Winnie Bowen

Genus: Helianthus greek helios = sun and anthos =flower

The sunflower is one of the few crop species that originated in North America. Western Native American tribes domesticated the crop, possibly in 1000 BC. The plant is one of the most useful to Native Americans as it was a source of food, oil, medicine, dye and fibers.



The seeds provided food for both people and animals. Sunflower seeds are a good source of nutrition and are high in vitamins D, B, niacin, and protein; Sunflower seeds have more iron than any other food except liver and egg yolk. Pounded or boiled seeds produced oil. Sunflower oil contains vitamin A, D calcium and iron. Grounded seeds made flour. Whole or partly dehulled sunflower meal is highest in fiber. The color of the meal ranges from grey to black, depending on the extraction process and degree of dehulling. A coffee was made from roasted seeds.

Some think young heads taste like artichokes when boiled and served with butter. Others think not so much!

Tea made from leaves treated fever and skin damage from screw worms.

Tea made from the roots treated rheumatism and snake bite.

Flower heads made yellow, green and orange dyes. Hopi Indians made a blue dye from the seeds which they used to paint their bodies for ceremonial purposes. The oil was used as a hair dressing. Fiber from the stems provided paper.

The Pima and Maricopa tribes chewed the pith as gum and candy. A decoction was made from the sunflower head, which the Dakota and Pawnee Indians would drink for respiratory ailments, bronchitis, lung infections and pleurisy.

In Native American symbolism, the sunflower is used in late summer festivals as a symbol of bounty, harvest and provision. It is a symbol of the sun, and thus likened to the life-giving force of the Great Spirit. The color of the sunflower was noted for vitality and symbolic of energy as well as fertility.

BEYOND ANCIENT TIME

The stems contain phosphorous and potassium; they can be composted.

Sunflower oil is used in salad dressing, margarine and shortening as well as for cooking.

The oil is used in industry for making paints, cosmetics, and returned to soil as fertilizer.

Chinese symbolism: the sunflower, and its meaning, deals with long life, happiness, good luck and is considered very auspicious. Its yellow color signifies vitality and intelligence.

In the Soviet Union the hulls are used for manufacturing ethyl alcohol, in lining for plywood and growing yeast. The dried stems have also been used for fuel.

The plant's ability to absorb water from soil has been used to reclaim marshy land in the Netherlands.

Sunflowers absorb toxic metals such as arsenic, zinc, lead, uranium and strontium-90. The long roots reach deep into polluted water and extract toxic metals. After the Chernobyl nuclear power plant accident in 1986, floating rafts of sunflowers with their roots dragging were placed in the radioactive water and were able to extract 95% of the radioactivity caused by the accident.

From my memory bank: Seeing acres and acres of cultivated sunflowers in bloom in Slovakia was a cheerful beautiful site!

WHO'S WHO-----NEWLY CERTIFIED MASTER NATURALISTS

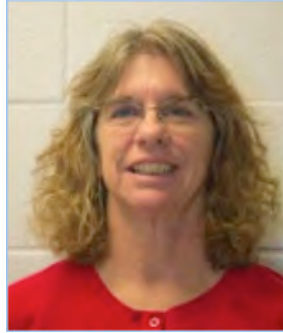
LORI MORINO



Lori moved to Texas in 1989 and retired this year as Project Manager at Applied Materials.

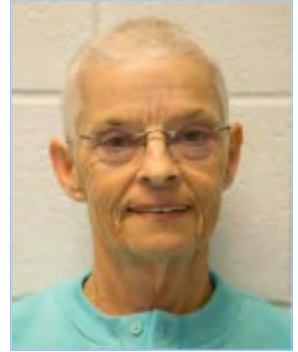
This enthusiastic Master Naturalist candidate certified by the end of the class has special interests in native plants, butterflies, and prairie restoration.

PATTY OZGA



Patty is an avid quilter and joined the MN class because of a fellow quilter. She retired in 2005 after 29 years teaching science. Married to a Dallas policeman, they are raising two children. Her special interests are youth, science and wildflowers. Her hobbies include baking and reading.

BARBARA STEWART



Barbara retired in 1995 after a 20-year Army career. She retired again 3-years ago from TxDot where she was a construction inspector. This New Englander first came to Texas in '88 when she was stationed at Ft. Hood. She has a special interest in birds, and traveling in her motor home.

This trio of ladies have been busy the last few weeks, not only did they faithfully attend all classes but managed to do 40 hours of volunteer work and attend at least 8 hours of additional training.
CONGRATULATIONS!

HEARD FROM

A biologist that the presence of salamanders indicates clean water.

An ornithologist that bird nests are clean because when chicks deposit a fecal capsule mom removes it from the nest.

What is a cave kiss? A naturalist told me it is when one is hit with a drop of dripping water.

An entomologist that termites consume and eat wood, but ants can live in wood but do not eat it.

A meteorologist that oceans cool with la Niña; oceans warm with el Niño, producing wetter weather.

An environmentalist that pollinators support biological diversity.