PRACTICAL WILDLIFE MANAGEMENT INFORMATION

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Earl Says…

We have a new puppy at our house. Everyone, please meet Luke. He is three months old and has already taken control of our hearts and lives. I forgot how much time and effort goes into training a new puppy.

Luke is a British Labrador we found at a kennel just south of us. We've always had regular American Labs in the past so we'll have to see how different he will be. We were told that British Labs are calmer and easier to train. Well, the jury is still out on all of that so far because he is ALL puppy including playing non stop and chewing everything in sight, especially my hands.

I'll keep you informed on our new addition from time to time but in the meantime, I'm still waiting to hear his British accent!

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Cover photo by Dave Edwards

The Cost of Nest Predator Trapping for Bobwhite Quail

by David A. Sisson

David Sisson was born and raised in quail country in southwest Georgia. This article is from his Masters in Natural Resources Project at the University of Georgia and is his first contribution to Wildlife Trends. His current position is with the land management and hunting crew at the Jones Center at Ichauway in Baker County, Georgia.

Co-authors: Clay Sisson, Bynum Boley, James Martin, and Theron Terhune

Nest predator control is commonly practiced on intensively managed quail plantations in the Southeast. Recently published research conducted by Tall Timbers and The University of Georgia (UGA) has validated this practice by demonstrating that trapping for mammalian predators (e.g. Opossums, Raccoons, Armadillos, Bobcats, etc.) can be beneficial to Northern Bobwhite reproductive success and population performance (Jackson et. al. 2018, Palmer et. al. 2019). A once controversial practice is now commonplace, with states such as Georgia having permitted year round trapping programs in place for nearly 20 years. Once it was proven beneficial, the argument against this type of intensive game management became it being cost-prohibitive to most landowners although little was actually known about what typical trapping programs were and the costs associated with them. To shed some light on this issue, Tall Timbers and UGA collaborated to survey private plantations in the Red Hills and Albany areas, as well as a handful of properties in Alabama and the Carolinas, to better understand the range of management practices associated with nest predator management. Our goal was to document common practices for nest predator trapping, estimate annual per acre cost, and learn some of the motivations of predator trapping on quail plantations.

To do this we created a survey consisting of 42 questions and distributed it to plantation managers through an online source as well as through email and in-person delivery. Forty-three surveys were returned representing over 258,000

acres of managed quail land. These properties ranged in size from 1,100 to 29,000 acres with an average of 6,000 acres of managed quail habitat. All the properties that completed a survey stated that they currently had a trapping program in place. The properties surveyed have had a trapping program in place for an average of 15 years. Average manager age on these properties was 50 and average number of years spent managing the current property was 11.

COMMON PRACTICES

Season: On the plantations surveyed, trapping typically is either year-round or seasonal (the bobwhite breeding season – after burning, before blocking). These two categories broke down evenly with 50% of properties trapping year-round and 50% trapping seasonally.

Style: The most utilized trapping method on the properties surveyed was a combination of both box traps and leghold traps (69%). Twenty-six percent used only box traps and 5% used only legholds. In many of these cases, box traps were used more frequently than legholds with an average ratio across these properties of nearly 4:1. However, managers often stated that leghold traps were "Very Effective" and that box traps were only "Moderately Effective".

Effort: Trapping density averaged 1 trap per 46 acres of managed land, or about 20-25 traps per 1000 acres. This was consistent across property size showing little difference in effort based on total acreage. Trapping was typically conducted by a combination of in-house employees and contractors (51%), or solely by in-house employees (40%). The average number of "in house" hours per week spent working with traps reported by these properties was between 20-24 hours. Most (78%) contract trapping lasts between 2 to 15 weeks during the bobwhite breeding season while the remaining eighteen percent of contracting was used on a year-round basis. The average contractor weekly rate was $1,405, or a per animal bounty between $20-25.

Baits: A wide variety of baits were reported used by the survey participants, so we separated them into 3 categories: visual, scent based, and a combination of the two. Most properties (64%) used a combination of visual and scent baits in their trapping program. Most properties stated that effectiveness of bait and its longevity were the main reasons behind bait choice (Figure 1). Several managers commented that the longevity of their bait related to resistance to ants.

Catch Rate: The average catch rate was 1.13% per night which resulted in an average of 1 animal caught per 17 acres of managed land annually. The trend in Figure 2 shows that as trap nights per acre value increases, the acres per animal caught decreases. Essentially meaning that more traps for more nights equals a higher catch rate and annual catch. We start to see a diminishing rate of returns after properties reach 17 trap nights per

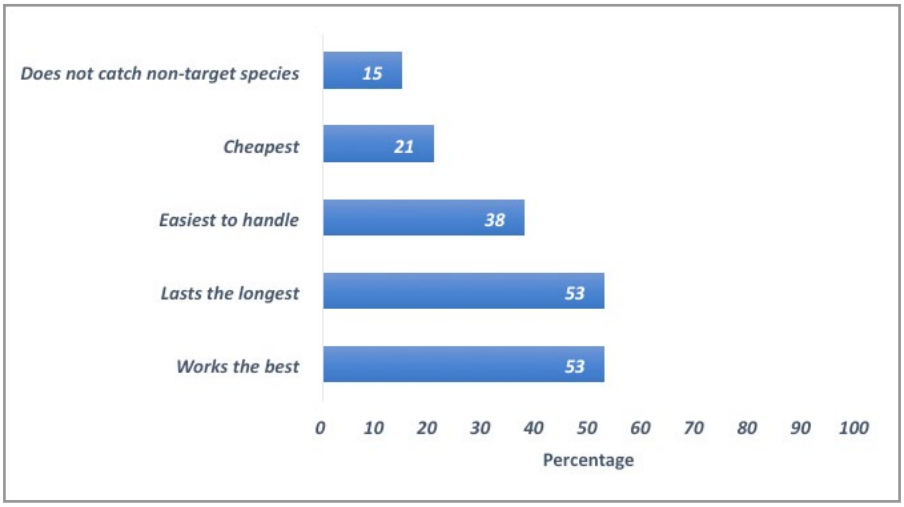

Figure 1: *Percentage of properties who selected these specific reasons for bait choice*

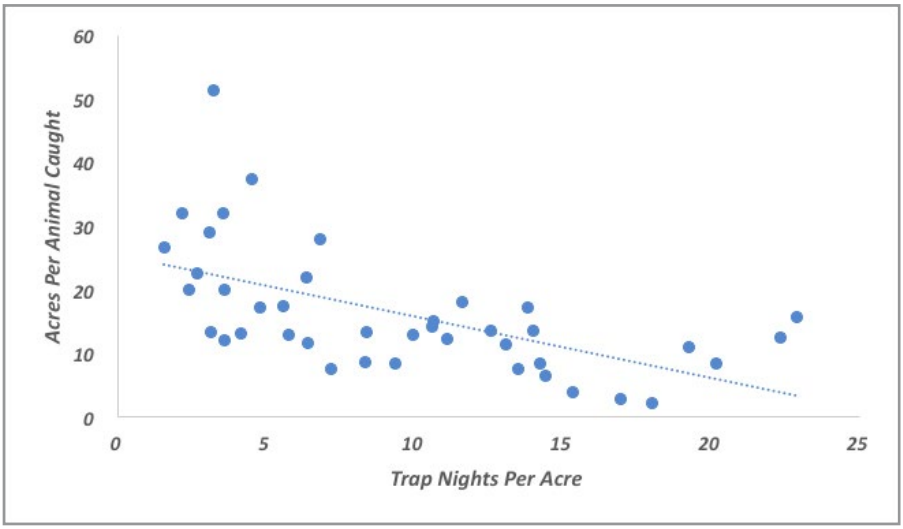

Figure 2: *Effectiveness of trapping based off trap nights per acre compared to the number of animals caught per acre*

acre, which is a very high trap density of roughly a trap per 20 acres or 50 traps per 1000 acres, nearly double the average trapping density. Total number of animals caught was generally determined by trapping effort (number of trap nights) with the larger properties typically having the highest number of trap nights and therefore the highest catch. There were some exceptions to this general rule as isolated properties or properties just starting a trapping program tended to catch large numbers disproportionate to their size. Opossums and raccoons made up over 70% of the annual catch on most of these properties with armadillos, coyotes, bobcats, and foxes making up 20%, and 5% was considered "other".

Monitoring: Forty percent of properties surveyed reported conducting a Predator Index Survey to monitor the yearly changes in predator index levels. This survey consists of running a series of stations where a sand/oil mixture captures the tracks of predators drawn in by a scent tablet. The Index is the average number of stations "hit" per night over the course of a week and these surveys averaged 13.4. An index of 20 or higher has recently been shown to impact reproductive output, with surveys on untrapped properties generally higher than those trapped and getting as high as 50-70 (Jackson et al. 2018).

