PRACTICAL WILDLIFE MANAGEMENT INFORMATION

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Earl Says...

We're starting this new column for each issue of ***Wildlife Trends Journal*** to better communicate to you, our loyal subscribers, and to pass along more information to help you better manage your property for wildlife. Earl is pictured above with me and he wanted the opportunity for the two of us to give you our two cents worth.

First, let me restate the philosophy for our publication. ***Wildlife Trends Journal*** is a bi-monthly publication providing landowners, land managers and wildlife enthusiasts the latest research based information to better manage their property for wildlife. We limit our advertising to 25% of the magazine and strive to provide you with unbiased articles. Simply stated, we won't try to "sell" you anything in our articles. Rather, we let our stable of qualified and experienced authors give you the "boots and briars" information to help you make the best decisions for your management plans.

I want to thank all those subscribers I meet and talk to every day in my travels to Field Days, hunting trade shows and everyday life. I am filled with pride whenever someone tells me a story about how an article saved them money or they now have more quail, turkey or deer because of something we published. I like to joke with one of my favorite authors, Dave Edwards with Westervelt Wildlife Services, that a wildlife biologist's favorite comment when asked a management questions is, "*it depends*". And it's true because not everyone's situation is going to be the same. We hope to give you the information throughout the year to answer some of those "*it depends*" situations on your property.

Finally, although we may need to tighten our belts in this tough economy, please remember to avail yourself our advertisers. Although we don't allow the "Advertorials" I mentioned, all of our advertisers are the best in their fields and they know you need to make the best use of your budgets. We're all in this together to make the best use of the land we manage. So when things look down and you have to shake your head at the latest economic news, don't forget the old saying…."this too shall pass".

Thank you again for subscribing with us and please contact me or Earl anytime with your comments and suggestions.

Andy Whitaker
Publisher/Editor

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Life Cycle and Seasonal Influences on Bobwhite Quail Diet

By G. Ryan Shurette

G. Ryan Shurette is an Ecologist/ Botanist with the USDA Forest Service.

Fruits and soft masts are utilized by adults whenever they are available. Sawtooth blackberry (Rubus argutus) shown here, serves as tough cover as well as summer forage.

As a young boy I was raised in the backwoods of Alabama, and like many of you I remember walking through open bluestem meadows, my dad nudging me up on a trembling pointer, with white knuckles gripping my .410, anticipating the jolting moment of the covey rise. When it finally happened we usually knocked down a couple, although not many fell as a result of my own shooting. The covey rise was fun indeed, but it seems my favorite thing to do when we got back and cleaned the birds (which was typically not many) was to go through each crop and gizzard to see what they'd been eating. Since my dad first showed me that trick, I made a habit of it and still seem to do the same thing today, even with doves and gobblers. The point is that by understanding food habits you can better understand the behavior and habitat requirements of the species you hunt and manage.

The changing seasons of the Southeast have over time led to a variety of different

strategies among our native bird species for finding enough food to survive. Approximately half of the region's birds deal with the stresses of a changing food base through some level of migration. However, the northern bobwhite, physically unable to make long distance journeys, is stuck here in the South and therefore must deal with the changing seasons as they come. Given its natural habitat and basic requirements, however, it survives.

The story of the bobwhite's life in the world begins, of course, with pipping from the egg. Although it varies from year to year this commonly occurs around late June in the South. A new chick weighs only about ¼ ounce, and as soon as it is free from the shell and is dry, it is literally up and looking for food. A bird that is immediately mobile and able to forage for food is referred to as being precocial (as opposed to altricial, like bluebird and wren chicks, for example that require feeding by adults). There are tradeoffs for species between having precocial and altricial offspring, as the latter group generally has short incubation periods and thus can get off the nest quicker. During the first few days the chicks have imprinted to the tending adult bobwhite and are led about foraging for food; the frequently discussed process of brooding. While this phenomenon is indeed regularly discussed, the ecology of brooding among various habitats is still not fully understood, and brooding is often the limiting factor on quail populations (Burger 2001). During this stage, quality brood-rearing vegetation (structure and composition) is critical for chick survival. Small succulent insects and other arthropods are the name of the game in brooding. Larval grasshoppers (Orthoptera), leafhoppers and other true bugs (Hemiptera), and spiders (Araneae) make up a large portion of the young bobwhite chick's diet. Other important foods during the first few weeks include aphids (Homoptera), beetles (Coleoptera), various flies (Diptera), caterpillars (Lepidoptera), and ants or bees (Hymenoptera) and terrestrial snails (Stylommatophora).

Many studies have used human-imprinted bobwhite chicks as an index of assessing diet as well as brood habitat quality of an area (Palmer et. al. 2001, Smith and Burger 2005). A 2009 study by Burke et. al. examined the foraging of human-imprinted chicks in North-central Louisiana in various brooding habitat treatments. They noted that vegetation structure and conditions resulting from treatments of the herbicide imazapyr (Arsenal) and prescribed burning increased the ability of the chicks to obtain small arthropod prey.

Young bobwhite chicks feed almost exclusively on small succulent arthropods like this larval grasshopper.

Native legumes (pea family) provide hard long-lasting, highly nutritious seeds. Spurred butterfly pea (Centrosema virginianum) is shown here.

These management tools, as we know, set back succession and promote the growth of the correct mix of herbaceous plant species, structure, and bare ground (which is also essential to the maneuverability of young chicks). The correct structure of this brooding habitat makes all the difference in the world when it comes to survival of young chicks. A field study by Barnes et. al. in 1995 examined arthropod availability to chicks in fields dominated by tall fescue (*Festuca arundinacea*). Although there was a diverse and abundant arthropod prey base in the fields, the arthropods were not accessible to the chicks and therefore, it was concluded that fescue fields make relatively poor brooding habitat for quail.

After about 6 weeks the bobwhite begins to incorporate non-arthropod food into the diet. At this time, it's typically late summer and various species of berries, fruits, and seeds are ripe and available. The juvenile quail has been able to fly for a while now as well, and therefore has greatly increased its chances of survival. Summer crop and gizzard studies have indicated that fruits from blackberry (*Rubus* spp.), red mulberry (*Morus* sp.), blueberry and huckleberry (*Vaccinium* spp.), greenbrier (*Smilax* spp.), and poison ivy (*Rhus* sp.) are used as foods by juvenile quail. Although the high-protein insects are still taken when there is opportunity, green vegetable matter, flowers, and other plant parts also play an important role in wild bobwhite diet. There are also many species of herbaceous plants that have dropped their seeds by midsummer as well. The seeds of foxtail (Setaria spp.) and many panic grasses (*Panicum* spp., *Dicanthelium* spp.) are often available by late summer, depending on soils and habitat conditions. If there is adequate bare ground and an abundant herbaceous plant community present, some amount of seed can almost certainly be scratched out.

In autumn, seeds from various grasses are the main target food for a while, however they generally deteriorate fairly rapidly in the elements, and are later replaced in the quail's diet by harder seeds. In a healthy, open, fire-maintained stand numerous species of these

grasses, wild legumes, and forbs will predictably provide abundant fall quail food. However (as with arthropod availability in brooding habitats), the structure and composition of the understory often dictates how accessible these seeds are to juvenile and adult quail. If there is not enough bare ground for the quail to see and scratch out seeds, the resource will be largely unusable by quail. This can also be the case if the stand is infested with a sod-forming pasture grass or other exotic invasive species.

Acorns, when available, are also important to quail and are actually preferred by them in many situations. Seeds are generally lower in protein than are insects but some seeds are very nutritious. The seeds from the pea family (legumes) are extremely important in providing high protein food in fall and winter. They generally have a very hard seed coat that allows them to endure fires that periodically disturb their habitats, and so they must be processed in the quail's gizzard. The gizzard is the critical part of a bird's anatomy that (along with ingested gravel) breaks and grinds seeds and/or insect parts into a manageable form so that nutrients can be extracted. It is a strong involuntary muscle lined with thick sandpaper-like tissue called koilin, and it is the gizzard that makes it possible for the bobwhite to subsist on seeds in the dormant season.

