

Gaillardia

Oklahoma Native Plant Society

The purpose of the Oklahoma Native Plant Society is to encourage the study, protection, propagation, appreciation and use of Oklahoma's native plants.

Volume 33, Number 2 Summer 2018

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Upcoming Events/Activities

(check the ONPS website for more details)

Fabulous Wildflower Fridays, at 5:30 the third Friday of each month at Panera Bread at 5601 E 41st Street, Tulsa

ONPS Board Meeting, June 16th, Helmerich Building at the TGC

ONPS website: www.oknativeplants.org
oknativeplants@yahoo.com
Gaillardia@mail: thegaillardia@gmail.com

COPY AND ART DEADLINE FOR NEXT ISSUE IS AUGUST 5th





Jona Tucker describes the hydrology of the bouncy bog at Oka 'Yanahli Preserve in southeastern Oklahoma Photos: Lisa Rudy Hoke

WELCOME TO THESE NEW MEMBERS

Jack & Cheryl Butler
James & Casey Freeman
Yakov & Hava Benyosef
Lisa Euchner
Melanie Mayer
Phil Morris
Leanne Newell

Bennington
OKC
Claremore
Decatur, TX
Muskogee
Edmond
Midwest City

Leah Dudley Ada Cliff McDonald Poteau Ashley Moyer Yukon

Save the Date

Our ONPS trip to the Lady Bird Johnson Wildflower Center and Selah in Austin is being planned for October 25-28 of this year.

If you've never visited you will not be disappointed!

Gaillardia

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President Bruce Smith
Vice-president Bill Farris
Secretary Connie Murray
Treasurer Mary Korthase
Historian Fran Stallings

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Patrick Bell Central
Elaine Lynch Cross-Timbers

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Adam Ryburn

Website

President's Paragraph

Dear ONPS members:

I hope you and your families are doing well. I am finishing up my 39th spring semester at McLoud High School. That is a long time at one place. I would not have stayed unless it was a great job with great kids, a wonderful administration and the best support staff in the state. Over the years I have learned to be more patient, kinder, and forgiving. The students respond well to all three. I think that is the secret to longevity. I love my students and McLoud High School.

Other than great people to work with, we have a campus that allows us to study the outdoors. We can walk five minutes from the classroom and be in a oak-hickory forest, we are five minutes to a pond, one minute to a large garden, two minutes to the greenhouse and sitting in the front of the building a horsetail garden. Needless to say, I have a great job. I look forward to every day, especially when it involves the outdoor classroom.

When you have all these environments, every day is a field trip at MHS.

I am blessed beyond measure and very thankful. Have a great summer.

God Bless

Bruce A. Smith

If you are interested, we are organizing a group to create updated flora for Sequoyah State Park. Please email me at cmwootonil@gmail.com. Let me know ASAP if you want to participate.

P.S. Thanks Joe Roberts for being a true leader, we appreciate you.

Photo Contest

Photo winners were announced at the recent Indoor Outing and some of the first place photos were in the Spring issue of the Gaillardia. The remaining first place winners are in this issue of the Gaillardia.

At the recent ONPS Board meeting the decision was made to ask that all photos be submitted via Facebook. You will have the entire growing season to capture all of these that you can and upload them to the appropriate albums. Winning photos will be chosen in December and the photographers will receive an annual membership to the Oklahoma Native Plant Society.

Categories for the coming year will be Paintbrushes (*Castilleja* spp.) and Lichens.

Botanist's Corner

"No-ose about Pollen Grains

Ramona Thompson

A physics professor periodically bursts into my office with the exclamation. "I didn't sleep last night! What is in flower now? I stop and try to figure out which plant has recently tossed millions of pollen grains into the wind attempting to pollinate and fertilize another individual of the same species and succeeding in aggravating mu colleague's sinuses. I consider trying to excite my friend with the glorious details regarding pollen grains but decide she is not in a receptive mood

A pollen grain is really an elegant package for the sperm of angiosperms (flowering plants) and gymnosperms (conebearing plants). The pollen wall (outside the grain) is made of sporopollinen, a very tough substance. The pollen wall is so resistant to degradation it can go through a bee's gut intact or can easily be fossilized.