COST

We divided the cost of trapping programs into two categories: (a) startup or "capital" cost and (b) annual operating costs. Average capital investment cost was $3.89 per acre, this was mostly determined by the individual trap cost and therefore varied based on trap type. The average price range of box traps was $60-80 and legholds were between $10-30.

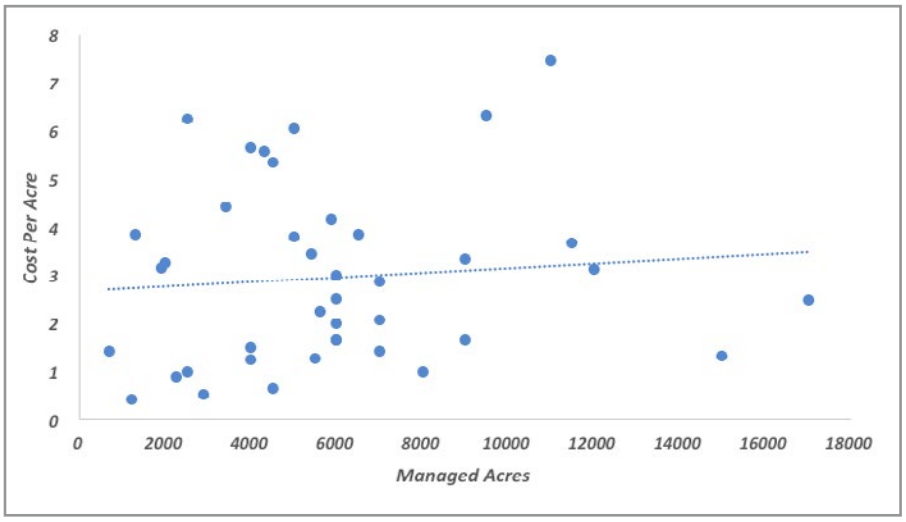

Figure 3: *Cost per acre compared to managed acres*

Implementing a telemetry system had the highest capital cost with a cost of up to $225 for a trap and system combination. Using the estimated 20 traps per 1000 acres constant, we can assume based off the reported prices that capital investment cost per thousand acres will be $1,400 for box traps, $400 for legholds, and $4,500 for a telemetry system. Investment cost will be higher still if ATV's, rifles, etc. are purchased just for the trapping program.

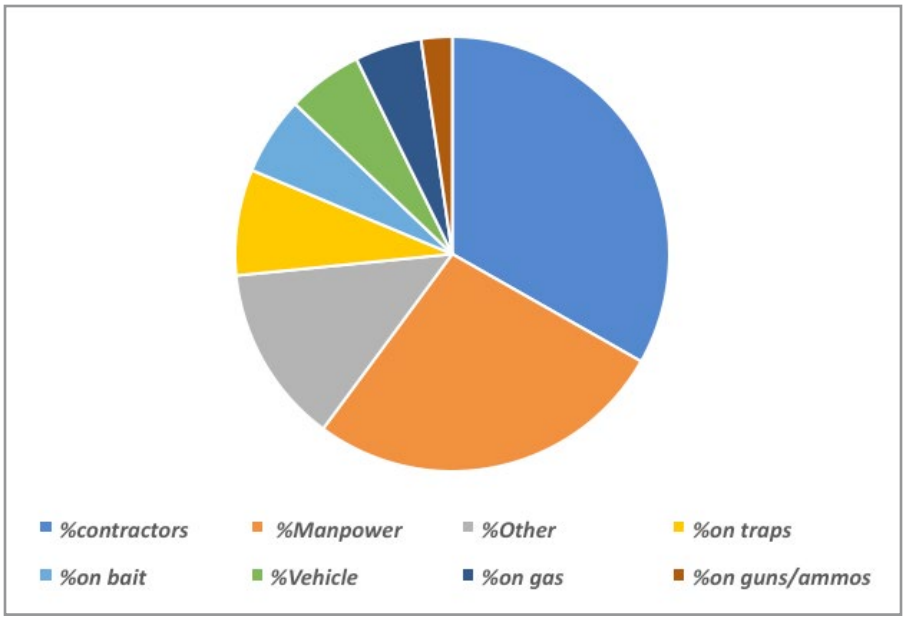

Figure 4: Breakdown of average spending on plantations surveyed

The average annual operating cost per acre on the surveyed properties was found to be $2.93. There was very little variability in annual operating cost relative to property size based off the results of this survey. Larger and smaller properties showed similar annual cost per acre regardless of total acreage (Figure 3). The bulk of annual expenses came from manpower and/or contractors, 44% and 55% respectively (Figure 4). If a property used in-house employees then they spent more on gas, bait, etc., wherein if they used contractors these costs were part of the contractor's weekly rate. On average, it costs $44 per animal caught based off annual cost and predators caught.

A question often posed by managers when asking about starting or revamping a trapping program is if the telemetry system is cost effective. The telemetry monitoring system (TMS) allows a trap conductor to check a signal from a receiver on a box trap at the start of every day to determine if a trap has been "tripped" overnight. In theory, while the initial startup cost is much higher, this system will save money on manpower hours needed and will allow for traps to be placed in areas where they would not be placed normally due to accessibility issues. Eleven survey returns came from properties using a telemetry system which was nearly a complete sample of these properties and is therefore over representative in the survey returns. Startup cost for a telemetry system was obviously higher, however the annual operating cost for trapping on these properties was reported higher also (Table 1). The survey did not ask some questions that could have delved deeper into this issue, however it is our belief that the properties who implement this system are often people who are very invested in predator removal off the property. Meaning that they also frequently hire out contractors to intensively trap the property, trap longer, and put forth a higher effort into baiting, moving, and other aspects of trap maintenance. This results in these properties having a higher annual cost per acre for the entire trapping program. If you compare just the cost of running box traps it is very similar between telemetry and non-telemetry properties however, the properties using TMS were able to run nearly twice as many traps in the same amount of time creating higher trap densities, resulting in a lower acre per predator caught value and a higher total catch (Table 1). Further comparison, when standardized for trap density, revealed that TMS can be a time and money saver if used as designed, especially on larger properties with a payback on initial investment estimated at 5 years.

Practices	Telemetry	No Telemetry
Annual Cost Per Acre	$3.83	$2.64
Capital Investment Cost/Acre	$10.55	$2.13
Catch Rate per 100 Traps Per Trap Night	0.84%	1.24%
$per animal captured	$44.72	$43.13
Acres Per Predator Caught	13.3 Acres	18.4 Acres
Acres per Trap	28 Acres	48 Acres
Average Months Trapped	10.5	9
Hours Per Week	20-24	20-24

Table 1: *Comparison of basic practices and cost between properties with and without a telemetry system*

MOTIVATIONS FOR TRAPPING

Several motivational questions asked in this survey gauged why managers engage in predator trapping on their properties. Most managers stated that mammalian predator trapping was "Very Effective" when it came to impacting the success of the quail population on the property and no manager stated that trapping was anything less than "Moderately Effective". Most managers agreed that trapping was an essential part of quail management and wasn't something they did "just because" (Figure 5).

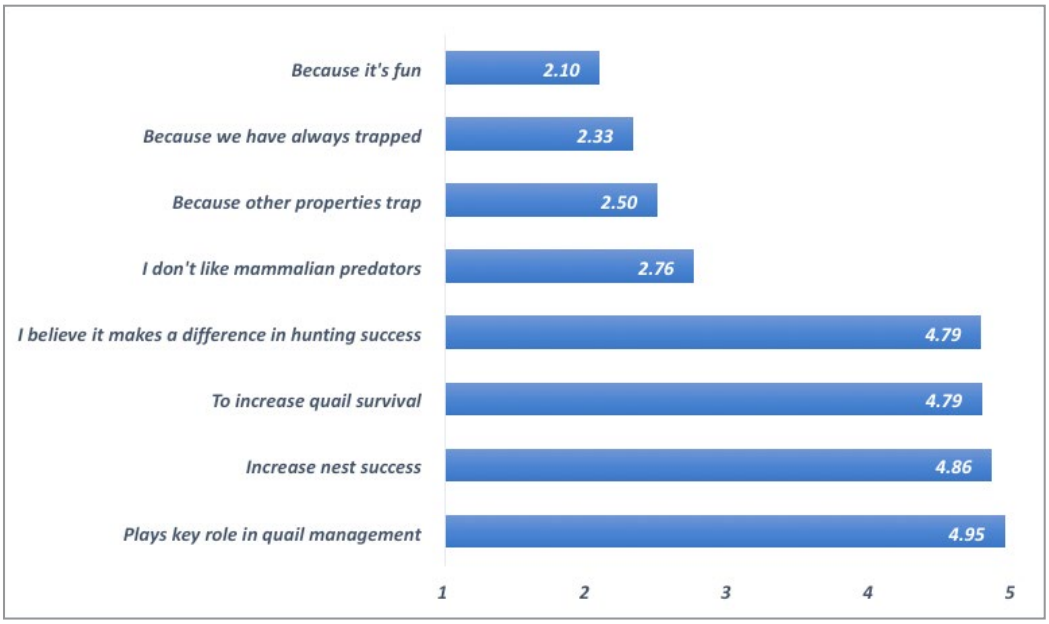

Figure 5: *Manager attitudes and reasoning behind predator trapping. 1 being "Strongly Disagree", 3 being "Neither Agree or Disagree" and 5 being "Strongly Agree"*