As winter passes, the covey feeds almost exclusively on seeds of late-dropping plants and more persistent seeded species. Partridge pea (*Chamaecrista* spp.), beggarweeds (*Desmodium* spp.), doveweeds (*Croton* spp.), and tick-trefoils (*Lespedeza* spp.) are some of the most preferred, but some grasses are still commonly found in the crops of winter-harvested quail. During this time, the quail covey feeds together, usually near some form of tough woody cover like sumac, blackberry brambles, etc., to expedite their escape from potential predators. Feeding generally occurs early in the morning and again in the late afternoon. As the winter day draws to an end, the bobwhites huddle together in a roost circle to share body heat. Food is the generator of warmth on cold winter nights, and usually as long as the bobwhite is able to find food the day before, they will be able to generate enough heat to survive the elements. Several studies have shown quail can easily tolerate sub-freezing temperatures if nutritional needs are met. For this reason winter forage habitat, while it's generally not the limiting factor, can't be overlooked in a solid quail management program. Besides prescribed burning, timber management, and herbicide treatments, managers often employ supplemental plantings to ease the stress on a covey of finding enough quality seed on winter days. Countless varieties are used for this, but again, legumes or hard grains like milo and millet are ideal because they persist for longer periods of time and are often

Seeds of various grasses and sedges are preferred foods in late summer and fall.

still available even into the spring.

With the spring, comes succulent green vegetation, and although seeds are still an important component, again they begin to be supplemented by insects as the weather warms. The high-protein arthropod diet is used also by adults (especially the hen), to prepare for the stresses of egg-production and incubation. Flowers, miscellaneous plant parts (including seeds), and arthropods constitute most of the springtime forage. By the time the chicks are hatched insect production is at its peak and if the structure of the vegetation is conducive to brooding, the process starts again.

In summary, the bobwhite is an omnivorous species with dynamic habitat requirements. In order to successfully sustain a population these habitats must produce at the least, abundant arthropods and seeds. Although there is some variability and flexibility in the diet of the bobwhite, these basic needs must be met and be maintained in a structure that favors finding and obtaining these resources while also providing adequate protection from predators. Significant research efforts have been invested to learn how to predictably manage these habitats to supply the food items that maintain a bobwhite quail population through the changing seasons.

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Master Planning Your Existing or New Farm Property

By Keith Summerour

Keith Summerour, a graduate of Auburn University, founded Summerour Architects. Since 1991, the firm has been designing high end residential and commercial projects throughout the country but with a strong presence in the Southeast.

Illustration A.
Photograph by Elizabeth Humma.

Master planning is a term most heard in the city for the planning of blighted neighborhoods but this concept can also apply to your farm. As we all know, a working, hunting or recreational property is in a constant state of change. The hedges grow, the old fields are burned, and there is always something to do. The hardest thing is deciding what doesn't change, the fixed assets that forever (or at least in your tenure) alter the beauty of the natural landscape and create utility for the seasonal work.

The first question you should ask yourself as you begin planning is what your intended use of the property will be? If you are primarily interested in hunting, then the buildings you design and construct should not interfere with your game areas and should add to your game experience. For example, a loft above a barn can be a great hunting spot for viewing deer (see illustration A). A small utility building can

Illustration B. Photograph by Rick Anwyl.

also double as a storm shelter and become a game blind when allowed to blend into your environment. Your lodge house can be positioned with a view of interest like a close in food plot or water source.

The second thought, as you begin to use your land, is that your goals may change over time as you use the property. The true value of particular areas of topography, soil type, rock, etc., give you better insight into where permanent structures should be placed. Waiting a year before investing in buildings may not be easy to do but has great value to the long term planning options you have available.

First year roads can be two track (see illustration B) or just bush hogged trails. The following year these preliminary roads can be improved, noting drainage problem areas and linear food plot expansion locations. Potential build sites can be great deer stand locations the first year. This gives you time to sit in your stand and contemplate the best views, important trees and other natural features during hunting season. Then you can begin staking locations for building in the spring.

The third concept to consider is the buildings themselves. I have used existing older farms as idea fountains due to their beauty and utility that was created over time like small European villages were. Villages have tall buildings like church steeples, farms have silos, and hamlets have small streets and courtyards. Farms have courtyards that are created by dependency structures (see illustration C), fencing, walls, graineries, the list goes on. The fact is that most villages are based originally on agriculture so the small farmstead can be thought of as the basic planning principle. This concept will allow you as you plan to consider not just the building you are constructing but its

Illustration C. Photograph by Luke Höck.

Illustration D. Sketch by Keith Summerour.

current and future relationship to other structures.

There is a lot to learn from existing old farms and just like Rome, they weren't created in a day. Practical and ready additions to the main structures, usually the barn, became necessary as the farm grew or changed functions over time due to successive generations of farm technology. Additional buildings were added in sensible places with regard to orientation of the topography and the adjacent buildings. Shed roofs (see illustration D) extended covered area, walls were added or removed creating an organic assemblage that gives buildings character and a unique composition to the place and time in which they were constructed.

My advice to those of you planning your new or existing property is to learn from our predecessors and take your time. Enjoy the process of considering your building options over the seasons.

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Managing for Rabbits

By Anna Huckabee Smith

Anna Huckabee Smith is a TWS certified Associate Wildlife Biologist with Innovative Wildlife Management Services, LLC out of Mt. Pleasant, SC (IWMS_Smith@comcast.net). She has worked for both South Carolina and North Carolina state governments, first as the SC Department of Natural Resources' Forest Stewardship Biologist and the Comprehensive Plan Coordinator. She then moved on to become the NC Wildlife Resources Commission's first Urban Wildlife Biologist. Smith has a BS degree in Biological Sciences, a Minor in Anthropology, and a Masters in Zoology, all from Clemson University. She is also a 2007 Fellow of the Natural Resources Leadership Institute (North Carolina State University, Raleigh).

Eastern cottontail.
Credit: Anna H. Smith

"Tally ho!" (If you are a rabbit hunter, you've heard that cry many times.) I remember back when I was in high school and owned a kennel full of beagles, "walkie-talkies" as they called these slow field trial types. Some Saturdays, I would ride with an older gentleman and his hounds to various field trials across the state of South Carolina—places such as Black Jack Beagle Club and Savannah River Valley Beagle Club. I think I was the only person under 50 years of age to attend and definitely the only female there! Despite the looks I sometimes got from the old-timers, my dogs still managed to win a few trophies. It always made me proud when one of my females put a "check" on the other dog in the brace, tracking every turn that rabbit made until the judge called time. That is where I first learned about rabbit behavior and habitat preferences. However, there is so much more to the species than what you observe within the artificial confines of a rabbit pen.

Rabbit species across the Southeast

There are numerous species and subspecies of rabbit and hare in the United States, but the most familiar and widest ranging of these is the Eastern cottontail (*Sylvilagus floridanus*). Other species often hunted include the swamp rabbit (*S. aquaticus*) or "canecutter" and the marsh rabbit (*S. palustris*). The Southern Appalachians also harbor pockets of New England cottontail (*S. transitionalis*) populations. Swamp rabbits are becoming rarer across their range due to alteration of their specific habitats—bottomland hardwoods—and are considered imperiled in some states such as South Carolina, Missouri, and Oklahoma. Habitat alteration also affects the the New England cottontail with its need for shrubby openings and conifers in the higher elevations. Marsh rabbit populations, however, appear to be stable.

It is often difficult to tell these Southeastern species apart, but there are some physical and behavioral characteristics that should help. Marsh rabbits have shorter ears than Eastern cottontails and are the only eastern US species with a dark underside to the tail. They are mostly found in brackish marshes along the coast. Swamp rabbits, as their name implies, prefer riparian forests and resemble the marsh rabbit in appearance but are much larger. They often defecate on logs in order to mark their territories and have been known to try to elude predators by hiding in hollow trees or logs. The New England Cottontail is smaller than the Eastern cottontail and often has a black spot between the ears as well as a dark edging to the ears. They are confined by habitat preference and competition with the Eastern cottontail to the higher elevations in the Southern Appalachians where they specialize in being able to digest conifer needles. Determining what rabbit species is prevalent in an area can best be done by identifying the habitat present and ecoregion. For ease of discussion, this article will mainly discuss the life history and management strategies associated with the Eastern cottontail as it is the most wide-ranging and well known of the species.

