



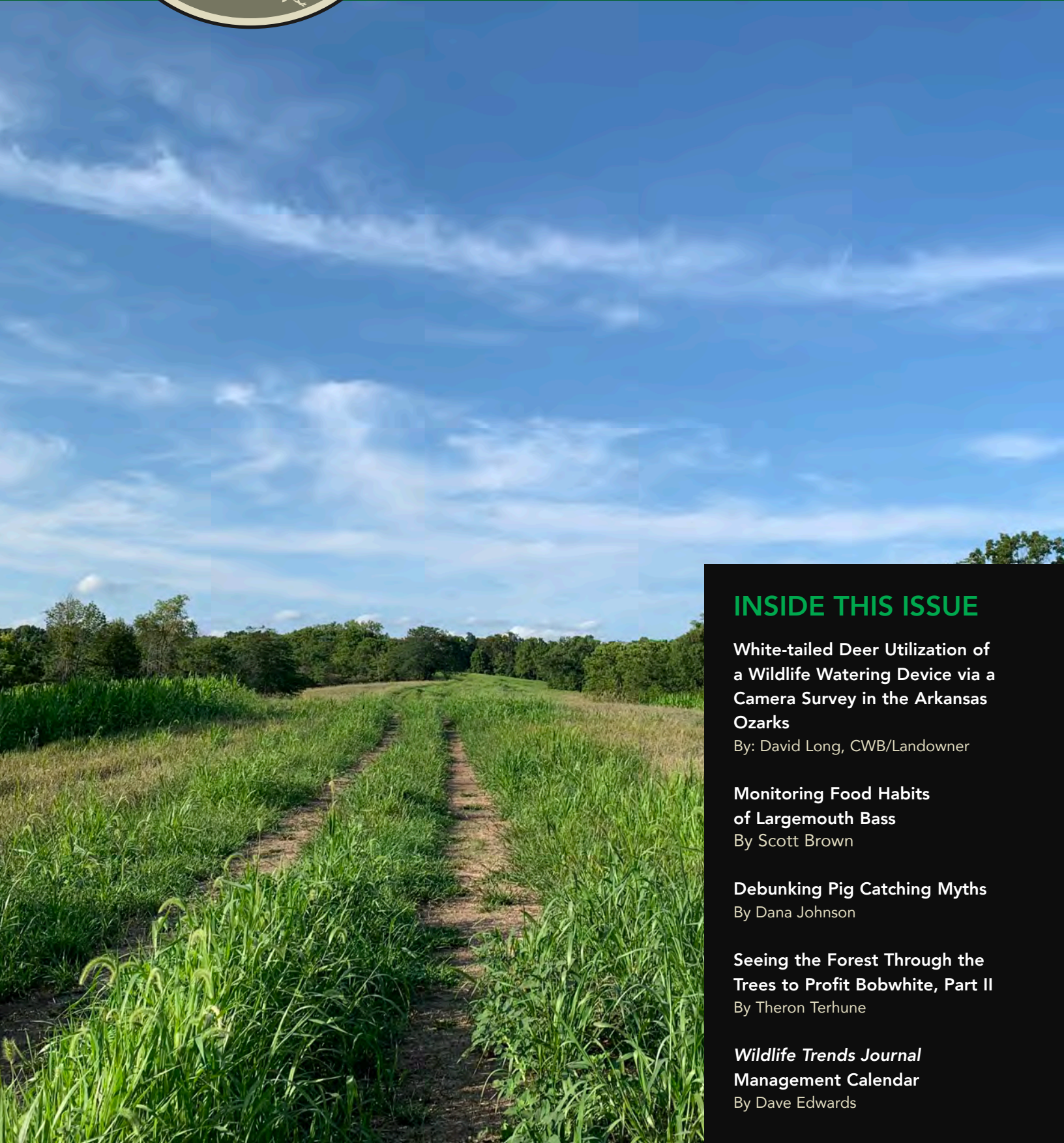
PRACTICAL WILDLIFE MANAGEMENT INFORMATION

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White-tailed Deer Utilization of a Wildlife Watering Device via a Camera Survey in the Arkansas Ozarks July 1 to September 30, 2021

David Long, CWB /
Landowner



Before his retirement in 2015, David Long served as the Arkansas Game and Fish Commission (AGFC) Private Lands Supervisor over 9 Private Lands Biologists, targeting technical assistance to private landowners. He served in other positions with the agency including Farm Bill Coordinator, Private Lands Coordinator and 6 years as a private lands biologist over a 38 year career. David is a Certified Wildlife Biologist and owns and actively manages 80 acres of land. Contact him at josephdavidlong@gmail.com.

Introduction

This article is a follow-up to an article I authored previously appearing in *Wildlife Trends Journal* in March/April 2018 (Volume 18, Issue 2). This previous article detailed information on the installation, management and maintenance of a wildlife watering device I developed on my property. In my opinion, one of the most overlooked habitat components by private landowners is water. Establishing permanent water sources where they are lacking is most valuable to the landowner and wildlife manager serious about providing quality wildlife habitat.

Methods

I cut 55-gallon poly-plastic barrels in half using a reciprocating or jig-saw along the long

axis, therefore each watering device could potentially hold 27.5 gallons of water. I then attached a hinge to a 12”X1”X12” wood board to the side of each half barrel as shown in the picture. The piece of wood is attached by a hinge to provide an escape route for small mammals, box turtles, reptiles and amphibians that will utilize the watering device. Eight devices have been installed on my property since 1997. I placed these in valleys (draws) where water is funneled during rain events. More details are included in the previous article.

Camera Survey

I conducted a camera survey on my 80 acres in Randolph County in the Ozarks of Arkansas. Six (6)

cameras were deployed on the property over watering devices covering the time period- July 1 to September 30, 2021. Cameras were set to take a picture every 30 seconds upon detecting deer and/or other wildlife. Various *Stealth Cam* cameras were utilized. All 6 wildlife watering devices were estimated at 60% to 100% water holding capacity July 1st.

Habitat Conditions

The forest type is Ozark oak-hickory with the following habitat conditions - 39 acres of hardwoods ranging from 120-130 BA; chemically thinned 41 acres to a BA of 50-60 in 2019 (21 acres), 2021 (20 acres); prescribed burned 21 acres in 2020 and 6 acres in 2021; and approximately 2.5 acres in wildlife food plots established.



BA= Basal Area is the cross-sectional area of trees at breast height (4.5 foot above ground) over an acre.

Previous camera surveys I conducted were over one watering device usually during late summer (August/September). However, I was interested in seeing what level of usage these watering devices could receive covering multiple locations over a longer period of the summer on my 80 acres. I

elected to survey the months of July, August and September of 2021.

Two cameras were not sited properly to capture the watering device. However, if deer were pictured in the lower portion of the picture as in this example which was immediately on the edge of the watering device, I counted it as a deer visit.

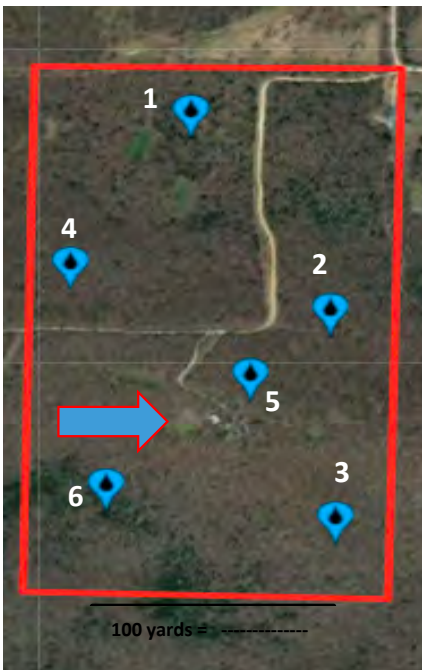
Deer were grouped as: antlerless, fawn, buck, and unknown.



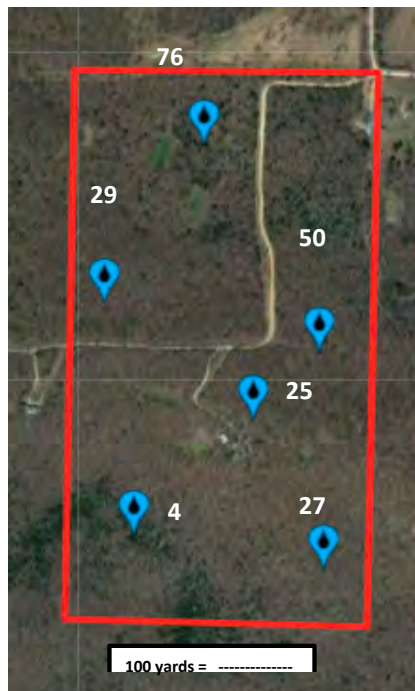
NOTE: This camera placement could have resulted in missed visits from deer approaching from the opposite side.

Deer that visited a camera site and had immediate additional picture(s) were counted once when it was obvious they were the same deer.

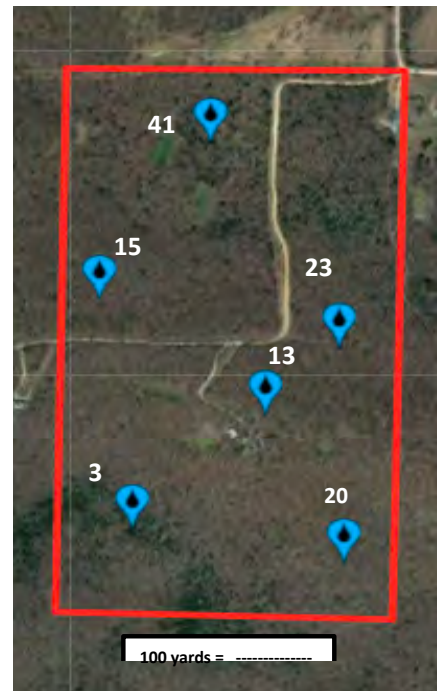
Antlerless deer includes does, and button bucks if hardened antler could not be seen in the picture. Deer pictures were counted as “unknown” if deer could not be identified as a doe, fawn, antlerless or buck.



