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Earl Says...

Starting our 13th year in publication has me thinking back on all the great people I've met along the way. From large and small landowners to experienced and knowledgeable wildlife biologists, I enjoy learning new things every day.

I met Erich Long from Drumming Log Wildlife Management at the QDMA National Convention last year and he told me about his experiences with deer and their behavior on game cameras. I was fascinated with his research and the result was the article you'll see in this issue. I know I love using game cameras on our property to "see what's out there" and what he said made sense to me. You all may have had similar or different experiences and we would love to hear your feedback as well. For more examples of Erich's research, check out his videos at <u>www.themanagementadvantage.com</u>.

And speaking of learning, Ted DeVos taught me that maybe I'm not as smart as I thought I was in his article this issue on the movements of turkeys in the spring. According to him, that same gobbler I try to entice to my position each morning may not be the same bird every day? So that just means I'm educating a lot more birds every year on how to avoid ending up on the dinner table than I thought. Oh well, I'm still looking forward to learning something new this year as "Turkey University" opens up in mid-March!

Andy Whitaker Publisher/Editor







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Cover photo by Dave Edwards

Gobbler Home Ranges in the Spring: What does the Research Say?



As a passionate wild turkey hunter as well as a wildlife biologist, I am often conflicted between the romantic versions of hunting stories and the reality of what wild animals do and why they do it. It is tempting to envision that the gobbler that I find in the same area day after day, week after week and, sometimes, year after year, is the same gobbler. We meet up at the same time and same place each morning and duel for a couple hours until he goes silent or I have to go to work. However, while day to day this may be the same bird, week to week it may not, and year to year it is probably seldom the same bird.

Several factors come into play in regards to how big a gobbler's home range is and how much they travel. Radio-telemetry research has been done for decades now in an attempt to quantify and qualify habitat and home ranges. Most certainly, habitat and terrain has a lot to do with movements as well as seasonal factors. We do need

By Ted DeVos

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There is not much better than pineywoods burning to keep turkeys from roaming too much in spring.

to think simple (like a gobbler) about why, when, and where they move and be careful not to anthropomorphize turkeys, giving them the ability to critically think or reason. They do have the ability to avoid predation and don't often make the same mistake twice. However, they also will occasionally stand there while someone shoots two or three times at them, apparently thinking that close gunfire is thunder if they aren't hit by any pellets nor see the hunter. I hate to admit that I have witnessed this personally with a group of five longbeards very recently when I thought I had a gun/shell or "friend" malfunction. When one turkey is killed, often another runs over and beats up on the flopping gobbler as long as the

hunter does not expose himself. Examples like these (and many others) strongly indicate that long-term memory and the ability to reason are not strong-suits of gobblers. However, their survival instinct is very strong and they are both suspicious and wary of anything new or out-of-place. Their eyesight and hearing are excellent and they will often disappear at the slightest movement they consider a "threat".

Gobblers have all the standard needs of all wildlife: food, water and cover. They need a home range that provides all of these and the more accessible each of these is, the smaller their home range. Gobblers are not burdened with taking care of poults, so brood habitat does not dictate their travels, however, they do follow hens during breeding season, so whatever the hens need in spring, the gobblers will not be far behind.

Habitat types such as roosting sites, feeding sites and open/display areas are searched out and used readily. The more spread out these habitat types are, the larger a gobblers' daily home range will be. As seasons change and turkey flock patterns change, home ranges also change. With the coming of spring, large winter flocks of turkeys begin to break up and spread out across the landscape. The hen groups break up into smaller groups, leave the hardwood bottom areas where they wintered and they begin to search out upland nesting/brood rearing habitat. Larger gobbler groups (5-30 birds) also break up into small



Large winter flocks of turkeys that wintered in hardwood bottoms begin to break up in spring and search out upland habitats.



Gobbler groups tend to follow various hen groups throughout the spring, going where they go.

groups and singles that travel independently, but usually begin to associate with and linger around hen groups.

To understand gobbler movements, it is important to realize where hens will be in spring and that hens will search out nesting and brood rearing cover, occasionally traveling miles to find it if it is not in close proximity to the winter ranges. Nesting cover is characterized by tall grassy areas (broomstraw) interspersed with shrubby cover and blackberries - envision an open, sunny pineywoods that was not burned in the last year or two or a fallow field that has not been mowed in three to four years. Brood habitat is areas where there will be a LOT of insects during the summer - burned pineywoods, ragweed fields, grassy openings in woodlands, etc. The best nesting habitat has good brood

habitat close by and visa-versa.

So, let's look at some of the excellent research projects that have been done on the subject. While there has been a lot of turkey research done throughout the U.S., this article will focus on the Eastern wild turkey in the Southeast and specifically those looking at gobbler home ranges. Many of the gobbler home range research projects done in the Southeast were done in Mississippi in the late 1980's through the late 1990's. Many of those were done on the Tallahala Wildlife Management Area in central MS. This habitat is pretty typical of most of the Southeast with 1/3 older bottomland hardwood, 1/3 pine and the rest mixed pine/hardwood, fields and regeneration areas. All of these research projects utilized radio-telemetry to track individual gobblers by attaching a transmitter to each turkey. Each of these projects, titles and their authors is listed at the end of this article.

One of the first of these projects was conducted by Randall Kelley, et. al. in 1986 and 1987. They monitored 52 wild turkey males (20 gobblers and 32 jakes) for home range and mortality information. Of those, 12 gobblers and 17 jakes were used for spring (March -May) season home range information. Adult gobblers had an average home range of 2,860 acres and jakes used 2,535 acres on average. The smallest gobbler home range was 1,600 acres and the largest was 6,680 acres. One jake had a 9,500 acre home range, the largest I noted in looking through all these projects. Remember, these are SPRING season home ranges! For illustrative purposes, 2,500 acres would be a square roughly 2 miles by 2 miles, or a circle with a diameter of 2.25 miles.

David Goodwin, et. al. followed this study on the same area from 1988 -1990 by radio-tagging approximately 50 gobblers and monitoring movements and home ranges. They published two papers on the subject. They found that average gobbler home ranges were 2,790 acres in spring which was the largest seasonal home range of the year. They also looked closely at daily movements (very interesting to turkey hunters!). They found that average $\frac{1}{2}$ day movements in spring (roost to noon or 1 pm to roost) were 1,800 yards (also the largest seasonal 1/2 day movements of the year). They also noted that gobblers readily moved to prescribed burns occurring on the research area.

Another study conducted on this area was done from 1986 – 1990 by Darren Miller, et. al. looking at habitat use as well as another study looking at spring home ranges of 24 gobblers and 30 jakes. They found that gobbler home ranges averaged 1,754 acres (ranged from 650 - 5,322 acres) and jake home ranges averaged 1,500 acres (ranged from 630-5,200 acres). These are nearly 1,000 acres smaller than those found by Kelley and Goodwin, but still quite large. They also noted some interesting habitat selection data and, in general, it appeared gobblers preferred mature mixed woods, mature hardwoods, and older sawtimber and burned pines in spring.

During 1986-1988, George Hurst, et. al. looked at 24 gobbler and 13 jake home ranges and habitat use in eastcentral MS. Their habitat types were about $\frac{1}{2}$ plantation pine, $\frac{1}{4}$ mature pine/ hardwood, and the rest evenly split in older hardwoods and crop/pasture fields. Spring home ranges of gobblers averaged 1,620 acres (ranged from 1,107 – 2,783 acres). Gobblers used mostly plantation pines and mixed forest in spring and the use of thinned and burned planted pines was high.

In 1992-1994, Alexander Badyaev, et. al., radio-tagged 40 male turkeys in the Arkansas Ozark mountains. The main habitat types were hardwood and mixed hardwood/pine with scattered clearcuts and forest openings. They determined that average gobbler home range was 1,300 acres and jakes had an average of 3,600 acres. Also in Arkansas, in the Ouachita Mountains in 1982 and 1983, T. Bentley Wigley et. al. tracked three gobblers and two jakes. Habitat was about 1/2 natural pine, 1/4 mixed pine/ hardwood and 1/4 pine plantations in mountainous habitat. They found average home ranges of gobblers were 3,200 acres. The researchers felt that the abundance of young pine plantations reduced habitat quality and contributed to the large spring home range size. Thinning and burning plantations and maintaining scattered openings would contribute to smaller home ranges.

