# ONAPA NEWS

*Dedicated to promoting, protecting, and improving Ohio natural areas and preserves.*

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**INSIDE THIS ISSUE**



## Osage orange still provides some fall fun

***Story and photos by Guy Denny***

As a youngster growing up in a semi-rural area of Northwestern Ohio, my friends and I had no difficulty coming up with creative ways to entertain ourselves. Among those were our fascination with the fruit of the Osage orange tree (*Maclura pomifera*).

These impressive fruits are about the size of a large navel orange. The genus *Maclura* honors William Maclure (1763-1840), an American geologist of Scottish birth. The specific epithet *pomifera* means "pome or fruit -bearing". Osage orange, also known as hedge apple, is definitely a fruit-bearing tree. But it is not in any way related to orange or apple trees, in spite of the fact that the color and size of the fruit and the shiny green leaves do somewhat resemble those of a domestic orange tree. Rather, it is a member of the mulberry family, Moraceae.

**Fruit of the *Maclura pomifera***

We found it was great fun to play or "monkey around" with the distinctive yellow-green, spherical fruits. Lacking any particular intent, we had fun throwing these firm projectiles at targets like trees and boulders, and even at one another in fun. They could be rolled along the ground like bowling balls or simply hurled into the air as far as one could throw them. We called them "monkey balls," one of their many common vernacular names.

To this very day, I have never heard a logical explanation for this name. They certainly have no resemblance to the anatomy of a monkey except perhaps for a very vague resemblance to a monkey's brain. The wrinkled surface of the fruit is coated with distinctive convoluted irregular folds and ridges resembling the surface of a brain, but even that is somewhat of a stretch. As youngsters, we didn't fully understand or appreciate just how very special and fascinating these fruits and the trees from which they came actually were. So let's take a closer look.

The osage orange tree is native to the Red River bottomlands drainage area of relatively small parts of extreme southern Arkansas and Oklahoma, then along a narrow belt dipping well southward into Texas, an area that was formally inhabited by the indigenous Osage Nation.

This medium-sized tree has since become planted and naturalized as hedge rows, living fences and wind-breaks throughout the eastern half of the United States. It is widely distributed in Ohio, where it was introduced in the 1800's and now occurs in probably every county. Although Osage orange is typically a small tree, it may grow to a height of 40-50 feet or more. When heavily pruned, to hedge row size, its stiff, thorny (about ½ inch or more long), interlacing branches and often crooked trunk create an impenetrable living fence or hedge, once used for keeping one's own livestock in while keeping the free-ranging livestock of others out.

Once barbed wire was invented in 1874, Osage orange living fences fell out of favor except as windbreaks, especially in the prairie states. Yet, Osage orange wood is heavy, strong, hard and exceptionally durable in contact with soil. Consequently, Osage orange later became readily used as fence posts for livestock fences and stringing barbed wire.

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# 'Living fence' trees can be found throughout Ohio

Native American tribes prized the strong, elastic wood for making bows, and even today the very best bows are made of Osage orange. It was said in the early 1800's that a bow made of Osage orange could be acquired for the trade of a horse and a blanket, a very high price, indeed. Such bows were held in great esteem by many indigenous nations, including Comanche, Kiowa, Omaha, and Pawnee. The name for Osage orange by early French explorers was *bois d'arc* which appropriately means "bow-wood."

The yellow-orange wood, especially the outer covering of the roots, made a yellow dye that Native Americans used to color cloth and baskets. The bark of the tree is rich in tannin and once used in tanning leather. A yellow to khaki dye can be extracted by boiling the fresh wood chips. Fresh cut wood is yellow but fades to light brown over time. Additionally, the very heavy and exceptionally hard wood has an extremely high heating value, but cutting it for firewood can quickly dull a chainsaw. Reportedly, the wood of Osage orange is at least twice as hard and strong as white oak. Once dried, Osage orange fence posts are so hard, it is actually difficult to staple fencing to them but they seemingly last forever in the ground.

Although the wood of this tree is highly valued, the same can't be said for its fruit.

This is a dioecious species, meaning male and female flowers occur on separate trees. The flowers that appear in spring are inconspicuous. However, female trees produce numerous, very conspicuous bright yellow-green fruits that mature and fall to the ground in early autumn.

These fruits have an interesting appearance, but they are of little value. The fruit is not suitable for human consumption and has very little value to wildlife. Squirrels as well as some species of birds have been known on occasion to dig out the numerous small seeds within the fruit, but it certainly is not a preferred wildlife food source.

