Arkansas OUT of DOORS

The Official Publication of the Arkansas Wildlife Federation | Vol. 50 , No. 1, Winter 2022

TABLE OF CONTENTS
Winter 2022

ARKANSAS WILDLIFE FEDERATION
PRESIDENT'S MESSAGE

Arkansas weather … you all know what I am talking about. 70 plus degrees on Christmas and then one week later 28 degrees. Just cementing in stone if you don't like the weather wait a week and it will change. Hard to deny climate change is happening. I will admit I have been a skeptic on this. But the reality is it is happening. We just need to figure out how to slow it down. A great tool is the "Hunter and Angler's Guide to Climate Change: Challenges, Opportunities and Solutions." Learn about it in the News of Note section.

It is with enormous sadness that we lost two lifelong conservations this past fall. Howard Robinson, two-time past president of AWF, went on to be with the Lord on October 16, 2021 while he was deer hunting. Besides hunting deer, his passion was mentoring youth and finding ways to get them excited about the outdoors. Robin Apple passed away in mid-November. She served on the AWF for over a decade and was a true climate change warrior. She also fought to protect her beloved song birds. Our condolences go out their family and friends.

We've got some great articles this issue. With the weather and changes in mind, Bill Cooksey with the NWF's Vanishing Paradise Program sits down with three Arkansas experts to discuss the future of duck hunting in Arkansas. AWF Vice President, Amanda Brogdon, and AGFC Education Chief, Tabbi Kinion, partnered up to share how high school students are learning about the future of using drones to monitor and watch wildlife. Steve Filipek examines what you can do to keep Arkansas a water rich state. Johnny Carrol Sain reminds us in his article to remember the place and wildlands from which your fall harvest once lived.

When you get this magazine, duck season will be over and I will be looking to get back on the White River and catch some trout and watch the beautiful sunrise and sunset at Rim Shoals. This year brings hope that I hear that great bird, the wild turkey, talk to me.

Keep updated about AWF and some of our actions by following us on Facebook. And please remember, that AWF can't do the work we do without your continued support and donations. Thank you for making AWF a priority in your charitable giving.

"Twenty-Five years ago, people could be excused for not knowing much, or doing much, about climate change. Today, we have no excuse."

– DESMOND TUTU

Charles S. Buckner, III (Trey)
President

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Arkansas Wildlife Federation Mission Statement

To promote conservation, responsible management and sustainable use of Arkansas' fish, wildlife, habitat, natural resources and outdoor recreational opportunities through education and advocacy.

Arkansas OUT *of* DOORS

OFFICIAL PUBLICATION OF THE ARKANSAS WILDLIFE FEDERATION

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"Wildlife of Arkansas"

2022 STUDENT ART CONTEST

presented by

AR Wildlife Federation & Creative Ideas

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Not all the news is doom and gloom. Photo by Bill Cooksey

Got Ducks?

by Bill Cooksey

"HEY, ARKANSAS DUCK SEASON OPENS WHEN WE'RE HOME FOR THANKSGIVING," said the voice on the other end of the line. "After we eat with our families, let's drive to Stuttgart. There's a store named Mack's that supposedly opens early enough for us to buy a license and we'll hunt a place nearby called Bayou Meto. We'll just sleep in the truck." And that's just what we did.

The year was 1990. I was young, single and could pretty much do as I wished, and what I wished was to hunt ducks. Since our Tennessee season wouldn't open for a few more weeks, a trip to Arkansas was just the ticket. That first morning was incredible. The only lead we had was to put in at Lower Vallier and find something called "the blue line." We never did find it, so we wandered around in the dark until we saw an opening in the canopy. As dawn broke there were more ducks in the air than I'd ever seen. There was calling from people and ducks in all directions, and the shooting seemed nonstop. I know we killed a few, but the memory which stuck was the number of birds.

For the next 30 years I spent more hunting days in Arkansas than Tennessee. I hunted every WMA, and most other public spots, from Big Lake to Bayou Meto. I joined clubs and enjoyed invitations with others. There were good days and bad days, but there were almost always ducks…lots of ducks, but things were slowly changing.

There's less food on the landscape than ever, and what fragmented habitat is available usually is usually being hunted. Photo by Blake Fisher.

At the end of the 2019 season, my friends and I gave up a property in Arkansas we'd leased and hunted since 1997. For much of that time there weren't many places better, but it was slipping, and it was slipping fast. Some of the reasons were obvious. The land was taken out of production and put in WRP, and the landowner started losing control of the water to the point it was always too much or not enough. Then there was the dramatic increase in pressure all around us. In 22 years we'd gone from rarely hearing a shot within a mile to hearing voices just across the property line. The final straw was simply no longer seeing ducks.

If you're an Arkansas duck hunter, you've either had that experience or know someone who has. Sometimes, as in my case, the problem is obvious, but often hunters are left scratching their heads.

So, what in the world is going on in the "Rice and Duck Capital of the World?" Is it over? Is there an explanation and maybe even something we can do about it? Those were my questions when I got the chance to speak to three gentlemen who spend their days trying to scientifically answer those questions. All three are serious duck hunters, each had some unique observations and all three also shared many common opinions.

Doug Osborne

Associate Professor, and Director at Five Oaks Agriculture Research and Education Center

"It's not just one thing. The hydrology of the Prairie has experienced drastic changes, and there's less food on the ground than there used to be. I grew up in Illinois, and in December we used to ice up and stay that way. Now there's more food up north, and there's rarely ice and snow for any duration at mid-latitudes. When things freeze up, or snow covers the ground, it's beneficial for ducks to wait it out when it only lasts a few days.

"Also, I think white fronted geese are a bigger issue than many realize. They begin to arrive in October, and they gorge on the rice. Between their arrival and late December, our studies show whitefronts get approximately 20% fatter. So, we're dealing with a situation which begins with an already diminished food supply and a large population of geese hammering it for two months prior to ducks showing up. Interestingly, snows don't gain weight during their stay. Until the early 80s the vast majority of whitefronts were in south Texas and Mexico, but they shifted in the 80s to almost equal distribution in Texas and Louisiana and by the 90s they were shifting more and more to Arkansas. In short, in 1990 we had more food and fewer geese, but today it's just the opposite."