Finally, a study conducted in 1965-1966 in Missouri by James Ellis and John Lewis radio-tagged four adult gobblers and attached marker wingtags on an additional 33 males (27 gobblers and 10 jakes). Habitat on the study site was rolling terrain associated with the Ozark highlands and was about ½ forested





RootMaker[®] Products Co., LLC 1-800-824-3941 www.rootmaker.com with oak/hickory and ½ agriculture/pasture. They noted that the spring home ranges of the adult gobblers were about 1,300 acres. However, they also noted some interesting movements. While the average movements of males from winter habitat to spring habitat was 1.3 miles, many gobblers traveled more and one traveled seven miles. They noted that gobblers showed little fidelity to particular locations and never were found gobbling in the same areas from year-year. The average distance moved from yearyear gobbling areas was 1.2 miles.

Some common things seemed to be noted in these studies regarding how gobblers used their large home ranges. It appears that, generally, these home ranges were not evenly used. One study noted "Intense activity centers" of 150 acres or so separated by 1-2 miles and several studies noted the same thing with similar numbers. Usage varied, but these 150-200 acre "activity centers" seemed to be used for 1-3 weeks, then the gobbler(s) moved a mile or two to another area. While they would use these areas for a period of time, then leave, they would often come back a few weeks later. These zones appear to be areas where they were very familiar with the terrain and habitat. It was typically noted that when they move to another zone, it takes a day or two to travel to the next zone.

I have noted the same thing years ago when I assisted with some turkey research and had a gobbler that spent a few days gobbling from the same general area, only to suddenly disappear one morning. After searching for a while, we found this gobbler 2.5 miles away where he spent the next couple weeks gobbling in a new zone.

If you take an average of these published spring home ranges, you end up with gobbler home ranges of a little over 2,000 acres and jakes an average of 2,400 acres. These are just an average of the published numbers, however, they do give a good idea that gobblers have a pretty large springtime home range and often travel long distances both daily and seasonally, sometimes miles. Their home ranges in springtime are measured in miles from one side to another. They appear to have little fidelity to particular areas for a long period of time but will tend to "set up shop" for a week or two in an area that they are familiar. Even the smallest spring home ranges noted were still around 600 acres and above, which is around a square mile in size.

Most of these projects that look at all four seasons noted the largest home ranges in the spring breeding season regardless of habitat quality. Because of these home range characteristics, gobblers are notoriously hard to pattern. They may roost here one day and travel through a particular area and end up in the same roost area that night, only to travel completely opposite the next day, roosting 1/2 mile away. There are often still gobblers roosting in the original site, but they are often gobblers from another area. The reason that turkeys are often in the same area is not necessarily that they are the same birds but that the area is an excellent roost area. Some



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mornings there may be one or none, some mornings maybe three or four.

Gobblers do not tend to defend a territory per se, but do seem to have an interest in defending an area around the hens they are looking at any particular point in time. Their mating system is called Polygynandry, meaning that both sexes may mate with multiple partners. Once a gobbler (or a small group of gobblers that are running together) associate with a flock of hens, they will tend to try to keep other gobblers away. This can often lead to intense fighting among groups of males. However, to effectively find all receptive hens in an area, gobblers need to spend time with multiple flocks of hens so the gobblers with a particular group of hens one day may not be the same gobblers tomorrow. It appears that their "display zones" or "Leks" simply travel with them and they defend a display area around them and within sight of hens, but they don't have a particular "strutting zone" they travel to each day and defend.

So, while I would like to think that I am developing a "relationship" with a particular gobbler as a season progresses, unless he has a definitive marking making his ID a surety, I will have to settle with the thought that on any given morning, the turkey gobbling in the same drain may be (and probably is) a different one from last week. And almost certainly, the gobbler we named last year in a particular area (everyone has a "cemetery" gobbler) is probably a different gobbler this year in the same area.

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Are We Spooking Deer Unintentionally?



By Erich Long

Erich D. Long received his degree from Hocking College, School of Natural Resources. Erich, or "Stretch", is the owner of Drumming Log Wildlife Management- Deer Management Consultants and has been managing for quality whitetails for over 12 years. Erich was award with the prestigious QDMA AI Brothers Professional Deer Manager of the Year in 2009 and acquired the QDMA's Deer Steward III award in 2010. Erich also contributes to the "Age This" segment of "Quality Whitetails" for the QDMA.

They say a picture is worth a thousand words and, if you look at a deer cam photo long enough, you can come up with at least a couple of things to say about it. For example, your typical deer cam photo of a buck can tell you roughly how old it is, a rough score of the animal and what he is doing at the time the picture was taken. Other than that, a photo falls short from helping a deer manager gain as much knowledge as possible.

Trail cameras are excellent management tools, but their use always left me asking, "Why?". Why was the animal there to begin with? Why was the animal looking at the camera in some cases? That leads us to this article, "Are we spooking our deer unintentionally?"

One day I set up my new camera over a water hole. What I didn't realize at the time, out of stupidity, was I set it up on video mode instead of picture mode. After a few weeks, like most people, I couldn't wait to see who showed up. I pulled my card from

the camera and rushed straight home. As I sat in front of the computer, this strange icon popped up. My computer screen was not filled with the normal icon that goes with trail camera photos. Instead, the screen was full of video clips. I thought to myself, "You dummy, what did you do wrong?" I clicked on one video clip and to my surprise I absolutely loved what I was seeing. As I watched all the video clips, I quickly became fond of what I was seeing. From that day forward I vowed to never take another picture with a trail camera again. I would always use the video mode instead.

My mistake opened up a new world

of trail camera use. Not only could I age the bucks on the hoof much better, I could come up with a more accurate rough score of the animal and observe the deer's behavior. My favorite aspect of video mode was that I could see what was going on around the animal. Video mode allows deer managers to









observe not only the behavior of the animal that triggered the camera, but also the other deer around it. Video mode had taken a valuable research tool, the trail camera, and made it even more useful for myself as a deer manager. It answered most if not all those questions of "why" that I had.

As the weeks and months went by using my new approach at researching, I was starting to notice something that was out of the ordinary. I was getting a lot of footage of deer that were not too fond of the camera. I didn't think too much of it at the time because in the past I would get random pictures of deer looking at the camera. As my video library continued to grow, more and more deer were looking at the camera at some point during the video clip. When utilizing trail cameras in picture mode, you are only seeing one moment in time. The deer might not be looking at the camera during that moment, but chances are they were looking at it either before or after the photo was taken. In video mode, you can see a substantially longer timeframe; thus the larger number of observations of deer looking at the camera. After using my trail cameras in video mode for a year, I had a large library of clips of deer looking directly at the camera. It led me to begin questioning what kind of an effect this was having on their overall behavior. This could not only affect my research during ratio surveys and looking at age structure, but also have dramatic effects on my hunting. I decided to dedicate the following year to seeing if deer cameras were having a negative effect on deer behavior.

For many, the word "negative" may mean a dramatic experience, but in this case we are using the word as a response that is out of the ordinary. For example, the deer head bobbing, stomping, or bolting off would be classified as "negative". We wanted to see how many deer would react in this manner versus just going about their daily routine over the course of the video clip. In order to keep our results as consistent as possible, at each camera location we sprayed ourselves down with scent free spray and wore knee high boots. Each camera was set waist high, and sprayed down as well. The cameras were left in a single location for two weeks at a time and all the first week video clips were deleted in order to lessen the effects that scent would have on the results of the study.

I started the year with a plan. I was going to set up the cameras in the same locations where most deer hunters do; food plots, transition zones, scrapes, bedding areas, and feeders, which are legal in the state of Ohio. What we learned from this was amazing to say the least. We learned that less than half of the deer were having a negative reaction to the camera at some point during the video clip.

Transition zones from bedding areas to feeding areas were studied first. We set up the cameras right on a deer trail to see how they would react. In this location, more than half of the deer would react in a negative fashion. They would walk toward the camera and notice it by sight first, then in some cases walk up to the camera and smell it. After a month of results, we then put the camera off the deer run by several yards in an attempt to keep the camera out of sight. What we found was there was little to no difference in the reaction no matter how close the camera was placed to the deer run. Once again, more



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than half of the deer responded in a negative way.