Wildlife watering device locations across 80-acre property in the Ozarks of Arkansas. The blue arrow on map identifies location of a 0.2-acre pond, the only other permanent water source on the property other than the 8 installed wildlife watering devices- (only six were selected for this survey).



*Number of **deer visits** each wildlife watering device during the 3-month period.*



*Number of **days deer visited** each wildlife watering device during the 3-month period.*

A deer picture was counted as a “visit” for the survey if deer were standing relatively close (within 2 feet estimated) to watering device, standing over the device, bent down to the device, or the head was down close to the water or drinking water.

Because cameras were set to take a picture every 30 seconds, it was assumed the deer close to the device had taken a drink. This could lead to some false recordings, so visit numbers could have been actually less than recorded for the survey.

Effectiveness of capturing water

All six watering devices maintained water levels ranging from 60-90% during the survey period. The functionality of these watering devices is evident with almost 10 inches of rain over this 3-month period, and when they are properly sited to capture runoff, devices are continually replenished. Even with very hot summer days between rain events,

water remains available on the property.

Deer visits and days visited per month increased steadily over the July, August, and September period, although rainfall increased in August to drop approximately 50% in September from the August amount. Rainfall was documented by *Field View* which I have found to be fairly accurate, + or - 5% as checked in my rain gauge on the property. Factor in the 4.5 inches of rainfall in August and 2.2 inches in September, overall deer visits and days of visits still increased compared to July numbers. This is probably due to the fact water from rainfall is basically unavailable within hours of the event (runoff leaves property quickly) and deer continue to seek available water from watering devices.

Off Property Water Sources

The closest permanent water sources off my property are as follows:

One small pond is approximately 156 yards to the north from my

closest watering device; two small ponds are approximately 229 and 168 yards east from my closest devices; two small ponds are approximately 528 and 1,584 yards west of my closest devices; another small pond is approximately 368 yards northeast from my closest device.

Availability of permanent water for White-tailed Deer

Wildlife biologists generally recommend free water sources should be established a minimum of one-half mile apart to meet basic deer water requirements. However, it has been my experience that by providing water using this water device at a much closer spacing has appeared to increase the use of many portions of our property by deer

Note: Even though other permanent water sources (6) are less than 1 mile from my property (with 4 ponds under 400 yards), deer utilized my watering devices during these hot months of the summer.

COMPARING TOTAL FOR ALL CAMERAS BY MONTH & RAINFALL, & TOTAL FOR THE THREE MONTH PERIOD -

MONTH	# OF VISITS	DAYS VISITED	# BY TYPE	RAINFALL (INCHES)
JULY	39	28	Antlerless- 15 Fawn- 6 Buck- 15 Unknown- 3	3.2
AUGUST	76	40	Antlerless- 33 Fawn- 18 Buck- 23 Unknown- 2	4.5
SEPTEMBER	96	47	Antlerless- 36 Fawn- 21 Buck- 37 Unknown- 2	2.2
TOTALS	211	115	Antlerless- 84 Fawns- 45 Bucks- 75 Unknown- 7	9.9 INCHES *as recorded by Field View

even before significant wildlife management practices were conducted.

Deer utilized my watering devices during these hot months of the summer even while water was readily available on surrounding properties. One can't conclude deer didn't use these other water sources, but I think it is reasonable to assume deer did not have to move as far to obtain water as result of my water supply within these 80 acres.

Maintenance of Watering Devices

Watering devices should be checked at least twice a year to insure they

are functioning properly. Any leaves, twigs or limbs, small rocks, sediment, vegetation, logs and other debris should be removed during these inspections to allow maximum water holding capacity of the device. I recommend from experience, devices should be checked in late spring and again in late winter. Replace the wooden escape ramp as required. These poly-plastic watering devices will provide many years of usage by wildlife if properly maintained since my devices have been in place since 1997. Only one device of the eight has evidence of squirrels chewing along the edges, but there has not been enough damage to merit replacing it yet.



Eastern Wild Turkey visited two days in September to two different watering devices

**Summary: Total Deer Visits/
Days Visited From July 1 to
September 30**

- A total of 211 deer visits to the 6 Wildlife Watering Devices during this period were recorded.
- Deer visited the 6 watering devices 115 days of the three-month survey (552 camera days).



Gray squirrels also utilized the devices during all three months of the survey.

Low Hanging Fruit

This is an easy habitat management practice to implement at low cost.

Private landowners should evaluate sources of permanent water on their property to determine availability. If permanent water is limited, landowners/managers could provide this component of habitat though the installation and management of wildlife watering devices utilizing poly-plastic half-barrels as utilized in this survey.

Any addition of water sources to properties using this method could provide wildlife benefits.

Could having these watering devices placed over my property at such a high level (approximately 1 per 10 acres) help meet this component of habitat and reduce travel distance for deer to obtain water?

Sure, in-depth research may need to be conducted to find the answer for certain but observationally and considering the

results of this survey, my gut feeling is, they are. Another plus, numerous other species such as songbirds, frogs, 2 species of salamanders, box turtles, gray squirrel, turkey, raccoon, opossum, bobcat and cottontail rabbit have also used this device.

Special Note:

If land considered for installing these watering devices is in a Chronic Wasting Disease (CWD) Zone, deer utilizing these could potentially spread the disease through this watering device.

However, any condition that concentrates deer such as small ponds, small food plots, mineral blocks and deer feeders all also have the potential to spread CWD.

Monitoring Food Habits of Largemouth Bass

By Scott Brown



Scott Brown is a Biologist and regular contributor to Wildlife Trends Journal with over 35 years experience in research and managing natural resources throughout the Southeast. Scott founded Southern Sportsman Aquatics & Land Management in 2007 and now has clients from Texas to Florida and into the Carolinas. Contact him at tazmanlabs1@gmail.com or (336) 941-9056.

Sometimes it is as easy as looking down a largemouth bass throat to see what they are feeding on. Sometimes it is easy to identify a fish by the tail, other times it is more difficult.

We frequently have clients ask us what their largemouth bass are eating. Through electrofishing we know what forage is available to them, but by doing a food habits study we can tell them what they are eating. Lake owners can also conduct their own food habit studies throughout the year, as diets change with food availability and sizes of bass in hand from angling. Lake owners/managers can use four techniques to examine largemouth bass stomach contents.

The first technique is by feeling the stomach. The least invasive is by looking inside the bass's throat for a tail or foot sticking out. The most invasive is cutting open the stomachs of small bass that are being removed. And the final method is tubing bass and releasing them afterwards. This technique is the most accurate without having to kill the fish.

The first, and one of the least invasive techniques to check large-

mouth bass stomach contents is by feeling the stomach between your thumb and index finger. You may be able to feel a fish, crayfish, snake, frog or large insects like dragon flies, grasshoppers, and cicada. Obviously, this technique is the least accurate, but it can identify with certainty what type of food has been ingested. Unless a small catfish or bullhead has been swallowed, a more detailed identification of fish species is not probable during most encounters. For

example, if you have been stocking crawfish, then this technique is noninvasive, quick and will let you know if your bass are targeting and benefitting from eating crawfish. The more you perform this technique and have an idea of what things are present in your waterbody, the better you are at it. We have a client in South Florida where bass, at certain times of the year, are targeting small, armored catfish (brown Hoplo), which are very easy to identify using this method, along with small turtles and crawfish, with hard shell and sometimes even the claws can be felt using this method.

The easiest and least invasive technique to analyze stomach contents in a largemouth bass is looking down the throat. I have seen fish tails (most common), frog feet, snake/lizard tails and bird feet sticking out from the stomach entrance. If you know your fish tails, many fish such as golden shiners, shad, catfish/bullheads and black crappie can be identified, while identifying beyond a bream species (bluegill, redear sunfish, warmouth, green sunfish, etc.) can be harder to get to the species level. Which is not that important as identifying that it is a bream species. Knowing species tail shape, coloring and markings can all help to distinguish shad, from shiner, from bream, from catfish or bullhead, from crappie, etc.

I recommend to all our clients when removing small bass to cut open their stomachs with a sharp pocketknife before throwing them into the frying pan. Obviously, this is the most invasive method to observe stomach contents as the fish is sacrificed to see what it has been eating, but the most accurate. You can see firsthand what the stomach contents are. This is not a fool proof method, as each obser-

vance is in a different stage of digestion, leaving several “unidentified fish remains” (UFR) on your data sheet. Usually large insects, crayfish, turtles and catfish/bullhead are identified, but even the most seasoned fish biologist cannot identify the contents beyond a wad of goo, as in some cases. You are already removing the fish from the lake as part of your annual small bass removal program, so gathering some information if you are curious or have been instructed to by your professional lake manager is advised. Cutting open stomachs is a method that does work on feed trained bass to verify they are eating feed or if they are switching over to live forage. This technique may not be for everyone, as it can be unappealing in nature to the squeamish.

The final technique used mostly by professional fish biologist is called **tubing**. Where a PVC tube that just fits down into the fish’s stomach opening is inserted and the stomach contents is sucked out to be analyzed. Done properly it is fairly noninvasive and does not harm the fish, but done improperly can hurt the fish. Not keeping the fish out of water too long causing stress or damaging the stomach lining or scales in the process. The bass probably worked hard for that meal, so losing its lunch will be more upsetting than the process, if performed properly. Tubing is another way to monitor food habits of feed trained bass to verify that they are eating feed or have switched to live forage.

The tubes vary in length and diam-



Electrofishing can tell us what forage is available in a waterbody, but it may not be what they are eating at that time. These two fish came from different lakes in different states, one is getting fat off Tilapia and the other threadfin shad.



Although the fish taken from this bass is partially decomposed, looking at shape, color and size, it is a shad.