So why would this tree produce such numerous large seemingly worthless fruits? Osage orange is what scientists call an evolutionary anachronism which simply means this tree is or seems to be out of its proper time in history. Apparently Osage orange co-evolved with several now extinct Ice Age megafauna including mammoths, mastodons, and giant ground sloths that did eat the fruits and aided in seed dispersal. These

**Inside the fruit of the Osage orange**

**Thorns on interlacing branches made Osage orange desirable fencing before barbed wire.**

Pleistocene animals have long been extinct, but the Osage orange tree continues to provide fruit for them, in spite of their absence.

When the leaves or fruit of the Osage orange are crushed, a milky, sticky, latex-like juice is exuded. When the fruit is sliced in half, the inside - except for the oozing sticky juice - is dry and pulpy and imbedded with numerous small seeds. There is no strong scientific basis for this actually working, but one of the more common historic uses of the fruit was to cut it in half and use the somewhat fragrant halves as insect repellents. Perhaps the best that can be said is that a fly, cockroach or spider that just happens to attempt to traverse the sticky juice might become entangled, but that, too, seems to be a stretch.

Osage orange reproduces more by root-sprouting clone formation than by seed, but the seeds are viable. The best way to retrieve the seeds for planting is to collect the ripened fruits in fall, place in a bucket, and leave outdoors to rot. In late winter or early spring, retrieve the ¼ inch long, hard purplish seeds from within the gooey mass of decomposed fruit, rinse and sow outdoors. They should germinate as the weather warms. However, keep in mind that mature female trees produce numerous large monkey ball fruits that can be a nuisance picking up out of your yard every fall, which is why Osage orange is not recommended as a desirable yard tree. On the other hand, it can be fun just picking them up and throwing them around. Try it—monkeying around with monkey balls can be great fun, even for an adult.

# August annual meeting is a welcome change after a year of challenges

***By Terry Duncan***

ONAPA members returned to its annual in-person meeting in August after skipping last year's get-together due to the COVID pandemic.

The eighth annual event drew 51 attendees to the West Woods Nature Center in Geauga County. Guy Denny and Jennifer Windus covered ONAPA's accomplishments in 2020-21, detailing partnerships and covering how pandemic challenges were met. A short business meeting gave an overview of an organization that is fiscally sound with an individual membership of 1,234 from 26 states. ONAPA also has 43 member organizations that support its mission. Its largest expense, the Stewardship Assistants, enables the organization to directly improve the state's natural areas and preserves.

According to Windus, ONAPA was one of the few organizations that did not interrupt volunteer operations, continuing to run its stewardship program throughout the pandemic. With adjustments designed to keep project participants safe, ONAPA partnered with several organizations as well as the Division of Natural Areas and Preserves to continue work in the field. Over 50 volunteers fought invasive plants, restored habitat for threatened species, monitored preserves and surveyed rare plants.

**Above: Secretary Dick Moseley and Treasurer Eddie Dengg greet guests. Below, left: Guy Denny leads bog tour. Below, right: Ian Adams explains lichens.**

After lunch catered by the local Heinen's, keynote speaker Lisa Rainsong engaged her audience with an audio-visual feast of the singing insects, crickets and katydids. Four field trips rounded out the event: a tour of Triangle Lake Bog and Kent Bog with Denny and Windus, a walk through Mentor Marsh with David Kriska, a visit to Geauga Parks' Frohring Meadows with Linda Gilbert, and a study of lichens with Ian Adams just outside the nature center.

## *Members enjoy well-attended July field trip in the prairie*

**Jan Kennedy captured this photo of the first field trip in 2021, Denny's Prairie. Three more field trips planned in 2021 include a walk through Johnson Woods SNP September 25, a return to Denny's Prairie for seed collecting October 2, and a walk through Blackhand Gorge SNP October 9. Details can be found at ONAPA.org/EVENTS.**

*"To the mouse, snow means freedom from want and fear…. A rough-legged hawk comes sailing over the meadow ahead. Now he stops, hovers like a kingfisher, and then drops like a feathered bomb into the marsh. He does not rise again, so I am sure he has caught, and is now eating, some worried mouse-engineer who could not wait until night to inspect the damage to his well-ordered world. The rough-leg has no opinion why grass grows, but he is well aware that snow melts in order that hawks may again catch mice. He came down out of the Artic in hope of thaws, for to him a thaw means freedom from want and fear."*