Bedding areas were the next on the list of areas to test. The results from this area were much like what we observed in transition zones. Nearly half of the deer would respond in a negative way. From the video clips we had gathered so far, the most noticeable aspect of the negative reactions was the difference between sexes. Does and bucks had a night and day difference no matter where we put the cameras. Does would notice the camera and either investigate it by looking at it or try to get a hint of scent from it. They would also do the typical head bob and/or stomp we've all seen while hunting. Does would complete their negative reaction by walking out of the camera's view. When a buck had a negative reaction to the camera, they would startle just like a doe. After noticing it, they would investigate it and try to smell it. In most cases, they would get a whiff of scent and reacted as if you smacked them in the butt with a 2x4 and bolted from the area.

Our next location was scrapes. The observation we gathered here taught us the most during our study. What we saw is that we were dictating deer behavior at scrapes by using trail cameras placed at waist height. Even after taking normal scent precautions on ourselves as well as the cameras, bucks aged 2.5 years and older would visit the scrape and do their normal thing. But once if they noticed the camera they would turn inside out and bolt. This reaction was not surprising but what was interesting was the fact that after this initial negative reaction, they would never return. Not all bucks reacted in this manner. The results were dependent on the personality of the buck. Some don't mind little boxes on trees and go about their business, while others notice the subtle things and vacate the area. We will say that this happened enough to open our eyes to the way we go about using trail cameras on scrapes. Most of this would have gone un-noticed had it not been for

video mode.

The location that brought all the observation together and made the light bulb turn on was food plots. After a thousand or so clips, we had only one doe act in a negative manner to the camera. It was an older doe and the only reason she showed any negative response was that she bumped into the camera. So what does this teach us? Well, what we came up with is that our food plots are where we kept our cameras the longest amount of time. They were accustomed to this thing that flashed or glowed at them or a blob that was part of a tree. This location was unlike a scrape that appears during late October where we instantly placed a camera. Food plots are there nearly year round and always offer a great opportunity for capturing a deer with a trail camera.

The information we gathered over the course of the season and input from other hunters helped us create a theory. I asked around to fellow hunters, "What do you think spooks deer while using cameras"? The majority of the people first suspected the flash spooked deer, then it was scent, and finally the camera made a noise. So we took these ideas and put them to the test. Our test consisted of setting a camera in an extremely attractive transition zone from a feeding area to a bedding area. We entered the area with a four wheeler and sprayed ourselves after arriving at our setup site. Then we sprayed the cameras. At our first setup, we placed a dummy camera waist high off the deer trail. The camera had no batteries or memory card in it, it was just a shell of a camera. Next we placed a camera ten feet up a tree across from the dummy camera. Due to the height, we had to angle it down in an attempt to capture the deer's reaction to the dummy camera. Our second set up was the same, but was 80 yards away on another attractive trail. After two weeks, through snow and rain during that time period, we retrieved the cameras. The videos taken during this time period showed that the deer responded no dif-

ferently to the dummy camera than to the live camera and that the gender reaction stayed the same. We also confirmed everyone's belief in the lasting effect of scent. At these camera setups, we had does walk over to where we parked the four wheeler two weeks prior and spent some time there sniffing around. Now this is after two weeks of rain and snow. Amazing to say the least! During this test, our cameras captured 800 clips of deer utilizing the deer trails. Only one clip captured a doe looking up at the camera that was placed 10 feet high. She just happened to look up at the camera, then looked back down and went on her way. So, after spinning our wheels on this information, we decided to do another test.

Typically, hunters place their cameras about waist high. This puts the sensor in line with the bulk of the deer's body which maximizes its ability to capture pictures or videos of all of the deer that pass by. In our first test, I placed the cameras ten feet high just as a starting point for testing. This in an unrealistic height plus a lot to ask of someone due to safety issues. Our second test we set a camera at six feet or eye level to see the reaction of the deer. This setup was going to be at a feeder site on my property in Ohio. We had placed a camera at waist height there three weeks prior and captured eight different bucks utilizing the area. Over the course of two weeks the bucks began to disappear. We then moved the camera to eye level. Now, we didn't get all eight bucks on video, but most of them were caught on film and out of 600 clips we had one buck look up at the camera and spook. A great lesson was learned during this final test!

The conclusion of all this was not to disclaim or bash any camera make or model. I repeat, this was not done to make you think you shouldn't ever use a deer cam again! This theory of "are we spooking our deer" should be looked upon as a "positive" observation. Our findings from the food plot sites and the dummy set ups lead us to believe that

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the deer spook because of visual of the camera on the tree, not the flash. Let's put it this way, if you walk into an empty house for most of your life and one day you walk into it and you find a box lying in the middle of the room, you're going to respond to that, would you not? Deer react in the same manner, we believe. The areas we placed our cameras are their home 365 days of the year. They know what should be there and what shouldn't. At the food plot sites where you may have your camera out longer, they grow accustomed to it and may think nothing from it hence why the lesser amount of negative responses. I had one gentleman after hearing my seminar on this topic go home and change his set up from waist high to eye level. He has always used video mode and uses his cameras year round in the same location. He called me a week or so later and said that my theory was wrong and the height difference made his deer spook. I told him he was correct. What we learned in this study is that it would cause a negative reaction. It's a visual thing once again. Just like the box in the middle of the room, if you see that box every day in the middle of the room and then one day it's been moved to the corner of the room, you're going to notice that.

Don't concentrate on the height as much as sight. The height was just a test and you shouldn't go out and move your cameras higher without testing this theory for yourself. The deer herd you hunt or manage may not care about the placement. Like I said, not all deer had a negative reaction to the cameras but a large enough percentage of them did on my property for me to warrant this attention to it. Anybody can test this theory and you should. Will we continue to put our cameras over scrapes, bedding areas, and transition zone? We will just be smarter about it is all. There is so much to learn about deer and their behavior towards cameras and what better way than with observation from a deer cam!



Fountains and Aeration Systems for Ponds and Lakes



By Scott Brown

Scott Brown has 30 years experience in researching and managing natural resources throughout the Southeast. Scott founded Southern Sportsman Aquatics & Land Management in 2007 and now has clients from Texas to Florida. Scott can be reached at scott@southernsportsmanaquaticsandland.com or (214) 383-3223.

Fountains add aesthetics and some improvement to water quality. Add white or colored lights for additional effects at night.

A t some point, lake owners consider or get advised by their lake management company to add a fountain or aeration system to their waterbody. Making the decision whether or not to install a fountain or aeration system can be difficult with all the manufacturers and advertising campaigns. Many of the systems out there have not had much scientific backing, and do not perform to manager and/or landowner's expectations. Several variables need to be considered before deciding if either will aid your management objective before the money is spent. Fountains are obviously an aesthetic addition, but can provide minimal improvement in water quality. Aeration is used to improve water quality and can also reduce algae growth in certain situations. In some instances, both aeration and fountains are installed to add aesthetics and greatly improve water quality.

Water chemistry issues that can be improved with a fountain or aeration system

include water movement, decreasing available nutrients to be used by algae, adding Dissolved Oxygen (DO) to the water and de-stratifying a waterbody. By keeping the water moving, certain aquatic plant species are deterred from growing on the surface or in the water. Also, moving water deters mosquitoes and other insects from using your pond to lay their eggs. However, insect larvae are an important part of your lake's food chain and only if you have a backyard water garden should this reason be considered. Moving water keeps nutrient molecules (particularly phosphorus) active and makes them unusable by algae to grow and reproduce. It has been proven that adding a bottom aeration system reduces planktonic (green water) and filamentous algae growth. Fountains add less oxygen to the water than aeration systems. Adding an aeration system can reduce the DO fluctuation that occurs every 24 hours, where oxygen is highest in the late afternoon



Dissolved Oxygen (DO) rises as light hits the water body and drops throughout the night. With aeration, this line becomes flatter, but remains higher.

and the lowest at sunrise. By mixing, DO remains more uniform without a large swing that can cause stress if great enough or the lows are too low. Both fountains and aeration can destratify (mixing top and bottom water



A traditional fountain fitted with mooring ropes, light kit and Quick Connect electrical wires.

so the amount of oxygen is adequate from top to bottom, as opposed to a stratified lake where an area past a certain depth is low or void of DO) a waterbody, which increases the usable portion of the water column and adds to the lake's carrying capacity. This mixing also brings cooler water from the bottom and can reduce summertime water temperatures, improve water quality and help reduce stress on fish. In colder climates, this mixing can prevent or prolong the pond from freezing over in winter.