Standard set of PVC tubing for checking largemouth bass stomachs. This set is not completed as the end has not been beveled to reduce harm to the fish.

eter to accommodate the various size bass you will encounter. One end has the edge ground down (beveled) to reduce scratching the esophagus or stomach lining and harming the bass during the process. Once the fish is captured, it is placed in the aerated tank, the proper size tube is chosen, inserted underwater (both fish and tube) all the way into the back of the fish's stomach. Once the tube is all the way in, the palm of your hand is placed over the tube. The fish is then pulled from the tank flipped vertically

mouth down and the tube is slid out, keeping your palm over the tube forming a vacuum to suck out the contents in the tube. The tube is quickly placed over a collection tub or the measuring board, your



Tubing largemouth bass is the most accurate technique for identifying food in a bass stomach.

hand comes off the tube opening ending the suction and the water and any contents flow out. All while you quickly place the fish back into the water tank or release it into the waterbody. Depending on how much forage you have in your population, you may experience several empty stomachs based on time of year and time of day you are collecting bass or angling. Besides empty stomachs, you will encounter samples that are unidentifiable as the digestion process is too far along for a positive ID. Sometimes a food item is present, you can visually see it, but it is not removable as sometimes with big bream due to their tall body size, they go in, but don't come out. In that case, do not force the tube over the contents inside the stomach and damage anything. Check the throat and feel the stomach for additional clues for contents identification.



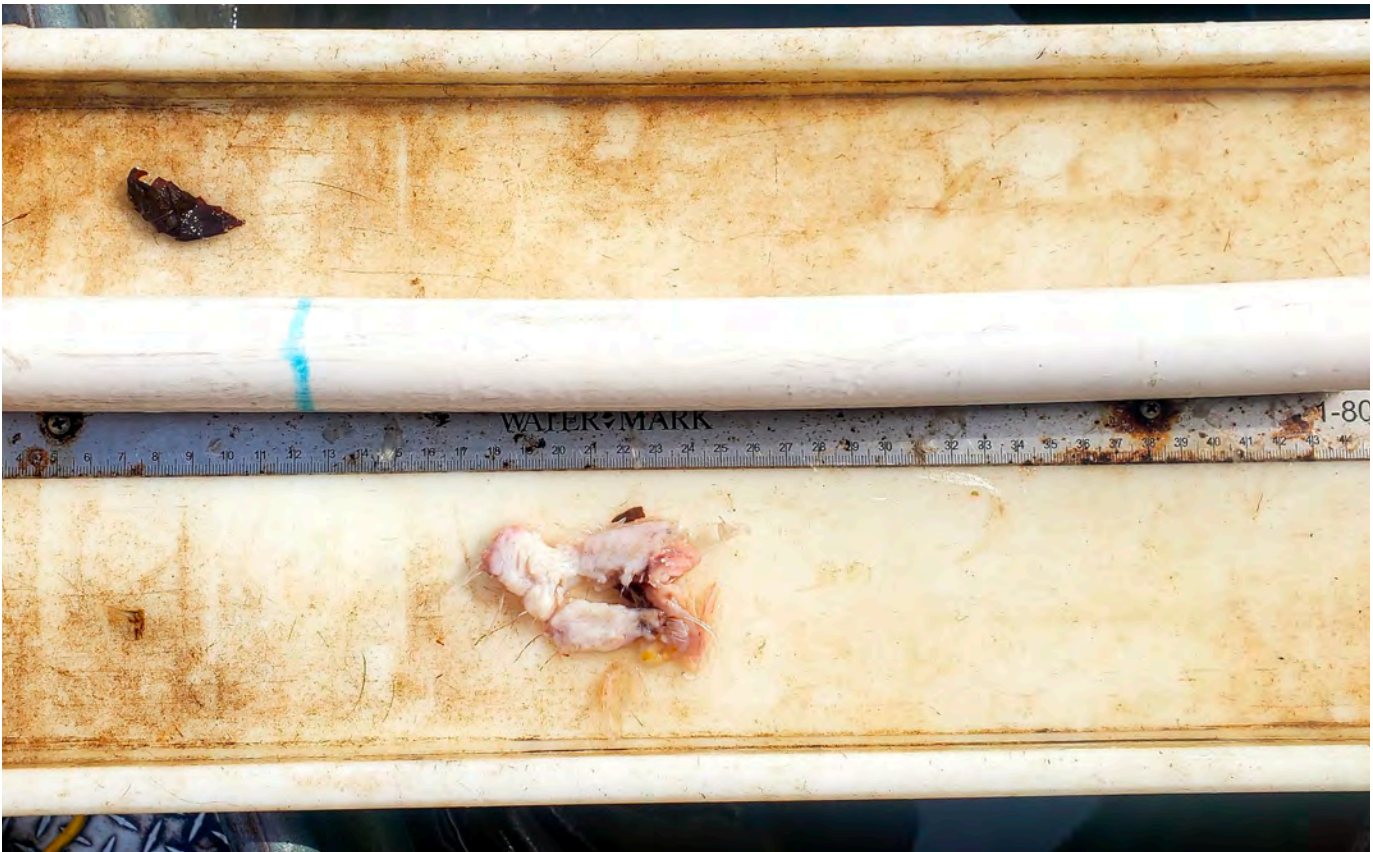
Sometimes the stomach looks full but may be empty. Feeling the stomach and looking down the throat prior to tubing is recommended, so it is not done on an empty stomach.



*Not sure if this is a redear sunfish or a bluegill, both are present in this waterbody, but we know it's in the *Lepomis* (true sunfish) genus.*



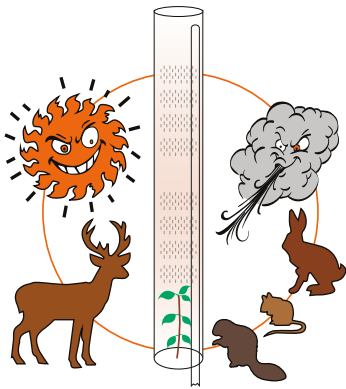
Knowing what possible forage species are present helps with identifying the food no matter the technique being used.



Here is a typical pile of goo, or “unidentifiable fish remains” (UFR) on the data sheet. Sometimes vegetative debris will also be present, but that was accidentally ingested when grabbing the forage organism. Catfish and redear sunfish may have an excessive amount of filamentous algae in their stomach from eating freshwater clams, mussels and snails which those organisms hide in.

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Checking stomach contents throughout the year can help with managing bass forage. When creating or improving a largemouth bass forage base, having multiple species in different size groups helps supply the forage required to grow trophy bass from birth to quality size with no growth interruptions and at a quicker rate. We always try to establish several species and various sizes of forage for predators. This can allow some forage species, once greatly reduced in numbers, to bounce back if the bass have started targeting something else. A forage base of minnows, bream, shad and shiners as opposed to one species is best. Along with good habitat that supports insects, grass shrimp, and possibly crawfish is even better. And removing small bass ensures bass at different life stages and sizes can readily have food available. The more forage available at all life stages, the better growth rates with uninterrupted growth as they move from one forage size and/or species to the next. This translates into quicker growth and greater numbers of larger bass.



Although these bass look like something is in their stomachs, looking down the throat and feeling the stomach revealed they were robust and healthy, but no recent ingested food was present.

There are many kinds of largemouth bass forage species. Largemouth bass routinely eat minnows, mosquitofish, grass shrimp, bream/panfish, golden shiners, shad (both threadfin and gizzard), Tilapia, trout, yellow perch and crayfish. There are instances where largemouth bass have been documented with small bass (cannibalism), crappie and catfish in their stomachs, but unless

it's a unique situation, these are not in a largemouth bass's regular diet, nor would we normally recommend managing for or stocking any of these as a forage for bass. On occasion, largemouth bass will also eat insect larvae, insects, frogs, tadpoles, snakes, turtles and ducklings, but these are not a steady food source. These species are consumed on occasions or during a

short time period each year when the opportunity presents itself. Catfish/bullheads and redear sunfish may have been observed with an excessive amount of filamentous algae in their stomachs from eating freshwater clams, mussels and snails, which those organisms hide in.

One of the most common uses we

see for checking stomachs is if a particular forage species has been stocked and the landowner needs to know if the species needs restocking. Threadfin shad are a perfect example where the lake owner has stocked threadfin shad and early on sees bass feeding on them in open water or sees the shad schooling early in the morning or before dark in open water at the surface. Then neither activity is observed for a while. Or to see is if your threadfin shad have survived a cold winter, checking stomachs late winter/early spring may notify you of restocking being needed. Another example are crawfish, they get stocked and maybe not seen very often, are they still present, or do they need restocking? Another reason you

might monitor largemouth bass food habits if feed-trained largemouth bass and/or striped bass hybrids have been stocked. Making sure they are eating feed is important, and if not, identifying what forage they have switched to can help with management decisions in the near future.

Food habits of largemouth bass is not necessary to manage a quality or trophy fishery, but more and more lake owners are becoming weekend fish biologists and these techniques can help you add more information to your data collected, which can be considered when making management decisions in the future.

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Debunking Pig Catching Myths

By Dana Johnson

“When pigs see other pigs in a trap, they become “trap shy”. Therefore, you must catch them all the first time.”

“Night and day hunting, shooting over bait, opportunistic shooting from vehicles, running dogs, and drop nets are an effective way of controlling hog populations.”

“The wider the door, the more pigs you catch.”

“Pre-baiting is essential to successful hog trapping. Give hogs several days of entering and exiting the trap prior to setting it. Longer lengths of pre-baiting usually result in increased trap success.”

“Feral hogs are smart, so the trapper must be smarter.”

Have you ever heard or even yourself said such statements about how to successfully control a feral hog population? Over the years, the increasing population of feral hogs has caused crop and land destruction, resulting in a costly and time-consuming problem for farmers and landowners. Rooted hay fields, large devoured sections of crops, large wallows created in roads, and displaced native wildlife are among the few problems creating the nationwide demand for removal of these highly reproductive animals from private and public lands.

A new idea emerged and feral hog trapping was born. But how do you trap an animal that could range in weight from 20-200+ pounds and run in groups of 1-25 or more?

Dana Johnson has a Bachelor's Degree in Wildlife Science and is employed with the USDA as a Wildlife Specialist. Dana has over 20 years of field and research experience managing wildlife and assisting landowners with producing quality wildlife habitats. He has authored numerous articles on issues ranging from animal damage to food plot preparation. For more information about feral hog management, call Dana at 334-301-1417 or email dana.k.johnson@usda.gov.