***Aldo Leopold***
***January Thaw-A Sand County Almanac, 1949***

# Leisurely hunter in the sky visits from the Arctic

***Story and photographs by John Watts***

Leopold's description of a hunting Rough-legged Hawk is a near perfect description of many naturalists' first sighting of this winter visitor. Rough-legged hawks migrate south from their Artic breeding grounds first arriving in Ohio between October 20 and November 10 in most years. Over the next month or so they begin to establish their wintering ranges in reclaimed strip mines of eastern Ohio, large grasslands and hayfields, and wildlife areas such as Killdeer Plains Wildlife Area in Marion County. In the larger strip mines of eastern Ohio, daily numbers can range between 5 and 20 individuals. Other areas such as Killdeer Plains and along the western Lake Erie lakefront produce up to six birds per day. Observations near the Ross-Pickaway County lines during the Kingston Christmas Bird Counts of 1974-1975 and 1975-1976 produced an incredible 72 and 87 individuals respectively.

Rough-legged hawks are circumpolar breeders, meaning they breed in the Arctic of North America, Europe, and Asia. In the Arctic, they occupy open treeless tundra, building nests on cliffs and rock outcrops. In years when the abundance food in the Arctic is high, they may extend their range to the forested Taiga region and place nests in the tops of trees and tree stumps. The nests are large and bulky, consisting of a mass of small sticks and twigs 24-36 inches across and 20-24 inches deep. Clutch sizes average 3-5 young in many years except when prey abundance is low: then they may only produce two-to-three young.

Rough-legged hawks are part of the genus *Buteo,* from Latin meaning "a kind of hawk or falcon" and are closely related to our permanent resident Red-tailed Hawk, Red-shouldered Hawk and summer breeding Broad-winged Hawk. Their specific name, *lagopus,* is from Latin meaning "hare's foot or hare-footed," referencing the resemblance of their feathered legs and feet to a hare's furry foot. The feathered legs and feet are an adaption to maintain warmth in the high Arctic frigid temperatures.

Rough-legged hawks exhibit a general bulky appearance, which would usually be perceived as a fairly powerful bird. They are very strong fliers, and even display a great degree of agility when hunting. Their feet, however, are considered weak and are adapted for catching the smaller prey such as mice, lemmings, pocket gophers and larger insects found in their tundra habitat. They have been observed occasionally feeding on carrion.

On their Ohio wintering grounds, they mainly prey on meadow voles and other mice and occasionally rabbits. Hunting Rough-legged Hawks are wonderful to watch. When perched they are usually found on the highest limb, even tip-top of a tree or shrub, poised in a very erect posture. This is a good field characteristic as Red-tailed Hawks often perch lower in a tree or tree line. On the wing, their flight is slow, graceful and leisurely as they drift across an open field. They often quarter the ground back and forth like a Marsh Hawk hunting closer to the ground. They frequently hang in the air, hovering, by rapid vibration of the wings turning their head from side to side while looking down. From this hovering flight position, they drop towards the ground pursuing prey. Oftentimes, they will pull back up into the air, reposition and then partially close their wings, dropping straight to the ground to pounce on a mouse or vole.

Rough-legged Hawks have few predators. They are considered to be very tame hawks, which historically led to many being shot on their wintering grounds in the United States by gunners and sport shooters in the late 1800's. Their large size, leisurely flight and general unsuspicious character made them very easy targets even for the untrained shooter. Noted Ornithologist William Brewster described shooters systematically taking up to 20 birds per day during fall migrations for over 15 years along Connecticut migratory routes in the 1870's and 1880's. This practice was eventually discontinued in 1890 largely as a result of fewer birds as targets.

The plumage variations of the Rough-legged Hawk place it as possibly the most attractive and striking of our hawks. Basic field marks include a white rump when viewed from above, a large black band across the upper belly, black patches near the wrist in the white underwing surfaces and black-

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**Rough-legged hawks display different plumage: (left to right): buffy, melanistic phase, light morph.**

wing tips; plumages can range from very light to intermediate to a black "melanistic phase." In Ohio, black Rough-legged Hawks can represent between ten and twenty-five percent of Ohio's winter population. During flight years these melanistic birds may outnumber the lighter phased individuals. Plumages also differ between adults and juveniles and differ slightly for males and females. When in doubt of their identification, always fall back on the basic field marks.