Sculpturing of pollen walls is determined by variations in the layers that make up the wall, so a grass pollen grain is a relatively smooth sphere while the ragweed pollen grain is a spiny ball. All pollen walls have some sort of relief which creates areas to store proteins called pollenkit. It is via the pollenkit that a plant stigma can "recognize" the pollen grains of its species; it is also the pollenkit that irritates my friend's nose and those of a hundred other kindred souls.

Another feature of the pollen wall is the pores (thin spots in the sporopollenen). The number of pores varies from species to species.: grasses have one; tomatoes three; and ragweed, lots. It is through the pores that the sperm leave the pollen grain.

Another feature (living contents) of an angiosperm pollen grain first divides into two cells; these cell are separated by a thin membrane. The two cells are called the vegetative cell (also called the tube nucleus) and the generative cell. The generative cell is much smaller than a vegetative cell. Two sper are "generated" by a division of the generative cell. The sperm remain connected at one end and each is little more than the genetic material that it is going to pass on to the next generation.

A pollen grain is denoted a 2-nucleate grain if it is released from the flower before the sperm are formed., a 3-nucleate grain if the pollen is shed after sperm develop.

When the cytoplasm of the pollen grain bursts out through the pore in the pollen wall, this event id designated pollen germination. But the contents of the pollen grain do not just spill out into the flower's stigma; instead the vegetative cell stimulates the development of a pollen tube (an exetension of the cytoplasm bound by a membrane), The vegetative cell and the sperm (or generative cell) pour into the pollen tube and are carried downward through the style to fertilize the egg.

Gymnosperm pollen is similar to angiosperm pollen as it possesses vegetative and generative cells. Gymnosperm differ

as they have a few extra cells, and the sperm do not form until shortly before fertilization. A pollen tube also forms in gymnosperm but ut is much slower growing; inpine it may take a year for the pollen tube to reach the structure housing in the egg.

Land plants other than angiosperms and gymnosperms have no container for their sperm. The sperm of these plants must swim to the egg via water from rain, dew, or heavy fog. If the environmentdries up before the sperm get to te egg, tough luck, because the sperm have no protection.

So the more advanced plants—the angiosperms and gymnosperm—have developed high tech packaging for their sperm. This means these plants can toss these sperm bearing packages to the wind or entice some insect, bird or mammal with rewards fo food (pollen itself or nectar) to shuttle the pollen from one flower to another. All the elaborate types of cones and exquisite forms of flowers are must mechanisms to ensure that the plant's pollen end up in the correct place.

So, the next time your nose is runny and eyes are watery, do not just blaspheme the junipers and grasses. Pause as reach for a Kleenex and appreciate the source of your misery — the pollen grain.

Editor's note: this article originally appeared in the summer 1992 Gaillardia, volume 7, number 2.

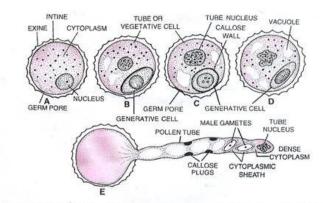


Fig. 2.9. Germination of pollen grain and formation of male gametophyte in an angiosperm

Over the next several issues **Fran Stallings**, ONPS Historian, will be highlighting individuals who have contributed to and been instrumental in the founding and success of ONPS.

Russell Studebaker

How did a farm boy from Pampa, Texas become a nationally published horticultural author and creator of elegant landscapes in Tulsa's Parks? Russell Studebaker grew up on the tree-less windswept plains of the Texas panhandle. Frequent visits to the oak woods of his grandparents' farm near Minco OK were a paradise in contrast.