Eastern cottontails (or simply "cottontails") aren't the only rabbits with a white patch on the underside of the tail. The white flag raised in alarm is thought to divert the predator's attention away from the escape path the rabbit is taking and instead focus attention on where the last white flash occurred. Rabbits, in general, are most often active at night. Daytime resting or loafing areas are typically in thick grasses or against a tree where a "form" (depression) is created. It is in these forms that the rabbits often re-ingest soft pellets they excrete in order to harvest more nutrients. The round pellets often seen are the final excrement. Dung re-ingestion is called coprophagy and is believed to benefit the rabbit by allowing it to eat quickly and return to shelter to properly digest the plant material it ingested.

Reproduction and habitat requirements

The cottontail's breeding season can be long, especially in the South, and can last from February to September. Mating displays often involve chases and acrobatic leaps. After a 25 to 35-day gestation period, the female gives birth to 3 to 6 young in a 5 by 7 inch nest she has constructed of grasses, leaves, and her belly fur. The nest is often placed in a field or open woods. Newborn rabbits are born hairless and with their eyes closed. The mother visits the nest at dawn and dusk to nurse them and then quickly re-covers the nest with vegetation. After 12 to 15 days (typically 14 days), the young are

Marsh rabbit. Credit: Anna H. Smith, 2008

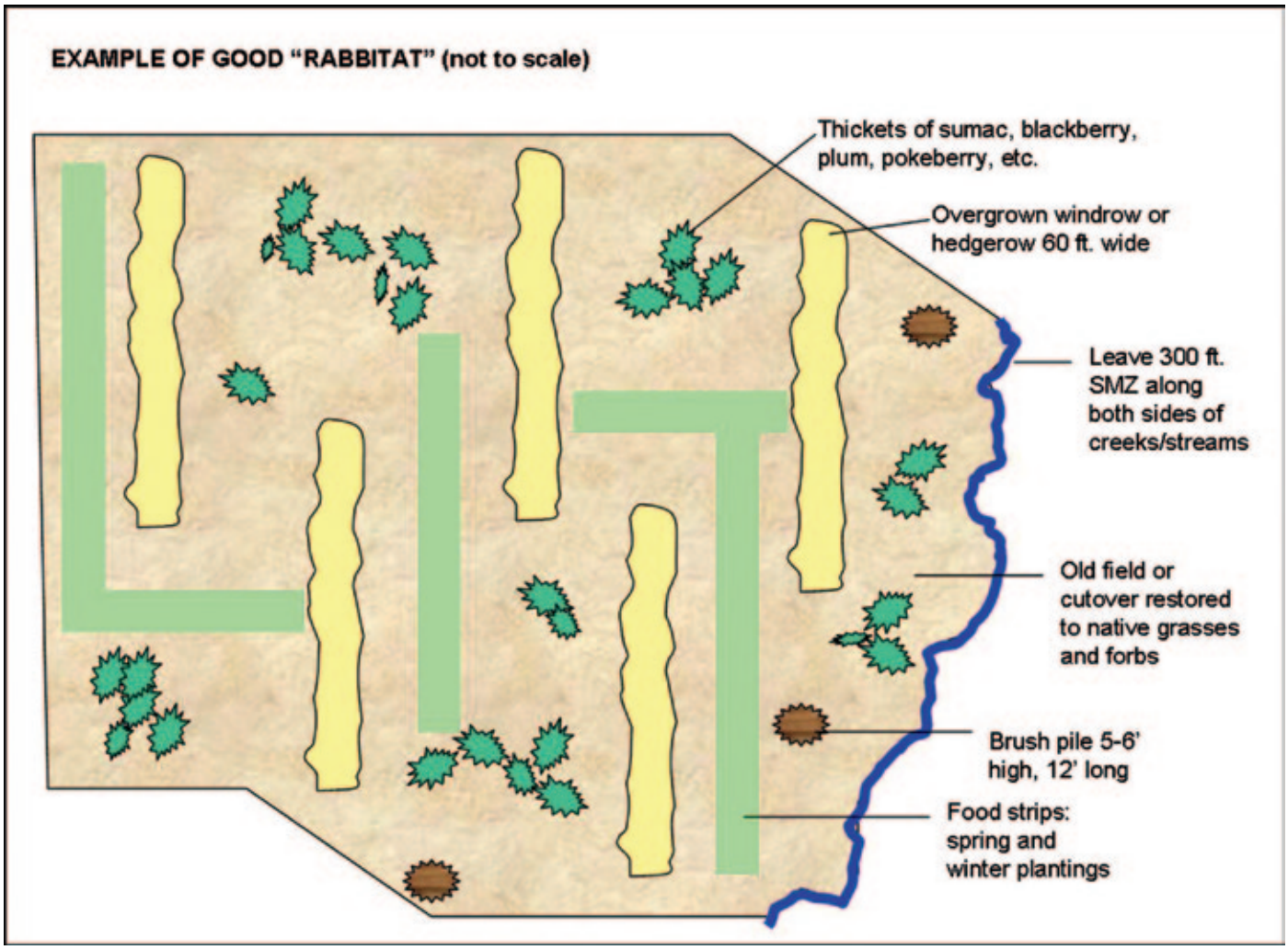
Eastern cottontail. Credit: Anna H. Smith, 2009

weaned and leave the nest to forage on their own.

Like the jokes remind us, rabbits are very prolific breeders. They have to be since they are prey for a variety of predators, especially foxes. Three or four litters a season are not unheard of with a new nest constructed each time. Many young fall prey to foxes, bobcats, large hawks, great-horned owls, mink, snakes, skunks, coyotes, and even crows. About half of the young will reproduce during the same year as their birth. Rabbits are capable of living 8 to 10 years but rarely make it to one year. In fact, 80% or more of the population at any given time is made up of juveniles. If the predators don't get them, parasites and disease can shorten their lifespan. Bot fly infestations, tapeworms, and rabbit horn disease (a skin growth caused by a virus) are mainly just irritating, but tularemia (caused by a bacteria), is deadly. Infected individuals appear tame since they don't run from a human's approach. The internal organs also appear speckled with white. Hunters should always be careful when dressing rabbits as tularemia is transferable to humans.

Rabbits do not require large acreage for home ranges, and cottontails in particular are very versatile in their habitat usage. Depending on the quality of the habitat, season, and population size, the average home range is 5 to 10 acres per individual. In areas with good food and winter cover, one rabbit per acre can be achieved. This is possible because cottontails are not territorial, so to speak. They have a hierarchy in which one individual is dominant and the others fall in line according to their rank. Because cottontails are most associated with openings and edge habitat, such as where a forest meets a field, they share many requirements with Bobwhite quail and can be managed simultaneously with them. In good rabbit habitat, or "rabbi-

Blackberry thickets make excellent cover for rabbits. Credit: Anna H. Smith, 1997



Credit: Anna H. Smith, 2009

tat" as it has been called, 10% or more of the tract should include native grasses, thickets of shrubs and seedling trees, and brush piles. Grasses should be those of the native warm season variety as fescue is exotic, invasive, mat-forming, and often carries an endophyte fungus that decreases the fertility of rabbits if consumed.

When looking for rabbit signs on a property, droppings are definitely a clue but so is the diagonal cut made on plant material by a feeding cottontail. In contrast, deer bite straight down on a plant and pull back, leaving a level, ragged edge. Important summer foods for cottontails include grasses and broad-leaved forbs while winter foods include blackberry stalks and the buds and twigs of shrubs and small trees. A favorite is sumac bark. To supplement the rabbit's diet, the land manager may choose to install ¾ to ½-acre food plots of white and crimson clover in the spring or wheat, millet, vetches, and alfalfa for winter feeding. These food plots should be located next to escape cover such as blackberry thickets or brush piles.