John Veon

USGS Arkansas Cooperative Fish and Wildlife Research Unit

"In 2015, the Lower Mississippi Valley Joint Venture estimated Arkansas had 53-58% of the available energy on the ground needed for the ducks we normally host. There are

Arkansas has lost the majority of its bottomland hardwoods. Taking care of what is left is crucial. Photo by Blake Fisher.

many reasons for the shortage, but some obvious issues are rice varieties which can be harvested earlier, and more efficient harvesting equipment. Couple early harvest with more efficiency, and the waste rice ducks have depended on is available to other wildlife for months and more prone to germination. So, we start earlier with less. Additionally there's been an expansion of soybean acres, and they are a poor substitute for the nutrition provided by rice. The 'duck use days' Arkansas used to supply via agriculture have been drastically reduced.

"Then there are our greentree reservoirs and seasonally flooded bottomland hardwoods. It's no secret we have just a fraction of that habitat left. Much of our timber is in really bad shape, so we have to prioritize taking care of what is left. We flooded too early, too often and held water too late because we all love to hunt flooded timber, but we're paying a heavy price. The oak species which produce acorns desirable to mallards have largely disappeared in many greentrees. The remaining timber is still valuable as cover, and there are invertebrates in the leaf litter, but they don't provide the nutrition they once did."

Luke Naylor

AGFC Waterfowl Program Coordinator

"There's nothing new under the sun. This has been a topic for decades, but I always ask people to show me the data which indicates a decline. It doesn't exist. Harvest surveys and mid-winter counts are consistent, and band recoveries indicate the same. What's changed for many is right in front of their blind and in the area around them. Often hunters think their hunting spot looks just like it did 20 years ago, but quite often it is less food rich and ducks are exposed to more pressure, whether on their property or in the area, than ever.

"It's also important to note we've had high adult duck counts in recent seasons, and this causes them to act like snows. Older ducks find the best habitat in an area quickly, and they've learned to avoid even slight pressure. Put all this together, and you have a situation where slight changes in food and habitat, high pressure and mature birds combine to create difficult hunting."

What does it mean?

After reading from the experts above you might think some of the information is conflicting, but it's not. It's a big, and diverse, landscape, and you should keep Doug Osborne's first sentence in mind, "It's not just one thing." All three spoke at length about there being significantly less food and habitat on the landscape. Each also spoke at length in our interview about the need to help farmers put more food and habitat on the landscape. The Arkansas Game and Fish Commission only controls about 11% of land in the state, and much of that is not duck habitat. It's critical we find ways to support producers to enhance private habitat.

Each spoke a great deal about pressure. Aside from an older population of ducks, duck hunters have better equipment, are more mobile and have access to information like never before. With waterfowl habitat more fragmented than ever before, ducks don't get to sit long on land open to hunting, and this pushes ducks into places hunters can't access.

Finding innovative ways to put more duck food on the landscape is crucial to future generations of duck hunters. Photo by Blake Fisher.

But the news isn't all bleak. Duck counts in Arkansas are higher than most of us realize. If we support restoring the bottomland hardwoods and habitat improvement initiatives on private land, the hunting experience will improve. If we find ways to mitigate, or limit, pressure wherever possible, ducks will be more available. Perhaps Luke Naylor summed it up best when he said, "We should support the breeding grounds, and our focus should be on improving our own backyard. That's where Arkansans can make a real difference!"

About Bill: Bill Cooksey has been duck hunting for 49 years, and has been fortunate enough to hunt extensively in all four US flyways and three Canadian Provinces. For the last 26 years he's worked with some of the biggest names in the hunting industry in marketing, sales and media relations. He's a published writer, and he's been active in many conservation organizations. Today he works for the Vanishing Paradise Program of the National Wildlife Federation, and with sportsmen around the country to support habitat restoration efforts around the Gulf Coast and the Mississippi River Valley. While he's been fortunate enough to hunt all over North America, Cooksey is happiest when he's in the mid-south hunting with his son Bill. Whether it's Beaver Dam's cypress, a grass hole at Reelfoot or kicking water in Bayou Meto, he's right where he wants to be. Cooksey lives in Jackson, TN.

How to Easily Save 1,000 Gallons + of Water in Your Home

By Steve Filipek, AWF Region 4 Director (Southwest Arkansas)

Here it is December 1, 2021 in Arkansas and we're already 5.5" under our normal precipitation level at this time of year. As an angler, duck hunter, and land and water conservationist, this is not good news. However, we're still way better off than our fellow Americans in the western US where a multi- year drought is literally killing them agriculturally, domestic water supply wise, wildlife wise and fire suppression wise. On the Colorado River, both Lakes Powell and Mead are the lowest they have been since impoundment. Water rationing will be limiting water consumption in Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming.

I'm sure we will be hearing, "It'll never happen in Arkansas, we're too water rich." Well, believe it or not, depending on how old you are, some of us older Arkansawyers know that we've had our share of droughts in the Natural State. Tree ring analysis on very old trees in Arkansas reveal that we've had major 10 plus year droughts and longer droughts in our region over the years.

So, whether you can acknowledge Arkansas might have a drought, and a significant one, in your lifetime, I think the majority of us agree it's not good to waste water. I live in Bismarck (Arkansas, not North Dakota, c'mon Man!) and we have excellent tasting tap water, coming from DeGray Lake, on the Caddo River. I don't want to waste any of this water so I thought hard about how I could conserve as much water as possible as economically as possible. When our house was being built, we considered installing an instantaneous water system, but we just couldn't afford it, since my wife and I had two sons and worked either for a school as a teacher or as a field biologist with Arkansas Game and Fish.

We certainly did most of the water conservation measures you see on the internet. What was one of the most wasteful things we did volume-wise with our clean and tasty water? Shower and bathe in it! Ok, I'm not saying I quit showering to save water, except maybe during deer season in our small truck camper. I mean, without an instantaneous hot water system, where was I "wasting" gallons of water every time I showered? Answer: Turning on the hot water and waiting for the water to be warm enough to shower in.