Fountains

Aesthetics are generally the reason a fountain is chosen. Fountains can provide some improvement to water quality, and various fountain types improve water quality better than others. There are three types of fountains: Traditional, Onshore and Direct Line.

Traditional fountains have the pump, intake and fountain heads all floating together in the lake. The pump intake is generally just below the surface under the pump, with an electrical cord running to shore to a power supply. The pump's horse power and fountain head dictate how high and wide the fountain will be. This type is not recommended for waterbodies where swimmers may frequent. A timer needs to be installed and turned off when people may be in the water. When installing, determine where the fountain will be placed so if heavy winds occur, water is not blown onshore, onto a building or dock. It should be anchored to the bottom with three anchors and ropes, and allowed to float up and down with water fluctuation. Always have an electrician install the proper electrical GFI outlets on shore and above the flood line. Using a heavy duty timer for the fountain and lights is recommended to conserve energy. Run all wires onshore through buried pipe a few feet into the water to protect from damage. If your waterbody receives excessive leaf debris, periodically check pump intake to ensure it is not partially clogged to extend pump life and reduce overheating. Traditional fountains cost slightly less than onshore, but are harder to maintain since everything except the breaker and timer are offshore. The motors are housed in a



An oil-less bottom aeration pump inside a sound reducing cabinet, with valves to each diffuser, air filter, one way check valve to prevent water from backing up into the pump, pressure gauge and cooling fan.

waterproof casing and the pump and lights may be directly wired or you can use a watertight Quick Connect plug to remove the fountain head from the lake for cleaning or repair. If anything leaks, it will throw the mandatory GFI breaker onshore. Once this happens, the leak needs to be located and repaired for proper and long time use.

The Onshore Fountain has a floating fountain head where water is drawn off the lake bottom to a pump onshore and then pumped back to the fountain head. Onshore fountains are the most expensive, but once installed are the easiest to maintain and all (except optional lights) electrical parts are out of the water. This type does aid with mixing, but it depends on how large and deep the waterbody is, and how many pumps are installed if it is having any significant effect improving water quality by mixing. When installing, make sure the intake is placed on a hard bottom free of muck and debris or place in a large plastic tub and lower to the bottom to ensure sediment is not drawn into the pump to help extend pump life. These systems can run multiple fountain heads off one pump. Spray height can be adjusted for each fountain head with valves onshore. Both Traditional and Onshore fountains can be rigged with a timer and fitted with light kits and separate timers to add even more aesthetics during the night. There are numerous nozzle types, lighting packages and colored bulbs that can be added for additional "Ooohs & AAAhs".

The third type of fountain is a *Direct Line Fountain*, where the water comes from a direct water source such as a well, and water is pushed out the fountain head. This provides aesthetics while adding water to the pond, with little improvement to water chemistry. Depending on the chemical makeup of the well water it could be detrimental to the pond in certain situations. A Direct Line fountain is the most economical fountain for ponds as well as the easiest to install and maintain. A single hose is



Typical bubble head from a bottom aeration diffuser.

connected to the fountain head from the water source. When the water is turned on the fountain is on. No electrical pumps, breakers or connectors to leak or break. The only maintenance required, as with all fountains, is occasionally cleaning the fountain head of calcium and algae build up with muriatic acid.

Aeration Systems

There are two types of aeration sys-

tems - *surface* and *bottom*. A *surface aerator* will only add oxygen to the water by increasing the interaction of the water with the atmosphere; it will not de-stratify a waterbody. Surface aerators are used on shallow lakes where de-stratifying is not necessary. In some instances where a lake may have deep holes but also has extensive shallow areas, both surface and bottom aeration may be prescribed. Deeper lakes during summer and winter become stratified, like cake layers, with high oxygenated water near the surface and low or oxygen free water near the bottom. The depth at which the drastic change from good to poor water occurs fluctuates during different times of the year. In better lakes this line is much deeper than in poor water quality lakes. In older ponds, where organics (muck) have built up over the years, an aeration system can help stabilize water chemistry and reduce fish kill risks.



Pond mixing with a bottom aeration system greatly improves water quality and allows the entire water column to be used by fish, not just the top portion. (Illustration provided by Aquatic Eco-Systems)

Bottom aeration systems have membrane or stone diffusers scattered strategically around the lake. The pump is housed onshore above the flood line either in a building or a sound reducing box. The surface acres, depth of the pond and distance the pump is to the diffusers will determine the size of pump and the number of diffusers needed for adequate aeration. It is recommended to have a professional fit your waterbody with the proper aeration system and unit size and not do it yourself. Weighted air line is recommended, but plastic tubing fitted with weights (bricks) run from the water's edge to diffuser heads is acceptable. Wherever the pump is placed, make sure it has adequate air flow around it to cool, or if in a box use a small fan to blow hot air out and draw cooler air in to prevent over heating. Bury polyethylene tubing from the pump to the water's edge. You then can continue to add bricks every four feet or switch to weighted tubing. Unless it is a very small job, weighted

tubing is worth the extra money compared to the time spent tying on brick in a boat to each diffuser head. It is recommended to run bottom aeration all the time. It's not recommended, but if you are using a timer, run from dusk to dawn. When first turning on, follow the manufacturer's instructions without cutting corners, as not doing so could cause a catastrophic fish kill.

There are two types of bottom aeration that are offered that are less effective at improving water quality; the *windmill* and *solar* aeration systems. These are options in areas where electricity is not available. Obviously the windmill operates only when the wind blows. Some solar units offer a battery system that does allow for some operation after sundown, but still doesn't deliver enough energy for uninterrupted service. The time DO is the lowest is sunrise, and neither of these types do well at delivering DO when it is needed the most.

Surface aeration can be large scale like the ones seen at hatcheries where a pad-

dle wheel is hooked up to a tractor PTO. Or the most common is a motor with a fan blade pointing down from its float that aggressively agitates the water, adding DO. The float is similar to the fountain and is anchored the same way. An electrical cord is run to shore and plugged into a GFI protected power source. These units can be run continuously or plugged into a timer, do not have a start-up procedure and are considerably cheaper than bottom aeration, although much noisier. They work well in water six feet deep or less. These can also be used for deicing in colder climates.

It is always best to have a professional fit your lake with an aeration system or fountain to make sure you get what is required and to meet your expectations. Even with aeration, a fish kill can occur if the situation is right and/or the system is not properly sized. However, aeration greatly reduces the chance of a low DO fish kill and reduces large swings in certain water quality parameters reducing fish stress.



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Black Bear Ecology and Management in the Southeast



By Anna Huckabee Smith, CWBÒ

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Black bears retain the ability to climb trees all their lives. Credit: NPS

The American black bear (*Ursus americanus*) once ranged from the forests of North America south into Central America. Today, that range has shrunk dramatically, and some areas of the United States have only remnant populations in scattered locales. In the Southeast, some strongholds remain in the mountainous regions as well as along the Atlantic and Gulf coastal plains. Despite some exceptions, most populations are huntable, and black bears are considered prize big game animals wherever they are found. Having black bears on your property is a good indication of prime wildlife habitat. Management techniques that benefit bear will also benefit deer, turkey, and other game animals the landowner may be trying to provide for on the property.

Ecology and Behavior

Distinct populations of black bears can be found in certain basic habitat types. In

the Southern Appalachians, for example, black bears prefer oak-hickory forests or mixed mesophytic communities (i.e. coves) both with good mast production and thick understories comprised of such species as mountain laurel, rhododendron, blackberry, raspberry, and blueberry. In fact, it was the creation of the national parks in the mountainous regions and the subsequent maturation of the oak forests that helped preserve the black bear population in many areas. States like Tennessee, North Carolina, and Virginia have seen increases in their black bear populations in recent years. In contrast to the mountain populations, coastal black bears can be found in oak forests or black gum-cypress bottomlands with understories of greenbrier, huckleberry, evergreens, and holly.