Brush piles make excellent cover for rabbits. Credit: Anna H. Smith, 2009

Brush piles can be constructed by placing large logs in a criss-cross pattern and then adding smaller branches on top until the pile is 5 to 6 feet tall. These brush piles can be any size but 12 to 15 feet wide makes for a good amount of shelter. Rabbits will enter the brush pile and gnaw their way deeper as the wood rots. Every 3 to 5 years the

brush pile will need to be replaced. Encourage blackberry thickets and native grasses to grow up around the brush pile to enhance the cover potential of the site. Good locations to establish brush piles and other thickets include odd corners in agricultural fields that have been taken out of production or along ditches and fence rows. A good spacing between piles is every 50 to 100 yards, again near food sources such as waste grains, food plots, or native vegetation in idle fields.

Just like quail, rabbits do not like to travel into large openings without having travel lanes of cover to conceal their movements. Overgrown windrows are excellent to use for this type of cover. These cover strips should be about 60 feet wide and be maintained by bushhogging, burning, or disking half every 2 to 3 years, but not during the nesting season. Instead, wait until winter. In idle fields where grasses are getting too thick for even the rabbits and quail to utilize (in other words, there is greater than 50% thatch layer), a back burn in strips across the field and/or disking may be in order. This usually happens when a field has been idle for approximately 2 to 6 years.

Although openings are needed for the growth of food and shelter plants, forests are not off-limits to rabbits. Cottontails also utilize open pine stands such as 5 to 7 year old plantations that have a healthy assortment of

native legumes, grasses, and forbs underneath. For swamp rabbits, which utilize forested bottomland hardwood stands, Streamside Management Zones of 300 feet or more in width would be beneficial to retain when creating an adjacent stand of pine. This also insures adequate nesting areas for many bird species that utilize the same habitat. New England cottontails do well with 25-acre patches of young pines to mixed pine-hardwoods with openings interspersed throughout the stand.

Harvest

There are actually more cottontails around now than when European settlers arrived, but their numbers have been decreasing over the years due to the conversion of farms to pine plantations. When these pines mature and become thick, sunlight is blocked from reaching the forest floor making an impenetrable barrier to forbs and grasses that would otherwise comprise the understory. It isn't until thinnings open up the canopy that forage and cover species can grow and rabbits can once again utilize the stand.

Despite the downward trend in rabbit numbers, they are still very much a harvestable species. The spring breeding population should not be affected by even a 65% harvest of the fall population. However, be aware that rabbits undergo normal cyclical patterns in their population densities, and some years may require less harvest pressure in order to allow the population to replenish. Depending on local game laws, rabbits can be released for hunting. Often 25% of these released rabbits are harvested if they are put out right before a hunt compared to only a 4% harvest rate for rabbits released earlier in the hunting season. Therefore, the best approach is to manage natural habitats in order to grow the local population. With a little time and commitment, the landowner can have a successful rabbit population while also benefiting other edge-dependent species.

This article is dedicated to the late W. G. "Tip" Senn, my fellow beagler, who started it all with FCH Tip's Billy Bob.

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Deer Data Collection – Essential for a Successful Management Program

By Jeremy Meares

Jeremy Meares is a wildlife biologist and hunting lease manager for Westervelt Wildlife Services. He manages over 100,000 acres of hunting leases on industrial timberland in central and west Alabama and is also involved with wildlife consulting and recreational property development. Jeremy received both his B.S. and M.S. from The University of Georgia specializing in deer management.

After each hunt, observation data should be recorded and stored in a safe place until the end of the season. A locked box is a good way to ensure other members don't stumble on your secret "honey hole".

Accurate and reliable data provide hunters and deer managers valuable insight into what is going on with their deer herd. How can you expect to have a successful deer management program without having the information needed to make sound management decisions? Without data, how do you know when its time to take it to the next level? Deer data is typically broken down into two categories: harvest and observation data. In this article, we'll go through each category and how to put it all together to see the big picture.

Harvest Data

As the name implies, this is data taken from harvested animals. Standard data collected includes date, sex, age, weight, lactation, fetal age (if in an area where you can get measurable fetuses from does during hunting season), and antler measurements. It is

essential to have a standardized procedure to ensure ALL information from EVERY deer is captured because this will be your database to use for monitoring current management strategies. Once compiled and analyzed, harvest data provides insight to herd health, age structure, sex ratio, and fawn production.

If you have an early rut, fetal data can be collected. Collected fetuses can be aged by measuring their rump to crown length. Thus allowing you to determine the date of conception, peak conception dates (peak of the rut) and the range of the breeding season (this will tell you when you need to schedule your vacation days!). Fetal data can also provide insight to the herd's productivity and adult sex ratio, which aids in setting harvest goals. By determining the length of the breeding season, you can get an idea of whether the sex ratio in your deer herd is skewed. For example, if you collect fetuses that represent conception dates ranging from November through January, this may tell you your sex ratio is out of balance and that you need to step up your doe harvest. Does that are not bred during their first "heat" cycle will continue to come into heat (usually about 30 days later) until they are bred, thus lengthening the breeding season. You want the breeding season to occur in a narrow window, which will limit the incidence of post-rut mortality for your bucks as well as ensure fawns

Collecting age data is crucial for any successful deer management program – otherwise how can you make any comparisons from year to year.

Two hunters on Droptine Hunting Club determine the age of a harvested doe.

Droptine Hunting Club collects detailed antler measurements from each buck harvested, which allows them to track antler quality changes in response to their management program.

will be born in a relatively tight timeframe.

Don't be too hasty in abandoning harvest restrictions or a management program based only on a couple years' worth of data It can take several hunting seasons to produce a set of harvest data from which you can begin to identify trends. Initially smaller properties may have to pool data from adjoining properties until they have a dataset with sample sizes large enough to show statistical as well as biological trends. The data most commonly tracked from year to year is total deer harvested, weights, lactation rates, and antler measurements. Let's go through the basics about each of these important areas.

Hunters on Droptine Hunting Club track trends in adult doe body weights to help determine overall herd health.

The total number of deer harvested can be broken down by sex and age class. From this we can track historical harvest (number of bucks and does) and the age composition of the bucks and does harvested. You will need to keep in mind that several factors can affect deer harvest trends. For example, good mast years usually result in a lower number of deer harvested. This is not an indicator there are less deer, it means that deer observations were lower and thus harvest rates decreased. These factors should be noted from year to year so that rash decisions are not made based on a small window of information. This data will show us if we are meeting our harvest goals, if we need to better protect young bucks, or if we need to increase/maintain the doe harvest.

Deer weights are usually presented as averages by sex and age class. It is broken down by sex and age class because obviously bucks will weigh more than does and older deer will generally

weigh more than younger deer. By comparing weights over time, you can assess herd health status. For example, if you begin to see a decreasing trend in weights, you may have more deer than the habitat can support and need to increase your doe harvest. Yearling buck weights are the best indicator of herd health, but few should be taken in a QDM program. Given the fact mature buck weights will fluctuate greatly during the season (rut), doe weights should be used as an indicator of herd health.

Lactation rates reflect the percentage of does that are "with milk". If there is milk present, then that indicates that the doe successfully raised a fawn that year. Lactation data is not accurate for areas with early fawning dates (Florida) because fawns are usually weaned by hunting season. Reproductive rates vary among different age classes – yearling does usually have a lower reproductive rate than adult does. This creates the need to separate lactation rates for yearlings and adults. Declines in adult lactation rates can be an indicator of herd health or habitat problems. However, a high incidence of yearling lactation is an indicator of high herd productivity because that means some does are breeding as fawns.

Collecting age and antler measurement information is essential to monitoring the effectiveness of antler restrictions and management strategies. Common antler measurements taken are inside spread, beam length, basal circumferences, and number of points. However, intense deer management programs commonly measure and track the Boone & Crockett score from each buck harvested. Most serious deer hunters and managers talk in terms of Boone & Crockett scores. Boone & Crockett scores by age class can provide better insight to buck quality than standard antler measurements alone because the scores are calculated based on inside spread, beam length, tine length, and circumference measurements. This data can help you set buck harvest restrictions by giving you average antler characteristics by age class for your individual property. For example, if your management goal is to produce and harvest 130-class bucks, you will be able to see at what age (on average) bucks reach this score by having a database of harvest data. Taking photographs of each buck harvested is a good way to visually assess antler quality. You should separate the photos by age and over time you can develop a portfolio of management successes that will be a good selling feature for recruiting new club members.