After graduating in 1962 from Texas Tech University with a B.S. in horticulture and park administration and a minor in botany, he was selected as a Peace Corps Volunteer for two years in El Salvador, the first PC volunteers in Central America. In a small village in the mountains, Russell worked with two Salvadorian Ag Extension Agents advising farmers in tropical agriculture, vegetable gardening, 4-H clubs, poultry projects, and planting tropical fruit orchards. His old Royal manual typewriter wrote many Aerogram letters to his family describing projects, experiences, and Salvadorian life.

Returning to the US in 1964, he became the Horticulturist for the Tulsa Parks and Recreation Department. He designed and supervised floral plantings at Woodward, Tracy, Swan Lake, Gilcrease Museum, and the Creek Garden at Creek Council Oak Park.

As Senior Horticulturist 1964-1996, he worked on committees with Oklahoma botanists like Dr. Harriet Barclay. This committee saved Redbud Valley from limestone mining. Anne Long invited him to serve with her committee, "Operation Wildflowers," planting wildflower seeds along Oklahoma highways. This evolved into "Color Oklahoma." He also worked with Dr. Paul Buck and Dr. Ron Tryl and was one of the founders of the Oklahoma Native Plant Society. Over the years, Russell has presented many talks in ONPS workshops.

Judy Randle invited Russell to write a regular gardening column in the *Tulsa World*. "In those days, sources for native plants were very limited," he says, but now "We are in a golden age of availability of all kinds of plants, especially natives. More knowledge, nursery sources, tissue culture, propagation, and butterfly gardening have all expanded the use of natives."

In addition to writing 33 years of *Tulsa World* gardening columns, Russell writes monthly columns for the *Oklahoma Gardener* magazine, award winning articles for national gardening magazines, and co-authored books for Jackson & Perkins on roses and perennials.

In semi-retirement, this ONPS founder surrounds himself with plants. Citrus trees bloom on his enclosed porch, tropicals thrive in his greenhouse, and in crowded containers along his driveway he's evaluating plants' merits and ability to survive in Oklahoma. His Minco grandparents would be amazed.



Special Note: If you have been enjoying your Color Oklahoma tag since the early years....it might be a little faded. It can be replaced by a newly minted tag with your same original number. Just fill out an application (same cost \$35 plus \$3 mailing) and enclose a request for your old number. It takes about two months for delivery. It is best to do this a couple months before your tax sticker is due to expire.



WOW

Lynn Michael

The third annual Wonders of Wildflowers (WOW) weekend was April 27-28, 2018 at the wonderful Nature Conservancy properties Pontotoc Ridge and Oka'Yanahli.

These are both just southeast of Ada, Oklahoma. Participants were not disappointed, as we were met at the gate at Pontotoc with fields of fine-leaved four-nerved daisies and white bladder pods. The dazzling site of the shooting stars was next as we made our trek through the preserve. The weather could not have been better, which was a relief after the cold and rain of this April.

Saturday we were again on the trail, this time at the newly acquired land along the Blue River known as Oka'Yanahli. Wonders were everywhere! The Blue River is truly gorgeous. The rare Seaside Alder, River cane, and Eve's Necklace tree are found there. Jona Tucker, Preserve Director, gave us a brief history of the extinct community that once was there. Across the highway we visited the "bouncy bog" which isn't really a bog, but a fen. Animals have been lost there, but no visitors were lost on this trip - just almost!

We saw hundreds of different native plants and some of nature's curiosities like a **fasciated** cactus and a mortar rock that looked like an owl. The final treat to many was the sighting of the native white honeysuckle bush, this was just one of many "firsts" that were found on this glorious weekend.

Fasciation (from the Latin root meaning "band" or "stripe"), also known as **cresting**, is a relatively rare condition of abnormal growth in vascular plants in which the apical meristem (growing tip), which normally is concentrated around a single point and produces approximately cylindrical tissue, instead becomes elongated perpendicularly to the direction of growth, thus producing flattened, ribbon-like, crested or elaborately contorted tissue. The phenomenon may occur in the stem, root, fruit or flower head. Any occurrence of fasciation has several possible causes, including hormonal, genetic, bacterial, fungal, viral and environmental issues.

