



PRACTICAL WILDLIFE MANAGEMENT INFORMATION

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Earl Says...

There are several Conservation Associations throughout the country who raise money through banquets and gun blasts to help fund research to help game and non-game wildlife.

Groups like the National Wild Turkey Federation, Ducks Unlimited, The Rocky Mountain Elk Foundation and many others do great things and help State Conservation Departments with not only research but buying equipment for State and National parks.

I am the President of our local NWTf banquet and if you're in the Montgomery/Pike Road, Alabama area, please contact me (whitaker553@charter.net) to purchase a ticket. The date is Thursday, November 9th. I can guarantee you would have a great time while supporting a worthy cause.



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Managing Habitat for Turkey and Quail Reproduction

By Ted DeVos



Woodlands burned in the previous months provide excellent brood habitat where chicks can forage on the ground for insects while the hen can keep a look out for predators.

Quail and turkeys, while significantly different critters, have very similar needs for reproduction. Turkeys, quail, various grouse species, partridge, prairie chickens, etc. are all gallinaceous gamebirds and all share similar traits. All nest on the ground and incubate nests for 26-29 days and share similar behavioral traits in breeding. All the chicks hatch covered with down, are mobile, leave the nest immediately and forage on their own guided by the adult(s). Both quail and turkeys are basically similar versions of the

same animal of different sizes.

While quail can build a fairly elaborate nest, turkeys “build” a nest as well. Both focus on, and do best, nesting in “shrubby” grasslands and nests are made mostly of dried grasses and pine straw. Both suffer significant nest predation rates. Both suffer high chick predation and mortality rates. Chicks of both species take about 2 weeks to become capable of flight at which time mortality declines significantly with their ability to escape ground predators.

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Chicks of both species depend on an abundance of insects that they can readily catch to fuel the high growth rates required to reach flight stage as quickly as possible. Hens of both species lead the chicks from the nest, watch out for predators and take them to “bugging areas”, but chicks fend for themselves in feeding. While this reproductive “window” is 2 months or so for individual hens, the season for turkeys is generally March – June and for quail May - September. Both require essentially the same habitats for nesting and brood rearing and these two important habitat requirements are what this article will focus on.

With some of the current turkey research, potential declines and season changes across the Southeast as well as information distribution outlets like the wild turkey podcast, more and more information is becoming available to managers about the necessity for nesting and brood habitat. A lot of questions are being asked about what it is, why it’s important and how to manage for it.

While nesting and brood rearing is similar for quail and turkeys, chick and egg size is, obviously, quite different. Several studies have been conducted on nest and brood mortality. These reported mortality figures vary widely on both species depending on the study, methods of monitoring and where it was conducted. In summary, in the southeast US, successful hatch rates for both species commonly range from 50-25% of nests hatching a clutch. Put another way, 50-75% of nests fail, most commonly from predation, although weather and abandonment causes occur occasionally. Even with the size difference of eggs, the nest predators appear to be similar as well with raccoons, opossums, fox, snakes,



Ragweed and other native plants that are lush and growing provide both structure and insects that chicks need to survive. Both fields and woodlands can provide quality brood habitat when managed correctly. The view from the ground is what a chick would see when walking in these brood areas.



Grasshoppers and other insects provide high protein food for fast growing chicks in the first 2 weeks of life and are critical to growing or maintaining a population of quail and turkeys.

coyote, skunks and crows ranking highest.

Poults and quail chicks have similar, dismal, survival rates. Both chicks and poults are hatched with down instead of feathers and cannot fly for about 2 weeks, so weather in those first 2 weeks of life are important. Heavy rains and cold, wet weather can decimate a brood through hypothermia in short order. Many more predator types are after these chicks so, in addition to the “normal” ground predators, we now add other predators like bobcats as well as in avian predators like coopers, red-tailed, broad winged hawks and owls to the mix of predators targeting chicks. Thankfully, once the chicks are able to fly well, their mortality rate drops significantly.

Monitoring brood survival is more complicated than monitoring nests. We are only just beginning to develop transmitters small enough to radio tag chicks without influencing survival and most brood survival estimates are “flush

counts”. However, the numbers of surviving chicks is similarly low for both turkeys and quail. If half of the chicks hatched survive to flight stage it is considered excellent. Typically, only 25% of chicks survive until they can fly. There is a lot to these numbers as well. Individual hens vary in their success with some raising a high percentage of their chicks and some losing all of them. Some are better nesters; some are better mothers. With turkeys, some hens successfully nest and raise broods year after year. With quail, some hens successfully nest and raise multiple broods in a summer. In addition, with quail, males often incubate a significant number of nests and can raise and protect broods on their own.