Should a trapper use small portable traps or big circular traps? What size should the entrance be and how tall should it stand? What is the best method for releasing the trap door once the pigs are inside? Where should the traps be placed for maximum capture? What should be used as an attractant or bait? What do you do to deter non-target animals such as deer? These were, and still are, some of the most common questions about feral swine trapping.

I have been trapping and researching feral swine for over 20 years and have heard it all; what to do, what not to do, where to put the trap, a better method to trap, and have even been told, "The only way to trap a hog is...." (insert over 100 different endings). When it comes to trapping pigs, every trapper will defend their method as the

most productive. Put ten trappers in a room and ask them one question and you'll get 10 different answers. They are all correct. I've had the opportunity to work with some of the most successful pig trappers in the country and spent years discussing and dissecting each of our methods to slow the growth of these destructive omnivores.

Many years and thousands of captured hogs later, I started noticing what I call, "pig trends." These patterns of success or failure, and long hours of camera surveillance led me to begin questioning the legitimacy of the common practices and opinions above. Furthermore, landowners, who typically rely on "the experts," accept such common practices and opinions without question to the tune of thousands of dollars to control or rid their feral hog population. I began work-

ing with Dr. Mark Smith, a renowned researcher and professor at Auburn University, to add scientific "evidence based" knowledge to the common methods I and many landowners were using. My goal was to use reliable and valid data to determine the best practices in feral pig control. This article unveils results of our research to date. Its purpose is to inform individuals engaged in or considering a hog removal method, to dispel myths, and to increase the success of maximum feral hog removal from any property.

Multi-Catch / Continuous Catch Doors – Do They Work?

***Common belief and practice:** Multi-catch doors increase catch success because after the doors shut, pigs on the outside of the trap could continue to enter and not escape.*



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— Will Primos

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Question: *How many pigs were caught using this type door and was it cost effective?*

Pigs use their snout to root for food sources and because of their low stature they are constantly having to push through thick areas of brush. The multi-catch door intrigued me because it allowed an animal that likes to push in or up to enter a trap after it had closed. A door that allows a pig to use its natural tendencies makes sense. On the other hand, I couldn't help but remember what I had been told about pigs becoming trap shy. If pigs see other pigs in a trap, they will avoid it and all future traps they encounter.

I decided to test the "multi-catch" door style and erected a few traps with cameras positioned at the door. The objective was to determine the effectiveness of capturing additional pigs after a door had closed using three different types of continuous-catch doors. The three doors tested were the root, saloon, and trainer. A pig had to use its natural tendency to "root" to push the root door up and the pig walk in under it. The saloon door, as the name implied, opened a double door that swung horizontally. The trainer door, my design, was structured to get pigs accustomed to pushing in and out of the door until at such time a trapper decided to "set" the door to only be an entrance. You can check in but you can't check out.

I used camera surveillance to view pig activity upon pushing through the door and entering the trap. Additionally, I captured activity of pigs on the outside of the trap once pigs had entered and a door was shut. This project was set up in four locations including both pine uplands and hardwood bottomland. During the project, a no harassment policy was imple-

mented meaning no stalk or dog hunting, trapping, or night/daytime shooting from vehicles. The pigs needed to be calm to avoid any negative reinforcement to the property or traps.

Each trap was built the same; 15-foot diameter circle with 11 t-posts and livestock panels a minimum of 4 foot high. Each panel had either 2x4 inch or 4x4 inch grate openings. The first is commonly referred to as a horse panel while the latter is known as a goat panel. The 30x36 inch high multi-catch doors were either commercially purchased or built to specifications by the local Technical College. After the traps were built, they were baited until pigs started entering them. Once pigs were entering traps, cameras were programmed to take five pictures with no delay every time motion was detected. The traps were checked daily, and captured pigs were released. Duration, number of visits, and sounder identity was recorded.

After reviewing 40,000 photos, 239 unique individual pigs in 24 sounders were counted, including 27 boars. Each sounder averaged 8.8 members and approximately half the sounder was captured (traps were purposely set not to catch the entire sounder). Other traps were filled with bait and the door shut to see if any pig tried to push or root into the trap. Interestingly enough,

pigs not captured stayed around the trap approximately one hour after the door shut. Some were even seen napping right next to the other members of the group that were caught just inside the panel.

Findings were remarkable. After analyzing the results of the study, we concluded the multi-catch door didn't capture a substantial number of hogs and were not cost effective in trapping multiple hogs at one time. Of the 222 times hogs were observed standing or manipulating the door, only 11 pigs were successful in rooting or pushing in the continuous catch door to enter. This equated to a 5% success rate of a hog entering a trap constructed with a multi-catch door. Surprisingly, 4 escaped after one opened the door. There are still questions that further research may or may not provide different results. However, it should be noted that this project and parameters were tested by another university and its results were very similar. One of the most amazing results was that 72.5% of pigs were recaptured after release. Seems that a trapped hog may not be so "trap shy" after all.

What is the Impact of Pressure on Hog Population Control?

Common belief and practice:
"Night and day hunting, shooting over bait, opportunistic shooting from vehicles,





running dogs, and drop nets are an effective way of controlling hog populations.”

Question: Do these methods really control a hog population or are they just “fun” revenue opportunities?

Many folks I’ve encountered report using any and every method at their disposal to “control” the fast growing hog population on a property. Some have even applied the “if it’s legal then we do it all the time” philosophy with some bending of the rules slightly just to remove a few more pigs.

These methods have included night and day hunting, shooting over bait, opportunistic shooting from vehicles, running dogs, trapping and drop nets. I even know of one instance where explosives were used.

I have a different approach and philosophy to hog removal which is rooted, no pun intended, in my life-long experience as a hunter. It’s all about the pressure. Activity of pressured animals is different from that of non-pressured animals. Would you rather deer or turkey hunt on a 1000-acre tract with ten other hunters who are always there? Or, would you rather hunt those same 1000 acres, where weeks go by without human interference? When I present at seminars, my audience

chooses the latter 100% of the time.

When I start working a property for wild hogs, I recommend stopping all activity while trapping, eliminating the factor of negative reinforcement to the pigs. Telling a landowner not to shoot at a hog standing in front of a trap is a hard sell, but my theory was a pressured animal may change its movements to avoid a location. The pig is not avoiding the trap itself because the trap is an inanimate object.

However, they are avoiding the activity of the human shooting at them, which could cause them to move to other areas. I always theorized that letting pigs “relax”, un-pressured by human presence, would increase trapping success but I didn’t have any scientific evidence to back up my theory. The reliability and validity of the previous door study and the amount of camera work that was going to be involved led me to call Dr. Smith once again with this new hypothesis.

This project was conducted primarily in central Alabama with the same trap parameters as the continuous catch door project. The only difference was the traps were not equipped with doors, just panels. Every 4 to 6 days, cameras were used to confirm that pigs were

entering the traps on a consistent basis. After the traps were pre-baited for a few weeks and pigs were seen entering and exiting freely, they were monitored for one additional week, upon which time direct or indirect pressure was applied. Indirect disturbance was defined as recreational hunting and increased vehicle traffic. Direct disturbance was defined as shooting at pigs in a trap, night shooting, and running dogs to chase down pigs.

Three trap sites were used in the conduct of the disturbance activities. We simulated many of the activities trappers typically use such as nighttime spotlighting, day riding, discharging of firearms and used pyrotechnics to create additional sound disturbances. We also participated in multiple hours of night hunting, dog hunting, and shot multiple rifle rounds when doing so. Over 400,000 pictures were taken identifying 190 unique individual hogs in an average sounder size of nine.

After the completion of the disturbance activities, traps were monitored for one week and average pig presence near the traps was calculated to determine any significant impact. The project measured the average number of days, visits, and amount of time for each visit a



week before and after the harassment. After compiling and analyzing data, this project showed validity to the theory that pressuring pigs during trapping can have a negative influence on trapping success. All areas of the study showed a drop in the number of days a pig visited a trap as well as a drop in the amount of time a pig spent near a trap during each visit.

The small sample size, variability in behavior, and disturbance application are all variables we considered to have possibly impacted our results. However, there was a definite trend present that harassment, or pressure, does interfere with the likelihood a pig will visit a trap. Removal techniques that rely on a heavy amount of pressure or disturbance are likely to lower trapping success.

Does Size Matter?

Common belief and practice:

“The wider the door, the more pigs you catch. Don’t use doors less than 6 feet wide or you will have less trapping success. Pre-baiting is essential to successful hog trapping. Give hogs several days of entering and exiting the trap prior to setting it. Feral hogs are smart, so the trapper must be smarter.”

Question: *Does the size of the trap door really matter? Do I need to pre-bait? Are pigs really smart?*

Budgets are the one thing I have found in common amongst all pig trapping programs. Expenses such as bait, panels, t-posts, gas and hired trappers can really add up. When I started trapping, I used 32”X48” doors set either vertically or horizontally. I always ask my seminar attendees to guess at how I came up with this particular size door and only a couple have been right. The answer? I can cut a 96” sheet of plywood twice and make three doors. Simple logic and it saves money!

Since I began trapping hogs, I have heard over and over that feral hogs are “smart” and methods must be used to outsmart them at their own game. One of those methods is by using a larger door, up to 6 or even 8 feet wide to catch the entire sounder. It is also common to hear that when using a smaller door, one must pre-bait 2 weeks prior to setting a trap because it takes longer for all the pigs in a sounder to enter through the smaller opening. It would seem to make sense, especially to a novice trapper or

landowner who is an attorney or a doctor, not a wildlife expert.

I have reviewed many years of photos and captured thousands of hogs and never concluded the size of the door lowered my catch success. I also contended that, based on my photo evidence, that one did not have to pre-bait for 2 weeks before setting traps. Once again, I contacted Dr. Smith to devise a research project that could produce actual data regarding the impact of door size and whether or not pigs were “smart” enough to know the difference.

Our method included using the same size traps as previous projects, yet different size doors. We used 48-inch wide doors on some traps while others used 32-inch wide doors. We would not use 8-foot wide doors or pre-bait unless entry time exceeded 2 weeks. Researchers baited traps using corn and a motion sensor camera was used to take pictures of any hogs around the trap. Trap monitoring began immediately once the traps were baited and set. Again, we did not engage in any pre-baiting. We also instituted a policy of no human harassment or disturbance based

on our previous research.