Managers should look for unexplained shifts in age structure or sex ratio, decreases in age- and sex-specific body weights, decreases in lactation rates, and changes in antler quality by age class because these are signs that something is going on with the deer herd. When possible try to get data from adjoining or surrounding clubs. Explaining your goals may lead to the

creation of cooperatives, which allows you to increase the size of your dataset to get a better idea of what is happening on a landscape level.

Droptine Hunting Club in Greene County, Alabama inherited a lease that had been poorly managed in the past. Even though poor prior management decisions were made, the previous club did collect pretty good harvest data. With that data, the hunters on Droptine Hunting Club quickly noticed a high percentage of 2.5 year old bucks making up the annual buck harvest and the overall harvest had been decreasing over the past few seasons. Based on this historical harvest information the club had a basis or starting point in which to begin. From there they were able to identify what it was going to take from a deer harvest standpoint to be able to achieve their management goals. Droptine is now in year three of their management program and are starting to reap the benefits of their hard work and dedication to their management plan. By having good data collection habits, the club can now support hunter observations of perceived increased quality of the deer herd. Increases in buck quality, doe weights, and lactation rates are now showing up at the skinning shed, which are all signs of a thriving deer herd.

Observation Data

If collected properly, observation data can be another valuable piece of the deer management puzzle. This data provides additional insight into sex ratio, herd productivity, age structure, and hunt quality. Again after a few years of good data collection, we can begin to see trends in herd and hunting quality on a property. Observation data can help plan for future, more productive stand sites as well as re-educate hunters on which deer they should be harvesting.

Observation data can be analyzed in several ways but here are a few of the more common areas tracked: deer observed per hour, buck to doe ratio, when you hunt vs. deer observations, hunting time vs. buck observation rate, hunting pressure by stand, and a breakdown of hunting locations (food plot, woods, etc.).

The number of deer observed per hour is pretty self-explanatory. This can give you an idea of deer abundance and can also be an indicator of hunt quality (depending on goals). Capturing the number of hunting hours is critical because without a way to quantify the observations, incorrect conclusions can be made based on observations alone. The number of deer observed per hour can easily be broken down by sex, age, and quality and each can be analyzed separately.

The observed buck to doe ratio can be averaged over the entire season to get an overall observed sex ratio. These ratios can also be separated out by month to identify when the rut occurs, which is the best time to get an accurate estimate of the adult sex ratio. This is another method for hunters and managers to identify needed changes (increased buck protection or doe harvest) in a management program.

An interesting area of observation data is tracking hunting pressure on a property.

These data include when you hunt vs. deer observations, hunting time vs. buck sightings, hunting pressure by stand, and a breakdown of hunting locations (% hunting food plots, etc.). This is becoming an important area to focus on because hunting pressure and methods have a drastic effect on deer movement and observations. Some of today's hunters have become creatures of habit. They have one or two "favorite" stands they will hunt regardless of wind direction or past hunting pressure. If deer do move through these areas, more than likely it will be when you aren't there. Often times these are the first people to complain about a management approach because they are not seeing any deer. When in reality they would have more successful hunts if they changed their hunting tactics. Data on hunting pressure can help prevent making incorrect conclusions about the success or failure of a management plan. By tracking pressure, managers will most likely know if it is a biological problem or a hunter management problem.

The hunters on Droptine Hunting Club also had some past year's observation data to review as well. If you remember, the harvest data was showing an obvious decrease over the last few seasons the previous club had the lease. This was reaffirmed by their observation data. The new club began to try to identify reasons behind the decrease in observations. The logical starting places were hunting pressure and hunting strategies. It did not take long to start finding the pieces of this puzzle. The previous club had stands sitting directly on food plot edges with little to no cover around them and no logical way to enter or exit the stand without spooking deer. As a result, the Droptine hunters moved stands back off the field edges into areas with some cover around them. In addition walking trails were cut in to allow hunters to enter and exit stands without spooking deer. This alone has resulted in reduced hunting pressure and increased hunting quality. They also identified trends in hunting strategies. The previous club's hunts were taking place primarily on food plots, thus increasing the hunting pressure on the plots and decreasing deer observations. Droptine Hunting Club manages the amount of pressure put on their food plots by allowing them to be hunted only under the appropriate wind conditions. In addition, no does are to be harvested on food plots. This does make achieving doe harvest goals a little more challenging, but it's worth it when you can sit on a food plot and routinely see mature bucks utilizing these areas during daylight hours. Droptine's observation rates have tripled since taking over the lease and making these changes.

Hunters and deer managers need to be collecting accurate and reliable data every time they enter the stand and from every deer harvested. By utilizing harvest and observation data, management decisions can be made based on actual trends instead of what is perceived or assumed. If you are going to dedicate the time and resources into managing and hunting a property, you might as well do it right! Just like the old saying, "anything worth doing is worth doing right".

Trophy Bass Management: Part 3

The rewards of trophy bass management!

By Jeff Slipke

Jeff Slipke is chief biologist and manager of Southeastern Pond Management's Jackson, TN, office. Jeff received a B.S. degree from Iowa State University, M.S. from South Dakota State and a Ph.D. from Auburn University where he conducted research on reservoir fisheries and population dynamics for eight years before joining SPM.

In previous issues I discussed a number of factors to consider when your management goal is trophy bass production. In particular, I discussed how age, growth and mortality interact to influence the size structure a bass population. Additionally, I discussed the nutritional requirements of bass and the importance of an abundant and diverse forage base for growing trophy sized bass. I also covered the topic of genetics and the lack of agreement with regard to the role genetics play in the trophy bass equation.

I will now turn my attention toward some of the other factors involved in developing a trophy bass fishery: factors such as pond size, habitat, water chemistry and fertility, selective harvest and sex ratios. Armed with this information, you should be well on your way toward developing an impressive population of trophy bass in your pond or lake.

Pond size

I met with a guy a few weeks ago that had just built a 1-acre pond and wanted some stocking recommendations. I asked what his objectives for the pond were. He said he wanted a pond full of 10-pound bass. I said no problem, consider it done…just kidding. I had to give him a dose of reality by explaining that a 10-pounder was not likely but also not out of the question, but a pond full of 10-pounders certainly was out of the question. Let's face it, the bigger the pond, the more fish you can grow and therefore; the more big fish you can grow. But there is more to it than that.

Larger ponds also allow for a more diverse forage base. Species like threadfin shad tend to thrive better in larger ponds. Threadfins are easy pickings for bass and their main defense mechanism to avoid complete annihilation is to school up in large numbers in open water far away from shore where bass spend most of their time. When bass do follow threadfins out off shore to feast on them, the school can breakup and go in every directions to avoid predation. However, in a small pond the means of escape becomes a bit more difficult for the shad as the bass can more easily coral them.

Larger ponds also allow for a greater diversity of habitat. Speaking of habitat…

This 10-pound trophy is proof that you can grow big bass in a one acre pond…just not many of them.

A diversity of cover types and depth contours concentrates forage for the bass, and bass for the angler. Quality habitat is a key component of trophy bass management.

Habitat

Before getting into the benefits of quality habitat and how it enhances trophy bass production, it is probably best to define a few terms. Habitat is defined as the area or place where a plant or animal lives. So by this definition, the habitat of a pond or lake consists of things such as the water, vegetation, cover and structure. Structure is defined as the shape or contour of a pond, whereas cover describes items that provide places for fish to hide and seek refuge. This could include natural items such as vegetation, brush piles, wood, or rocks, or commercially manufactured artificial fish attractors.

Habitat enhancement is not a necessity for growing trophy bass, but it certainly helps. As an example, you could put a single bass in a very small pond devoid of any real structure or cover, feed it trout every day, and that bass will grow and grow and grow. However, that's not a very self sustaining fishery. Cover, whether natural or artificial, enhances trophy bass production in a variety of ways. Cover attracts aquatic invertebrates that are consumed by small fish. This translates into enhanced forage production. By concentrating small fish and providing ambush loca-

Crushed agricultural lime should be liberally applied to ponds with low alkalinity. The benefits: enhanced productivity and improved odds of growing trophy bass.

tions for bass, quality cover enhances the foraging success of large bass while still allowing forage to hide and avoid complete annihilation. Good fish attracting cover also enhances your fishing success by concentrating bass, both small and large. This increases the likelihood of catching a trophy bass and helps you meet recommended annual bass harvest goals (more on harvest later).