What is a "Typical" Trapping Program

While the survey results show that trapping effort varies among the quail plantations, it also revealed to us that there are some constants that are good guidelines: Using 20-25 traps per thousand acres of managed land (this could be box traps, legholds, or a combination), trapping at least during the bobwhite breeding season (between the burning and blocking seasons), and hiring an effective contractor to trap during the peak breeding season for as long as possible (between 5-15 weeks is typical). Managers favored a combination of visual and scent attractants to be used as bait. Managers should expect to catch an animal for every 17 acres, or roughly 60 predators per 1000 acres. This number may be higher if the property is isolated or if the trapping program is just beginning. The best way to evaluate a trapping program is to utilize a Predator Index Survey over time to analyze differences in the index. Expect the annual cost per acre to be ~ $2.90 and for labor to be around 20-24 hours a week. It is important to note that while there is some variance in annual cost per acre when trapping, that even on the high end of annual cost per acre, trapping makes up a much lower percentage of the annual budget than many other standard management practices conducted on these properties. A recent analysis by Tall Timbers revealed an average management cost on these properties approaching $100/acre annually, meaning that a trapping program would make up only 2-4% of an annual budget (Sisson et al. 2017). This essentially nullifies the argument about trapping being cost prohibitive and points out that the biggest "cost" may be in doing nothing.

There is still much to be learned about the benefits and best ways to effectively trap mammalian predators to benefit bobwhite production. Future research should look deeper into the pros and cons of the telemetry system. Evaluating effectiveness of different trapping programs through predator index, and other important issues such as types of baits and frequency of rebaiting should be looked at. Understanding the benefits of utilizing legholds versus box traps should also be considered further. Finally, we would like to thank all the managers who took the time to complete this survey.

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Regenerating Deer Dirt: Part 1

by Jason R. Snavely, CWB
Photos by Tim Kocher

The author holding what rich, dark soil should look like as opposed to just lifeless dirt.

There's a movement sweeping through the food plotting world and your chance to be involved with the right side of history is NOW! Many have joined to save money by downsizing or eliminating their fertilizer bills while others seek to improve the overall health of their farms in the absence of caustic chemical herbicides. As a result of this paradigm shift, managers are once again bringing a diversity of life back to their farms and ranches. The support for this game changing shift in the way we manage our farms does not originate from any textbook. We're learning from the best teacher of them all: nature.

This paper, which I also developed into a presentation, is the culmination of my three-year, intensive

Jason R. Snavely, CWB is a Certified Wildlife Biologist and founder/owner of Drop-Tine Wildlife Consulting, Drop-Tine Seed Co. and The Drop-Tine Podcast. Jason graduated from Mississippi State University in 2001 where he majored in Wildlife & Fisheries Science with a concentration on wildlife. Immediately after graduation Jason started his consulting company and he has spent nearly two decades working with private land owners all across the whitetail's range. Jason's focus is on regenerative land and wildlife management principles that aim to increase biodiversity through holistic management practices and by farming in nature's image. Jason also started The Drop-Tine Seed Co. after finding a void in seed blends that seek soil health and to regenerate ecosystem function. He also records The Drop-Tine Podcast to discuss the principles, practices and experiences that have shaped the Drop-Tine brand over the years.

This photo showing the massive amount of destruction tillage of any kind does. Tillage of all kinds destroys your soil's ability to form and maintain aggregates, with pore spaces that allow water infiltration and habitat for beneficial micro-organisms to proliferate and work FOR you! Without this beneficial soil biology, your system becomes dependent on expensive, added fertilizers

fact-finding mission that questions the way we farm and food plot. What I've found, and incorporated into my client's management programs, has completely changed the way we make management decisions and view our food plot programs.

If you are currently disking, plowing, fertilizing, spraying herbicides or planting food plots with less than 8 different species/varieties of seeds, you are being misled by antiquated thinking, providing nutrient deficient forage, and destroying your soil health! I'm sure many of you will argue with this statement, especially if you sell fertilizer or tillage equipment; however, more and more farmers are learning the hard way: ***modern farming practices have been WRONG in so many ways!***

A brief scan through the history books reveals that fighting against nature with sloppy farming practices (i.e. tillage) has led to the collapse of many civilizations.

Conventional farming practices have proven to be hard on our wallets and we're starting to realize that they have been holding back our wildlife management efforts. Throughout this journey, nothing has been more impactful on our management programs than our new approach to working **WITH** nature as opposed to working against her. This new approach using ancient wisdom has resulted in properties that are absolutely **FULL** of life from the soil up. In fact, after spending 13 years intensively managing my personal slice of deer dirt, I can honestly say nothing has positively impacted the wildlife richness and diversity on my farm more than regenerative approaches to "farming in nature's image." As a result, my farm will never again see added synthetic fertilizers, caustic chemical herbicides/pesticides or soil disturbance through tillage. My clients all across the whitetail's range are witnessing the same amazing results. I wrote this thorough presentation of the material that supports this mission to pique your interest in joining the cause. You certainly don't have to go all in and you can see results from just one minor change; just do SOMETHING!

Do As I Do…

My goal with this article is not to convince you to forget everything ***you <u>think</u> you know*** about farming food plots and to start all over with an open mind. Although, I did just that! I'm not trying to sell you on the idea of cutting ***ALL expensive***, added fertilizers from your food plot program. Although, I did just that! I'm not trying to sound an alarm by insisting that you cut out all herbicides and insecticides because they are budget busters, ineffective and simply not necessary. Although, I did just that! I don't intend to convince you to research unfamiliar, ancient plants that, when added to a multi-species cocktail blend, prime your soil health by pushing you one step closer to eliminating expensive, soil-destroying synthetic fertilizers. Although, I did just that!

Regenerative Wildlife Agriculture (RWA), as I've coined it, is allowing us to grow more attractive forages with greater nutrient density, eliminate our dependence on added, synthetic fertilizer, remove dangerous chemical herbicides and pesticides of any kind from our farms, save us a significant amount of money, and restore natural ecosystem function to our beloved properties. If this fascinating paradigm shift doesn't interest you, you can stop reading now!

Carbon is KING! A byproduct of photosynthesis, carbon drives the entire system and acts as the currency that the plant uses to trade for needed nutrients that are delivered by the micro-organisms. This beneficial process is compromised when we add synthetic fertilizer. Photo by Jimmy Emmons.

My goal is to question common myths of industrialized agrochemical agriculture and open your mind to consider the feasibility of what I am now 100% convinced of: modern, yield-driven agriculture that employs soil disturbance through tillage, high fertilizer inputs, chemical herbicides, single species cropping systems that lack diversity, simple crop rotations and the relentless removal of plant residue from the soil surface has caused a major decline in soil fertility, soil biology and nutrient density of the plants that grow in it. These highly groomed, spoon fed crops may look fantastic to the untrained eye and they may even produce great yields due to added and expensive synthetic inputs such as fertilizer; however, keen observations and results from early adopters in the rapidly growing RWA movement suggests that we've had it all wrong for more than 100 years! If you perform these farming practices on your farm and in your food plots, you better hope your neighbor hasn't joined the RWA train!

Food plotters will one day wake up and realize that they can slash the highest costs associated with planting and maintaining food plots while attracting more deer with more nutrient dense, nutritious forages than their neighbors are offering in their struggling, chemical dependent food plots or Ag fields. There are 32,000 tons of FREE atmospheric nitrogen over every acre. If we can utilize the right plants to capture that atmospheric nitrogen and convert it into a usable form for all plants, WHY are we paying for nitrogen?

I've decided to share the regenerative food plotting techniques that my clients and I have been working on to improve their soil health, wildlife fitness and property attraction while realizing significant savings along the way.

Mindset

The first step in regenerating ecosystem function on your farm to eliminate your dependence on fertilizers and herbicides is to change your ***mindset***. Your only obstacle to success lies in the five (or so) inches between your ears. This first step is no simple task. A quick drive through farm country reveals a plethora of farms that read like a history book of generations of failed farming practices. You would think someone would look at those fields from an ecological position and realize something is just not right. This is exactly how my path down regenerative agriculture started. My soils just looked dead. Where was the life? I'm guilty of once practicing the same "kill all the life and add synthetic inputs" mindset.