The variables of this particular study included entry time defined as the first time a pig/sounder was caught on camera until the time one pig in the group entered the trap. Time to 50% was defined as the first time a sounder was caught on camera until 50% of pigs identified during an event were observed entering the trap. Finally, time to 100% was defined as the first time a sounder was caught on camera until 100% of pigs identified during an event were observed entering the trap. Over 400,000 images were taken over the two years on the project site with 47 sounders and 27 individual boars identified.

Results from the traps with 32" wide doors showed that the first pig entry took, on average, less than a day for at least one pig from a sounder, to enter the trap. It took an average of 7.2 days for the 15 individual boars to enter through a 32" wide door. For 50% of the sounder to enter, it took an average of .4 days. Lastly, for 100% sounder entry, it took 3.9 days. Results from the traps with 48" wide doors, first entry took an average of 3.3 days for each identified sounder and 12.5 days for the 3 boars identified. It took an average of 1.2 days for 50% entry for sounders and 5.2 days for 100% sounder entry.

Data results indicated there was no statistically significant difference between the 32-inch door and the 48-inch door as it relates to the time it took for a pig to enter a trap. Fellow researcher, Mathew George, noted, quite often, entire sounders entered the trap as soon they walked up to it and were 100% caught within minutes. Mr. George also documented that, in many cases, pigs were observed in and around traps that weren't even

baited or set. The 8' door, which is a widely commercialized product, was never tested because at no time did it take more than a day for a hog to enter a trap. Pre-baiting was also not necessary for the same reason.

Finally, are hogs really that smart? What makes feral hogs so "sophisticated" in their brain development that humans must spend thousands of dollars to "outsmart" them? The results of our research has led us to conclude hogs are no different than any other wild animal, and in most cases, are very trainable. They simply respond to positive or negative reinforcement, similar to how professional dog trainers teach a dog to roll-over, sit, and stay. When a trapper genuinely desires to control a hog population and avoids negative reinforcement, they are likely to have a successful trapping program.

Conclusion

New products and trapping methods are being developed daily when it comes to marketing methods of hog trapping. Landowners are the winners, or losers, however you want to look at it, when it comes to revealing the true effectiveness of these new methods and products. For that reason, I strive to educate myself, and landowners, on the



most productive and equally important, cost-effective methods of controlling hog populations.

I am excited to report additional research projects have been conducted and future research projects are already underway. I plan to report those findings once data is finalized and analyzed. Questions such as, "What is the best hog bait?" and "What is the best time of year to implement a trapping plan?" will be answered along with more evidenced-based information to help landowners make the most informed decisions to ensure maximum trapping success.



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Seeing the Forest through the Trees to Profit Bobwhite

Part II: The Hard Line on Hardwoods

By Theron Terhune



Dr. Theron Terhune is a Wildlife Biologist and Research Scientist at a privately-owned property near Wilmington, NC and a Research Fellow at the Spatial Informatics Group – Natural Assets Laboratory (SIG-NAL). He received a B.S. and M.S. degree from Auburn University in Wildlife Science and a Ph.D. in Forestry and Natural Resources at the University of Georgia. Theron has studied gamebirds and fire-affiliated species for more than 20 years during which he has published 65 scientific articles in peer-reviewed journals and 34 popular magazine articles.

Live oaks (*Quercus virginiana*) donning Spanish moss dripping from limbs like icicles are true emblems of the South. The human-nature connection is often heightened with these oaks as they exude a historical and sagacious vibe, shaping the landscape of one's mind with the likes of quail hunting in the Old South. For many, live oaks increase the aesthetic beauty when coursing the piney woods with bird dogs. Personally, I can't get enough of a big mature white oak with their thick overlapping layers of bark, like pages of a book hiding the words of a story. Aside from aesthetics, leaving select hardwoods (live oaks, etc.) provides functional value to bobwhite and the ecosystem they inhabit. However,

the presence and especially overabundance of live oaks and other mature hardwoods shades understory vegetation and impedes growth of grasses, forbs, and shrubs characteristic of southeastern pine savannas.

In Part I of this article, the emphasis was on the importance of constantly evaluating forest stand conditions relative to timber density and canopy closure such that sunlight penetration to the forest floor is critical for facilitating

healthy herbaceous growth needed to produce quality bobwhite cover at the ground level. When factoring hardwoods into the equation, the same sentiment is warranted to profit bobwhite, but balancing objectives and species abundance targets while managing personal connections to these majestic oaks should be judiciously considered. Determining an acceptable level of hardwoods in upland pine stands, however, without negative consequences to bobwhite habitat conditions can be tricky. As such, in this

“The density of timber stands should receive constant attention on the well-managed quail preserve.”

-- Herbert L. Stoddard, The Bobwhite Quail, Its Habits, Preservation, and Increase, 1931

article, the goal is to give you ammunition to understand when to pull the trigger on hardwood reduction or let them go.

Why are hardwoods a concern?

Although hardwoods naturally occur peppered throughout the uplands in the Southeast, their distribution and density has increased substantially due to changes in fire application, such as fire suppression or exclusion, and more intensive forest management practices such as aggressive timber thinning and monoculture pine production. Anthropogenic disruptions of these regimes have played a large role in the global expansion of woody vegetation creating midstory and overstory canopy closure in once open grassland and savanna ecosystems. The reduction in burn frequency (>3-year fire return intervals) has negatively impacted bobwhite habitat by shifting cover conditions to hardwoods and vines rather than the desirable cover conditions of a mixture of grasses, forbs and legumes, and shrubs. The lost practice of burning in the piney woods throughout the Southeast has contributed greatly to the decline in bobwhite numbers.

For the past several decades, much of the forest land in the Southeast has not been managed using frequent fire (<3-yr fire return interval) and therefore does not support quail or scores of other fire-affiliated species (e.g., Bachman's sparrow, red-cockaded woodpecker). Frequent prescribed fire remains the most effective management tool for vegetation maintenance and hardwood control with demonstrably positive effects on bobwhite populations. However, even on properties managed intentionally for bobwhite using frequent fire, forest stand conditions are



Because of the lack of fire, pines compete with water oak and sweetgum and other hardwoods. Many of the forest land in the Southeast that has not been managed using frequent fire and therefore does not support quail or red-cockaded woodpeckers.

dynamic and midstory hardwood encroachment is a constant battle for land managers. As stated in Part I, Stoddard said: *“the density of timber stands should receive constant attention on the well-managed quail preserve.”* This is true for pine timber and hardwoods alike! Midstory hardwood encroachment presents a major problem for those managing to maximize either timber or quail. Hardwoods pilfer nutrients and moisture from more desirable trees and create less desirable habitat structure for many wildlife species. Thus, *keeping the good stuff good* requires constant attention to the timber stand density and species composition.

Mechanical hardwood reduction is a common management tool employed by land managers to improve upland stand conditions for bobwhite when midstory and overstory hardwoods become overabundant. Hardwood reduction is thought to increase bobwhite abundance by 1) increasing the amount of understory vegetation and overall usable space for quail, and 2) decreasing predation risk by removing key habitat of common preda-

tor species such as arboreal snakes, raccoons and avian predators that use dense canopy to stalk prey.

Given that mechanical hardwood reduction is expensive (~\$125 – \$150 per acre) with potential negative impacts on non-target species including disruptions to soil and ground-cover vegetation, careful consideration to its implementation is warranted. And, although hardwoods often get a bad rap, they do provide ecological value. For example, in one study in Florida, oaks were linked to facilitating longleaf pine seedling establishment (Loudermilk et al. 2016). When implementing hardwood reduction, the focus should be on selective removal of non-productive and invasive hardwoods such as sweetgum and water oak. Leaving a few dominant hardwoods such as white oak, black cherry and live oaks will add diversity, provide desirable habitat structure and food value for several wildlife species. The presence of moderate amounts of hardwoods in the uplands will also provide a source for woody structure resprout and refuge for many species including bobwhite from

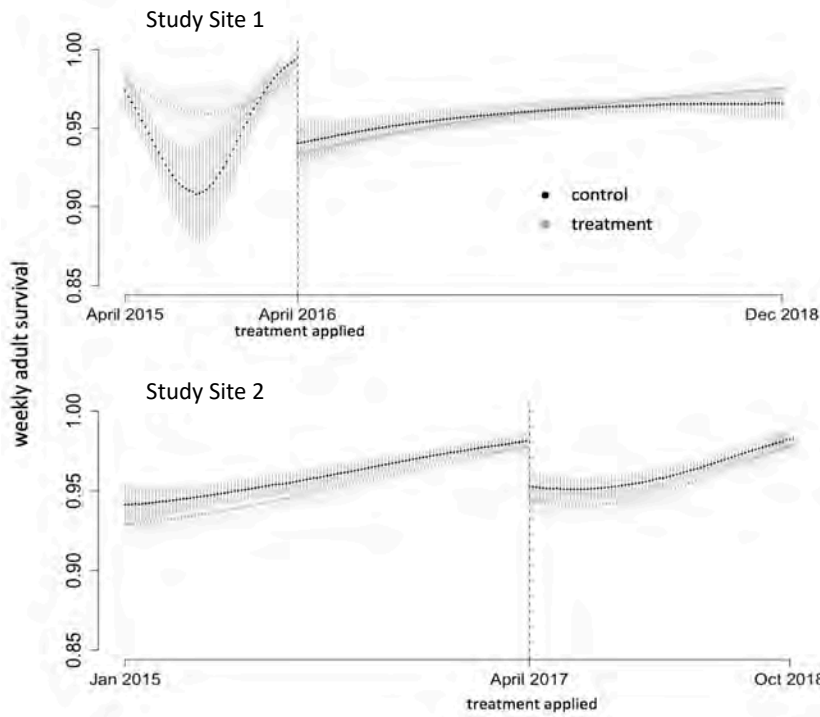


Figure 1. Northern bobwhite survival during 2015–2018 on 2 different study sites in north Florida where hardwood reduction (treatment) was implemented and a control site where no hardwood reduction took place. Hardwood density was similar on the treatment and control sites prior to hardwood reduction. No difference in survival was observed during this study on the control and treatment areas (see Malone et al.).

fire or inclement weather.