Thankfully, both quail and turkeys have evolved to 1) lay large clutches of eggs 2) hatch large broods that grow rapidly and 3) often re-nest throughout the summer if a nest is destroyed. This helps compensate for large nest and brood losses.

So now we know the impressive odds turkeys and quail face attempting to replace themselves in their lifetime. The question is, what habitats do they need and how do we go about creating more of it?

While timing may be somewhat different, each species moves through the seasons similarly. As spring progresses, hens begin to feel the urge to search out nesting cover and begin to use upland habitats more. Burned, grassy, open, upland pine stands are a choice habitat type at this time. Hens **MUST** have nesting cover to successfully lay and hatch a nest. The better the quality and quantity of cover, the better the chance that a nest will hatch a brood of chicks. In addition, turkey hens are known to pack up in the spring and travel **MILES** to access good nesting habitat if it is not available where they wintered.

Many studies show that greater than 50% of turkey nests are found in pine or pine/hardwood stands and less than 15% of nests are found in other areas like hardwoods, young pine, or fields. For quail, an even higher percentage of nests are in open pine stands, fallow fields or shrubby areas and very few in hardwoods or young pine.

So, what would a quality nest site look like? Turkeys and quail select for habitat types that provide nest concealment and while hens will occasionally nest in poor cover, the success rates of these nests is low. Simply put, manage for broomstraw and other native grass habitats. Grassy areas with broomstraw and other native grasses interspersed with light shrubby cover and/or blackberry thickets are the most often selected and successful. If quality nesting cover is available, hens will use it heavily. Turkey nests are often located on the lower and midslopes of a ridge, closer to a

hardwood drain edge where fires typically go out. While fields and field edges that have not been planted or mowed for several years characterize this habitat type and are used, nesting cover is best if created and maintained in larger blocks of open pine woodlands. Nests located in larger blocks of good habitat also have higher success and those in narrow habitat types, (like field edges and powerline ROW's), usually result in lower success. This is probably due to the ability of



Burned pine stands with scattered shrubby thickets are the epitome of high quality nesting cover for both quail and turkeys.



This is a hatched quail nest. Note that the nest itself is entirely made up of dead grass material and is concealed in native grasses. Also note the way the eggs are cleanly "cut off" on the fat end, indicating a successful hatch.



Turkey nests are usually associated with grassy woodlands and are often near a shrubby thicket. Low ground vegetation provides concealment for the nest and the hen while she is incubating. This nest was at the base of the thicket in the picture.

predators to easily hunt narrow habitat types for nests. Large blocks of habitat are much harder for predators to search. Nests are also often located near a road, forest edge or other “habitat edge” where one habitat type is adjacent to another. For instance, nests might be located in a pine woodland but within 30 yds. of a road, field edge, or a block of young pine.

Nests found in poor nesting cover would be characterized by those, for example, under a downed limb in a hardwood bottom, under a pine top in a pine/hardwood or planted pine stand with solid pine straw groundcover or other places with little grassy or shrubby cover available to conceal the nest. If this is all hens have to nest in, they are lacking quality nesting cover. In addition, the further away from prime predator habitat they nest, the better. Most predator species are closely tied to hardwood bottoms and turkeys and quail nesting in upland areas have less potential for a predator to encounter their nest.

Typically, the best nesting cover is found in mature, open, burned pineywoods and fallowed fields. Pine stands need to be maintained

at a low basal area, (low density of trees), with ample sunlight coming through the canopy of the trees to grow the grasses necessary for nesting. To maintain these conditions, on most sites, they need to be burned on a 2–4-year rotation. Managed like this, pineywoods can offer hens an abundant supply of some of the best nesting habitat available. The best condition for nesting is typically 2–3 years after the stand is burned. Pine stands that are burned but too shady will either have only sparse weed growth with little grass or nothing but pine straw on the forest floor. Pine stands that are unburned will have a thick midstory of sapling hardwood and pine shading out the good plants that grow close to the ground.

Fallow fields that provide good nesting cover are those that have been left undisturbed for 2-3 years. In the first year after fallowing a field, lots of annual weeds and some grasses colonize the site. After 2-3 years, they are usually covered with more perennial grasses and shrubs/blackberries – ideal nesting cover. They will, however, need to be “recaptured” after that and either mowed, burned or disked to set them back and prevent them

from becoming too thick for good nesting cover.