Connections

Marilyn Stewart

Optunia macrorhiza Plains Prickly Pear

Of the nine species of Optunia native to Oklahoma the species macrorhiza is the most widespread and recognizable. There are three reasons this plant is noticed; the bright lemon yellow blooms, the deep red fruits or stumbling into one with bare feet.

Prickly Pear thrives in the dry, sandy and rocky soils of prairies and roadsides, the early summer blooms are showy and often covered with native bees and pollinators. This evergreen cactus is clump forming and usually a foot tall and up to 3 feet wide. Like other cacti the spines are highly modified leaves and the fleshy pads retain water. Fruit ripens in late summer.

Indigenous peoples have given them many names: "prickly fruit", "flat cactus", "large cactus", "many sharp points", "bigroot prickly pear" and "twist-spine prickly pear". There is a long history of this plant being used as a food source. The fruits have been consumed raw and dried, preparing the fruit was labor intensive. George Bird Grinnell, in his book 1962 book The Cheyenne Indians described the process:

The fruit was collected in parfleche sacks and was then put on the ground in little piles and stirred and swept over by small brushes, made of twigs of sagebrush, until most of the thorns had been removed. The women, having first made little finger tips of deerskin to protect the ends of the fingers, then went over the piles and removed the last thorns from the fruit. When this had been done the fruit was split, the seeds removed and thrown away and the flesh dried in the sun. This was used to stew with meat and game, and made a gelatinous thickening to the soup. This fruit was still gathered as above as late as 1915.

The pads are also edible and the flavor has been described as being similar to raw okra, early settlers reported boiling the pads, removing the spines and then frying the soft center. The stems have also been used as an emergency food and research shows the flowers were also used by ancient peoples as a food source.

There are several sources for Prickly Pear soda, perhaps we should have this as a drink option at our next annual meeting?



Glandualria bipinnatifida





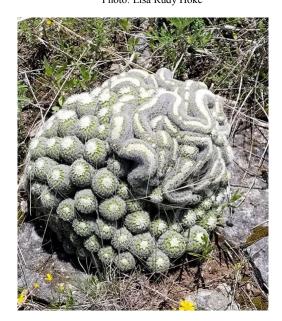
Sophora affinis Eve's Necklace Photo: Lynn Michael



Optunia macrorhiza Prickly Pear Cactus Photo:Marilyn Stewart



Hymenoxys linearifolia Narrowleaf Four-nerve Daisy Photo: Lisa Rudy Hoke



(fasciated) Echinocereus reichenbachii Lace Cactus Photo: Lynn Michael



Linum rigidum Berlandier's Flax

Photo: Lynn Michael



Nemastylis geminiflora Celestial Lily

Photo: Lisa Rudy Hoke



Oenothera triloba Stemless Evening Primrose

Photo: Lynn Michael



Dodecatheon meadia Shooting Star

Bouteloua hirsuta Hairy Grama

Photo: Lisa Rudy Hoke



Podophyllum peltatum May Apple

Photo: Lisa Rudy Hoke



Physaria ovalifolia Oval-leaf Bladderpod

Photo: Lynn Michael

Poking Around

Pat Folley

This was originally published in the 2000 summer edition of the Gaillardia, Pat's words are ones we should all heed.

Of course, the art of poking around can be practiced anywhere there are sufficient varieties of things, like libraries, but the best way to is to poke around a natural place. A vegetable garden, for example is way too organized: everything is strictly organized to make food grow where before there were only weeds. Still, it is possible to find interesting things there: insects like butterflies and grasshoppers, toads (if you haven't been too liberal with the bug spray), perhaps a little brown snake. Better places are woods and the edges of creeks and ponds, where human values haven't eliminated all the really fun stuff,

It takes discipline to poke around. The fist lesson I had to learn when I started poking around with a trained naturalist was that I mustn't pick up trash. Soon, I was seeing nothing but trash. Since I learned to leave it alone, I seldom see it at all. Next, it is essential to abandon all intentional agendas, If I look for birds, I won't see lizards. If I look for lizards, I might miss the blackberry flowers. The secret is in **not** looking for anything specific. Go out thinking "if I am lucky and observant enough, one of nature's secrets will be revealed to me". Then follow your curiosity where it leads you.