The black bear is a forest species, only venturing into openings to forage. They are solitary in nature, except for sows with cubs, and are most active in the mornings and evenings. Black bears require thick escape cover in their habitats as well as brushy travel corridors, often along streams and other waterways. Thick underbrush is also critical for denning sites. A black bear's sense of smell is very well developed. Most likely, they can hear well too. They can see in color and fairly well close up, but overall it is believed that they see poorer than the average human. As for the color of the bears themselves, they can be black, blonde, and various shades of brown. Black bears can swim well and are also capable of a top running speed of 30-35 mph. Most people are aware of the climbing abilities of the cubs which scamper up a tree at the first sign of danger. However, this ability is retained throughout their lives. Some sows even choose to den in hollow trees, even at heights of 60 feet.

Males of the species can reach up to 70 inches (5-6 feet) in length and weigh in at 200-500 pounds while females are usually smaller at 59 inches in length and 125-450 pounds. There have been exceptions such as big, 600-800 pounders. Bears in the coastal regions of South Carolina tend to be smaller than their mountain cousins. However, coastal bears in North Carolina are much larger, probably due to the high amount of agriculture in the region.

Most black bears reach maturity at 4 to 5 years of age. However, in good habitat, females may begin reproducing at age 2. Typically, though, females are 5-7 years old (3-5 years of age in the South) when they begin having cubs. Twins are common, and adoption of orphaned cubs is not unheard of, though rare. Because the cubs stay with their mother almost two years, females only reproduce every 2 to 3 years. Males are capable of breeding at age 3 but often are trumped by the dominant boars in the area. Life expectancy is 10-20 years with some record individuals reaching their mid-thirties.

Breeding occurs in the spring (May-June), and embryos do not implant until the female begins hibernation in the fall (which is after October in the South). [NOTE: Technically, bears go through torpor and are not true hibernators. They will often remain active as long as food is readily available.] Den locations include evergreen thickets, rock outcrops, hollow logs or trees, at the base of uprooted trees, and in excavated cavities under debris. Bears eat constantly, fattening up before retiring to their shelters. Cubs are born during the winter denning period (January-February) and only weigh $\frac{1}{2}$ - $\frac{3}{4}$ of a pound. Adults and cubs emerge in the spring (April-May). The survival of the cubs is directly related to the skill of the sow in finding enough food and protecting them from danger.

Black bears are opportunistic omnivores, eating a wide variety of foods including: grasses; forbs; fruits such as grapes and plums; berries such as chokeberries, blackberries, pokeberries, and blueberries; hard mast species such as hickory nuts, acorns, and beechnuts; small mammals; carrion; the occasional fawn; fish; and insects such as beetles, wasps, ants, bee larvae, and their honey. They also will eat some agricultural



A female black bear will often use thickets for den sites. Credit: NPS, Wikipedia



A generalized black bear range map. Credit: Wikipedia



Black bear scat typically consists of seasonally available insects, berries, and plant material. Credit: Jim Peaco, NPS

crops like the seed heads of sorghum, apples from orchards, and will sometimes kill livestock. In coastal regions, black bears often scavenge along beaches as well as eat the buds and berries of saw and sable palmettos. In swampy regions, bears will browse on aquatic plants such as wild calla lilies, waterparsnip roots, and cattails. Cubs learn what to eat from their mothers but also regularly nurse for a full year.

Home range size depends on den site and food availability, sex and age of the bear, and season of the year. This may mean a bear could subsist on 640 acres of good habitat or need to roam over 100 mi² to find suitable resources. Other examples of home range sizes include 1.5mi² for Appalachian bears and greater than 2mi² in coastal bear populations such as Louisiana. Some Alabama bears apparently need 18-42mi². Obviously, range size varies widely. In general, male ranges are 3 to 8 times larger than those of females. Female territories are allowed to overlap with a dominant male's territory, but subordinate males are forbidden.

Distinct populations

Sixteen subspecies of black bear exist, but the most common is the nominate species, Ursus americanus. Two other subspecies known to the Southeast are the Florida black bear (Ursus americanus floridanus) and Louisiana black bear (Ursus americanus luteolus), both of which are protected from hunting. The Florida black bear was recently removed from Florida's state threatened list since its numbers have risen from a mere 300 in the 1970's to an estimated 3,000 today. It is not totally secure yet and is still monitored in case federal listing under the Endangered Species Act (ESA) is warranted. This subspecies is found in parts of Florida, Alabama, and Georgia.

The Louisiana black bear is still struggling to gain ground. This subspecies was federally listed as threatened under the ESA in 1992. Due to similarity of appearance, several black bear populations in Louisiana, Texas, and Mississippi are also protected just to be on the safe side. They are also protected by law in Mexico as they are listed as endangered in that country. The story behind the restocking of Louisiana's black bears is a combination of failures and successes. In the summers of 1964-1967, the Louisiana Department of Wildlife and Fisheries relocated 131 Minnesota bears to the state. The effort was labeled a failure due to the fact that many of the bears migrated out of the state, died, or were illegally harvested. However, genetic evidence from recent times shows that at least the northern Pointe Coupee area has evidence of Minnesota DNA in their bears, meaning some must have survived to reproduce with the local population.

Today, there are approximately 300 Louisiana black bears, most of whom are suffering from a lack of gene flow across populations. In order to connect known populations of the bears, a dispersal corridor which includes the Red River Wildlife Management Area and surrounding lands has been established as a restoration site. Bears have a strong homing instinct and relocated individuals have been known to travel back to their old territories 143 miles away. Therefore, to make the restoration more likely to succeed, a "soft release" was utilized in 2001 whereby sows with cubs were moved together. The mothers were less likely to abandon their cubs and subsequently set up permanent residence in the area. The program has been considered a success thus far. Still, on average, cub survival for this subspecies is only 50% so continued research and recovery efforts will be needed to bolster the species.

Arkansas bears also went through a restocking in the past. Black bears from Minnesota and Manitoba, Canada were introduced to mountainous regions from 1958-1968 by the Arkansas Game and Fish Commission. The reintroduction was considered a success and today the black



Black bears often forage for insect larva in rotting wood. Credit: Terry Spivey, USDA Forest Service, Bugwood.org



Bear sign: claw marks on the side of a tree. Credit: USDA Forest Service Archive, Bugwood.org

bear population is doing relatively well.

New research has involved the sampling of black bear hair samples caught on barbed wire snares. DNA studies are shedding light on the relatedness of disjunct populations of black bears across their range. This can help determine the threat of inbreeding depression or make a case for or against relocations of bears into the ranges of genetically distinct populations.

Management Recommendations

Landowners can help with the return of black bears to appropriate habitats by implementing simple management techniques. Many states, the federal government, and non-governmental organizations (NGOs) have incentive programs available to assist the landowner with management expenses. Examples include the SAFE program and the Partners for Fish and Wildlife Program as well as WHIP and other Farm Bill programs. Conservation banking and easements are also an option.

There are a number of signs to look for that would indicate the presence of bears currently residing on the property. Tracks, scat, trampled vegetation, mud wallows, day bed sites (depressions) on the forest floor, den sites, ripped open



All bears have plantigrade locomotion like humans and so all five toes and the heel are seen in their tracks. The front legs are slightly shorter than their hind legs, giving them a rolling gait. Credit: NPS

logs and stumps, and gnawed or clawed trees. Bears are creatures of habit and use a system of well-worn trails to travel to and from feeding sites.

Keep in mind that black bears in different ecoregions will feed on those plants typical of that climate zone. A majority of the food items eaten by black bears everywhere is mast. Hard mast crops like acorns provide fat and carbohydrates important for hibernation. Soft mast fruits are also on the menu. Locating and protecting large (50-100 year old) mast-bearing oaks, hickories, pecan, beech, persimmon, cherry, palmetto, plum, grape, swamp dogwood, mulberry, elderberry, blueberries, and others will benefit bears and many other wildlife species. Other staples in the black bear diet include spicebush, Devil's walking stick, pawpaw, sassafras, thistle, and many more.