It took time and $2.98 to find the solution to this matter. That's right, a 5-gallon plastic bucket like the one in the photo here. Why? Because in the few seconds (or more) it takes for hot water to flow from your hot water heater to your shower or tub in another part of the house or apartment and get to the temperature you would like to bathe in, gallons or fractions thereof have gone down the drain, wasted. In our house, I've measured that amount and, in the summer, it takes 2 gallons of water flowing into my 5-gallon bucket to get warm enough water to shower in. In the winter, it takes closer to 2.5 gallons to get warm enough to shower. So, on to the calculation of saving 1,000 gallons of water easily in our home. Oh, and to save more water in our home, when I save the first 2 gallons of water while taking a shower, I use part of those 2 gallons to flush the commode (don't gag yet, only after number 1s, not after number 2s). Our toilet uses 1.6 gallons of water per flush, so I saved 2 gallons of water in the shower and 1.6 gallons at the toile, making the combo water savings of 3.6 gallons. So, minimally speaking, in 280 days a person will have saved at the very least 1,008 gallons of water if you showered once every day. Realistically, you can save more than that quicker than that for reasons not mentioned in this article. Also, you don't have to use the "saved" water in the bathroom but it can be used watering your garden, for the birds to bathe in, to fill up reservoirs in your camper, etc.

So, you saved 1,000 gallons of water, big deal, it's pretty cheap per gallon here in The Natural State. True, but you are saving one of the most precious natural resources we have on planet Earth, ya know. And one of these days, we in Arkansas may just need to conserve more than we do now. Remember the California example earlier in this article. My mother-in-law who lives in CA, after listening to what we were doing in Arkansas, is saving her bath water too but in a smaller container easier for her to handle. I always say I have one of the best mother-in-laws a man could have. C'mon Arkansas, save your water and save your Mother Earth!

AWF mourns the loss of two of Arkansas's great wildlife conservationists

Along with other AWF board members, Howard regularly met with the AR congressional delegation to advocate for wildlife. From left to right, Ellen McNulty, Jim Taylor, AR Representative Bruce Westerman and Howard Robinson.

Howard Robinson went to be with his lord on October 16, 2021 doing what he loved, deer hunting. He was born February 1, 1950 in Crockett, Texas.

Howard was an incredible volunteer, teaching Hunter Education for over 40 years, coaching youth shooting sports with the old Fort Gun Club and was a State Field Director for the Sportsmen's Alliance. He helped manage events for Girl Scouts, Boy Scouts, and other youth programs. He played an integral role in the planning and development of the Janet Huckabee Nature Center and held important roles with many committees over the years such as Friends of the NRA, National Wild Turkey Federation, Ducks Unlimited and the Arkansas Trappers Association.

Quoting Bryan Hendricks, Outdoor Writer, Arkansas Democrat Gazette, "The Arkansas Wildlife Federation was Robinson's true love. He served two terms as president, and in that position, he was influential in garnering public support of the Amendment75 and its one-eighth percent conservation sales tax to fund the Arkansas Game and Fish Commission and Department of Parks and Tourism."

Along with all this volunteer work, he worked as a Whirlpool employee for 42 years.

We share the sadness of his wife Paula and his daughters, Laura, Leshia, and Lacey. We offer our condolences to his family for this unselfish, friendly and model of a man, Howard Robinson.

Robin Apple of Maumelle and Dardanelle passed away in mid-November, 2021. Robin was one of the energetic volunteers with the Arkansas Wildlife Federation, and along with her father Robert (Bob), worked for years to help the wildlife of Arkansas. She was an avid conservationist and was a licensed wildlife rehabilitator specializing in song birds. Robin's work with birds led her to be deeply concerned about deforestation, destruction of natural habitats, and global climate change. Her devotion to all the wildlife of Arkansas and their habitats leaves us sad for her family's loss and we offer our condolences to her mother and all her family.

Soaring to New Heights for Arkansas Public Schools:

Career and Technical Education Partnerships for wildlife

By Amanda Brogdon, *AWF Vice President and Tabbi Kinion, AGFC Education Chief*

When you ask Arkansans about what they want for kindergarten to high school students, many say that they want them to have engaging educational experiences that lead to prosperous careers in Arkansas. Many students seek out prosperous career paths related to science, technology, engineering, and math (STEM) through classes and opportunities offered through Career and Technical Education (CTE) programs.

Arkansans also value our status as "the natural state" and want to ensure that future generations have the same access and opportunity to enjoy the outdoors that we have today. The Arkansas Game and Fish Commission works to conserve and enhance Arkansas's fish and wildlife and their habitats while promoting sustainable use, public understanding, and support.

Bringing CTE and wildlife management together offers many opportunities for innovative partnerships that benefit Arkansas students now and into their future careers.

Wildlife Drones in Arkansas Schools

When you think about the day-to-day work of an Arkansas Game and Fish Commission (AGFC) wildlife officer, the images that often come to mind include ATVs in the backcountry, boats on the water, and catching poachers red-handed. Less often do the images of a registered drone pilot staring intently at a screen pop into view. However, like many other professions, drones have become an increasingly important tool for wildlife officers and wildlife managers in the field.

Drones also provide a great opportunity to incorporate technology into the classroom. From an educational perspective, emerging technology in this field could steer students toward potential careers, or skills that could be incorporated into many different career fields.

The drone used in education builds critical thinking and problem-solving skills in addition to technical skills. Acquiring these skills will benefit students on any career path they choose.

In July of 2021, the Wilbur D. Mills Education Service Cooperative was awarded a grant through the University of Arkansas Fort Smith (UAFS) to offer drones training for teachers in Arkansas. The Drones Program of Study is supported through the Arkansas Department of Career and Technical Education representing the STEM (Science, Technology, Engineering, and Math) Career Field. Career and Technical Education teachers from across the state met at the Wilbur D. Mills Education Service Cooperative in Beebe to learn about drones and the opportunity to build and use them with students from UAFS Instructor Garry Cude. During the workshop, guest speakers helped teachers gain an understanding of how drones are being utilized in different sectors throughout the Arkansas workforce. Major Brian Aston from the Arkansas Game and Fish Commission, provided an engaging and interesting session on how the wildlife officers use drones to aid the public and help enforce wildlife laws in the state.