Rough-legged Hawks are generally found in association with other grassland birds of prey. Areas that support them will also likely produce Northern Harriers (Marsh Hawks), American Kestrels and Red-tailed Hawks. Visiting these areas during late afternoon, dusk, and dawn may also reward you with Short-eared Owls. Many of these birds are best seen in or near your vehicle, so it provides a great activity for many of us on those colder, blue sky winter days. Checking reclaimed strip mines, grasslands, pastures and wildlife areas, such as Killdeer Plains in Marion County, should provide you the opportunity to observe this winter visitor from the far north.

## Two inducted into ODNR Hall of Fame

***By Dick Moseley***

President Guy Denny and Board Member Dr. Barbara Andreas were inducted into the Natural Resources Hall of Fame at an August ceremony held at the Department of Natural Resources in Columbus. They were honored for their life time devotion to service and dedication to the preservation of Ohio's natural areas and rare plant communities.

Guy is an outstanding interpretive naturalist, educator, writer and photographer who has influenced many to become interested in preserving Ohio's Natural Heritage during his career with ODNR. During his career, he served as Chief Naturalist for the Division of Parks and Recreation, as Assistant Chief of the Division of Natural Areas and Preserves, and as Chief of the Division until his retirement in 1999. Unlike many who retire from their work, Guy began a new endeavor by serving as Executive Director of the Ohio Biological Survey for two years and also served a term as Vice-President of the Ohio Environmental Council, as well as a member of the advisory board of the Trust for Public Lands in Ohio. He presently serves on the Board of the Governor's Residence and Heritage Garden and was involved with the founding of the Heritage Garden with Hope Taft when she was First Lady. He is presently Secretary-Treasurer of the Outdoor Writers of Ohio and still writes many natural history articles for various organizations, including ONAPA where he is serves as President. He has authored two books: *The Prairie Peninsula* and *Peatlands of Ohio & the Southern Great Lakes Region*, published by the Kent State University Press.

Dr. Barbara Andreas was honored for her work as an educator and botanist where she was a professor, now Emeritus Professor, for the Department of Biological Sciences at Kent State University. During her career, Barb served on the Ohio Natural Areas Council, an advisory board to the Division of Natural Areas and Preserves. She also served as ecologist and botanist for rare plant and plant community field investigations for the Division and worked for the U.S. Fish and Wildlife Service as a botanist. Barb authored many papers and books, including "The Flora of Cuyahoga Valley National Recreation Area" and "A Catalog Atlas of the Mosses of Ohio." She is involved in conducting botanical surveys and serves as an ONAPA Board Member.


**Guy Denny with Dr. Barbara Andreas**

The Columbus Audubon's Service in the Preserves group was honored with the Cardinal Award for service projects on State Nature Preserves. Several in this group are also members of ONAPA. Former ONAPA Board Member Katryn Renard accepted the Cardinal Award from Director Mary Mertz on behalf of the Audubon's Service group. Katryn was instrumental in leading and keeping the group going during the 39 years of conducting projects on the preserves.

# Season in the field will carry into next chapter

***By Lydia Radcliffe***

Four months ago, I rolled into the parking lot of Fowler Woods for my first day as an ONAPA stewardship assistant. That day, I met some volunteers who are now familiar faces, pulled butterweed, and properly initiated myself by falling into the mud.

Since then, I've removed a large variety of invasive plants from important natural areas, had the chance to see and count some of Ohio's rarest plants, explored many state nature preserves, and met some really amazing people along the way. I can't think of a better way to gain valuable field experience immediately out of college. My season as an ONAPA stewardship assistant exceeded my expectations because of the experiences it offered.

The majority of the work I've done as an ONAPA stewardship assistant has been centered around ecosystem management of Ohio's valuable natural areas, which generally involves the removal of invasive plant species threatening the balance of native flora and fauna in the area.

*Photo by Jennifer Windus*

**Lydia (right) works to remove invasive woody species with DNAP volunteer Doug at Gallagher Fen.**

Before working with ONAPA, I had helped with a fair amount of invasive removal projects, but the amount of effort ONAPA exerts in this area impressed on me more than ever before why the strategic and thorough removal of invasive plants is so necessary for supporting native communities and protecting rare species.

The importance of continued ecosystem management becomes clearer, for example, when you see the difference between a bog meadow full of pitcher plants, cranberries, and orchids and one thick with poison sumac and buckthorn, evident at Cranberry Bog.

Working with ONAPA has helped me understand what high quality natural areas look like and their greatest threats. Teaming up with partners to help protect this natural heritage from invasive species or the effects of natural succession has been a gratifying and engaging experience.