There is no hard and fast rule dictating the type or amount of cover you should incorporate into a pond, or how much structure a pond should have. Use your imagination and think about areas you have fished in the past that seem to hold fish day in and day out. Humps and bumps, drop offs, rock reefs, brush piles, etc. are all good. You can never go wrong with variety and diversity. But keep in mind that you can put too much cover in a pond, and this can actually inhibit trophy bass production. Too much cover can cause fish to spread out rather than concentrating them. Too much cover, particularly too much aquatic vegetation, inhibits the ability of bass to forage efficiently; thereby leading to suppressed growth rates.

Although quality cover and structure is important, perhaps the most important aspect of quality habitat in a trophy bass fishery is the quality of the water itself. However, water quality, especially with respect to water chemistry and fertility, is often taken for granted by most pond owners.

Water Quality

The discussion of water quality is really not much different with respect to trophy bass production than it is for any decent fishery. Adequate aeration is a must and most folks understand the need for such. After all, fish cannot breathe if there is little or no dissolved oxygen in the water. Additionally, things such as chemical contamination, extreme siltation or excessive turbidity are detrimental to any pond. However, the chemistry (i.e., alkalinity and pH) and fertility of a pond must be considered with regard to maximizing the growth of bass.

Total alkalinity is a measure of carbonate and bicarbonate ions in the water. The higher the alkalinity, the greater the buffering capacity of the water; or stated another way, the greater the ability of the water to neutralize acid and resist changes in pH. pH is a measure of the acidity of the water and is measured on an inverse logarithmic scale, meaning that a change in pH from 7 to 6 indicates a ten-fold increase in acidity. A pH of 7 is considered neutral. Values lower than 7 are acidic, while values higher than 7 are considered basic or alkaline. Fish grow best in water ranging between 6.5 and 9 pH. Anything outside this range will impact fish growth, and hence, trophy bass production.

Alkalinity affects fish production in two general ways: nutritive and physiological. Nutritive affects are those that impact fish production via the food chain; from the productivity of the water itself on up through to the phyto-

plankton, zooplankton, insects and ultimately the fish. Physiological affects are those that impact fish growth not by what or how much they eat, but rather by how fish utilize what they eat and how well they can maximize their growth potential. Let's take a closer look at each category.

Nutritive

First, the limiting nutrient in most freshwater systems is phosphorus. Therefore, phosphorus must be added on a regular basis to maximize production. However, the phosphorus in fertilizer is relatively insoluble when alkalinity is below 20 parts-per-million (ppm), rendering fertilization ineffective. Increasing the alkalinity makes phosphorus readily available for the growth of phytoplankton, the base of the food chain in ponds (more on this below). Second, higher alkalinity is associated with a higher availability of carbon, which also aids in the production of phytoplankton. Third, higher alkalinity is more favorable for the production and growth of zooplankton and aquatic insects which occupy the transitional level on the food chain between phytoplankton and fish.

Physiological

In low alkalinity waters pH can fluctuate widely on a daily basis. These fluctuations are stressful to fish and extract a certain amount of energy on the part of the fish in order to adjust; energy that would otherwise be used for growth. Conversely, when alkalinity is high, pH tends to stabilize and fish are not stressed. Fish living in low pH water are also more prone to disease, parasites and bacteria; all of which lead to reduced fitness and slower growth. Fish simply do not grow well in acidic, low alkalinity waters and the application of agricultural lime (calcium carbonate) to increase alkalinity and maintain it at a level of at least 20 part per million (ppm) is absolutely necessary for many ponds throughout the southeast. However, there are also many ponds in the southeast that are situated on naturally high alkalinity soils and do not require additional lime.

Finally, although 20 ppm is a minimum recommended total alkalinity concentration, research suggests that even higher alkalinities in the range of 50 to 100 ppm are correlated to increased fish production and growth due to the reasons stated above. Therefore, the old adage that you can't "over lime" is certainly true, particularly if your goal is to maximize the production and growth of trophy bass.

Once the alkalinity in your pond has been addressed, it is time to consider the fertility of the water. Although clear water is pretty to look at, it is not good for growing fish. If you are interested in growing fish, and lots of big bass, you must get used to the idea of green water.

Green water is fertile water. Just like a lush, green pasture produces more pounds of beef than a barren pasture, green water produces more pounds (biomass) of fish than clear water. Why? Because the tiny microscopic

The fertility of a pond dictates how many pounds of bass it can support. That's the best reason ever to go green.

Bass typically produce a surplus each year and need to be thinned to prevent them from over-populating. Therefore, bass like these need to be harvested. Start heating the grease!

plants (phytoplankton) that tint the water green form the base of the food pyramid in ponds. And the stronger the base, the more weight it can support.

Phytoplankton feed the microscopic animals (zooplankton) upon which small fishes feed. In addition, the larval and juvenile stages of some forage species such as threadfin shad also feed directly on phytoplankton. Therefore, having a healthy phytoplankton bloom in your pond is especially important for the production of forage fish, which in turn means more food for your bass.

Consider a couple of fish population dynamics facts. A pond fishery requires about 4 to 6 pounds of forage fish for every pound of predator fish to remain balanced. Also, bass needs to eat roughly 10 pounds of fish in order to gain one pound of weight. Therefore, to get a pond to sustain 100 pounds of bass per acre, it must also be able to sustain about 500 pounds of forage per acre. Add these two numbers and you get 650 total pounds of fish per acre. It should be obvious that increasing the biomass of bass in a pond requires approximately a concurrent five-fold increase in the biomass of forage.

How about a few more fisheries terms? The total weight of fish present in a pond at any one time is known as the standing stock. The maximum weight of fish a pond can support is known as the carrying capacity, and is governed by the fertility of the water. Once the standing stock in a pond approaches carrying capacity, that's it; the pond cannot support any more fish.

In fisheries management, we use a classification system to designate the relative productivity of a fishery. These "trophic" categories refer to the concentration of nutrients within a body of water and thus the level of primary production, and ultimately fish production, that a pond or lake can support. There are four primary categories: *oligotrophic* (little-nourished), *mesotrophic* (moderately-nourished), *eutrophic* (well-nourished), and *hypereutrophic* (extremely well-nourished). Oligotrophic ponds are crystal clear and support very little aquatic life; fish carrying capacity is less than 50 lbs/acre in oligotrophic ponds. Oligotrophic ponds are typically deep and rocky. They maintain high dissolved oxygen levels throughout the summer, even at great depths. Accordingly, they are able to support year-round trout fisheries. Oligotrophic ponds are typically not found in the southeastern states. Eutrophic ponds are somewhat green with water visibility between 3 and 5 feet. These ponds support abundant plants (typically weeds) and animal life; carrying capacity may

approach 500 lbs/acre. Eutrophic ponds typically support bass, bream, catfish and shad and are subject to summer-time dissolved oxygen problems and potential fish kills. Mesotrophic ponds are intermediate between these two categories. Dissolved oxygen levels are typically low in the deepest parts of the pond during summer, but fish kills are extremely rare. That brings us to hyper-eutrophic ponds, the ponds that really maximize fish productivity. Ponds in this category have bright green water, with visibilities ranging from 1 to 2.5 feet. Weed coverage is typically low due to the shading effect offered by the dense plankton bloom. Fish carrying capacity will often exceed 500 lbs/acre. Therefore, bass standing stocks of 100 to 125 lbs/acre are possible, while still maintaining balance. Hypereutrophic ponds are prone to summer-time fish kills when environmental conditions such as strong thunderstorms or extreme drought present themselves. That's why aeration is important, especially in smaller ponds.

As you can guess, most southeastern ponds are managed to achieve the eutrophic to hypereutrophic conditions described above. This obviously enables a pond to produce the greatest quantity of fish by approaching carrying capacity. Doing so also prevents weed problems in the vast majority of ponds by limiting sunlight penetration to the pond bottom during the growing season.