A good way to determine what bear are eating in the area is to analyze scat contents through the seasons looking for seeds and other undigested material. This will give the landowner an idea of where to focus management efforts, both encouraging existing vegetation to persist or providing food options that are lacking such as fruit orchards. Black bears are also known to visit agricultural plantings of winter wheat, rye, oats, clover, and corn. Leaving some portions of fields unharvested or creating small food plots along forest borders that include these plantings will benefit bear, deer, songbirds, turkey, and quail.

Other species of plants associated with good escape cover or denning thickets include white titi (*Cyrilla*), switchcane, blackberry brambles, mountain laurel, and rhododendron. Brush piles and deadfall trees provide den sites while snags and downed logs should be retained for places to find insects to eat. Maintaining large (minimum 36in. dbh), hollow den trees near water is also advisable. Examples include bald cypress and tupelo gum in coastal regions.

As for travel corridors, which are so



A Florida black bear is caught on a trail camera in the sand pine scrub of Ocala National Forest. Credit: FL Fish and Wildlife Conservation Commission, Wikipedia

vital to bear movement across the landscape, these need to be in continuous cover and preferably located along watercourses such as Streamside Management Zones. Drainage ditches in agricultural fields can be given wider buffers (over 50ft.) to benefit all wildlife.

A diversity of cover types and stand ages across the landscape is essential for proper black bear management. Pine stands should be thinned to allow sunlight to penetrate the forest floor and burned on a 3-5 year cycle to stimulate herbaceous growth. Portions of or entire fallow fields can be replanted to hardwoods to increase forested habitat for bears in highly fragmented landscapes.

In the past, excessive harvest and a loss of habitat decimated bear populations. Black bears in the Southeast need large expanses of contiguous forest to maintain a viable population. Today, the problem of habitat loss (especially bottomlands) to agriculture and development still persists, while new threats have arisen such as highway fatalities and feeding by misinformed people. Feeding wild bears is often illegal and causes bears to lose their fear of humans, making them a potential danger or, at the very least, a nuisance. Many of these bears have to be relocated or killed. As for baiting for hunting purposes, check your local laws for the legality of it.

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Disturbance Management



By Dr. Stephen Ditchkoff

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The art, or science, of managing white-tailed deer has been well documented. *Wildlife Trends Journal* regularly publishes articles that describe tips and techniques to improve the management of deer on your property. These articles, and others like them, describe techniques on habitat management and herd management, explain symptoms and causes of diseases, and outline techniques related to hunting. Without question, we possess the ability to manage white-tailed deer effectively, and have the knowledge to produce deer of exceptional quality. The production and harvest of white-tailed deer improves every year due to our constantly improving knowledge, and the consistent refinement of management techniques. But, the successful harvest of these high quality deer that we produce is sometimes lacking....if not downright frustrating.

I've heard a lot of people say, "If it was easy to kill a big buck, it would take away

the fun of hunting." Like me, I'm sure you all like the challenge of deer hunting, and it's that challenge that fuels your passion. If you killed a big buck every time out, some of the enamor of the sport would fade. With that being said, I'm also sure that you wouldn't mind a little more success...as would I.

Mature bucks are difficult to harvest. because they're mature. They have survived several hunting seasons, because they were lucky, smart, or had the good fortune of living on a property where hunters passed on them when they were younger. But whatever the reason, they have lived and learned, and are going to use their knowledge to avoid danger in the future. The bucks you hope to see this coming season have been educated...and you've been their teacher. Every time that you set foot on your hunting property, you educate deer. They see you, smell you, or hear you, and they constantly build their knowledge base concerning your strategies, tricks, patterns, and habits. In other words, you cause a certain degree of disturbance whenever you scout, hunt, trail deer, plant food plots, or anything else you do on your property. This disturbance is what educates deer and creates the challenge of harvesting a mature animal. In this article, I'll discuss a few common disturbance pitfalls, and describe some simple things you can do to reduce the disturbance footprint on your property.

Gunshots

When most hunters think of disturbance, they think of gunshots. The loud noise can be heard for miles, and we naturally assume that deer associate this noise with hunting or hunters. However, I'm not convinced that the noise of gunshots has the huge negative impact on deer that most hunters believe. Deer hear gunshots every day during hunting season, but in most cases, when a deer hears a gunshot they are in no immediate danger. Rather, it's just a loud noise in the distance. In fact, deer hear gunshots throughout the year. Dove, turkey, waterfowl, and small game seasons, when combined with deer season create an almost year-round rally of gunshots. For this reason, I don't think that gunshots during deer season have any special significance to deer. I'm not suggesting that gunshots can't negatively affect your deer, but rather, we put too much emphasis on controlling this form of disturbance. Why do I mention this? Because (1) deer hunters focus on disturbance due to gunshots and tend to forget other forms of disturbance, and (2) they allow their focus on gunshots to negatively affect their deer management program. I'll discus this first issue throughout this article, so let's focus on the second for a moment.

I have heard many managers say that they only allow antlerless deer to be harvested during certain parts of the season because they don't want to negatively affect hunting for bucks. The result is that they are handicapping their herd management program by not allowing hunters to harvest does throughout the season. It's difficult enough to successfully remove enough antlerless deer on some properties without limiting the days in which it can be done. I shoot does on my property all season long. It doesn't matter the day, time, or location. If a doe shows herself, she will be shot, up until the property I am hunting has reached its prescribed quota of harvested does. And, this practice has not negatively impacted hunting success.

Let me give you an example of how gunshots do not scare deer. My father and I were hunting a December morning on a small hayfield that was approximately 300 yards long and 125 yards across. We sat along the same treeline at opposite ends of the field. Ten minutes after legal hunting hours began, my father shot a doe, and let her lay where she fell. Three minutes later, I had two does step out and begin to leisurely walk across my end of the field towards me. As they moved across the field, my father shot another doe that had stepped out at his end of the field. The shot was loud enough that I almost jumped out of my shorts, and I went into panic mode knowing that my two deer would instantly be gone. Without question, they were startled, but they didn't run. Rather, they exhibited a mild level of alarm and walked to the nearest edge of the field, allowing me the time to shoot one. At this point, we had killed three does, all in separate groups, in less than five minutes. I figured the hunt was over, but considering that we had only hunted for 15 minutes and it was a beautiful morning, I phoned my father and told him to just unload his gun and hold tight for a little bit. Five minutes later, another group of does stepped out onto the field at my end, and I was able to harvest one. Now, consider that this last group of deer (not to mention the second two groups) had just heard three gunshots coming from the field that they were approaching: so much for being scared of gunshots. While what my father and I experienced may not be the norm, it convinced me that gunshots do not have near the negative impact on deer that most people believe.

Foot Traffic

Travel to and from your tree stand is most hunter's downfall in my opinion. I'm not talking about disturbing deer while you walk in or out, but rather, leaving a trail of scent (there and back) that countless deer cross during the next 5, 10, or 15 hours. Imagine that every deer has an internal clicker (or counter), and every time they cross a human trail they add that trail to the count and file away the location that it was crossed. When hunting season begins, human traffic in the woods increases exponentially, and the number of human trails that a deer has crossed increases as well. Very quickly they learn that hunting season has once again begun, because this is the same pattern that they experienced the previous year.

Our patterns of travel (or disturbance)



are easily interpreted by deer, which enables them to avoid locations that we regularly spend time in the woods. Let's examine one hunting scenario as an example. You have a creek bottom located on the southwest section of your property, and it's loaded with swamp chestnut oaks. The acorns produced by these trees are large and highly desirable by deer, and they are often produced in large quantities. As a result, large numbers of deer use these areas during October and November, and they make great hunting locations. For this reason, you have two tree stands in the area: one for a north wind and one for a south wind, enabling you to maximize your opportunities to successfully hunt the area. You're real careful to slip in quietly and use different approaches to your stand each time you hunt in the area to reduce the ability of deer to detect your presence. But, every time you walk in and out, you leave a scent trail. These trails are detectable for hours, and countless deer cross the trails, even after you have left the woods. After several weeks of hunting

these stands, your trails have been crossed by deer probably hundreds of times. Because these deer have evolved to avoid predation, they are exceptional at detecting locations where the chances of being predated are high. Your travels to and fro, no matter how careful you have been, have informed the deer that the creek bottom is an area of high human activity. As a result, the deer will quickly begin to only use the area after dark, and your chance of harvesting anything but a young, inexperienced deer has been substantially reduced.