In addition to protecting native plant populations through the removal of invasive species, I have also had the privilege of helping monitor populations of rare Ohio plants. Some of the species ONAPA has helped to count this year include Lakeside daisy, prairie fringed orchid, prairie valerian, and compass plant. In addition to the gift of getting to see these plants in their native habitats, these monitoring experiences gave me the chance to learn field sampling techniques. It's been rewarding to learn about many of Ohio's rare plants and to participate in their conservation.

Occasionally, I've also enjoyed a stewardship day that takes a broader look at the state of a natural area. Preserve monitoring days usually involve hiking around a preserve or two, observing the overall condition of the preserve and taking notes about anything that may need attention. I've appreciated these days because they've allowed me to explore some preserves I may not have otherwise taken the time to see. It gave me practice assessing the overall condition of natural areas.

All throughout these valuable field experiences, I've gotten the chance to meet incredible people who are passionately engaged in their work. I am impressed by the time and energy ONAPA board members and volunteers dedicate, some driving hours to show up for a physically demanding day of pulling garlic mustard or cutting glossy buckthorn. Because they care about the preservation of Ohio's natural areas, they are excited to participate in and learn more about conservation work.

It's been a gift to get to know these people, working beside them, hearing their stories, making memories, and learning from them. In addition, I appreciate the way ONAPA thrives on partnering with other organizations. I've enjoyed getting to work alongside people doing conservation work in other organizations and listening to the experiences of others who are further down the road than me in their environmental careers.

Finally, I'm so very grateful for this year's team of stewardship assistants and our leader, Jennifer Windus. Maddie, Makaila, Rachael, and Jennifer have been a gracious and good-humored crew through the fun days as well as the long and difficult ones. I have learned so much from their knowledge, experience, and character.

I don't know what comes next for me when this season with ONAPA is over, but I am so very grateful for what it has been thus far. I feel I've been in the thick of some of the most important work that is being done in the conservation of Ohio's natural treasures, learning from people who are not only knowledgeable and experienced, but who are passionately engaged in what they do, who understand why it matters, and who want to pass it on to the next generation.

I hope I can carry what I've learned and experienced during this time with ONAPA into the rest of my life and my career in a way that benefits others and the natural world we steward.

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**The August Kent Bog crew was one of the larger turnouts for stewardship this summer.**

# Stewardship continues to make an positive impact

***Story and photos by Jennifer Windus***

ONAPA stayed busy with its stewardship efforts during June-September, despite the heat, humidity and rain. With four stewardship assistants and plenty of good volunteers, we added new partners, including the Greater Cleveland Audubon Society and the Cleveland Museum of Natural History.

Over the summer, we conducted stewardship projects two to three days a week. We also completed some rare plant monitoring for species such as prairie valerian, Eastern prairie fringed orchid, compass plant, and Lakeside daisy.

June stewardship projects included garlic mustard and Dame's rocket control at Olsen Preserve, sweet-clover control at Chaparral Prairie, garlic mustard and Japanese stiltgrass control at Hueston Woods. Late summer efforts included purple loosestrife and cattail control at Jackson Bog, woody invasives and Japanese stiltgrass at Clifton Gorge, and invasive woody species control at Kent Bog, Myersville Fen,Gallagher Fen and Cranberry Bog. Summaries of these projects are usually posted on the ONAPA website and Facebook page.

Some of the projects with partners, including Division of Natural Areas and Preserves (DNAP) staff, attracted good-sized groups, with as many as 19 people working together. In addition to these public projects, we also scheduled other projects primarily for the stewardship assistants. These included Milford Center Prairie, Brinkhaven Barrens, Richfield Heritage Preserve, Cedar Bog, Wolf Run Regional Park (Knox County. Park District), and Aurora Audubon Sanctuary. The stewardship assistants also visited several preserves to write up preserve monitoring reports.

ONAPA was very fortunate to contract with four excellent candidates this season to help us with stewardship. Maddie Brown, who worked with us last season and stayed on through the winter, is joining us for a second season as our Lead Stewardship Assistant. She previously graduated from Bowling Green State University with a degree in Environmental Science, and an interest in environmental education and land management.

Lydia Radcliffe graduated from Mount Vernon Nazarene University (MVNU) in May as an Environmental Biology major. She spent two summers as an intern for the Knox County Park District and already had great field experience.

Makaila Weir graduated from Ohio Wesleyan University in May with a degree in Botany, Sociology, and Anthropology, and was excited to get field experience.