Is it possible to reduce the risk of a fish kill in a pond by managing it in the mesotrophic to slightly eutrophic range? Sure. But doing so comes at the cost of decreased fish production and increased weed growth. Clearer water means less plankton and fewer fish, more sunlight penetration and more weeds. These are the conditions typically found in most large southeastern reservoirs.

Creating a pond environment that will maximize fish production requires a diligent approach to management. This includes liming if necessary and fertilizing on a regular basis. Inconsistent fertilization is worse than no fertilization at all. Maintaining a healthy plankton bloom throughout the growing season will allow your pond to sustain a forage base necessary to support a trophy bass fishery.

Selective Harvest

As I stated above, a pond can support a finite biomass of bass per acre, dependent upon the fertility of the water. It is up to the selective harvest strategy to determine how that biomass is structured.

Bass are well adapted to a pond environment and generally reproduce abundantly; producing a surplus amount of replacements to the population each year. If surplus bass are not harvested each year, the pond becomes imbalanced, the bass decimate their food supply and bass growth slows or even ceases. Therefore, bass must be harvested at an annual rate of roughly 25-50 lbs/acre to prevent bass over-crowding and maximize growth.

The specific amount and size at which bass need to be harvested depends upon the dynamics of the particular pond and the owner's management goals. An experience pond biologist can help you determine what is best for your pond or lake. Trophy bass management typically necessitates harvest rates on the high end of the range. This might mean removing bass 2lbs and smaller at a rate of 40-50 lbs/acre; a tall order for a large body of water, but again, very necessary.

The idea of selective harvest is to minimize competition for a limited food supply, thereby maximizing the forage available to the bass that remain. With respect to trophy bass management, this means the pond will contain fewer bass at any given time than a pond managed for a balanced fishery, but they will certainly be larger. There is definitely an inverse relationship between the density of bass in a pond and the average size of the bass.

Sex Ratios

If you have the time and resources, concentrate your bass harvest on the males. Male bass rarely exceed 5-pounds, so they are not going to make it to true trophy size. Harvesting only males can be an arduous task for a number of reasons however. First is the difficulty of differentiating males from females. Although the general shape and color of the scaleless region around the urogenital opening (circular and pale in males, elliptical, red and swollen in females) can be used with some degree of certainty in the spring spawning season, this method is not foolproof. And it is even less certain outside the spawning season. A more accurate method is to insert a small glass or plastic catheter into the urogenital pore and look for milt or eggs, but this too is subject to some seasonality.

Focusing your harvest on males only also requires twice the effort in order to reach your annual harvest quota. This may or may not be an issue depending upon the size of your pond. Although concentrating your harvest on male bass is a great idea, do not let it prevent you from meeting your annual harvest quota. I would caution you to prioritize achieving your annual harvest quota above removing primarily male bass.

Finally, research is being conducted across the southeast to develop an efficient and accurate way to mass produce female-only bass fingerlings for stocking new ponds. When this happens, it will certainly change the way trophy bass ponds are created and managed.

Until then, consider all the factors that go into trophy bass management and consult with an experienced fisheries biologist to help guide you along the path toward growing the fish of a lifetime in your own pond. And keep this fact in mind, no matter how many big bass you have in your pond; there is only one "biggest" bass. And you are going to need a bit of luck to get her in the boat.

Management Calendar

By Dave Edwards
Westervelt Wildlife Services

August/September 2009

A properly managed dove field can offer additional recreational opportunity on your property.

Manage dove fields in preparation for the upcoming season.

Common dove field crops include dove proso millet, browntop millet, Japanese millet, sunflowers, grain sorghum, corn, and wheat. Dove field planting activities should be done a few months before dove season, but will depend on the time it takes for the specific crop you plant to mature. The goal is to have mature seed available for dove a few weeks before the season starts to allow them time to find and begin using the field. Besides providing a crop with abundant seed for dove, below are a few things I have learned that improve dove use of fields and/or improve hunting experiences.

1. Maintain a clean disked strip or two through the field of bare ground. These are strips that you do not plant, rather simply keep plowed through the summer and into dove season. Dove find these bare dirt areas attractive because it is easy to walk in, exposes seeds, grit, and offers dusting areas. Disked strips offer access to seed once it matures as well.

2. If you do not already have "pea gravel" (very small grit stone) along roads that either run through or around the field, add it. Dove are attracted to this gravel because they need grit in their gizzard to assist in digestion of seeds and other food sources. If you pay attention to where you see dove on the way to work, you will notice they are often along roadsides that have exposed dirt/grit, dirt/gravel parking lots or plowed fields. If you're not paying too much attention, however, you are seeing them on powerlines that overlook these places. I learned this trick of enhancing dove fields with pea gravel by accident. I had a client that wanted a boat landing on a lake that was adjacent to his dove field. We used pea gravel to make the landing. Because we had extra gravel, we spread it along a road that went through the field. When I drove through the field a couple weeks later, hundreds of dove were flying up from the road. There were so many that I got out of my truck to check for cracked corn! No corn. They were simply using the grit in the gravel. Since then I have incorporated pea gravel in dove field management if there is not already a source in or around the field with great success. They are simply attracted to it. Pea

gravel is relatively cheap – give it a try.

3. Once the crop is mature begin periodic strip mowing or sectional burning to allow access and expose seed to dove. I prefer burning if it is possible because it completely cleans the ground allowing better access for dove and exposes more seed. Only a few strips are needed at any one time. The goal is to only mow/expose enough seed for dove to use for a week or so. Add another strip or burn another section as dove need it. This method will prolong the life of your dove field by providing seed to dove over several weeks or months.

Regardless of your management efforts, dove can be unpredictable and be here today and there tomorrow which can be quite frustrating. Dove fields are kind of like boats….it's nice to have a friend with a dove field! However, by providing a very attractive field with everything a dove needs will increase your chances of holding more dove and having better shoots.

Plan for and host a BBQ dinner for your neighbors.

Many of you may already know your neighbors, while some of you don't. Whether you already know your neighbors or not, inviting them to a cookout at your property will not only be a good gesture, but will likely result in new or better relationships that will benefit wildlife on your property. These are great events to exchange ideas, share management experiences (what has worked and what has not), discuss any problems such as poaching or trespassing issues, or simply getting to know each other better. In most cases, successful deer management, particularly on small properties, requires working with adjacent landowners or hunters to ensure similar herd management strategies are being applied. When several properties are working together towards common goals it is often referred to as a "deer management cooperative". Obviously the goal is to get as many landowners and hunters to participate as possible so that you have "control of the deer herd" over a larger area. Given the relatively large home range sizes of white-tailed deer, the more land under management the better, and any increase in acreage will improve management success. Other non-biological benefits of getting to know your neighbors may include sharing resources such as tractors, planting efforts, or other equipment. Many neighbors save money by ordering bulk fertilizer, seed, and supplemental feed. I've known of several great friendships that have developed through "neighborhood" cookouts.

Hosting a cook out for neighboring landowners and hunters will foster good relationships and ultimately benefit your wildlife management program.

Properly managing pine habitat will result in quality wildlife habitat. Timber thinning, herbicide, and fire are the tools of choice.

Begin flooding duck ponds in early September.

Teal are usually the first ducks coming down the flyways as they migrate south for winter. Although it depends on where your property is located, you should expect to start seeing teal in late August through mid-September. To accommodate these waterfowl and/or to attract them for the early teal hunting season, flood at least 30% of your duck pond. To be most attractive, make sure there are some open water areas within the flooded area. The main reason for not flooding the entire duck pond is to delay seed deterioration caused by flooding. Seed deterioration rates, or the amount of time it takes for a seed to breakdown after being flooded, vary among different plant species. Most native wetland plant seeds are well adapted to flooded conditions and will last up to 3 months under water. However, most agriculture crop seeds breakdown much quicker. Thus, you only want to flood enough of your pond to provide early arriving teal with a food resource. Begin flooding the remainder of the pond in late October for the main flight of ducks. This will ensure the seeds you've worked hard to produce will remain longer into the winter to provide food and attract ducks. If you have never shot early season teal, you're missing out. Teal respond to calling and work decoys well and they fly in fast, tight flocks which makes for some fast and furious shooting – notice I said shooting and not killing!! – they are tough to hit!