The same patterns of human disturbance are often found at bait sites, which is a reason why most scientific data on hunting success where baiting is legal suggests that hunter success decreases when hunters use bait. The singular location of the bait site means that hunters will hunt the same location time and again, creating a small area of easily-detectable, high human disturbance that deer will avoid until after dark. Our tendency as hunters to build large, comfortable shooting towers on food plots leads to the same thing. The comfort, ease of access, and ability to avoid the elements when hunting in shooting houses leads to us hunting these locations quite frequently. Wise deer quickly learn that humans spend a lot of time around that food plot, and their use of the plot becomes concentrated after dark.

I have seen data that suggest that deer learn these patterns over multiple seasons, and learn what areas hunters are regularly found. If you're like me, you have several favorite locations on your hunting property (food plots, mast producing trees, creek crossing, etc.), and you have learned that these are good locations to ambush deer. As a result, you hunt them regularly, and you hunt them year after year. And...you have success at these locations. But, this regular hunting educates deer, and older deer that have several seasons of experience (such as the mature buck that is your prime target), has learned to avoid these areas during daylight hours.

The problem is, the only way to avoid leaving trails in the woods is to not hunt...which is obviously not an option.

So how do you avoid educating deer? I have had great success by not using permanent hunting locations. What I mean is, I try and hunt a different location every time I go to the woods. The more I move around, the more difficult it becomes for deer to pattern my location, and the greater the chances that I will be able to see deer that think they are in a hunter-free area. I try and hunt locations that I would never hunt. For example, that small corner of the property that is obviously a poor location... hunt it. Give it a try. The deer have learned that you never go in there, and it's a refuge for them. You'll be amazed at the number of these little pockets on your property, and also the level of success that you'll have in these "poor hunting locations".

To help yourself in this regard, keep a map that tracks everywhere that you hunt this coming season. You'll notice that there are very well-defined "hot spots" of hunting pressure (or disturbance), and I can guarantee you that the deer know that you regularly use these areas because of the high numbers of times they have encountered your trails in that area. As you see the "hot spots" become defined on your map as the season progresses, switch things up. You'll be amazed at the jump in hunting success that you'll experience.

Four Wheelers

If foot traffic has such a negative effect on hunting success, it seems logical that the use of four wheelers or other all-terrain vehicles to travel to and from your stand is the solution. However, I feel that these vehicles can significantly hamper your hunting success if used in the wrong way. While these tools are fantastic for hauling dead deer, planting remote food plots, and other jobs around the farm, back in the woods, and in other remote locations, they are not well-suited for going to and from the tree stand. Let me explain why.

When you head out hunting in the morning, you probably do the same thing every time you get to your property. You unlock and open the gate, drive in a bit and unload the ATV. You crank it up, hop on, and buzz away to your stand, being careful not to drive too close so that you don't disturb the deer in the area. Now let's think about this. You still have to walk to the stand, and as a result, still leave the tell-tale trails signaling that you were there. So, in fact, you have done little to hide the fact that you were at your honey hole. Rather, you have just made things worse. You unlocked the gate (made noise), opened a gate with a distinctive squeak or groan (more noise) drove through and relocked the gate behind you (made more noise), lowered the ramp on your trailer (it squeaks and makes lots of noise), cranked up the ATV (lots of noise with some models), and buzzed off into the woods (leaving a trail of noise). Get the picture? This is the same thing you do every morning (or afternoon), and it serves as a sort of alarm to the deer that says, "Yo! I'm here. If you want to see the sun rise tomorrow morning, you should proba-



bly take note." Now, not only do the deer have your hunting locations patterned, but now they have an alarm that tells them that you're coming.

I'm not saying that ATVs are bad. They are great tools for the "heavy lifting" of deer hunting and deer management. But, most of them aren't good for the stealth that is needed for some activities. In short, walk, and do everything you can to not let the deer know you are at your stand before you even get there.

Other Thoughts

In my opinion, the greatest pitfall that we have as hunters is that we underestimate the ability of deer to pattern us. We concentrate on patterning them, and fail to see that we continually educate them with our actions. Think about your dog. He (or she) knows when it's time to go for a ride in the car, or for a walk, or when it's time to eat, based upon their patterning of your actions. They know that when you put on your socks and shoes, and grab your keys (causing them to jingle), that you're leaving in the car. They know when you put on a jacket and grab the leash that you're taking them for a walk. These are just a few simple examples. I'm sure you can think of many more. Deer are no different. They learn your patterns, and, the ones that learn them well (like the "smart" dog that quickly learns to sit, stay, heel, etc.) survive and become difficult to harvest.

Obviously, you can work to make yourself more difficult to pattern. But, you can also use the patterns of others to improve your hunting success. Most of us don't have the luxury of being the only hunter on a piece of property. As a result, our fellow hunters are educating the deer as well. Learn what you can about their hunting patterns and use those patterns to your advantage. Map their hunting locations, as these will help highlight those areas where there is little to no human disturbance. Keep track of when your neighbors are hunting. Chances are that they are announcing their presence to deer on their property. Maybe they only hunt on weekends. In this case, select stand locations on those days that are near their property line. You might just catch deer heading your direction.

We work too hard to manage our deer so that we have high quality animals available for harvest during the season, just to undo these actions due to poor "disturbance management". Take a little time to pattern yourself (examine what you do when you go hunting) before the season begins, and then prepare a plan to make your patterns less apparent. If you do this, I am confident that you will experience a measurable increase in your success this deer hunting season.

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Wildlife Trends Journal **Management Calendar**



By Dave Edwards

February/March 2013

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Old fields can be exceptional turkey nesting habitat. Late winter mowing select areas can create travel corridors, strutting zones, and loafing areas for turkeys.

may play a role in how you manage your property. For example, if your goal was to manage for turkeys and you see on an aerial that your neighbor's property is primarily mature timber, increasing nesting habitat on your property will likely attract nesting hens (and gobblers) from the surrounding property in the spring (not that you want to "steal" turkeys from your neighbor!). Also, aerial photographs often become my "drawing board" when devising

Obtain an updated aerial photograph of your property.

Updated aerial photographs are an invaluable tool in land/wildlife management. In fact, it is the first thing I want to see when someone asks me to help them improve their property for wildlife or create a management plan. In my opinion, aerial photographs are best if taken during the dormant season when deciduous trees have lost their leaves (i.e., late winter or early spring before green up). This allows you to distinctly see differences in pine or evergreen habitats and hardwoods. Infrared images taken during the growing season can do this as well, but I prefer color photos taken during winter. An aerial photo puts everything into perspective by allowing you to see the various habitats and how they lay across a property. While this may sound odd, it also allows you to see habitat diversity and layout of your neighbor's land which





An updated aerial photograph is an invaluable tool for managing a hunting/recreational property

plans to improve a property. That is, having a map of the entire property in front of me, I can see everything, where various habitats are on the property, where food plots are located, etc. Having this, I can visualize how hunters, deer or other wildlife use the property and/or how we can improve the property to not only ensure quality habitat is provided across the landscape, but where habitat management can be used to direct wildlife to areas for improved hunting. There are many companies that specialize in taking aerial photographs, adding geographic features (roads, property lines, habitats, etc), and providing a custom aerial map to the customer's specifications. While using these companies is obviously more expensive that pulling your property up on something like GoogleEarth, the resulting map/photo will be of high quality, up-to-date, customized to your liking, and can be uploaded into GIS type programs that allow you to pull useful information about your property (e.g, number of acres of each habitat type) and create detailed habitat management plans. While I prefer professionally flown custom maps to work with, I often use free online satellite

imagery, such as GoogleEarth, Bing Maps, etc. if needed. The downside of these images is that they are often outdated and harder to work with in professional mapping programs which can handicap your map building/management planning process.

Spring is a good time to check soil pH and apply lime to food plots if needed.