Thanks to the excitement and enthusiasm of the teachers who participated in the summer drone workshop, Career and Technical Education Coordinator, Amanda Brogdon from the Wilbur D. Mills Educational Service Cooperative (WDMESC), applied for and received grants for seven high schools to purchase kits to build DJI Mavic Pro Drones. The high schools that are building drones for the 2021-2022 school year are Augusta, Bald Knob, Carlisle, Des Arc, McCrory, Pangburn, and Riverview. As part of this award, Major Brian Aston and other guest speakers bring in drones to talk about how they use them in a professional setting and demonstrate how they fly during student assemblies.

The students at each of the schools are engaged and excited to learn how drones can lead to potential careers and how this technology impacts many different fields of employment. During the presentations, Major Aston highlights possible career opportunities related to drones and the outdoors and shows examples of different ways the AGFC Law Enforcement Division is currently using drones in the field. Examples include times when drones were used to find lost hikers and hunters in the backcountry, how the drones helped officers find and rescue citizens during the 2019 Arkansas River Flood, and times when AGFC drones have helped identify areas where people are illegally baiting wildlife on public lands.

Major Aston also highlights other ways that AGFC is using drones. Fishery managers use drones to inspect

dams and levees, as well as to assess lake and river conditions. Wildlife managers use drones to set controlled burns quickly and safely and to do large-scale wildlife habitat evaluations. The public engagement team uses drones to help tell the story of Arkansas wildlife and places. The overall emphasis is that technology in the outdoors is an exciting and evolving career path for students to consider.

After the presentation, students observed a drone flight demonstration, conducted by a Federal Aviation Administration Part 107 licensed Drone Operator.

The Arkansas Department of Education Division of Career and Technical Education (DCTE) works to support teachers and students across the state through CTE Programs of Study. DCTE currently has 64 different programs of study in sixteen different career clusters, including Natural Resources and Environmental Service Systems, Hospitality and Tourism, Culinary Arts and Food Production, Emergency Preparedness, Advanced Manufacturing, Drones, Engineering, and Computer Science. DCTE supports these programs by providing Arkansas schools with grant funding, technical assistance, teacher professional development, and industry and post-secondary connections. DCTE partners with the 15 Educational Service Cooperatives across the state to assist schools in choosing programs of study that are relevant to the local industry needs and job availability. Adam Musto, STEM Program Coordinator at DCTE, states "Careers across the board are becoming more and more technical everyday. The programs of study offered through DCTE give students an opportunity to learn and practice the technical skills needed in today's world."

Allison Cox, Computer Science teacher for the Des Arc school district, said that she is "thankful for the opportunity to have the drones in her classroom. Many of my students are now considering careers related to the drone industry." Mr. James Featherston, a Business teacher, shared that "drones are directly related to in-demand, high-wage job opportunities for his students."

He is excited about having the opportunity to introduce his students at Des Arc High School to drones through his CTE business classes. He continues, "It is also quite likely that many of these students will end up working with drones at some point in their careers. The demand for drone-related jobs is already high and will only continue to grow." These teachers are truly onto something. According to the Association for Unmanned Vehicle Systems International, it is projected that there will be more than 100,000 new jobs in unmanned aircraft by 2025.

Career and Technical Education Benefits for Students

Through partnerships like the drone program between government, businesses, and industry, students learn about opportunities right here in our own state and within their own communities. The participating Career and Technical Education teachers within each district will utilize drones to share with students in their district how drones could impact each of their respective career fields. Partnerships like the one between the AGFC and DCTE are essential for workforce development in Arkansas. This strategy brings business partners together with the public sector/schools to guide the preparation of workers for the high-demand jobs, most critical to our local/state economies/economy.

Career and Technical Education programs at the high school level create a pipeline of skilled graduates ready to work in today's technologically advanced workforce. According to the experts at Advance CTE and ACTE (Association of Career and Technical Educators), CTE consist of teaching students the core academic, employability, and technical, job-specific skills they will need to pursue certifications, degrees, and high-wage careers in more than a dozen areas, such as STEM, manufacturing, logistics, information technology, construction, agriculture, and training. Rather than traditional education based upon theory, CTE focuses on relevant technical skills applicable to specific career pathways. CTE students gain invaluable hands-on experience that enables them to better understand and prepare for high-demand, real-world jobs. CTE Programs offer relevant, industry-recognized certifications to students participating in CTE programs throughout the state.

WDMESC and DCTE are continuing to support CTE programs for teachers and students in Arkansas. Adam Musto, STEM Program Coordinator for DCTE, shared that we just finished up a "Bootcamp" style training for teachers

at the WDMESC in Beebe preparing for the Part 107 Exam. The instructor for this class was a participant from the summer class that has taken and passed his exam. Major Sean Gibson, Cabot Air Force JROTC Instructor, did a wonderful job leading the class. Future plans include expanding on these trainings to include other technical skills related to drone technology such as geographic information systems (GIS) and photo and video editing.

AGFC Supports School-based Partnerships

The Arkansas Game and Fish Commission has a successful track wwrecord of supporting educators through innovative partnerships in Arkansas. The drones project is one example among many. According to Education Division Chief, Tabbi Kinion, "partnerships with schools and cooperatives like the Wilbur D. Mills Education Service Cooperative are opportunities that we would be foolish to pass up. The AGFC team has industry-leading technical skills, extraordinary and passionate staff, and resources to help teachers connect students to the professional world of fish and wildlife management. Our education partners bring the student audience and the professional pedagogy to translate our staff's technical knowledge into curriculum steps that create knowledgeable and engaged citizens of Arkansas. These partnerships benefit all involved."

The AGFC offers many educational opportunities to teachers and students throughout the state. The Fishing in the Natural State (FINS) Program was created in 2016 to train teachers to teach fishing skills and provide equipment for classes. The Wildlife Education Grant program, in partnership with the Arkansas Division of Rural Services, takes the money collected from tickets written by our wildlife officers and invests the funds back into education in the county where the wildlife violations occurred. Archery in the Schools and Youth Shooting Sports (trap shooting) are programs that provide training, equipment, and tournament opportunities for schools across the state. Project WILD and the Outdoor Adventure Program support schools by training teachers to teach about wildlife and outdoor recreation in the classroom. The 10 Nature Centers across Arkansas provide field trip opportunities and staff from the centers will visit schools and groups in their communities to teach about a wide variety of topics. The Virtual Nature Center at agfcnaturecenter.com is a wealth of videos for teachers, students, and anyone interested in wildlife to peruse.