Modern farmers are selling off their fertility one bale or bushel at a time, leaving very little residue to feed and house the soil ecosystem. At this pace, they will never rebuild soil at a faster rate than they are removing it. After selling off what they've grown in their fields, they leave soils bare and lacking plant armor making for a great scenario to lose more soil through wind and water erosion. I can assure you that everything we are covering in this article has been brought up to all farmers at one point or another. However, tradition is a strong bond to break. I wish I had a dollar for every farmer who told me "I plow because my father and grandfather plowed the dirt and it just smells good". Many of these same farmers are foreclosing on their operations and auctioning off equipment and livestock at an alarming rate. Perhaps more concerning, suicide rates of farmers are at an all-time high. One CDC study revealing that suicide rates among farmers are 5 times higher than those of the general population.

Although the specific regenerative practices (tools, timing, species, etc.)

may change slightly as you travel from Michigan to Alabama or from Maine to Texas, the principles remain the same. Before I cover those key principles, it is imperative that you think of your soil as a living ecosystem, not merely as a dirt medium that offers a place for plants to grow.

Your soil, property and management results are a direct reflection of you. Without the proper mindset, you will fail in this endeavor. I've personally observed all of the following principles put into practice under every circumstance you could encounter where white-tailed deer roam and beyond; spare me the excuses! I'd rather you just admit you're scared…I was too.

Nature as Teacher

In order to regenerate what we've destroyed with modern agricultural practices, we must look to nature. If you look at modern agriculture today, it looks more like a chemistry experiment than an attempt to cultivate life for the sustainable consumption of the fruits of our labor. Before I get into more detail on the principles and practices of RWA, you must understand how nature's ecosystem works. Once you understand this process you will have a better awareness of why the traditional food plotting techniques, we've carried over from modern agriculture have created a system that is dependent on the addition of soil destroying and budget busting fertilizers and herbicides. In other words, being armed with this knowledge will save you money on equipment, diesel fuel, added fertilizer, herbicides, all other pesticides and your most valuable asset: TIME!

We are extremely blessed to have the sun in the sky! Of course, the sun benefits us in so many ways. However, it is your basic understanding of the relationship that the sun has fostered over time with plants that will allow you to get away from relying on added fertilizer! The energy the sun emits combined with the ability of green plants to perform photosynthesis sustains ***all*** life on earth. I think most of us know this but the question is: how does this occur and how can we benefit from it?

Photosynthesis, as you may recall from 4th grade science is the process of combining sunlight energy, carbon dioxide and water to make glucose and oxygen. I've simplified the process for this article; however, I want to draw your attention to one of the byproducts of photosynthesis: **CARBON!** Carbon is derived from the glucose molecule byproduct of photosynthesis and it drives the entire system. Carbon is the **FIRST** thing I look at on soil test results from my client's food plots. There's a good chance you

won't find it on your soil test report (more on this later). If you take nothing else away from this article, please understand that carbon is the most important component of this system. In fact, when talking about your soil test results with your fertilizer suppliers I want you to ask them how they are measuring carbon in your soil. If they look at you funny, and they will, fire them because they lack the knowledge and motivation to do anything but take checks from you.

Carbon is the currency ($$$) that the plants use to give (in the form of root exudates that leak from roots) to the living organisms (bacteria, fungi, etc.) in the soil in exchange for the nutrients plants need to grow and thrive. That's right, soil organisms go get N, P, K and all of the micro nutrients including zinc, copper, magnesium, Iron (and many others) and deliver them in plant available form to the plant roots. What an incredibly efficient process, right!? And you thought NPK only came at a cost in a bag! WRONG! All of the minerals that we feel the need to pay for are right there in the soil. We just need to farm the way nature intended to capture that FREE plant food. When our management actions negatively impact the soil biology, we become dependent on added synthetic fertilizers.

Although we like to think that the NPK we dump into the soil is directly taken up by plant roots it just doesn't work that way. Later in the article I will address some long-term data that show most of this added nitrogen that we dump into our fields is completely wasted! It must go through the micro and macro organisms to become plant available. It's ironic and disappointing to think that so many food plotters are dumping inorganic fertilizers into the soil that require soil biology to make it plant available BUT the biology is absent from most of our soils! This fertilizer that is dumped into the ground by the ton is not being utilized by plants! Unfortunately, much of it leaches through the soil profile and into our water system where it dumps out into our oceans to create dead zones like we see in the Gulf.

This well-tuned symbiotic relationship between plants and soil life works very well until we feel the need to get involved. This carbon by product of photosynthesis is the **food for the biology** as it "leaks" from the plant roots and into the soil where the biology consumes it. As a token of appreciation, the living organisms of the soil deliver nutrients **and water** to the plants. When we disturb this symbiotic

With a single pass, the author can simulate running a herd of Bison across the pasture and drill a season-specific, diverse cocktail blend. This efficient system eliminates the need for tillage, fertilizer, herbicide and reduces fuel costs with a single pass across the field.

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process, our plants begin to rely on us to spoon feed them with added nutrients (fertilizer), herbicides to kill unwanted plants, and pesticides to kill insects and diseases that the biology (predatory insects) once kept in check until we broke the system.

When we spray insecticides to kill the "crop pests" we are taking collateral damage and killing beneficial insects as well. This catch 22 system then results in a system that is heavily dependent upon our chemical warfare to maintain crop pests below our "threshold". Why not just allow natural, predatory insects to manage the pest insects? Entomologist Dr. Jonathan Lundgren reminds us that there are 1700 beneficial or neutral insects for every one pest insect! You wouldn't think this to be the case when you stop at a chemical pesticide warehouse and gander at the amount of chemicals they have stacked by the pallet! The heavy application and reliance on insecticides is detrimental to a healthy ecosystem. Nothing has had a greater impact on the rapid increase in biodiversity on my farm than the removal of herbicides and insecticides.

When we dump fertilizer into the soil, the plants no longer rely on the biology to go get these nutrients (which often lie out of reach of the plant) and the plants get lazy. They no longer need to release as much carbon into the soil to barter with the biology. As a result, soil biology numbers decline just about the time you fail to add more nutrients that are in limited supply later in the growing season. By this time, it's too late as the plants have disassociated with the beneficial soil microorganisms and they suffer.

This has been likened to the welfare system in America; an ineffective and flawed system that is not working as it was intended to work. Why would anyone want to work for a living when the system is providing an endless supply of all their wants and needs for FREE? When I see a modern soybean, corn or wheat field that were farmed using conventional practices, I'm now reminded of the broken welfare system. Those plants may be producing a respectable yield, but at what cost? Without extremely high inputs at the cost of the farmer, the system will crash. The only winner is the fertilizer salesman.

Crimp-terminating and drilling directly into the green plant residue is the author's choice for regenerating the soils and his ecosystem function. This photo shows where the drill sliced through a freshly created armor of hairy vetch. Corn was planted in this particular plot using zero added nitrogen since the legumes fixed FREE nitrogen from the atmosphere and held it in a biological form for the follow up crop.

Plants + Thriving Soil Biology = Improved Soil Health = Removal of Added Synthetic Inputs

This very simple equation drives everything I do on my farm. Just put plants in the ground! If my management actions are promoting more life in the soil and above ground, then I know I'm doing the right thing. It seems like every article or video on food plots these days includes killing something. If we're not killing weeds with broad spectrum or specialty chemical herbicides, we're killing pest insects with insecticides. Have you ever wondered: how did mother nature manage these things before we imposed our will on her?

Conventional soil testing methods have failed the agricultural industry because they treat soil like a chemistry experiment, looking solely at chemical and physical aspects of the soil. It turns out, we're ignoring the best part: the biological component! It is this biological component that can offer natural fertility (and $ savings) when properly managed. Soil is a living system, not merely a plant growing medium as your synthetic fertilizer salesmen wants you to believe. It's a giant red flag if your fertilizer supplier offers you free soil samples so that he can make fertilizer recommendations with the results! 90% of the fertilizer added to the soil must go through the biology before it becomes available to plants. Without the biology, all of the added nutrients are out of reach of the plants, unavailable for tissue growth.

The truth is, healthy soil is chock full of living micro and macro organisms that work with plants, symbiotically, to cycle nutrients, conserve moisture and create resiliency against disease and pest insects. Soils that have a thriving biological component grow nutrient dense plants for wildlife and DO NOT REQURIE US TO SPOON FEED THEM WITH SYNTHETICS FERTILIZERS! How does this work?