A manager in the Red Hills once told me: “I leave a fair number of live oaks because during the hunting season and poor weather like rain, and especially cold rain or snow, that is where you will find several coveys huddled together.”

Research has demonstrated that bobwhite broods often loaf under live oaks during hot summer days in August and September and coveys can be found under live oaks during cold winter rains. Additionally, retention of shrubs and small hardwoods including huckleberry, wax myrtle, dogwood, and gallberry is highly encouraged as these provide excellent protective cover for bobwhite. Likewise, we often find soft and hard mast items in crops of harvested quail, especially early in the hunting season. Acorns are highly nutritious, add diversity to their diet, and take fewer to meet the daily caloric requirements of a quail than many

other native or supplemental seeds. Taken collectively, leaving a select number of “legacy” or “signature” live oaks can add wildlife value and aesthetics to the forest stand while benefiting bobwhite.

Does hardwood reduction work?

When applied at a large scale and-or when overstory hardwood levels are high, mechanical hardwood reduction can create a new ground effect bolstering bobwhite abundance. This is especially true on sites with low-quality soils. However, hardwood reduction may not always be necessary and if implemented when encroachment levels are low or at a small scale, positive results may not be noticeable. For instance, a recent study in north Florida found that hardwood reduction did not impact bobwhite survival (see Figure 1), nest survival (see Figure 2) or reproductive

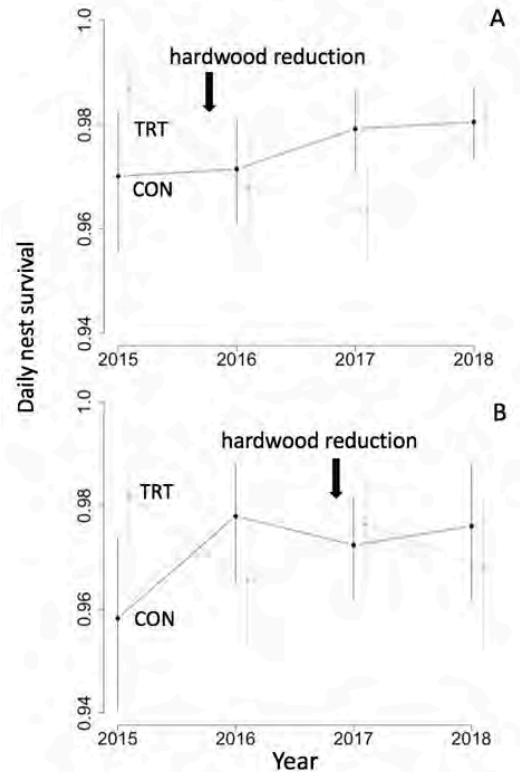


Figure 2. Daily survival, during 2015–2018, for northern bobwhite nests on 2 different study sites in north Florida where hardwood reduction (treatment) was implemented and a control site where no hardwood reduction took place (see Malone et al.). No difference in nest survival was observed in this study between the control and treatment areas.

output (see Figure 3). This study was conducted on 2 properties with high quality soils, already being intensively managed for quail, good bobwhite densities (>1 bird per acre), and hardwood density was moderate (1 mature hardwood per 2 acres, on average, with less than 15% canopy coverage). Therefore, a philosophy of “less is more” is not always the case even when it comes to hardwoods in the uplands.

The Red Hills Forest Stewardship Guide suggests that 2- 10 square feet per acre of mature hardwoods in upland pine stands aligns with historical dominance of pines, and one signature live oak may have a basal area of 8 to 18 square feet. This indicates that 1 live oak per 2

acres is reasonable for bobwhite management objectives. Thus, plucking a few hardwoods on a well-managed quail preserve with low to moderate hardwood densities is not likely to produce huge dividends and may even set you back if implemented at the wrong time of year or during times of poor weather conditions or simply have a neutral affect. However, on sites where hardwood density and hardwood canopy coverage are more extensive, positive results would be more plausible.

A study in North Carolina demonstrated that maintaining low to moderate levels of hardwoods on the landscape can increase overall avian diversity with limited negative effects on target upland species such as bobwhite (Hannon et al. 2021). They recommended 5 – 15% hardwood cover to maintain habitat diversity and ecosystem health. A common mistake when implementing hardwood reduction or controlling hardwoods is over-emphasis on precision and specificity which can result in homogenization of habitats. Reduction in habitat variability can limit options for managers trying to balance competing objectives. Thus, the goal should be to reduce hard-

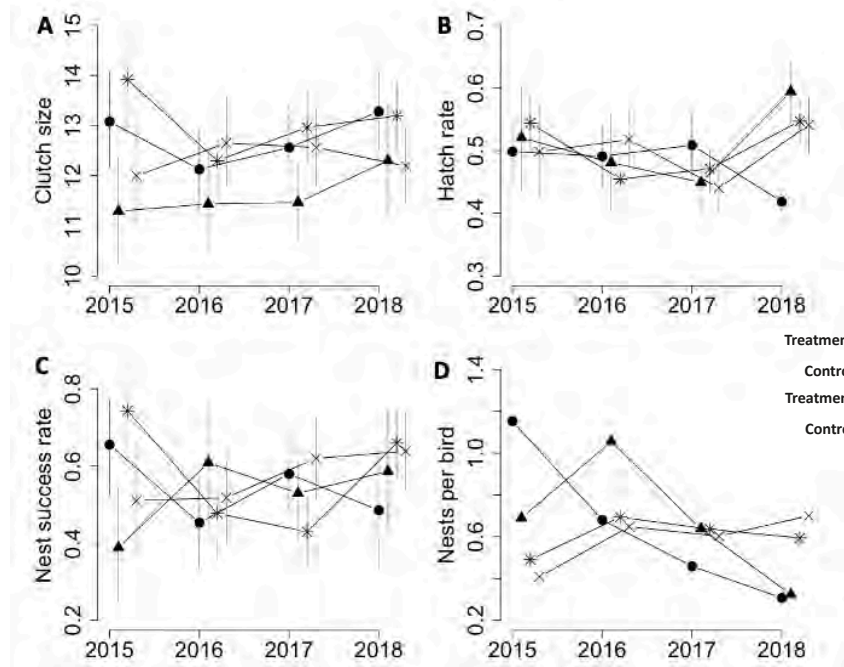


Figure 3. *Reproduction metrics for northern bobwhite, during 2015 – 2018, on 2 different study sites in north Florida where hardwood reduction (treatment) was implemented and a control site where no hardwood reduction took place. No differences in nest success, clutch size, hatch rate, and nest production was observed in this study between control and treatment areas (see Malone et al.).*

woods to **balance** the community needs rather than eradicating them or nuking them on landscape. As stated previously, hardwoods do provide ecological value such that retaining the proper balance will result in a healthier ecosystem while still observing stellar results for bobwhite.

What is the proper balance of hardwoods?

The short answer is it depends on your objectives. Maintaining the balance of hardwood density is accomplished similarly to pine timber such that when canopy closure increases, and ground-level cover conditions decline thinning or reduction may need to occur to open the canopy and allow sunlight

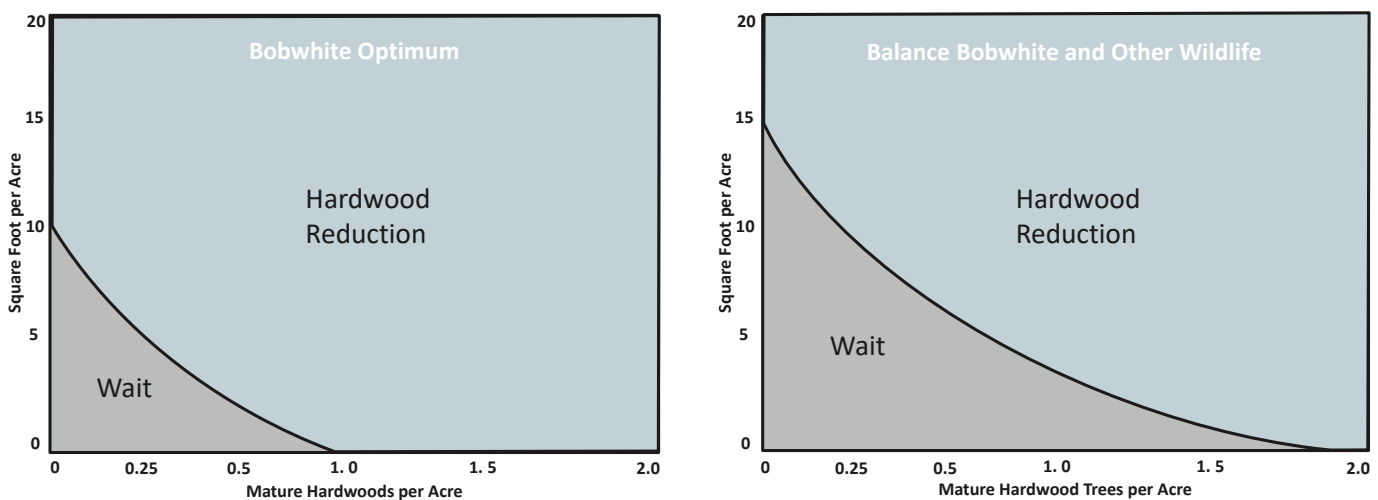


Figure 4. *Guidelines for implementing hardwood reduction when objectives are for (a) bobwhite primarily or (b) multiple competing wildlife objectives including bobwhite. If conditions are excessively into the blue shaded area hardwood reduction may be warranted.*



Two different snapshots of live oaks with varying levels of cover under the tree canopy. The image to the left is on soils with high quality soils but still provides relatively decent cover conditions whereas the picture on the right shows poor cover on lower quality soil. Some soils little-to-no cover exists under live oak canopies.

to penetrate the forest floor. Battling hardwood encroachment comes in 2 forms: (1) midstory and understory and (2) overstory or mature hardwoods. For controlling midstory and understory hardwood encroachment, research has shown that post-burn (after a burn) mowing hardwood thickets will result in improved grasses and reduced hardwood structure which will also have the added benefit of increased efficacy of future prescribed fires. This is preferential to chemical control because it does not set the hardwoods back too much to reduce shrubs below a level that is beneficial for bobwhite. Here the objective is to shoot for the Third Rule whereby roughly one-third shrub (woody cover) is available with the other two-thirds being forbs/legumes and native bunch grasses, if bobwhite is the primary objective. This rule may vary somewhat with additional wildlife or other objectives.