Service tractors, ATV's, and other mechanical tools.

As you know, equipment such as tractors, ATV's, and chainsaws are required to implement your wildlife management program. Because late summer is somewhat of a slow period for equipment use, it is a great time to perform maintenance or service. I recommend developing a maintenance sheet that includes all your equipment and keeping records of service. This will insure that equipment is taken care of and will be in good working order for the fall activities such as food plot planting and preparing your property for hunting season. Don't forget about tractor implements such as grain drills, mowers, or harrows. We even keep a maintenance sheet for small tools like weedeaters and pressure washers.

Gain knowledge. Attend wildlife management seminars.

Most landowners I work with are

"starving" for more information on how to best manage their property. In fact, the reason you are probably reading *Wildlife Trends* is to learn more about wildlife and land management. The more you understand the how's and why's of wildlife/wildlife habitat management, the better you will be at managing your property. There are normally several wildlife management oriented seminars or short-courses that take place during late summer and early fall. These events provide opportunities to speak with foresters, wildlife and fisheries biologists as well as other landowners. A good resource for educational events is land grant universities that have Cooperative Extension Services or other organizations dedicated to the management of specific species such as Quality Deer Management Association, Ducks Unlimited, etc.

Manage mid-rotation pine stands with herbicides to improve food and cover for wildlife.

Although thinning timber can improve wildlife habitat by promoting development of food and bedding/escape cover, the responding vegetation is often of low quality in terms of wildlife value (e.g., sweetgum, waxmyrtle, gallberry, etc.) and can out compete desirable vegetation over time. An effective technique to control undesirable hardwood competition, and promote quality deer foods, is through the use of herbicides such as imazapyr (Arsenal™). An application of imazapyr will minimize hardwood competition and promote development of higher quality wildlife food and bedding/escape cover within treated areas. While you can apply this herbicide throughout the growing season, it is most effective if applied from late summer until leaf drop in the fall. Furthermore, research has shown that one treatment of imazapyr can significantly increase growth and production of the remaining pine trees by final harvest, hence, generating a return far outweighing the cost of the treatment. Treating entire stands is not necessary from a wildlife perspective. For example, in a thinned pine plantation, simply applying herbicides via skidder/tractor down select thinned rows into the adjacent pine rows can significantly increase the quality and quantity of deer browse and ultimately raise the nutritional carrying capacity of the area. Once pine stands are treated, a prescribed burning rotation should be established thereafter. This technique is often referred to as a "mid-rotation" release. It is reducing hardwood competition and 'releasing' the pines for better growth. I often use this strategy (herbicide followed by fire) to create natural food plots within middle aged pine plantations. These areas create exceptional hunting opportunities for deer and turkey.

Prepare areas to plant wildflowers.

Installing wildflower areas is an excellent management strategy for recreational properties. Wildflowers not only enhance the aesthetics of a property, but provide excellent foraging areas for turkeys and quail. The wildflowers attract a multitude of insects which are high in protein. Insects are the primary food source for turkey and quail chicks which require a high protein diet. Adults consume many insects as well. The best time to establish a wildflower area is in the fall. I recommend a mix that is suited for your area that includes annuals and perennials. If properly managed, wildflower areas are easily maintained for several years. If you are creating a new wildflower area, prepare the ground just as if you were planting a food plot. That is, create a smooth, firm, clean seedbed. Refer to the planting instructions for the mix you plan to use. Most blends recommend planting

Taking 10 minutes to check the safety of a treestand before the hunting season can avoid serious injury or death.

well into fall after temperatures have dropped some to prevent germination of the perennials until spring. If you already have wildflower areas, you probably have a few flowers that will persist through late summer, but most have faded. Assess the wildflower areas. If bad weed problems exist (over 50% of the area is covered with weeds), mow the area then apply a broadleaf selective herbicide a couple weeks later once the weeds are actively growing again. However, if possible (if the weeds are not overwhelming), allow the area to sit until early to mid September. Holding off and applying this management strategy in September will provide more protection for fall wildflowers that will be germinating soon. Mowing the area will scatter seed and stimulate germination.

Start preparations for fall food plots.

It is difficult, if not impossible, to establish successful food plots without preparation. Planting quality food plots is a process that may span over several months, not a weekend. There are several factors that influence the success of a food plot program. Among the most important are establishing a well thought out food plot plan, ensuring proper soil fertility and pH, preparing a firm, smooth seed bed, only planting under favorable conditions, and controlling weeds. Each of these activities plays an important role in the success of your food plots.

If you added annual clovers to your food plots last fall, September is the time to apply management to regenerate the food plots.

Incorporating reseeding annual clovers into your fall plantings will allow you to extend the plots wildlife value by providing quality food sources through early summer. Without them, fall plots of small grain such as winter wheat and oats generally become less productive and thus less valuable for wildlife by early spring. If you have

planted annual clovers such as crimson or arrowleaf clover, allow them to flower and seed out – which normally occurs in April – June depending on which growing zone you are in. The flowers are important for game birds, particularly quail and turkey poults. Flowers attract insects which are an important component in the diet (source of much needed protein) for very young turkeys that were hatched this spring. Although plots generally get weedy after the clover has seeded out (which isn't always a bad thing), leave these plots alone until early fall. About 3 weeks to a month prior to planting time, mow the plots as low as possible, allow a week or so for the weeds to start growing again, and apply glyphosate (RoundUp) to knock them out and prep the plot for re-planting. If weeds were thick, you may consider burning the thatch off to expose bare ground (burning also enhances clover seed germination). Once the weeds die (or have been burned off), spread fertilizer, lightly disk the plot to expose bare ground and "stir up" the residual clover seed from last year, then plant annual small grains (wheat and oats). The key to the whole process is to not disk the food plot too deep. After the first planting, and if you've allowed last year's clover to seed out, annual clovers will reseed and come back every year – which not only provides great nutrition and extends the life of your fall annual plots, but will save you money on seed.

Check, repair and place new hunting stands

While the best time of year to relocate or place new deer stands on your property is in late winter after the deer season has ended or very early spring (before green up), late summer or early fall is when you need to revisit these stands to tighten them back up, inspect for loose nuts/bolts, rotten or lose wood, or any other safety hazards. This is also a good time to check the shooting rails, padding, and trim shooting lanes where needed in preparation for hunting season. However, do not over do the shooting lanes. Small openings are all that is normally needed to identify and shoot deer.

Results of a camera survey provide an accurate assessment of a deer herd and enable you to make educated decisions regarding deer harvest strategies.

Mow under and around fruit trees and orchards.

Mowing around fruit trees will not only enhance the growth of the trees by reducing competition for resources by surrounding plants, but will enhance the aesthetics of your property. Mowing will also help "clean" the understory around the fruit trees so wildlife can find the fruit as it drops in the fall (acorns, persimmons, apples, etc). As fruit or nuts begin to fall, these areas provide great places to hang a trail camera to get pictures of wildlife using the trees.

Assess the status of the deer herd and make harvest plans for this season.

Monitoring the status of your deer herd is the backbone to the success of your deer program. Hopefully, you have been collecting harvest data (weights, measurements, ages, etc), hunter observation data, as well as conducting spotlight counts or camera censuses. Collectively, this information is used to make sound deer management decisions that will help you achieve the goals of your program. If you haven't already done so, ask a wildlife biologist to review your data or information and provide harvest recommendations before hunting season starts. Using trail cameras is a great way to assess buck quality and make buck harvest decisions before you head to the woods. Pictures from trail cameras will help reduce "mistakes" when judging bucks in the woods while hunting (where judgments are often made in seconds while your heart is racing 200 beats per minute!) While trail cameras are useful, a true camera survey is the most accurate method available to assess the status of your deer herd. September and October are normally the best months to conduct a camera survey (after bucks shed velvet but before the majority of acorns start to drop). If you plan to conduct a survey this fall, be sure to plan ahead. If you are doing it yourself, make sure you have all the equipment needed (cameras, batteries, digital cards, film, corn, etc). If you plan to hire a professional, get on their schedule early. With the popularity of camera surveys, most wildlife consulting companies are booked well in advance of camera survey season (September – November).




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