Additionally, the Conservation License Plate program (you know, all those license plates with wildlife on them) fund 125 college scholarships each year for students to study wildlife-related fields and provide internship opportunities within the agency each summer. We are particularly excited about the long-eared sunfish license plate coming out in 2022. The artwork is truly exceptional and the proceeds go back to Arkansas students.

Endemic Gophers, Rare Plants and the Case of the Missing Prairies

By Theo Witsell

WHEN I TALK TO PEOPLE AROUND ARKANSAS about the ANHC's work, they are often surprised to hear that we are still learning new things about our state's natural history; most people assume that there aren't new discoveries to be made. However, that isn't the case, as exemplified by one of the most exciting Arkansas natural history discoveries in recent decades, the description of the Ozark Pocket Gopher (Geomys bursarius ozarkensis).

The Ozark Pocket Gopher has a small range – it is known only from a small area in southern Izard County and is the only mammal that is endemic to (found only in) Arkansas. Its occurrence in this region of the state is somewhat unexpected and presents something of a mystery – one that has really captured my interest. As described with the publication of an article by Douglas Elrod, Earl Zimmerman, Philip Sudman and Gary Heidt in the August 2000 issue of the Journal of Mammalogy, these unusual burrowing rodents have coats camouflaged to match the color of the soil where they live. They spend most of their lives in underground tunnels, emerging briefly to gather plant foods, which they transport back to their burrows in large fur-lined cheek pouches, or pockets.

The presence of narrowly endemic species, those restricted to a small geographic area (and usually also to a specific uncommon or rare habitat), is evidence of great antiquity, and therein lies the mystery. Pocket gophers are a grassland species, so there must have been a suitable natural grassland habitat in Izard County in ancient times and at least some of it must have been present up until modern times or they would have gone extinct. So, what is (or was) that habitat?

The literature on the Ozark Pocket Gopher gives its habitat as "pastures and crop fields with deep sandy soil," and this is an accurate description of where they are found today. The mystery is that we have no historic records of there being grasslands in this area. They weren't mapped by the

The uncommon and well-armed white prickly-poppy (Argemone albiflora subsp. texana) is locally common in remnant sand grasslands in southern Izard County. Photo by Theo Witsell.

Pocket gopher mounds. Photo by Matthew B. Connior.

An Ozark pocket gopher (Geomys bursarius ozarkensis) with its cheek pockets visible. Photo by Matthew B. Connior. The gopher had been drugged for capture but was unharmed.

General Land Office (GLO) surveyors who completed the original survey of the Louisiana Purchase (one of our best sources of information on the locations of historical grasslands in Arkansas), nor were they described in the accounts of early naturalists, explorers or settlers (at least so far as we are aware). We knew there were scattered glades in the hills around these valleys, but these are rocky grasslands with bedrock at or near the surface of the ground and not suitable for pocket gophers.

Remnants of ancient, natural grasslands usually have uncommon plants that aren't found in other habitats and concentrations of them are the hallmarks of such a remnant. These botanical clues could help solve the mystery of the missing grasslands, so I began by exploring a couple of interested landowners' properties on these creeks, hunting for grassland indicator plants. I had a hypothesis that maybe there were once sandy savannas and open woodlands throughout these valleys, with small sandy prairies here and there populated by sun-and-sand loving plants.

Historically, prairies have been plowed for crops or converted to non-native pasture grasses. Savannas and open woodlands either were cleared and converted to pasture or have grown up into dense forest. In the latter case, botanical clues can often still be found along open roadsides and utility rights-of-way, so that was my first strategy – run the roads and look for grassland indicator plants. Unfortunately, many of these areas have been sprayed with herbicide, reducing rich pockets of diverse grassland flora to the weediest, most common and often invasive species. But before long I found encouraging clues – big stands of little bluestem (Schizachyrium scoparium), one of our most common denizens of dry grasslands, along with some grassland-obligate wildflowers like pale purple coneflower (Echinacea pallida).

The rare Cleland's evening-primrose (Oenothera clelandii), rediscovered in Arkansas in remnant sand grasslands in southern Izard County. Photo by Theo Witsell.

The first property I explored, along Hidden Creek, didn't have any significant areas of open ground, but it did have a very sandy forested stream terrace with a heavy component of eastern red-cedar (Juniperus virginiana), a common invader of formerly open savannas and woodlands. A quick study of the trees in this forest showed the typical pattern of invasion – scattered larger (and older) individuals of oaks and pines with a more or less even-aged stand of smaller, younger cedar filling in between them.

The soil here was very loose and sandy and even though the site was nearly flat and located right along a stream, the non-cedar trees were species typical of well-drained, even drought-prone soils like shortleaf pine (Pinus echinata) and post oak (Quercus stellata). The shrub component in these woods was similar to what is found at Miller County Sandhills Natural Area (NA) on the Texas border including dwarf hawthorn (Crataegus uniflora) and Carolina holly (Ilex ambigua).

Looking at the ground, I found a few small semi-open pockets of woodland that had a little bit of what I was after. There was more little bluestem and other plants that were sure signs that this area was once more open than it is today. My pulse quickened when I found a few plants of the rare hairy rockcress (Arabis pycnocarpa var. adpressipilis), a species of state conservation concern previously known in Arkansas from just a handful of sites. In 25 years of hunting plants in the state I have only seen this at one other site!

There was also a nice list of psammophytes (sand-loving plants). These were the ones I was most interested in finding, as they fit in with my hypothesis. Again I was transported to the southwest Arkansas sand barrens as I documented several species of sand-loving plants. Several of these are rarely encountered in the Ozarks and are in open habitat on sandy soils when they are found.

I visited a second property along Rocky Bayou, the next creek to the east of Hidden Creek. The soils in both valleys include areas with a lot of loose sand, something that is central to the distribution of both sand grasslands and the rare pocket gophers. I had high hopes of finding some intact scrap of original sand grassland that would help further unlock this ecological mystery, as well as another, unspoken hope of discovering a second Arkansas population of the rare sand-loving plant called Cleland's evening-primrose (Oenothera clelandii). This species was known in Arkansas only from two historical herbarium specimens, collected in 1968 and 1969 from the same site in adjacent Independence County.