When evaluating the overstory or mature hardwoods, management and aesthetic objectives should be considered prior to hardwood reduction. If bobwhite is the primary objective, shooting for less than 10 square foot per acre or 1

mature hardwood (live oak, etc.) per acre (see Figure 4a). As such, to optimize bobwhite abundance when hardwoods grow above that point, hardwood reduction should be implemented using a selective approach based on your aesthetic objectives and preferences to achieve that balance. That said, it is important to note a property can support a huntable bobwhite population when hardwood density is greater than 1 per acre or greater than 10 square foot per acre, but the carrying capacity or total abundance level may be lower. I have found that 1 mature hardwood (e.g., signature live oak) per 2 acres is an excellent goal when trying to optimize bobwhite abundance.

If bobwhite is one among several competing wildlife objectives (such as turkey and deer), shooting for a higher number of trees is recommended; 15 square foot per acre or 1.5 hardwoods per acre would be more desirable while not being deleterious to the bobwhite population (see Figure 4b). Of course, on higher quality soils the window of opportunity increases for carrying more hardwoods while maintaining quality cover conditions for bobwhite. Figures 4a&b are general

guides, and it is not always about basal area and number of trees given that edaphic conditions and annual rainfall can influence cover conditions under and around mature hardwoods. Alternate or secondary wildlife objectives such as wild turkey and-or deer can benefit from leaving productive mast producing trees. In these situations, focusing on reducing “predator traps” will extend the window some also and mitigate potential negative impacts on bobwhite with the higher hardwood densities due to competing management objectives. Some common predator traps include hard edges along fields, wildlife opening, drains, or large mottes – hardwood reduction or edge feathering in these areas will result in improved survival of both bobwhite adults and chicks. Leaving the drains, wet areas etc. is also recommended as they will most always tend to be poor conditions for bobwhite but provide good refuge for turkey, deer, and other wildlife.

Take Home Message

Inappropriately precise management prescriptions may lead to unintended negative wildlife

resource outcomes. When it comes to hardwood management for bobwhite in the uplands, as with many things in wildlife management, there is not a one-size fits all approach or an industry standard, and less is not always more. That is managing hardwoods for bobwhite and-or other wildlife is all about balance! Determination of an acceptable level of hardwoods to achieve that balance in accordance with your objectives in upland stands can be tricky, but it is very doable when carefully weighing the objectives prior to implementing habitat management actions.

Hardwoods provide ecological value to the ecosystem as well as direct value to bobwhite, so it makes sense to keep as many hardwoods as possible without negative impacts on cover conditions to maintain habitat heterogeneity and increase opportunity for wildlife. When hardwoods negative impact cover conditions, hardwood reduction may be a feasible option to restore cover quality for bobwhite and other grassland-shrub obligates. Leaving select hardwoods such as legacy live oaks can provide that value-added function for many species, including bobwhite. Similarly, removing undesirable hardwoods such as sweetgum and invasives will improve overall stand conditions for wildlife and facilitate quality understory vegetation. The magnitude of and number of hardwoods in the uplands may vary widely based on landowner preference and objectives. However, if left unchecked hardwoods can become to abundant and negatively impact bobwhite abundance as seen in much of the forested lands in the southeastern United States. But it is very reasonable to have both the Prince of Game Birds and majestic oaks on the well managed quail preserve!



A D-8 bulldozer KG-stinger blade to split and knock down live oak trees for hardwood reduction projects. This practice can be costly (\$125-150) per acre or more depending on the density of lives oaks removed.

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Wildlife Trends Journal Management Calendar

Dave Edwards



Dave Edwards is a certified wildlife biologist and regular contributor to *Wildlife Trends Journal* and other hunting/wildlife publications. Dave was honored as QDMA's 2007 Deer Manager of the Year and nominated in 2011 as Alabama Wildlife Federation's Wildlife Conservationist of the Year. Dave is President of Tall Tines Wildlife & Hunting Consultants, Inc. Contact him at TallTinesConsulting@gmail.com or 912-464-9328.

Dove field preparations should be underway to ensure crops are mature before the season starts.

Start preparing and planting dove fields.

Dove field preparations should begin by June or July. Planting dates will depend on the soil moisture, crops you are planting, and the time required to produce seed. Common dove field crops include a variety of millets (e.g., dove proso, browntop, Japanese, pearl, etc.), sunflowers, grain sorghum, corn, and wheat. For best results obtain soil samples and apply required lime and fertilizer before planting. A mistake commonly made is planting too late. Most dove field crops generally take between 50 and 90 days for seed to mature. Know the maturity period for the crop you are planting and plant accordingly. Keep in mind that soil conditions and rainfall should play a role in when crops need to be

planted. That is, don't hesitate to plant when conditions are right even if it's a little earlier or later than you planned. While seed of planted grains offer attractive food sources for dove, maintaining a clean disked strip or two through the field offers dusting areas for dove. These are strips that you do not plant, rather, simply keep plowed through the summer and into dove season. Dove find these bare dirt areas attractive which will keep them in and around your field until grain seed is mature. These strips also offer landing areas and access to seed once crops matures. Another trick that I have used many times with great success is to include/spread pea gravel (very small gravel) along roads that are within the dove field area. Dove "eat" the smallest particles of gravel to assist in digestion (used in

their gizzard to break down seeds and other food parts). This is the reason dove are often seen "feeding" along roadsides.

Plan now for late summer trail cameras – Create mineral licks

While the nutritional benefits of providing mineral licks for deer have not been well studied, they are cheap to create, deer use them, and they do not appear to have any negative nutritional effects. In fact, most deer biologists think there are nutritional benefits of providing minerals for deer. You can create a mineral lick using commercial blends of dry minerals and/or placing mineral blocks in desired locations around your property. I have had great success getting deer to use commercial mineral rocks,



Installing mineral licks now will provide places to monitor deer via trail cameras during late summer.

such Bio-rock or Trophy Rock, throughout summer and into early fall. Using a mineral lick or salt rock is also a good way to reduce bear or hog problems commonly experienced when using corn to get deer in front of a camera. Deer tend to use mineral licks the heaviest from summer through early fall. The key, however, is to establish the mineral licks early in the summer to allow deer time to find them and begin using them. My experience with mineral licks has been that the longer they have been established, the better they are. Rains dissolve the minerals and saturate the stump or area they are placed. Evidently “leftover” minerals or salt that attracts them lingers and deer often come back to the same site the following year. Having said this, corn is still the “go to” attractant if you are conducting a true camera census on a property, but mineral licks offer a cheaper way to get deer in front of cameras for “casual” photographing. If your property is in a state where “baiting” with corn is illegal, and you plan to conduct a camera survey or install cameras in early fall to photograph bucks, get mineral sites established now so that deer are

using them during later summer/early fall when you want to photograph them.

Conduct warm season or summer prescribed burns.

Warm season burns are an exceptional tool for managing quail habitat. Warm season burns are generally conducted from June through August. However, extreme caution should be used when conducting summer burns. Due to higher ambient air temperatures and low relative humidity, summer fires can get very hot and difficult to control. If the area you plan to burn has a heavy fuel load (understory shrubs, grasses, and thatch) or has not been burned in over 3 years, I recommend initially conducting a cool season burn (December – March) to reduce fuel loads before attempting a summer burn. Fire rotations (interval of time between burning the same area again) for summer burns vary depending on your goals and habitat types but are generally every 1-2 years to promote quality wildlife habitat. Regular warm season burns will often promote native warm season grasses that are desirable for quality quail habitat. It is also a good idea

to strategically plan your burns so that you always leave some areas unburned. This will help to maintain diverse habitat types which will enhance the wildlife value of the area. Always check local burning laws and consult with an experienced burn manager before lighting a woodland fire. The U.S. Forest Service or your state forestry commission are great sources for obtaining more information regarding burning in your area.

Improve habitat edges.

Most game species of wildlife travel, feed, and thrive along habitat edges. Habitat edges or “ecotones” occur where two habitat types merge or join. The most noticeable are edges created where woods meet fields, but edges can be as subtle as the transition of a brushy creek to a stand of young hardwoods. Improving the quality of edges and the food and cover they provide will increase the wildlife value of your property. Although “interior” edges are more difficult to manage due to access, improving the quality of edge habitat along roadsides, food plots, and fields is relatively easy. There are many methods used to enhance edge, but applying selective herbicides generally produce the best and longest lasting results. Application of herbicide can be made with a backpack, 4-wheeler, ATV, or tractor mounted sprayer. Simply apply herbicide along the edge spraying as far into the edge as you can. The goal is to remove undesirable mid-story woody species such as young sweetgum and ash trees to encourage increased growth of plants that will benefit deer, turkey, and quail, like legumes, forbs, and blackberry species. If possible, include these areas in prescribed burns the following year to remove “skeletons” of the trees and underbrush

you killed via herbicide and to stimulate additional desirable plant species. Another tip is to include managed edges when you fertilize food plots or fields. In addition to removing undesirable trees/shrubs that compete for sunlight and nutrients, fertilizing these areas can significantly increase the amount of foliage the remaining desirable plants produce.

Monitor and control weeds in summer food plots

If you planted summer food plots (which I hope you did), it is important to monitor weed encroachment to ensure you get the most benefit out of your food plots. If you are new to planting summer crops, you will soon become an expert at weed identification and herbicides. Just by nature of the warmer conditions and excellent growing conditions, food plot managers have a tougher weed battle to fight during the summer. There are many summer weeds that will take advantage of the lime

and fertilizer you applied to the soil for your summer food plot plants. If left unattended, these weeds can, and will, take over your summer food plot resulting in less quality forage for your wildlife. Make food-plot-specific notes of the weeds you are having problems with so that you can adjust your planting the following year. For example, if you have grass type weed problems (such as Johnson grass), plant a broadleaf crop on that plot so that you can spray grass-selective herbicide to control the problem grasses without harming your crop. Vice versa, if you have broadleaf weeds, plant grass or grain crops so that you can spray broadleaf-selective herbicides. Obviously, another option is to plant “RoundUp Ready” summer crops. Doing so allows you to apply glyphosate (RoundUp) after germination of your crop to kill all competing weeds whether they are grasses or broadleaves. While weeds are persistent, we are smarter!! Anticipating your site-specific weed problems,

and planning/planting accordingly will help you make the most of your summer food plots and efforts. It is also less frustrating when you are winning the weed war!