While burning nesting cover seems counter-intuitive, fire and both quail and turkey nesting is closely related. Regular burning maintains the grasses, forbs, and the shrub/sapling layer in a condition that is ideal for good nesting habitat. Even burning during the nesting season, while possibly burning a nest or two, has a much greater positive effect on overall nesting success than not burning at all.

An excerpt from “*Lightning-Season Burning: Friend or Foe of Breeding Birds?*” notes Sisson et al. (1990) found that 62% of all turkey nests occurred in mature pine forests that had been burned within the past two years. Moore et al. (2005) monitored 22 turkey hens in areas subjected to lightning-season fires and found only 2 nests destroyed by the burns, and one of these hens re-nested. Similarly, for 64 turkey nests monitored in Mississippi, (National Wild Turkey Federation 2006), only four were located in areas scheduled to be burned and only two nests were actually destroyed by lightning-season fires. Allen et al. (1996) also found that areas not burned within the past



Newly hatched chicks need lots of insects and good habitat structure to survive the first 2 weeks when they are flightless. Once they are fully feathered, they start to eat vegetation in addition to insects and can escape predators more easily.

two years were almost entirely avoided by hens. The point here is that the best nesting cover is created and maintained with fire, even fires that may occur in the

nesting season.

Patch size is also important. For turkeys, which are larger and have larger home ranges, burn blocks can be from 50-200 acres and still

be fully utilized and provide good nesting cover throughout. For quail management, burn blocks should be on a finer scale of 10-50-acre blocks. There should also be a good



Views like this used to be common throughout the Southeast.

distribution of burn blocks next to unburned blocks to provide good nesting adjacent to good brood cover.

The following plants are the ones to look for and those that commonly characterize good nesting cover and many are typically found at nearly every nest. Broomstraw, Indiangrass, any of the bluestem grasses, panic grass covering most of the area and small sapling or shrub gum and oak, wax myrtle, cat or green briar (smilax), blackberry and or grape vines, scattered throughout.

Once poults and chicks hatch and for the first 2 weeks of their life, they need access to abundant insect populations to fuel high body and feather growth rates. Only after reaching 2-3 weeks of age and ability to fly, do they begin to switch over to more vegetation and seeds in their diet. These first few weeks are critical in the life of a quail or turkey chick and brood habitat can often make or break a fall population. Remember, while the chicks are flightless, they are susceptible to predators of all sorts and suffer high rates of predation, often losing up to 75% or more of the chicks hatched. Because of this, brood habitat that supplies plenty of cover to hide them while they are feeding and plenty of insects to feed on is essential.

Fields of annual weeds such as ragweed and partridge pea can be ideal, and in many cases, superior brood habitat producing large, easy access bug populations and high-quality cover. In addition, burned pine stands can also produce high quality brood habitat in areas that were burned the same year that the chicks hatch. Areas burned in February and March are greened up by April and May when the first turkey nests begin to hatch and the lush growing vegetation is a natural

producer of high insect populations. Both the structure, plant species and insect populations are ideal for broods in recently burned woods. Later burns can produce similar results for nesting quail.

So, what are the characteristics of good brood habitat? Ideally, the structure is fresh, succulent, growing weeds and forbs that have recently sprouted. Freshly harrowed ground, (November through February disking), or recently burned ground provides these conditions ideally. Lots of bare ground is necessary for unimpeded chick movement. Think of walking through a clean forest of tall saplings or trees with a closed canopy above your head providing shade. That is the structure chicks need with plants like ragweed providing the structure and canopy above the chick's heads and keeping the bare ground clean for easy movement. These plants need to be insect rich so that there are plenty of small bugs like grasshoppers, beetles, ants, etc. available for chicks to catch. The ability of chicks to move through the field is important for both the ability to catch escaping insects as well as to be able to escape approaching predators.

These weedy bugging grounds are also typically the right height not only for chicks to forage on the ground under the canopy of the leaves but also allows hens the ability to keep an eye out for predators. Hen turkeys, especially, will bring broods to these fields and "periscope" their heads above the vegetation to look out for both ground predators and avian predators trying to capture one of their chicks.

Because of this open ground nature requirement, it is also important that there be no pasture grasses present. Non-native invasive grasses

like Fescue, Bermuda, bahaia and ryegrass will essentially ruin a field for chicks. These grasses become too thick on the ground and prevent chicks from being able to navigate the fields. They also out compete good weeds and grasses that attract insects and allow movement. In this case, think of trying to walk or run on a hard floor vs. trying to run on a floor covered with thick mattresses. Which one would you be able to run fast enough to evade a predator? That is what chicks face in thick vegetation and why they need lots of bare dirt.