To check the soil pH, simply collect soil samples and send them to a soil laboratory (see previous Wildlife Trends articles on how to properly collect soil samples). Your local farmers cooperative will often have soil collection bags (which normally have directions on how to collect soil samples) and will also know where you can send the soil to be tested. Although there are exceptions, most crops grow best in a relatively neutral soil pH of 6.5 - 7.0. Thus, lime is often needed to enhance the soil (this is particularly true in sandy soils). Because it can take several months for lime to effectively change the soil pH, checking the soil in the spring will give you ample time to enhance the soil before the fall planting period. Remember, ensuring proper soil pH is

often more important than what you plant or how much you fertilize. In fact, proper soil pH is essential for fertilizer to be available to the plants. Although lime can be spread any time of year, applying it at least six months before planting will allow time for it to enhance the soil. Lime can be broadcast directly on top of the soil where rain can work it into the growing zone of the soil, but disking it into the soil will speed the process and is recommended.

Learn your property.

Late winter/early spring is a great time to be outdoors and the perfect time to learn more about your property, find areas that could be improved, and figure out how deer or other wildlife use your property. Learning these things will help you maximize the value and use of your property. I often use squirrel hunting as an excuse to be in the woods learning a property and scouting for deer sign. Squirrel season runs through February in many states and can offer some great excitement. While it can still be pretty cold in many parts of the South, this is a great time to wander around and learn your property. As I have mentioned in past calendars, February and March are also great times to learn how deer use your property and strategize on new stand locations. Because deer have been exposed to a great deal of hunting pressure over the past few months, they are using areas that they are most comfortable in and feel safe. If you find where they are "hiding" now, you will know where to find them next season once the hunting pressure builds and deer seem to disappear. During this time of year, buck sign such as trails, rubs and scrapes are still fresh.

Mow early or wait until early summer.

If you have areas that need to be mowed, mow them before turkey nesting season (which is generally March-May in most of the Southeast) to pre-

vent destroying nests. Unless necessary, I recommend leaving as much of your roadsides, fields, and other openings un-mowed to provide additional nesting habitat for turkeys and other birds. Much turkey nesting research shows that these areas are valuable and heavily used for nesting by hen turkeys. Even if turkeys do not use all of the un-mowed areas, these areas will host an alternate food source (small mammals - rats, mice, and rabbits) for potential turkey nest predators. Having this "extra habitat" also increases the "search area" and reduces predator success in finding turkeys and their nests giving turkeys a better chance of producing a clutch and surviving. This strategy is more valuable for landowners whose property has limited nesting habitat.

Make preparations for spring turkey season.

One of the best ways to ensure you have gobblers in the spring is to manage your property throughout the year to promote quality nesting cover (see turkey habitat management article in the January-February 2009 issue for more details on creating nesting habitat). I have worked with many landowners who had gobblers on their property all year, but the birds disappeared during the spring. After closer inspection, their property didn't have good nesting habitat and the hens had moved to adjacent properties carrying the gobblers with them. Quality nesting habitat is created by maintaining a patchwork of early successional habitat throughout your property. Burning, herbicide applications, strip disking, timber harvest,

and roadside management strategies are all tools that can help you create quality nesting habitat for turkeys. Besides the key element of creating nesting habitat, creating strutting zones in strategic areas around your property will help put turkeys where you want them to be. A mower, disk, fire or combination of these are the tools of choice for this task. Fire is my preferred tool if it can be used. Strutting areas are simply areas that have relatively little or open ground cover that will be attractive to turkeys for breeding courtships. I often create these areas between roosting and nesting areas and preferably near a food source such as an old field, chufa patch, or food plot. Areas that often lend themselves well to creating strutting areas are powerlines, old fields, food plots and roadsides. Lastly, mowing



Strip disking is by far one of the cheapest and most effective strategies used to create wildlife habitat. Late winter - early spring disking often promotes beneficial broadleaf plants for deer, turkeys, and quail.



Slow spring water draw downs result in a diversity of wetland plants that attract and benefit waterfowl. Notice the "layers" of different plants in this pond.

hunter access trails will help you slip into areas to hunt without making a bunch of noise. If these trails go through thick habitat, don't be surprised if turkeys use the same trails.

Assess management strategies, review or develop a plan, & prepare for upcoming projects.

Good planning and preparation ensures you will have everything needed and be ready to initiate projects this summer. I heard a saying that has stuck with me over the years that always reminds me to plan – "People don't plan to fail, but often fail to plan". Planning also allows you to prioritize projects, create a budget for the upcoming year, and develop timelines for completion to help you stay on track. Many landowners simply tackle projects as they come up or as they think of them. This strategy can work, but without planning they may overlook or run out of money before addressing a more needed project. Spring is a busy time for us helping landowners determine the needs of their property. We conduct what we call "property management assessments/reviews". During this consultation we review projects that had been completed the previous year, review harvest data or other information that provides insight to how the wildlife we are trying to manage are responding to management, re-assess

progress towards goals, assess the habitat and property in general to determine its limiting factors, and develop a prioritized list of activities that need to happen to help the landowner achieve their goals. While this is a professional service we provide, it is a process that I feel all landowners should go through each year, whether they hire a professional biologist or not, to keep them on track.

Fertilize perennial clover plots.

Although I am a fan of planting annual summer crops to provide maximum nutrition through the summer months, I also like to include perennial clover plots in my food plot strategies

for diversity and as a year-round crop that will be available when other crops fade out or are being planted. Perennial clover plots will start growing rapidly once spring green-up begins and daily temperatures exceed 65 degrees. Fertilizing clover can add a significant growth/nutritional boost to clover and other perennials. Because clover produces its own nitrogen, apply a fertilizer that does not contain nitrogen, such as 0-20-20, during early-mid spring to provide adequate nutrients for clover growth. If you add nitrogen, you are simply feeding competing grasses. Although I strongly recommend pulling soil samples and applying fertilizer accordingly, a "normal" fertilizer application rate for clover in the spring is 200 lbs./acre. Once the growing season begins, monitor the plot for undesirable weeds and grass. Pre-emergent herbicides are a fantastic tool that will kill weeds before they have a chance to become a problem. If you are unable to apply pre-emergent herbicide, mowing will help reduce undesirable weeds (<u>do</u> <u>not mow too low</u>...your mower should be set to cut just over the clover). However, if weeds and grasses persist, apply selective post-emergent herbicides for control. Although herbicides are more expensive than mowing, they are often the most effective. Mowing is used to give the clover a better chance to out-compete the weeds while herbicide kills the weeds.

Manage water in duck ponds.

Although duck season may be over, leaving your duck ponds flooded will benefit migrating waterfowl by providing energy rich foods for their flight back north. Pond drawdown rate and timing is important and will vary depending on your management strategy (natural moist soil management or agricultural plantings). If you are planting agricultural crops for waterfowl, leaving the pond flooded through early summer will help control weeds. Just be sure to drain the pond early enough to allow adequate drying time before planting time. However, if you are managing for natural moist soil plants, such as in a beaver pond, you will need to start pond drawdown in the spring to allow desirable native moist soil plants to germinate and grow. Slow drawdowns (over a 2-3 week period) are often desired because they will result in a diverse emergent wetland species composition. Quick drawdowns result in decreased plant species diversity and are often composed of undesirable species. If you are managing a GTR



Collecting sheds can be great family fun and provides insight to buck quality improvements on a hunting property.



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(Green Tree Reservoir or flooded hardwood area), use a slow draw down process but ensure water is off the area before spring green up to protect/enhance the growth of oaks in the GTR. Some oaks, particularly the more desirable ones for generating duck food, do not do well if left flooded after they begin growing leaves in the spring.

Collect shed antlers.

By mid-March, whitetail bucks across the country have shed their antlers. Collecting antler sheds can be a fun spring activity for the whole family. Shed collecting not only provides a great opportunity to spend time with your family, but also provides some insight to the quality of your deer herd. After a few seasons, compare the quality of sheds found from different years. If your program is moving in a positive direction, you will notice that the antlers are getting larger each year. Key areas to concentrate your searches include food plots, fields, around feeders, and along trails where deer must jump (over fences, ditches, etc). Training Labrador retrievers to find sheds has become relatively common and may offer additional outdoor adventures for you and your best friend.

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