Rachael Patterson just finished her junior year of high school, but had volunteered with ONAPA stewardship projects for at least five summers (as Jennifer Windus' daughter). She joined the stewardship team for three months before starting her senior year at MVNU at the end of August.

Makaila recently obtained another job as a research assistant at Cornell University and moved to Ithaca, New York, in mid-September. We expect Maddie and Lydia will be working with ONAPA through the fall and winter. Our stewardship assistant team started an ONAPA Instagram account this summer so you can follow their activities at "onapaorg".

It was a busy summer that continues into the fall, with significant strides made in improving Ohio's natural areas.

**Rachael Patterson, Lydia Radcliffe, Makaila Weir and Maddie Brown**

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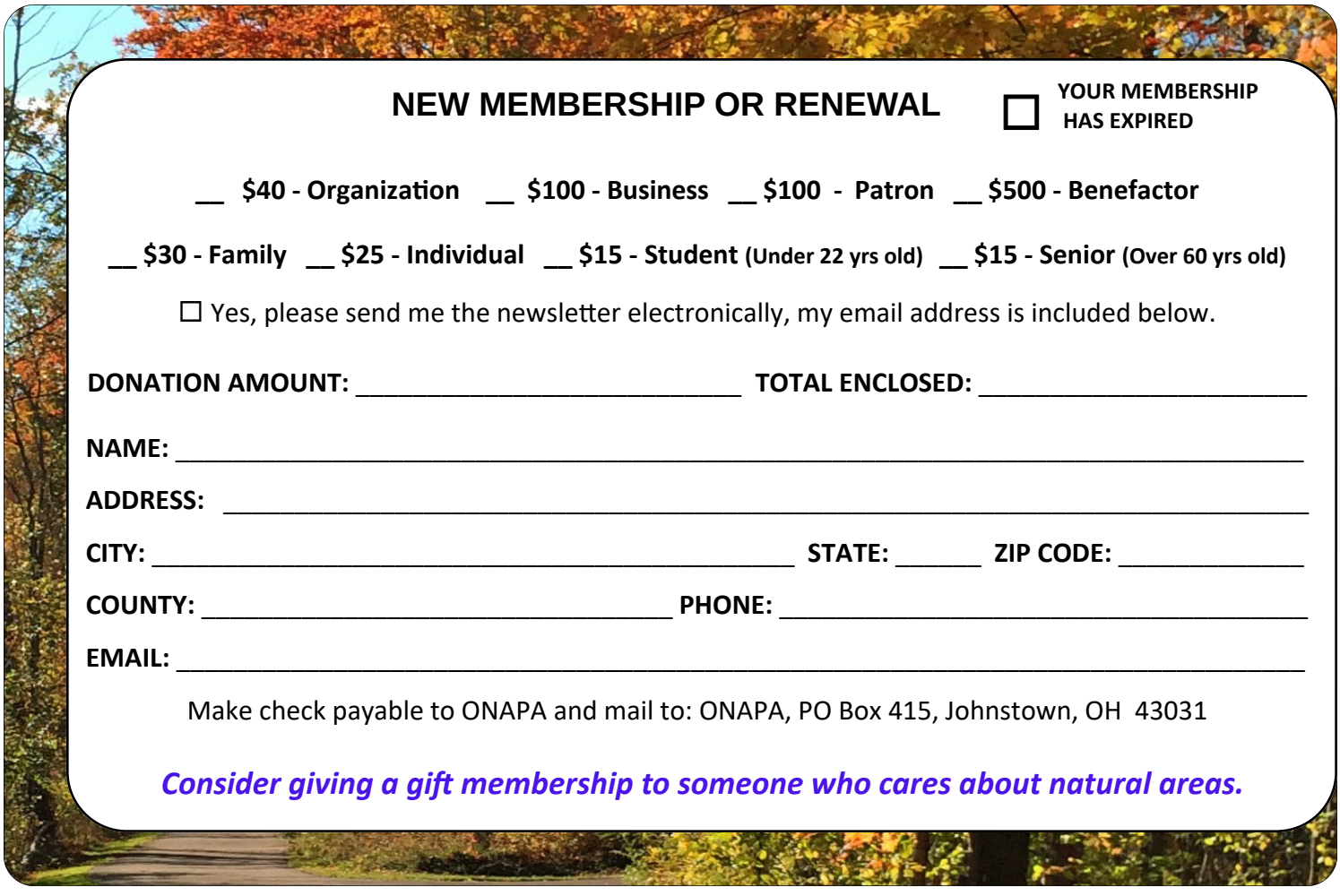

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