Miracle Fungus = $$$ Savings

Soil microbiologists identify that they are just scratching the surface of the world beneath our boots. Do yourself a favor and Google videos by Dr. Kris Nichols and Dr. Michael Amaranthus. While I won't go in depth on this fascinating topic, you **must** understand the role of a very important beneficial fungi known as **arbuscular mycorrhizal fungi (AMF)** that serve as the highways of nutrient and water transfer in the soil. Once you do, you forever understand why the use of tillage is frowned upon in RWA. This is also why I constantly remind people that organic farming is not RWA. Traditionally, organic farmers employ a great deal of tillage as a form of weed control. If plowing controls weeds, why do we still have them?

AMF extend from plant roots throughout the soil, exponentially increasing the surface area and reach of the plant. Dr. Amaranthus has proven 100+ year old conventional wisdom to be absolutely wrong when he showed that mycorrhizae provide transportation infrastructure for plants to access organic, plant available nitrogen. In other words, when you plant nitrogen fixing clover in a multi-species cocktail blend, they are providing free nitrogen, through mycorrhizae, to the plants that do not have the ability to fix atmospheric nitrogen! When you build the house for the biology by eliminating tillage you provide the habitat for the biology to thrive and work together with plants to cycle in-field nutrients. Plowing breaks apart the AMF "interstate" network forcing a welfare system dependent on added, synthetic fertilizers. Imagine how difficult it would be to transport produce across the country to grocery stores if the nation's highways were bombed.

This photo shows one of the authors diverse cocktail blends planted ahead of a pre-determined crop. This photo shows an ideal seed bed ready to be planted with no-till equipment. The diverse plant types in this mix will allow for nutrients to be consumed and broken down by the soil biology and then delivered to the plants, eliminating the need for added, synthetic fertilizers.

Interestingly, when you "outsource" the AMF's job by adding synthetic fertilizer from a bag, the AMF find themselves unemployed and they get lazy. Plants and fungi work together and when you negatively impact this relationship, your soils become dependent on synthetic fertilizers. When you apply NPK fertilizers you interrupt the system by which plants work with the microbes in a well-tuned symbiotic relationship. If the plants are getting it directly from you, why do they need to establish relationships with AMF? If you want to know how this vicious cycle ends, visit your fertilizer salesman with a conventional soil sample and tell your wife how much money you spent and why. Before farming under RWA principles, my system was dependent upon the heavy use of synthetic fertilizers. Before I purchased it, my farm was conventionally farmed for generations. I now have an additional $8,000.00 available to me annually, in my food plot budget on my farm, by simply cutting out ***all*** added inorganic fertilizers. I'm stepping aside and allowing my plants to work in conjunction with the soil biology to close the nutrient cycle and rejuvenate ecosystem function the way nature intended. Oh, by the way, clients and peers across the country have noticed that deer and other wildlife flock to their properties once they switch to regenerative practices.

Check back next issue as we discuss more on building your soil, diversifying what you plant and more.

Your Lake's Shoreline

by Scott Brown

The best lake shorelines are a combination of various habitats that will benefit plants, invertebrates, and fish and wildlife. The majority of fish utilize the shoreline more than other areas of the waterbody.

To most fish species, the shoreline of a waterbody is the most important part of the lake. This is also true for most anglers, especially those targeting bass and bream, do so along the shoreline. Most mammals and birds that frequent your waterbody are also using the shoreline habitat more than the open water. The **Littoral Zone**, shallower areas of a waterbody, is that area of your waterbody generally close to shore where light penetrates to bottom or near bottom. Most fish species require a good amount of littoral zone/shoreline as they may spend part of or their entire life there. This is also where most of the natural desirable habitat occurs and where the most fish and other organisms can be found living, growing, feeding and/or reproducing. The shoreline is the

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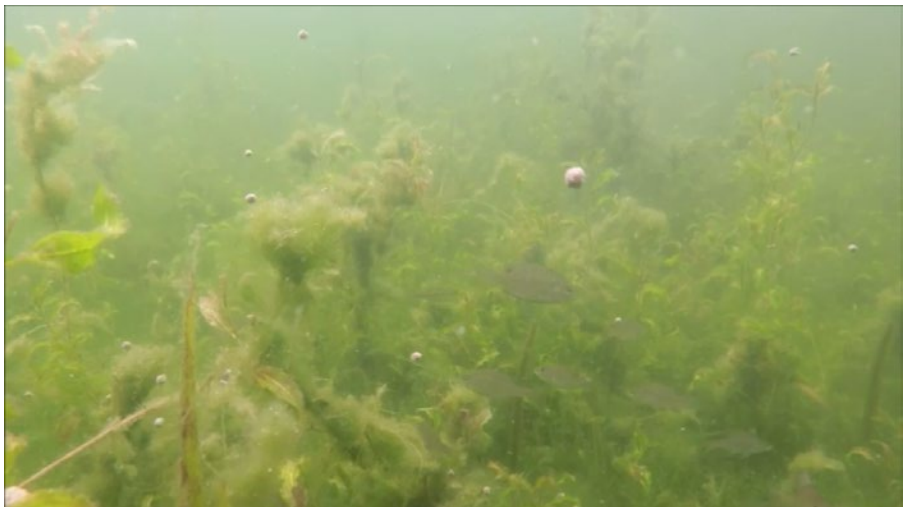
most important area of the waterbody for most aquatic species. The more of it, the better.

Where the light penetrates the water column, microscopic organisms called **phytoplankton** and **zooplankton** grow and hopefully thrive. These organisms, although tiny, are very important, as they are the foundation of the aquatic food chain/pyramid. Some of these organisms will free float, but certain species also attach themselves to pebbles, rocks, logs, manmade structures (docks) and vegetation where sunlight reaches. Newly hatched fish and organisms that fish feed on such as grass shrimp, crayfish, insect larvae etc. feed on the microscopic organisms. The largemouth bass is a top-level predator in the lake, however at birth and the first several days of its life, the newly hatched bass will feed only on these organisms until they move up to the next size prey, which is the other organisms previously mentioned also feeding on microscopic food.

The shoreline is where we like to see a combination of shallow open water with hard sandy or small gravel bottom, and some nearby vegetation. Many species like largemouth bass and bream require water three-to-six feet deep with a non-organic bottom for spawning with nearby cover (vegetation, logs, boulders) for protection during spawning, or for newly hatched fry to migrate quickly to for protection after hatching. Therefore, we always like to see some aquatic vegetation present to improve habitat and support the target species we are managing. From one day old to 12 pounds, we want to supply largemouth bass with unlimited food, so it will grow throughout its life cycle to its full potential.

Most rooted plants will be found, depending on the water's clarity in the shallower water depths along the shoreline. Both submerged and emergent species grow in the shallow waters where light can penetrate the water and plants benefit from it. These plants besides, supplying dissolved oxygen,



Small bream (bluegill and redear sunfish) hiding amongst the vegetation along the shore. This shoreline happened to have a fish feeder on it as part of a supplemental feeding program.

Species such as bluegill, redear sunfish and largemouth bass spend a lot of their lifetime along the shoreline living, feeding and spawning. Quality shoreline habitat improves the overall ecosystem and the fish population.

This bulrush and pickerel weed provides needed cover for minnows, juvenile bream and largemouth bass from predation. But once nightfall hits, the bigger fish will come up from deeper water and feed throughout the night on fish, insects, frogs, crayfish, grass shrimp etc. that are present.

provide cover for small fish and have microscopic plants and animals on them which provides food for juvenile fish. These plants may also benefit other animals such as ducks or various wildlife such as wading birds for resting or feeding areas. Some bird species will nest on/in the shoreline vegetation. Puddle ducks may feed along the shore in the water two feet deep or shallower. Allowing vegetation to grow up the bank from shore helps reduce erosion, helps filter excess nutrients from runoff and can support lots of insects that become fish food throughout the spring, summer and fall. Mowing areas to the water's edge and/or applying herbicide to open areas up for bank angling can be performed to create lake access while leaving the majority of shoreline natural for fish to use and thrive. These areas can be 10 yds wide and 75-150 yds apart, depending on how large of a waterbody you have and the layout.

Fish species such as the largemouth bass, bluegill, redear sunfish, other bream species, minnows, etc. may spend their entire life cycle near shore or other species such as black crappie require it during certain periods of their life. If quality offshore habitat is present, both bass and bream will utilize both areas throughout the day A species like black crappie may spend most of its year in open water and along the outside edge of the littoral zone, but will come inshore to spawn in late winter and early spring, before heading back out into open water. This species definitely benefits from both quality onshore and offshore habitat related to the shoreline and open deeper water.

The shoreline water chemistry is slightly different than the open water. Particularly temperature and dissolved oxygen levels. The

temperature changes quicker than deeper water. In late winter, this area becomes important as fish warm up and increase feeding activity and move closer to shore. In the fall the opposite happens, and cool nights lower the water temperature along shore and in the water column quicker than the deeper offshore water. In the peak of summer, excessively hot water along shore may have less oxygen in it than slightly deeper water. Plus, usually along shore is where more organics are built up and dead plant material is decomposing and using dissolved oxygen. But this is also where generally there is more plant life generating dissolved oxygen through photosynthesis.