After I described the kind of habitat I was looking for, the landowner took me to a large field on a broad terrace of the creek. At the bottom edge of the field was a two or three acre area that had not been plowed. I could tell from a distance that this was what I had come to see. We drove up to the edge of it and I could see gopher mounds here and there.

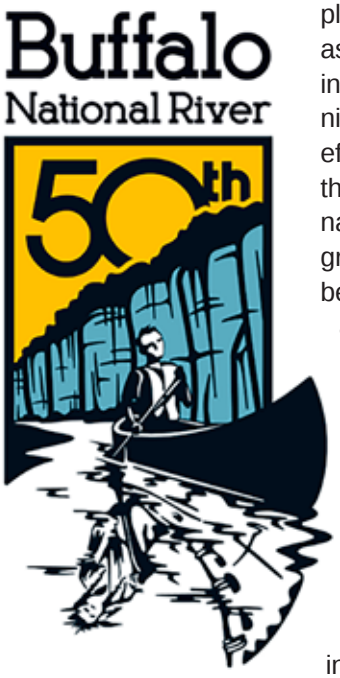
Story continued on page 21...

ARKANSAS WILDLIFE

News-of-Note

Buffalo National River 50th Anniversary

March 1, 2022 marks the 50th anniversary of the designation of the Buffalo River as the nation's first National River. Buffalo National River flows freely for 135 miles and is one of the few remaining undammed rivers in the lower 48 states. The Park has nearly 95,000 acres surrounding the river and it has become a hotspot for people seeking an escape to nature from cities far and wide. They come to hike trails which offer beautiful scenic views, canoe and kayak past high bluffs, view the night sky while camping along its banks, and fish the cool, clean waters for smallmouth bass, catfish, sunfish and spotted bass. According to the 2020 Buffalo National River Visitor Spending Impact Report, 1.5 million park visitors spent an estimated $66.3 million in local gateway regions while visiting the Buffalo National River in 2020. Lots of celebrations will happen throughout 2022 to commemorate the Buffalo River designation starting with a History Weekend on February 26th to March 1st. To learn more about events being planned for the 50th anniversary, visit https://www.nps.gov/buff.



A Hunter's & Angler's Guide to Climate Change

National Wildlife Federation just released a new climate report that examines impacts on hunting and fishing. This report urges hunters and anglers to engage in climate solutions. "It isn't a matter of if but when climate change will find our favorite spots and change our sporting lives," says Director of Sporting Advocacy Aaron Kindle. Climate change is threatening the wildlife, lands, and waters that hunters and anglers rely upon — and sportsmen and sportswomen have a crucial role to play in seeking common-sense climate solutions, according to this new report. The report examines effective solutions that are being deployed in restoring natural infrastructure — such as wetlands, forests, rivers, and grasslands — in order to recover wildlife and protect communities. The report notes, "the most logical, cost effective and sustainable solutions are often those that harness and augment the power of natural systems and restore developed and degraded landscapes and waterways. And even better, these types of solutions improve hunting and fishing." Check out "A Hunter's & Angler's Guide to Climate Change" at https://www.nwf.org/outdoors for the full report.

Chronic Wasting Disease Research and Management Act

With new cases being found in more parts of Arkansas, help in stopping the spread could not come soon enough. A new bill moving through Congress would invest resources in understanding, preventing, and managing the spread of the deadly chronic wasting disease, a fatal neurological disease, that has impacted deer, moose, and elk populations across the United States. The bipartisan Chronic Wasting Disease Research and Management Act, introduced by Representatives Ron Kind (D-Wis.) and

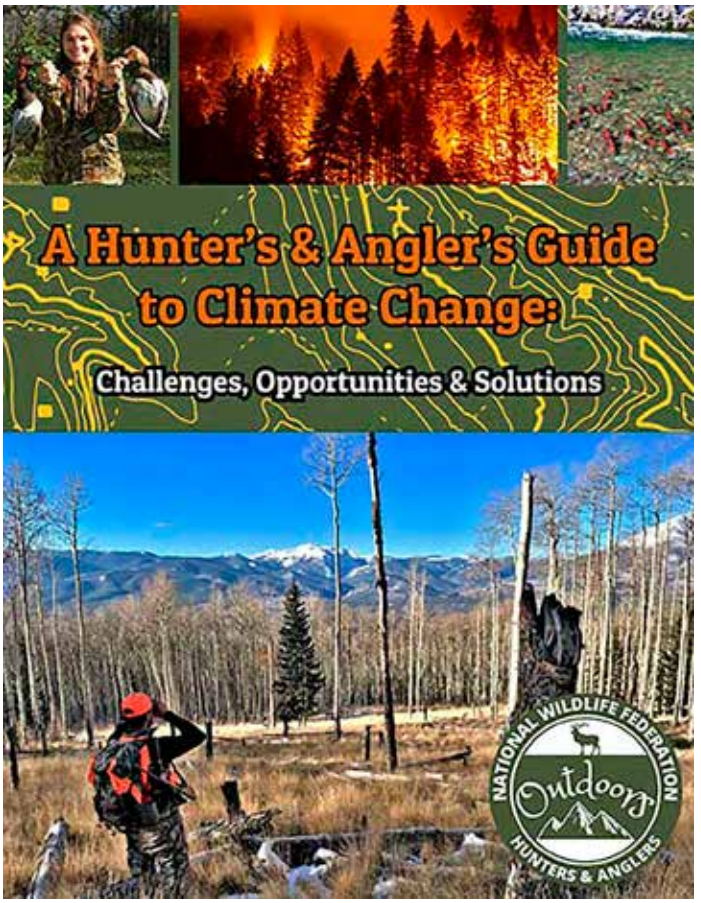
Glenn Thompson (R-Pa.), passed the House of Representatives 393 to 33 on December 8th and will fund research on detecting and managing the spread of the disease along with funding state and Tribal efforts to stem the spread. Chronic wasting disease is a highly transmissible disease that spreads among members of the deer family that are critical to ecosystems along with local economies and hunting traditions. It has been found in over 25 states across the country and is nearly always fatal and, once established in an area, hard to control.