When setting up a "brood field layout", we often shoot for a well distributed amount of 1-3-acre fields. When managing for quail, we might establish a brood field per 15 acres or so. For turkeys, we may shoot for a brood field per 50-100 acres. These fields can be simply disked in the fall/winter each year and larger fields can be disked 1/2 per year. Ragweed or a mix of ragweed and partridge pea is an excellent brood field planting and often comes in on most sites on its own. Occasionally it needs to be planted. While winter greenfields can be good and can suffice as brood fields, they are often infested with ryegrass making the fields basically useless as bugging fields for chicks. Ryegrass is one of the "bad" grasses that form a thick mat on the ground and crowd out good plants, both native and planted. They die back right at the time when turkey poults are hatching thereby making these greenfields useless. However, well managed winter greenfields without ryegrass have good structure and are also insect rich.

The following plants/forbs/weeds are the ones to look for and those that commonly characterize good brooding cover in both fields and

woodlands. As mentioned, ragweed and partridge pea are the quintessential brood cover plants and can be encouraged in both fields and woodlands. Native legumes such as beggarweeds and lespedezas grow erect with good structure. Viney legumes like Milk pea, wild bean and butterfly pea are good insect producers like all legumes. Erect weeds that provide good standing structure are plants like croton, golden rod, horseweed and dogfennel. Coneflower, asters and sunflowers are also common native plants in quality brood habitat.

So, the bottom line for pineywoods is it needs to be open and burned! From replanted clearcut to about 3-4 years of age, there is nesting value in young stands of pine, but as they grow out to 8-10 years old or so, are often too thick for any usage by quail or turkeys. However, as the stands mature and become merchantable, timely and regular thinning to a low enough density to

get plenty of sun on the ground and grow lush, grassy understories is in order. Burning these stands regularly will keep the understories in good shape and promote quality plant species. Young stands of pine can be burned at 5-7 years of age and will receive little usage by hens; however, they will not create good habitat until first thinning and then only if thinned enough and not choked out by hardwood brush. They will provide good brood rearing in the year they were burned and provide good nesting cover in the following 2-3 years until it is back on the burn schedule again.

The bottom line for brood fields is they need to be disked and left to grow annual weeds that are lush and growing in summer without competition from grasses or planted crops. The structure needs to provide both cover and the bare ground chicks need to navigate in addition to providing the insects they need to grow. Provide these

two habitat types in abundance and quail and turkeys can thrive. Generally, for the rest of the seasons, the adult birds can make it fine in the available habitat types on a property.

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Riparian Habitats and Streamside Management Zones

By Ryan Shurette



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Recommended streamside management zone width can vary by situation, prescription, stream order, percent slope of adjacent lands, or other factors. A standard width of 50 feet is common practice in many southern states for a typical upland stream.

Most forest landowners and natural resource managers are familiar with riparian habitats and streamside management zones. Foresters and wildlife biologists often use these terms in management plans and survey reports, and in some cases, they can be used interchangeably. The chief difference in these terms is that the phrase **streamside management zone**, or **SMZ**, is typically used in the context of timber harvest, silvicultural treatment, or some other kind of forest management or disturbance situation. In other words, an SMZ is an example of a **Best Management Practice (BMP)**. For instance, when laying out a clear-cut timber sale, a forester will generally delineate, and then physically mark on the ground with

flagging or paint, a zone of vegetation along a stream, creek, river or other water resource where harvest specifications, and impacts from traffic or disturbance will be different from that of the rest of the stand. While most often used along perennial streams in a timber sale, even ephemeral streams that only flow during storm events or wet seasons might have designated SMZs. The Georgia Forestry Commission defines and describes SMZs as “areas next to stream banks and bodies of water that must be specially managed to protect water quality and aquatic life. They provide a protective area as needed along streams and other bodies of water where disturbance and activity is limited. SMZs help prevent and/or reduce issues such as exces-

sive erosion or sedimentation, logging debris input, pesticide/fertilizer inputs, and temperature changes.” Within the SMZ, the trees, (either all or some), and natural vegetation are typically left in place. The Texas Forest Service recommends that “roads, skid trails, and fire lanes should be located outside of the SMZ if possible”. One of the main reasons for leaving the vegetation in these zones is, as stated earlier, to help mitigate erosion and soil and sediment run-off from the clearcut, or otherwise disturbed portions of the surrounding stand, into the stream or waterbody below. Erosion is typically not desirable from the standpoint of losing topsoil and organic material in the stand itself, however some level of soil loss in the upland parts of the stand is usu-