When designing a new lake, create a lot of shoreline with irregular lines (not circular or four straight sides) if possible, going in and out to maximize the amount of shoreline present. Also, adding fishing fingers that jet out into the lake in a spot or two will increase the shoreline present. If you are designing a large lake, place areas where the bottom rises so water depth there will simulate the littoral zone, even though it may be far from the actual shoreline. These areas will be good for additional bass and bream spawning, and if structure and/or vegetation present nursery, loafing and feeding areas for several species of fish. Be sure to create these areas at the proper depth, not too shallow to assure

Crayfish do well in ponds and lakes where the shorelines have adequate vegetation and/or rocks to hide under and are an excellent largemouth bass food source rich in protein and fairly easy to prey upon.

they do not become vegetation problems. These plateaus can become big spawning grounds for bluegill and redear sunfish

To help with vegetation control, use an aggressive slope rate on shorelines and underwater raised areas of newly designed or restoration projects in waterbodies so vegetation cannot grow excessively out from shore or on top of the underwater raised areas. Too small of a slope can cause vegetation problems requiring more herbicide use in the future than desired. A steeper shoreline slope also deters livestock from getting into the waterbody, which causes water quality issues from the extra nutrients they add from waste.

Drop trees in the lake along the shore, or drag large tress, leaving root ball intact, with the crown in water and root ball just on shore for extra habitat. Although these do not last forever, you will get 5-10 or more years of habitat (depending on size and species of tree) for fish and wildlife along the shoreline. Short artificial fish attractors can be placed along shore in water 3-5 feet deep to provide long lasting habitat for fish to hide and feed.

Add gravel beds along shore in lakes with high organic build up (muck) to offer spawning areas for bream and largemouth bass. Spread #57 lime rock gravel approximately 4 inches thick in water 2-6 feet deep at normal pool. This depth will allow it to be used whether water is high or low, assuring some or all of it is at a usable depth. We have observed bluegill using these enhanced spawning sites within a few days of being spread out. These are easier to build when water is low with a bobcat or front-end-loader on tractor, but can also be done with a Jon boat when water is at normal or full pool.

A tree was drug down and laid into the lake providing habitat, but vegetation (rush) started growing around it and will remain once the tree has rotted and no longer provides cover.

This shoreline has a buffer that provides fish habitat, decreases erosion and acts as a filter for runoff from the nearby food plot on one side and pine stand on the other.

WHEN A PASTIME BECOMES A PASSION.

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Allowing vegetation to grow along the shoreline is a minor inconvenience for the benefit to the fishery.

Plant fruit and nut trees just above the high-water line around the lake shoreline (not on either side of dam) for wildlife attractant and food for deer, turkey, birds and other mammals, and to supply shade for anglers. Planting cypress trees in groups of three-to-five along the edge or in water 1-3 feet deep also makes for an aesthetically pleasing look in the future. If cypress are planted in water, use a stake for trunk support until the trunk becomes permanently stiff. Use tree guards for all trees planted near a waterbody to protect from damage from beaver, Nutria and muskrats. Even if you have not observed any of these at your lake, it is advisable to protect your investment of time and money.

To help reduce dam erosion, line shoreline just above normal waterline and several feet below with small boulders/riprap, which will also provide habitat for many aquatic animals already mentioned. Crayfish also do well in rocky and heavily vegetated areas where they can live, reproduce and feed. A plant species rarely promoted is cattails, however they are excellent erosion control on the water side of dams. The strappy leaves and spongy root systems help hold sediment in place, protect from wind and waves, and do not damage the dam like woody plants. The remainder of shoreline should only have well controlled cattail stands or none at all. Small bi-annual herbicide treatments to keep cattails from creeping away from the dam on each can be performed with little effort or funding. Never allow woody plants to grow on either side of the dam, their roots can weaken the dam over time causing leaks and eventually causing dam failure.

Place wood duck boxes or mallard nesting tubes along shore or over shallow water. If on shore, place them close enough for ducklings to have a short distance to get to water where they are more protect from predators than on land. Place both nesting devices high enough to not get flooded during high water events and place predator guards on the poles, even if over water.

Most pond management habitat recommendations address the shoreline, which is where most fish live. You want to create a balance of cover for fish survival, with open water for spawning and angling. In my opinion, the majority of lake owners want too much of a park-like look around their lakes and are not supplying enough quality habitat for the desirable/target species, especially if they are managing for quality bream and/or largemouth bass. As one can see, the shoreline is a complicated area in your lake, from water chemistry, to lake bottom, to habitat/cover to the critters that use it above and below the water surface.

Here is an area (also on opposite shore) that was cleared with a weedwhacker for angler access, but still leaving plenty of quality habitat for fish and wildlife.

The Feral Hog Dilemma

By Ron Jolly

Ron Jolly (ronjolly22952@mindspring.com) is an award-winning outdoor writer and video producer living with his wife, Tes, on their farm near Tuskegee, Alabama. Tes (www.jollysoutddorvisions.com) is herself an award-winning writer and outdoor photographer. You've seen lots of her work in past issues of *Wildlife Trends Journal*.

No doubt you are aware of the dilemma facing landowners in the form of feral hogs. You know the destructive nature of these omnivorous mammals and their ability to multiply, survive and thrive. You have heard of the threat they pose as carriers of disease, destruction of habitat and native species.

Over the last two decades feral swine have expanded their range all across the United States. With the spread of hogs comes more destruction to property, agriculture and habitat. It is generally accepted that feral hogs cause around $1.5 billion in damage annually. Many landowners and managers have taken up the torch and fight the hog war on a daily basis.

Innovations in trapping, thermal shooting, helicopter hunting, and regulations for hog control have been implemented to help stem the tide of hog expansion and destruction. It has been proven that 70% of the hog population on your property must be removed annually

to achieve status quo. 70%. Seven of every 10 pigs. Seven of every 10 sounders. Anything less and you have more hogs the following year.

Trapping is considered the most effective way to eliminate feral hogs. At this time total sounder removal is the accepted concept for control success. Innovative companies such JAGER PRO™ have developed technology and equipment to increase the efficiency of trapping.

So, with all the effort to control feral hogs, all the technology, all the research, all the heart break of seeing property damaged and crops destroyed, why are hogs still expanding their range? This is the question that must be answered if we ever expect to get a handle on the feral hog dilemma. With that question in mind, we asked the expert why, in spite of cutting-edge technology and increased awareness of the problem, are feral

Jager Pro™ is currently upgrading their M.I.N.E. cameras from 3G to 4G LTE for faster more reliable surveillance of traps. The new cameras will feature live, streaming video on demand.

Using thermal optics to locate and eliminate trap shy hogs is critical to total hog removal from large properties.

hogs expanding their range and impact.

Rod Pinkston, Founder/CEO JAGER PRO™

"JAGER PRO™ pioneered Integrated Wild Pig Control™ and the whole-sounder removal concept and to this day it remains the most effective way to get a handle on the feral swine dilemma," said Pinkston. "We improved our M.I.N.E.™ Trapping System with eight-foot-wide portable panels that require no posts and allows one person to set up a trap in less than 30 minutes. We are currently upgrading our M.I.N.E.™ cameras from 3G to 4G LTE for faster, more reliable surveillance of traps and these new cameras will feature live, streaming video on demand. Whole-sounder trapping combined with thermal shooting and discipline, a landowner can eliminate feral hogs on their property."

"Problem is, if your neighbor is not performing the same mission, you will not win the war. We have to get away from the damage management perspective and start looking at how we can eliminate hogs on 50,000 to 100,000-acre properties and entire counties at one time. To accomplish goals like this, you must have partners and everyone has to be on the same page. One project we are doing involves 16 project partners, everyone from the Georgia Department of Agriculture, Georgia Department of Natural Resources, the University of Georgia and more. Everyone has skin in the game, has a role to play and responsibility to fulfill that role. When you have everybody on the same page, everybody has the same definition of success, and everyone agrees how to accomplish those goals. It's just a matter of if everybody does their part," said Pinkston.

"We want to professionalize Integrated Wild Pig Control™. The solution to the problem is efficient trapping in winter and thermal shooting in spring and summer. We have written a wild pig control manual that details all you need to know about controlling hogs. We have established 30 tasks that are required to be a trained, certified Hog Control Operator™. We are starting a Hog Control Academy to train new technicians. All video training and testing will be done on our website. Each task will have skill level ratings ranging from level one to level three. Training will cover everything from trapping techniques to organizing and conducting a meeting of like-minded people who are interested in controlling feral swine. The ultimate goal is to establish a national standard of what it takes to control feral swine."