2023 Farm Bill

Farm Bill conservation programs are voluntary, incentive-based programs that enable farmers, ranchers, and forest owners to adopt conservation practices on working lands. Congress should include equitable and comprehensive environmental provisions in the next Farm Bill. In the lead up to the 2023 Farm Bill, the National Wildlife Federation, AWF and other state affiliates have been meeting since April to discuss the conservation title and develop a platform for focused advocacy. We will be looking for Congress to establish ways to significantly increase conservation funding, promote climate-smart agriculture practices, conserve native grasslands and wetlands, and increase opportunities to enhance carbon sequestration on private forestlands. Congress and the U.S. Department of Agriculture (USDA) must ensure that the Farm Bill is implemented in a way that maximizes the benefits to soil, water, and wildlife, including making sure that the Conservation Reserve Program enrollment gets back on track after dropping to a thirty-year low.

Reducing single use plastics

It is hard to live in the modern world without constantly running into plastic. In the US, our food sector (grocers, restaurants, food producers, et.al.) is rampant with unnecessary single-use plastics. Some of it is hard to imagine not using, but there is a great deal of unnecessary packaging of things including foods. One great example of a commitment to reduce plastic waste happened this year



at Little Rock's Main Street Food Truck Festival. As part of their commitment to sustainability, they required vendors to use compostable plates and cups. A unique recycling company based in Rogers, Food Loops was hired to manage the effort. Rather than styrofoam plates with food residue going to the landfill, the bio-degradable plates, cups and food containers were composted. Consumers can pay attention and avoid gratuitous packaging. Bring your own reusable bags and buy at farmer's markets or choose from bulk produce selections when possible. Dining out? Bring your own container instead of accepting the plastic clamshell for the leftovers. Let's do better. Eight billion people can't live on this planet the way we have become accustomed for very much longer.

A Taste of Place

Story & photos by Johnny Carrol Sain

The hunks of whitetail tenderloin in front of me just came off the grill. Seasoned with garlic, salt, pepper, cumin, and just a dash of crushed red pepper, they were every bit as mouth-watering delicious as they looked. Seasoning, coal fire, and a soaked piece of hickory working in concert underneath the hood of my old grill crafted a masterpiece of flavor that my --and your -- prehistoric ancestors would call overkill. But it tasted like perfection to me.

Nobody really knows how and when we started cooking, but somewhere back in our murky past meat found its way to fire after the kill, and it was good. Taste was the reason back then. If something tastes good a creature will eat more of it. This was before junk food threw our perceptions out of whack by going overboard on the tastes we crave. So it only makes sense that taste was the original goal for cooking, and our taste buds were right. Cooked meat is better for us omnivorous apes who lack the proper plumbing to handle raw meat like more dedicated carnivores. Cooking unravels proteins and loosens muscle fiber in meat, which makes for easier chewing and digestion. My taste buds tell me that grilled venison is far superior to venison prepared any other way. And while we eat deer meat prepared by different methods, tenderloin is almost always reserved for the grill.

Backstrap tenderloin from a whitetail is good eating without the spices. I sometimes eat a bare hunk as an homage to a simpler time and to experience the clean, nuanced flavors that set some of humanity's taste preferences in motion. But many folks can't seem to get past the "gamey" taste of deer compared to beef. I think the idea that venison's taste needs to be tamed comes from an unfair comparison. Venison is not beef, and it shouldn't be compared to beef any more than pork should be compared to beef.

Venison's flavor comes from a variety of influences. The conditions surrounding the hunt are important. A deer run half to death, its muscles loaded with lactic acid, won't please your palate like a deer shot while peacefully browsing. Age and sex of the deer matter, too. Many eaters of deer say there is no difference in taste between buck and doe. I said the same thing a few years ago. I was wrong. There is a subtle contrast; one isn't better than the other only different. And, of course, the younger the deer the more tender the meat. At least one young doe is on my wish list every season. But far and away the most powerful influence on taste is what the deer ate. This is where the connection between hunter and hunted turns into a shadowy bond between biology and an almost spiritual awareness. It has to do with a topic I've written about a few times before: a sense of place.

I've eaten deer plumped up on corn and soybeans, their hams covered with a thick layer of fat, and their taste was a paradox — somehow both milder and richer than the venison I was accustomed to. Domesticated is the best description. Domesticated is a good description of the land they fed on as well. Crops grown in neat rows with only pockets of trees breaking the monotony of agricultural fields. They were wild deer, but they were eating cultivated food. If your local whitetails gorge on grain, then enjoy. But, to me, it didn't really taste like deer. It was a much different flavor than the venison my family usually enjoys from the southern Ozarks Mountains and River Valley of western Arkansas.

My local whitetail herd eats greenbrier, honeysuckle, various tender new shoots, and soft mast in the summer; acorns and assorted other mast (both hard and soft) in the fall; and back to honeysuckle, woody browse, and assorted greens in a few scattered food plots for winter. A deer's diet is diverse, and there are countless other bits of vegetation browsed throughout the year, but those are the staples. You can taste this through the deer's flesh: energy from the sun and nutrients from the soil cycling through the vegetation, through the deer and to you with every morsel. Each bite is tinted with notes of what that deer ate, and it all blends together into a flavor unique to the specific home of the whitetail now cooked and transformed into meat.

I always say I can pick up hints of acorn and persimmon, but I might be reaching. That woodsy flavor might be because the smell of an autumn hardwood ridge is in my nose when I hunt them, but the deer tastes like an October morning in the forests of my Arkansas home. It tastes like where I'm from.

The next time you're seated at the dinner table with a venison steak in front of you, take a moment of reflection for the meal, for the hunt, for the deer, for the place it came from. And when you take that first bite savor the flavor. Savor the sense of place resting on your plate.

...story continued from page 17

Indicator plants of sand grasslands abounded, including six kinds of sand-loving sedges in the genus Cyperus. Other indicators included plants typically found in Arkansas in the sand barrens of the West Gulf Coastal Plain. There were tall, showy specimens of the well-armed and somewhat intimidating white prickly-poppy (Argemone albiflora subsp. texana) and scattered throughout was a species of state conservation concern, the rare Elliott's fanpetals (Sida elliottii). A diversity of grasses was present, as well as scattered specimens of prickly-pear cactus (Opuntia sp.) and the menacing sandbur (Cenchrus spinifex), which requires careful navigating to keep clear of the barbed spines of the mature fruit.