Initiate management of beaver ponds for creating and attracting waterfowl this winter

Like cultivated duck ponds and green tree reservoirs equipped with water control structures, beaver ponds can be managed to produce duck food to attract waterfowl and provide great hunting opportunities. If quality mast producing trees are still alive in the beaver pond, manage the pond as a green tree reservoir – meaning apply a slow draw down before spring green up. While most oak species can tolerate being flooded over dormant season, few do well and often die if their feet stay wet well into summer. If few quality trees exist or if trees are already dead (from constant/unmanaged flooding), you have a few options on management strate-



Summer burning is an exceptional tool for creating quality wildlife habitat.



Beaver ponds can provide exceptional duck hunting opportunities if properly managed.

gies. First, you could drain the pond early in the growing season (at spring green up or very early summer) to allow natural wetland/moist soil plants to germinate and grow throughout the summer. Many moist soil plants produce seeds which are quality duck foods. A slower draw down over several weeks will result in a more diverse species composition of plants providing a variety of seeds/food. Another option would be to hold water on the pond until early summer, drain the pond by breaking the beaver dam, then broadcast small grains such as millets. Keep in mind that unless you install a “beaver deceiver” or Clemson Leveler type pipe to prevent beavers from repairing the dam, you will need to routinely check the dam and manually rake debris out to keep it open. I personally like Japanese millet because it easily germinates on mud flats with little or no site preparation, grows well

in wet soils, produces an abundance of seeds, and if water is properly managed it will often reseed the following year. Planting grain in a beaver pond is relatively easy. Simply broadcast seed at the recommended seeding rate per acre onto exposed mud flats. Although fertilizing is not essential to success, it can help. I rarely fertilize broadcasted crops in beaver ponds and have had great success without it.

Now to the hard and messy part – water control. To consistently manage a beaver pond successfully for ducks, it is necessary to drain the pond by breaking the dam and installing a drain pipe. Generally speaking, this means a 6–10-foot corrugated pipe that extends well into the pond with many perforations along its length to prevent beavers from patching the leak. Although it is messy, and certainly watch out for water moccasin/cottonmouth snakes, breaking a

beaver dam is often not as difficult as it seems and can normally be done with a fire rake. Break the dam on the downstream side of the existing channel in the form of a narrow, deep “V”. The initial flow of water through the dam will help clear excess dam materials. Place the drain pipe deep into the break so that at least 10’ of pipe extends both upstream and downstream of the dam. The final level of the pond will be determined by the height of the downstream end of the pipe, or the stand pipe position height. There are many options for beaver pond drain pipes. The key is to install a pipe that is designed to prevent beavers from “patching the hole”, yet does not drain the pond completely so that beavers remain in the pond. Always leave at least 1/3 to 1/2 of the pond area un-drained during drawdown, as over-draining may cause the beavers to seek new areas. There are many homemade and fabri-

cated designs that can be found by doing a little internet research. If you do not use a drain pipe that allows you to adjust the water level, you will need to remove the drain pipe approximately 45 days after natural moist soil plants or your planted crop germinates. This will allow beavers to patch the break in the dam resulting in the pond to start flooding. Using this method often requires re-breaking the dam and re-installing a drain pipe higher in the dam to maintain the desired water level. I like the Clemson Pond Leveler as it is a great and relatively permanent design that allows you to control water levels by adjusting a stand-pipe on the downstream side of the dam.

Install new food plots or expand existing ones

From a landscape level, actively managing nature habitats should be one of the highest priorities for landowners desiring to enhance wildlife value of a property. Having said this, we all know the wildlife value created by dedicating land to aggressively managed food plots. Because all properties are unique with various habitat compositions, forest ages, diversity, timber management strategies, agricultural practices, and management on neighboring lands it is impossible to provide a “cookie cutter” amount of acreage that should be dedicated to food plots. However, if adding more acreage in food plots is in your plans, summer is a good time to create new ones or expand existing plots. I personally like to plan and mark/flag areas needing clearing during winter months while leaves are off allowing me to see the area better. Another advantage of doing this during winter is there are no snakes, ticks, and chiggers to worry about! I then come back in summer to do the “dirt” work.



RoundUp ready type summer plots allow for simple weed control in fields where weeds are an issue.

Through years of experience, I am a big fan of using mulching machines when creating new food plots, expanding existing ones, expanding roadsides, or creating new trails. A mulching machine, also referred to as a forestry mulcher, uses a rotary drum equipped with steel chipper tools (or teeth) to shred vegetation. Heavy duty forestry mulchers can clear up to eight or ten acres of vegetation a day depending on terrain, density, and type of material. However, 5-8 acres per day is more realistic for most applications where I've used them. The advantage of using a mulcher is only needing a single machine to cut, grind, and clear vegetation verses needing a dozer, backhoe and farm tractor to do the same job. Mulching is essentially a one-pass and done type process. Because the vegetation is grinded into chips there are no debris or root piles commonly associated with dozer type clearing. Another advantage is mulchers are capable of clearing land of unwanted trees and brush with limited disturbance to soils

leaving more nutrient rich topsoil and reducing the risk of erosion. From a location and design standpoint, I always consider soil quality, hunting stand placement, preferred wind direction for hunting, hunter access, and obviously what the land, terrain, and habitat will allow. Where possible I try to create linear shaped food plots. Deer, particularly mature bucks, feel more comfortable and secure using linear plots which results in more sightings and harvest opportunities while hunting. Examples of this may include a “turkey foot”, “V” shape, or “hub and spoke” – aka “wagon wheel” shape. When expanding existing rectangular food plots, I often add linear “ears” or “fingers” that extend from the core food plot area. In this situation, deer often enter the fingers first then work their way to the more open plot. Regardless of the methods used to clear the land or the shape you design, summer is a good time to conduct this work. Doing so allows plenty of time for working and amending the soil in preparation for fall plantings.

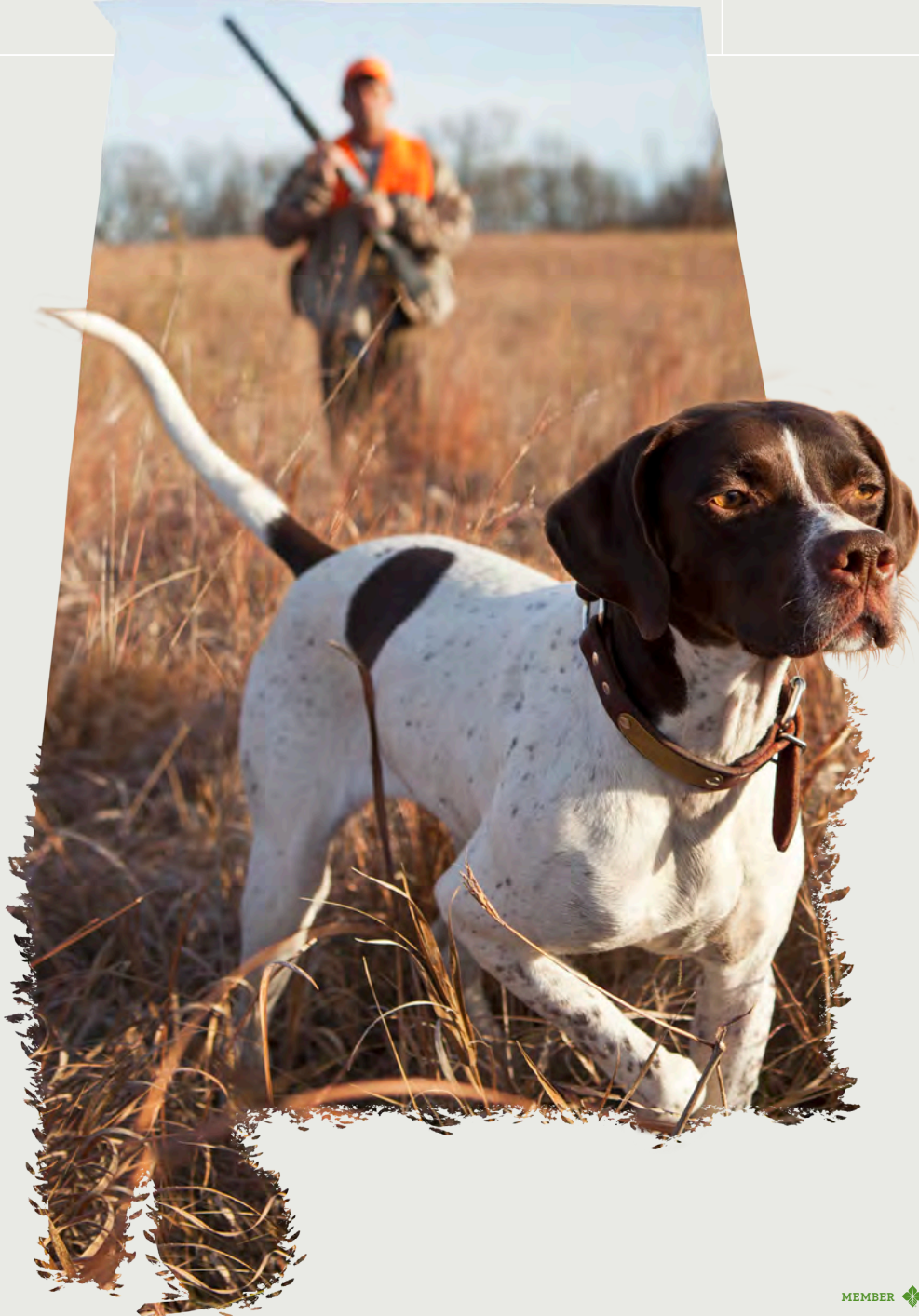
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