Federal Involvement

Recently, a listening session involving federal and state agencies, private industry and contractors was held. The three-hour conference call allowed three minutes for anyone invited to participate to call in and voice their opinion. The goal was to form a consensus on how to best spend federal dollars to achieve the common goal of controlling wild hogs.

The new Federal Farm Bill approved by Congress in 2018 includes $75 million to fund the Feral Swine Eradication and Control Pilot Program, (FSCP). This program was established to respond to the threat feral swine pose to agriculture, native ecosystems and human and animal health. The Farm Bill provides $15 million each of the next five years. The Feral Swine Eradication and Control Pilot Program will be implemented jointly by the Natural Resources Conservation Service, (NRCS) and Animal and Plant Health Inspection Services (APHIS).

At the end of the meeting there was a lot to consider but the general opinion was that the best approach was to tackle ridding large tracts of land or certain watersheds of feral swine. Hope was that if this goal could be attained more federal money would

become available to expand the project to more large tracts of land.

FSCP identified 20 large problem areas in certain counties and parishes in 10 states (Alabama, Arkansas, Florida, Georgia, Louisiana, Oklahoma, North Carolina, South Carolina, California and Texas) to conduct the initial implementation of the program. These states were chosen because APHIS has determined these states have the highest population of feral hogs. Project funding can be used to purchase any feral hog trap but all 20 pilot projects elected to purchase JAGER PRO™ traps because they were considered "smart traps" due to their ability to capture entire sounders.

Pilot programs will consist of feral swine removal by APHIS, restoration efforts supported by NRCS and assistance provided by partnership agreements with non-federal partners. Other provisions of the program include hiring of trapping technicians, estimated equipment needed and management/evaluation of partners. It requires names of anticipated partnerships with the project and outreach/education expectations achieved through press releases, workshops, demonstrations and web outreach.

"The pilot projects are finally based on targeting every property within a 50,000 to 100,000-acre pilot area instead of traditional 1,000-acre USDA projects. The FSCP Pilot Program could actually be successful if they will adopt our whole-sounder performance standard and Integrated Wild Pig Control™ approach within these 50,000 – 100,000 acre areas. It remains to be seen whether USDA will measure their performance against this standard," said Rod Pinkston.

Poisons

If you are one of the unfortunate landowners or managers dealing with the invasion of feral hogs you have probably heard that there is ongoing research into the use of poisons to control hogs. This is a touchy subject but one that could be a legitimate answer to the hog problem. Here is what we know.

Warfarin, is the compound used in common rat poisons. The product Kaput, is a first-generation bait that contains a low dose of warfarin, .005%. It is an anti-coagulant that is lethal to hogs if enough is consumed.

Feral hogs often muddy and contaminate water sources used by native wildlife and cause tremendous property damage.

Total sounder removal with Smart Traps is accepted as the most efficient way to rid feral hogs from your land.

At this time, pen trials conducted by the University of Georgia and other researchers show hogs must consume the poison daily to be effective. Time to mortality in these trials varies from five to eleven days and most hogs die in the seven to nine day period. There was 100% mortality in pen trials that peaked at day eight.

The problem with this system is getting free ranging hogs to consume the bait enough consecutive days to be effective. The good news is that in pen trials hogs appeared to enjoy the taste and continued eating it even after fatal amounts were consumed.

Another type of toxicant is sodium nitrite which is a food preservative that is safe for human consumption in small doses. It is fatal to hogs in a single dose. It affects the way blood cells carry oxygen. After consumption, hogs lie down to nap and suffocate, usually in sight of the bait station.

One problem with sodium nitrite is the salty taste. Pigs do not like the taste of salt. To be effective sodium nitrite has to be encapsulated to mask the taste. How the encapsulation is affected by weather is part of the ongoing research.

Two field trials were planned to reach some conclusions on sodium nitrite or Kaput. One was planned for the hot, dry climate of Texas and the other for the cool moist, climate of Alabama. The Texas trial was implemented first and during that trial it was discovered that hogs dropped some of the bait during feeding. These droppings were consumed by birds and small animals and had the adverse effect of killing non-target species. The trial was immediately discontinued in Texas and cancelled in Alabama before implementation.

Both of these poisons require a species-specific delivery method or mechanism. This is part of the research. In order for the Environmental Protection Agency, (EPA), to approve and license products like Kaput for feral swine control they must be 95% effective and be species specific. At this time, poisons do not meet those requirements.

The Big Picture

"We have proven individuals trapping hogs on only the property they own does not eliminate the big problem," said Rod Pinkston. " I equate it to roach control in a three-story apartment building. If you eliminate all the roaches on the second floor and ignore the first

The M.I.N.E™ Trap Trailer is designed to easily transport a Jager Pro™ trap from one area to the next.

Most experts contribute the expansion of feral hogs across the United States to their natural ability to multiply and thrive combined with eager hunters transporting to new areas for sport hunting

and third floor, those roaches are going to migrate to the second floor. You have to eliminate them in the entire building."

"To do that with hogs everybody has to be on the same page with the same goal. That is why we train Hog Control Operators™ to look at the big picture. We train them all to do it the same way. It will take a standardized plan implemented on a large scale to eliminate hogs from large areas such as watersheds, soil conservation districts, counties and then states. We know how to do it, we just need all the stakeholders to get involved," said Pinkston.

Summary

A lot has been learned in the past decade about feral swine and how to control their spread. Problem is, the solutions are not being applied over enough of the landscape to solve the dilemma. Fact is, at this time, hogs are winning the war.

In Texas, two counties have adopted a bounty system on hogs valid through August 9, in Caldwell County and September 30 in Guadalupe County. To participate you must fill out a W-9 form and a participation form for both counties. A $5 bounty per head for removing wild hogs from the counties will be paid. Accepted proof is a hog tail or certified buying station receipts. It remains to be seen how effective these programs will be but illustrate another effort to get the feral hog population under control.

I think we can safely say that until a uniform policy of what it takes to control the spread of and eliminate feral hog populations in large areas and numbers, things will remain much the same. Hogs will continue to spread due to their ability to reproduce and the movement of hogs by people who want to hunt them in their area. With more hogs comes more damage to crops, property and the environment. In the opinion of many experts, the ultimate solution will come when all stakeholders are on the same page with one mission, one method and one definition of success. Let's hope the current funds appropriated in the new Farm Bill will be the first step in that direction!

To keep the status quo on pigs on your property you must eliminate 70% of the population annually. The three pregnant sows in this sounder are about to make that job much more difficult.

The new Jager Pro™ eight foot wide panels require no posts and allows one man to set up the trap in less than 30 minutes.

Wildlife Trends Journal Management Calendar

Dave Edwards

Mowing lanes through thick habitats create great deer hunting opportunities.

Calibrate deer scales before hunting season.
Whether the scales you use to weigh harvested deer at your hunting property are 10 years old or right out of the box, they should be calibrated each year before hunting season to ensure accurate weight data is collected. To calibrate scales, simply hang an object of known weight from the scale (e.g., 25 lbs. dumbbell, tractor weight, etc.), along with your gambrel (normally a triangular metal hanger used to attach deer to scale), then adjust the scale to the known weight if needed. Although there are many makes/models of scales available most have a calibration screw that can be easily adjusted. Also note that it is not uncommon for a calibrated scale to read something other than "zero" when idle.

Recording accurate weights from harvested deer provide insight to the health of deer on your property and will assist in making management decisions (herd and habitat) to achieve overall goals.

Hold a preseason meeting with your hunting club or people that hunt your property to discuss the progress of the deer management program and harvest strategies planned for the upcoming season.

Holding a preseason meeting to discuss the deer management program and deer harvest plans for the upcoming season will ensure everyone is on the same page before the season kicks off and hunters head to the woods. Hopefully, you have

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been collecting harvest, hunter, and population data regarding the deer herd. Use this information to assess the status of the deer herd and how the herd has or is responding to your management strategies. A preseason meeting is a great time to review this information, make harvest decisions for the upcoming season, and share with the group or hunters using the property. As a biologist, I often present this information to hunting clubs or landowners with recommendations for the upcoming season. These meetings are most effective if held just prior to hunting season to ensure the information is fresh on hunter's minds. This is also a great time to review general rules for hunting, discuss housekeeping items around the camp and property, and develop management and/or maintenance project lists. I often see these meetings tied into a work day or work weekend at the property.

Mow lanes through CRP, grassy powerlines, or corn fields to provide additional hunting opportunities.
Growing mature bucks is relatively easy to do if you stick with a sound deer management program geared towards QDM. However, harvesting mature bucks is another story. Through my experience, there is no better place to observe and/or harvest mature bucks than in a long-mowed lane that runs through thick cover (e.g., clearcuts, young pine stands, chest high grassy areas, corn fields, etc.). This thick cover is where the mature bucks live. These lanes offer bucks a sense of security which makes them more apt to use these areas during daylight. They know that with a quick bounce, they are in heavy cover and safe. Mowed or disked lanes through thick cover also provides great travel corridors to connect woodlots or mature timber. Deer will often take the path of least resistance and will use these lanes to travel which can make for some exceptional bow hunting opportunities. Mowing a wagon wheel pattern or hub & spoke design works well if the situation allows for it. These areas make for some great hunting.