There are several things that characterize a good quality remnant sand grassland in addition to the species present and I was also looking for these. One of the most obvious is a certain amount of natural sparseness to the vegetation. The best and most diverse examples have some gaps between the individual plants, where a little bare ground is visible. One term often used for these sand grasslands is "barrens." These sandy soils don't have a lot of organic matter in them and these ecosystems run on a relatively tight nutrient budget. The least disturbed examples often also have a living biological soil crust in the more barren areas. This protective layer, sometimes called a cryptogamic crust, helps stabilize the soil and is made of communities of cyanobacteria (blue-green algae), algae, fungi, bacteria and lichens. These are common in deserts and desert-like habitats around the world, but are generally poorly known and understood, at least in Arkansas. The cryptogamic crust was present in this site.

I was shown a second site that the landowner thought might be of interest. Like the first site, it was at the lower edge of a sandy field, in an area of nearly pure sand that didn't support much agriculture or even improved pasture plants. This site was of even better quality and there were even more interesting species, several of which are solid indicators of natural grasslands. There were large clumps of the impressive Texas bull-nettle (Cnidoscolus texanus), another hallmark of our classic Coastal Plain sand barrens, with which these Ozark sand grasslands share so many species. Bull-nettle has deeply lobed leaves, stems covered with sharp, white, chemically armed prickles and perhaps the brightest-white flowers of any species in the state. It also has the distinction of having by far the most painful sting of any of the 10 so-called "stinging nettles" found in Arkansas (I may be one of the few people in the world to have been stung by all of them, so you can take my word for it).

One of the least common shrubs in the state, Jointweed (Polygonella americana) was scattered here and there in clumps – I don't think I have ever seen that species in a site that didn't have other uncommon or intriguing species. And then, there it was! Mostly already gone to fruit, but with a few yellow flowers still hanging on – Cleland's evening-primrose! I got down on my knees (careful to avoid the bull-nettle and prickly-pear) for a close inspection. I had

Texas bull-nettle (Cnidoscolus texanus) has the most painful sting of any of the ten species of "stinging nettle" found in Arkansas. Photo by Theo Witsell.

seen it only once, more than a decade before, in rare sand prairies in central Illinois. I counted several dozen plants scattered across this remnant grassland. It isn't every day that you find the one thing you were secretly hoping to find and it sure makes an afternoon in the blazing sun of an open grassland worth it.

I bid goodbye to my host and climbed back into the truck with a full collection bag and a lot more knowledge about a forgotten and nearly lost component of Arkansas's natural heritage. There is still a lot more to learn and I look forward to studying these sand grassland remnants more next year. As usual, we have just barely scratched the surface of learning all there is to know.

Theo Witsell is an ecologist and the ANHC's chief of research and inventory. He is also curator of the ANHC Herbarium.

The ANHC, an agency of Arkansas Heritage, focuses on science-based conservation to protect Arkansas's biological diversity and maintains a statewide System of Natural Areas made up of more than 72,000 acres. The ANHC's Arkansas Heritage Program biodiversity database tracks the location and status of rare animal and plant species, as well as natural communities in Arkansas.

Winter Warriors

By Anne Cissel, *National Wildlife Federation*
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STEALTHY STASHERS

When winter comes, finding food can be a tricky business for wild animals. Some animals have solved this problem by gathering and storing food before winter comes. Have you ever seen a squirrel running around with a nut in its mouth? It may be about to bury that treat in the ground, saving it for later. Black-capped chickadees also hide food, usually seeds, as they get ready for winter. Later, when it gets cold, the birds remember where all their snacks are hidden. But they have another trick: They grow new brain cells before winter to help them remember all their hiding places!

FANTASTIC FEATHERS

Winter isn't a big problem for birds. Feathers are their secret weapon against the cold. They fluff their feathers up, trapping pockets of body-heated air in between them. The air gives the birds an extra layer of protection against the cold. Underneath a bird's outer feathers are soft, fluffy feathers called down. These feathers are especially good at trapping and holding body heat. The secret to maintaining these layers of air lies in having clean, dry and flexible feathers through a cleaning process called preening. Waterproofing is also important. Some cold-tolerant birds produce oil to weatherproof all their feathers and other birds grow special feathers that disintegrate into a powder that they use to waterproof their feathers.

BARELY BREATHING

While some animals are hibernating, others—such as reptiles and amphibians—are brumating. Just as with hibernating animals, the bodies of brumating animals slow way down. When a painted turtle decides to tuck itself away for the winter, it rests in the mud at the bottom of a pond or lake. But turtles have lungs and breathe air, so how can a painted turtle survive all winter underwater? Because its body is on pause, the turtle needs less oxygen. Its skin takes in enough oxygen from the water to keep the turtle alive. Even with hardly any oxygen in the water, chemicals in the turtle's body work together with its cells to keep the reptile alive for months without oxygen.

STAYING STILL

Some animals survive the cold by finding a sheltered hideaway and taking lots of long naps. But only a few types of animals go into a special kind of deep sleep called hibernation. When an animal hibernates, three things happen: Its body temperature lowers, its breathing slows, and it burns energy much more slowly. That way, it can go a long time without food or water. Before settling down for this kind of winter sleep, animals eat as much as they can to pack on the fat. Then they find a safe spot to hunker down.

HIVE HUGGING

Honey bees are active in the winter but stay inside their hive, feeding on stored honey. The main job of the worker bees in the winter is to keep the queen bee alive and healthy. To keep her warm, the bees cluster around her in a "hug." They "shiver" their flight muscles to make heat. The cluster constantly rotates to make sure all the bees get a chance to be at the toasty center. The colder it gets, the tighter the cluster becomes.

FROZEN FROG

The wood frog doesn't just slow down in the winter—it stops! The frog freezes almost completely, its heart stops beating, and it stops breathing. When warmer weather comes, it simply thaws out and hops away! Most animals' bodies can't survive a deep freeze. But this frog's liver makes a special "antifreeze"—a sugary chemical that keeps the insides of its cells from freezing. No one really knows how its body can just restart again, though.

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