Interruptions are encouraged: begin, perhaps, by noticing a bird call. When you look for the bird, you may see the tree, or the grapevine on it, is in bloom. Or you may notice an unusual bug, or that there is about to be a beautiful sunset. For practice, shut your eyes and try to figure out the source of all the smells. You wonder why the butterflies are clustered on a bare mudbank. You hope the mosquitoes won't find you for a while. Wondering and hoping give you additional scenes of awareness to explore.

Poking around is less structured than studying, but requires more imagination than just strolling through the landscape. Have you noticed that you see more detail when you walk than when you drive through? There is another dimension of detail that emerges when you poke, allowing the local attractions to lead you constantly astray. It is always different, even in the same place. For example, I have a life-long habit of listing all the plants that are blooming on the first day of each month. In between, I am free to just enjoy the flowers. Guess which approach nets the most interesting results?

What do you get for a day of poking around? Seeds in your socks. Rocks in your pockets. Memories of tantalizing glimpses of little brown birds as they forage in the treetops. Butterflies in your soul.

Invasive Watch

Chad Cox
Onopordum acanthium

Scotch Cottonthistle

Oklahoma has only 3 invasive terrestrial plants that are banned, the so called 3 thistles, musk, Canada and Scotch. Musk thistle is on the OkIPC Dozen Dirty List and the other 2 are on the Watch List. Canada thistle will be covered later in this series of articles on the members on the Watch List.

Scotch cottonthistle, *Onopordum acanthium*, is the subject of this article. Cotton thistle was another common name for *O. acanthium*. The reason for the combination of cottonthistle was to distinguish it from true thistles, *Cirsium* spp. The Scotch part of the name comes from the plant being selected as the national emblem of Scotland (long story).

There were infestations of Scotch cottonthistle recorded in Roger Mills and Custer counties early in the 1990s. New infestations were recorded in 1999-2000 in Love, Harper, Texas and Woodward counties according to Ron Tyrl and Case Medlin. While most invasive plants in Oklahoma have spread here from the east, this is an invader from the west. Its native area is in Europe and western Asia but now it is widely naturalized elsewhere including in western states here and there are sprinkled sightings across the east. Considering that the first recorded sightings were in Utah in 1963, this has been a remarkable invasion.

Scotch cottonthistle, a biennial, has a ground rosette the first year but grows to 6-8 feet with many branches the next year. The stem is winged and the leaves are covered with cottony hairs on both sides that give the plant a uniform, dusty gray-green look and that alternate name of cotton thistle. The foot long oblong leaves are spiny, slightly lobed and toothed, not deeply emarginated as in other thistles and look-a-likes. These attributes of the leaves are diagnostic.

The plant blooms July to October. One to two inch purple flowers have involucre bracts that end in pale orange spines. The plant can produce up to 20,000 seeds that remain viable for several years.

Scotch cottonthistle has a wide tolerance for environments but is more often found in disturbed areas with adequate moisture. It can readily colonize these areas. It is rather resistant to herbicides and has no known biological control pests. Even the roots after cultivation can resprout. The preferred control is a six year recurring herbicidal treatment with dense revegetation to prevent new seedling sprouting.

The more recent reports of infestations in other counties suggest that this species needs more than just watching.



Onopordum accanthium

Photo: Invasive Species Plant
Council of British Columbia



Asclepias asperula Antelope Horns Milkweed

Photo: Lisa Rudy Hoke



Bloom of *Onopordum accanthium*Photo: Steve Dewey, Utah State University,
Bugwood.org

Cave with spring, Pontotoc Ridge

Photo: Lisa Rudy Hoke



Blue River Oka 'Yanahli Preserve, the Oklahoma Nature Conservancy

Photo: Lisa Rudy Hoke



Photo: Lisa Rudy Hoke

"The one who dies with the most field guides, wins."