Scout from the skinning shed
How many times have you found a great place on your property to hunt that had everything – great food sources, cover, maybe a few deer trails and rubs… set up a stand, sit there all day with anticipation and never see a deer? Or worse yet, have you ever convinced yourself that "this is the place, it's just a matter of time" and spend a weekend committed to a single stand and not see much of anything? I have, and it isn't much fun! Don't get me wrong. I don't have to kill a deer every time I go to the woods, but I at least want to see some action. It was very likely that the area I was hunting was indeed a "good area" and had all the ingredients of a prime spot, but the deer simply weren't using it at the time. It is also very likely that there were either abundant food

Enclosures are great tools to observe or monitor deer use of food plots as well as food plot success.

Allow duck impoundments to reach full pool as November approaches.

sources or more preferred food sources available somewhere else on the property. Like me, deer are slaves to their stomachs (or rumens). They feed many times each day. Thus, food is what drives most deer movement. Deer movement results in successful hunts. The key is to know where deer are bedding or loafing, which food source they are using, and position yourself in a strategic location near the food source, bedding area, or between the two and you're in business.

Effectively scouting by traditional techniques is certainly necessary to consistently have successful hunts. However, traditional methods require a good bit of time and energy on your part, which for most of us is limited. Besides the time required, traditional scouting techniques require the hunter to "ramble around" the woods disturbing deer and leaving a lot of scent behind. This is where scouting from the skinning shed comes in handy, will minimize "scouting pressure", and can save precious time that can be spent on stand.

Scouting from the skinning shed simply refers to inspecting the rumen contents of harvested deer to determine available and preferred food sources that deer are using at that particular time of the season. "At that particular time" is important because food sources change from week to week. To do this, simply cut the rumen (stomach) open and look to see what's inside. A word of caution: if the rumen is bloated or tight, release pressure slowly with the point of your knife before slicing….and turn your head or you may be inspecting your own stomach contents! Although the contents often look like a green gooey mess, with some inspection, the primary food sources the deer has been eating should be obvious. It helps to dump the contents on the ground or concrete pad and run some water over it. I keep a "scouting box" at the skinning shed that makes the job easier. The scouting box is nothing more than a wooden box with a hardware cloth bottom. This box allows you to dump the stomach contents onto the screen and wash away the more digested/fine particles leaving only the larger pieces behind. Stomach contents often include various leaves and acorns. Simply identifying what deer are eating will help you focus on specific areas of your property leading to more productive hunts.

Coordinate food plot planting with good soil moisture

Generally speaking, October through early November are the best months to plant fall food plots

in the Southeast. The goal is to plant when conditions are favorable for maximum seed germination and plant growth. Don't fall into the trap of planting too early. Unfortunately, many landowners and hunters plant in early-mid September. Some hunters, particularly hunting clubs, even pick a specific weekend that food plots will be planted well ahead of time and do not have a clue what the soil conditions will be like….but they plant anyway because "that's when we plant every year". This is often a very dry period across the Southeast which will lead to food plot failure. If planted in September and you are lucky enough to receive adequate rainfall, food plots may grow rapidly which will result in over mature (i.e., high/tall) food plots by the time hunting season arrives. This is very common when an abundance of acorns are present (which seems to be the case in many areas of the Southeast this year) because deer use of the food plots is limited allowing it to grow. There is also a higher chance of army worm problems if temperatures are still warm. In most areas of the Southeast more consistent rainfall events begin in October as cold fronts move south. Planting "later" (meaning in October-November) will also result in young, tender food plots that are very attractive to deer and other wildlife during hunting season. Very young and growing food plots are attractive to deer. When planted under the right conditions (adequate soil moisture), plots germinate quickly and deer will begin using them within two weeks after planting. My point is to not feel rushed to get seed in the ground. Focus more on planting under favorable conditions. There have been several articles related to food plots and planting strategies in past issues of *Wildlife Trends*. Refer to these articles for more detailed information.

Build and install enclosures on your food plots.

Enclosures are simply small fenced structures that are placed on food plots to observe or monitor deer use of the plot and food plot success. The enclosure does not have to be big, just enough to prevent deer from eating a small area of the food plot. In general, enclosures are nothing more than a short length of 4 foot hog-wire fence that is "rolled" and fastened with either wire or zip-ties to create a tube with a 2-3' diameter opening. The enclosure can then be placed on a food plot and fastened to a stake or T-post. Enclosures are particularly helpful if you have a high deer density. I've often seen food plots in areas with a high deer density appear as though the plants never germinated. The landowner or land manager is beating himself up because he is thinking that he did not plant the food plot correctly, or that the particular seed mix he planted isn't growing well on his property. The fact is that deer have literally eaten the plot to the ground before it had a chance to grow (in this case, I would consider installing more food plots or, depending on your goals, planting lead to reduce the herd!). A food plot enclosure will help answer these questions.

Conduct a camera survey to assess the status of your deer herd.

Monitoring the status of your deer herd is the backbone to the success of your program. Collecting and recording harvest data (weights, measurements, ages, etc.), hunter observation data (number, sex, and quality of deer you see while hunting), as well as population surveys provide information about the deer herd that will allow you to make sound deer management decisions and adjustments in strategies where needed to accomplish your goals. Without this information you are simply guessing. If you are like me, you spend way too much time, money, and energy managing your property to just guess on how many and which deer to harvest this season. I want to know. Conducting a

Understanding which food source deer are currently attracted to will lead to more successful hunts.

camera survey is the best tool available to assess the status of your deer herd (number of deer, buck quality, fawn recruitment, etc.) and make buck harvest decisions before you head to the woods. The best times of the year to conduct a deer survey is when natural food availability is at its lowest which is generally late summer/early fall and late winter before spring green up. Most managers conduct fall surveys (September through early November) because they also use the photographs to make buck harvest decisions before hunting season. The ideal period to conduct a fall survey is soon after bucks shed velvet but before the majority of acorns start to drop.

Regardless of whether you conduct a full scale survey or simply use cameras to scout, photographs from trail cameras are a great tool to assess buck quality and make buck harvest decisions before the moment of truth in a deer stand. I have seen many young bucks with great potential make it another year because they were placed on a "do not shoot" list. If you are using the trail camera photographs to make buck harvest decisions, late summer or early fall is when you need to deploy them.

Flood duck ponds to "full pool" by early-mid November. Monitor water levels in duck ponds as fall arrives. Many areas in the Southeast have been fortunate and have gotten abundant rains so far. However, too much water too early can be bad for growing duck pond crops/plants. Water control structures allow managers to regulate water levels and are valuable tools when a rain event such as a tropical storm comes through. Once your crop matures, allow ponds to slowly flood to "full pool" as November approaches. Ideal water depths for dabbling ducks such as mallards, gadwalls, wood ducks, etc. is 12-18" with pockets of 4"-6" depths. The reason to have ponds flooded 2-4 weeks before the hunting season opens is to give ducks a chance to find your ponds and get used to using them. Flooding too early (more than a month before the season) may result in seed deterioration resulting in less food later during hunting season. For good hunting throughout the season, do not over-hunt your duck pond and allow a "rest" period between hunts. If you have several duck ponds, designate one as a "no hunt area" to provide a place for ducks to loaf. This will keep them on your property.

Record and utilize deer hunting observations. Quality deer management involves more than producing quality bucks. It should create quality hunting experiences as well. Collecting hunter observation data (where hunters record the number of deer and quality of deer they see while hunting) allows you to monitor the hunting quality of the property. Adjustments in management and/or hunting strategies can be implemented accordingly to promote better quality hunting if needed. Additionally, hunter observation data is a great (and cheap) method to help assess some parameters of the deer herd. Although a camera census is, by far, the most accurate way to collect information regarding the deer herd, trends in population parameters such as the adult sex ratio, buck age structure, and fawn recruitment can be monitored through hunter observation data. However, for this data to be meaningful, it must be collected accurately each year to track trends in the data. Hunter observation data is also a good way to assess hunting strategy success. When recording this information hunters generally record when and where they were hunting (e.g., PM-food plot, AM-woods, AM-clear cut, etc.) and what they saw. When the data is analyzed, it provides insight as to which hunting methods and which areas are most productive for the property. For example, through hunter observation data collected throughout the season, you may find that hunters saw more mature bucks per hunt in thinned pine stands in the morning verses the afternoon. Thus, you can adjust your hunting strategies to enhance the productivity of your hunting time.

Conducting a camera survey is the best tool available to assess the status of your deer herd.

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