Joe Roberts

For joining or renewing use this form

Fill out this form or supply the same information. Make checks payable to Oklahoma Native Plant Society and mail to: Oklahoma Native Plant Society, PO Box 14274, Tulsa, OK 74159.

Membership is for Jan. 1 – Dec. 31 of current year and dues include subscription to Gaillardia.

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Oklahoma Native Plant Society 2018 Annual Meeting

September 21 - 23, 2018 The Lodge at Sequoyah State Park Wagoner, Oklahoma

The 2018 Annual Meeting is being held at The Lodge at Sequoyah State Park. ONPS last utilized this location for an Annual Meeting in 2006. Since then the Lodge has been totally renovated and other park facilities upgraded or modernized. This includes hiking, biking, and horse trails. ONPS is having a **Silent Auction** so clean out your closets and find some treasures that you no longer want and no one in your family wants, or a service you would be willing to provide. Let Constance Murray know what you have to contribute.

- Schedule of Events -

Friday, September 21 - Location: The Lodge at Sequoyah State Park, Hospitality Suite 221

5:00 - 7:00 p.m.	Registration, and/or Dinner on your own till 9:00 Lodge Restau	rant		
7:00 p.m.	Silent Auction bidding begins and runs through Saturday dinne	Silent Auction bidding begins and runs through Saturday dinner		
7:00 - 8:30 p.m.	"Getting to Know Sequoyah State Park" in the Hickory Room			
8:00 - 11:00 p.m.	Bonfire Story Time, location TBA			
Saturday, September 7:30 - 9:00 a.m.	er 22 - Location: The Lodge at Sequoyah State Park Registration and Continental Snack Breakfast - Hospitality Sui	te 221		
7:00 - 9:00 a.m.	Breakfast on your own, Lodge Restaurant			
9:15 - 9:30 a.m.	Welcome, Announcements, Outlining Our Day			
9:30 a.m Noon	Field Scavenger Hunt in the Choctaw Use Area OR Morning V	Valks-2 trails		
Noon - 1:00	Lunch, picnic on the grounds - Location TBA			
1:00 p.m 5:00 p	 a) Field trip to Spring Creek - Rooney property (carpool or care b) Repeat morning activities, reversed c) "Long" Hike on Eagle Roost Trail (caravan to Paradise Covered 	,		
6:30 p.m.	Dinner at The Lodge at Sequoyah State Park, Cedar Room	Dinner at The Lodge at Sequoyah State Park, Cedar Room		
7:30 p.m.	ONPS Membership Annual Meeting, Cedar Room Displays, Silent Auction bidding ends, winners announced			
·	Breakfast on your own or Continental Snack Breakfast - Hospi Executive Board meeting. All are welcome Hickory Room Check out of Lodge stions contact Lynn Michael at 918-381-0219 or			

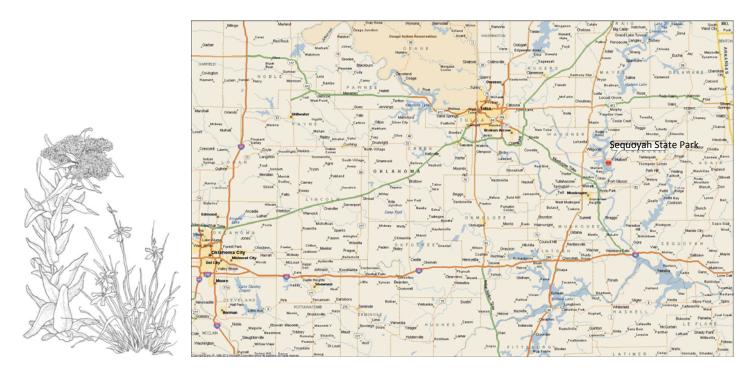
Make checks payable to: Oklahoma Native Plant Society. Confirmation of registration will be sent by email.

Sequoyah State Park

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Oklahoma Native Plant Society
September 21-23, 2018

Numerous Park Trails
Bonstre Story Time

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