Streamside management zones, or SMZs, are typically used in the context of timber harvest, silvicultural treatment, or some other kind of forest management or disturbance situation. In most cases, the use and implementation of SMZs across the Southeast is voluntary. Widespread compliance, however, (estimated at approximately 90% across the region), has resulted in this practice becoming the cultural and land management industry standard.

ally inevitable. An important role of the SMZ is to filter out this soil and sediment that may be moving from the higher parts of the stand and capture it before it enters the stream. Some level of sedimentation and soil movement into a stream occurs naturally, especially in large floodplain river systems like the Mississippi River. In other cases, however, such as in clear, cold mountain streams, significant sedimentation can have many negative effects to water quality and affect the overall health of the aquatic ecosystems. Siltation and excessive turbidity can negatively affect fish, mussels, aquatic snails, aquatic invertebrates and many wildlife species. In a study looking at timber harvest areas in Mississippi, Keim and Schoenholtz (1999) found approximately triple the sediment concentration within streams in logged watersheds without SMZs, as opposed to streams in non-harvested watersheds. They concluded that SMZ efficacy is highest when forest floor vegetation is left intact and undisturbed. Recommended SMZ width can vary by situation, prescription, stream order, percent slope of adjacent lands (Virginia

Department of Forestry 2002), or other factors. A standard width of 50 feet on either side of a typical upland stream is common practice in many states in the Southeast. However, some researchers feel these can be “arbitrary guidelines



Several states give separate recommendations for cold-water streams versus warm-water streams, with cold-water streams receiving the most protective buffer distances. Warm water systems like the one shown here are typically more resilient, less temperature sensitive, and have higher turbidity and eutrophication thresholds from natural sedimentation events, than cold-water or mountain stream systems.

most often determined by politics and established with little or no scientific basis” with regard to effectiveness of various widths in controlling targeted pollutants (Castelle et. Al., 1994). Castelle and other researchers examined effectiveness across a range of SMZ buffer widths (from 3 m to 200 m) and concluded that a buffer of at least 15 m (about 50 feet) was required to protect wetland and stream integrity under “most conditions”.

The truth is, in most cases the use and implementation of SMZs (along with other BMPs) across the Southeast is largely voluntary. Widespread compliance, however, (estimated at approximately 90% across the region), has resulted in this practice becoming the cultural and land management industry standard. While the recommended buffer distance varies by state, it most often follows an increasing trend as slope of the adjacent lands increases. For example, in Georgia, the State Forestry Commission’s

recommended SMZ buffer distance (1999) in stands of 0-20% slopes is 40 feet on either side of the stream and around the head of the stream. As slopes increase to 21-50%, their recommended buffer distance expands to 70 feet, and then on to 100 feet for adjacent slopes greater than 50%. Tennessee Division of Forestry has similar guidelines with SMZ buffer distances starting at 25 feet for flat lands, increasing by 20 additional feet for every 10% increase in slope, up to 145 feet for slopes 60% or greater. Several states also give separate recommendations for cold-water streams versus warm-water streams, with cold-water streams receiving the most protective buffer distances. Warm water systems are typically more resilient, less temperature sensitive, and have higher turbidity and eutrophication thresholds from natural sedimentation events, than cold-water or mountain stream systems. North Carolina, for example, recommends an SMZ minimum buffer range of 50 to 125 feet, (as slope increases), for cold-water streams, but only 50 feet in regions of warm blackwater streams, regardless of adjacent slopes.

Besides sediment control, SMZs are also typically able to capture to some level of pollutants and undesirable nutrients to help prevent them from entering the stream. It is easy to see why water contamination by pollutants would probably be a bad thing, but why is nutrient loading a problem? One might think fertilizing a stream or water body would be beneficial and ultimately provide more food and growth for fish and aquatic wildlife. While this could be true in some cases, such as in farm pond management for example, unnaturally high levels of nutrients can be disruptive to both freshwater and saltwater ecosystems and extremely



Without the overstory canopy of the riparian vegetation, streams can warm significantly and many cold-water aquatic species, like the Southern Appalachian brook trout, would find it hard to tolerate the elevated temperatures, especially at the southern edges of their range. Photo in public domain.

detrimental to many aquatic species. The eutrophication of marine estuaries along the Gulf of Mexico and coral reefs in south Florida, and the resulting negative effects to marine life, has been in the news in recent decades, and is one extreme example of this problem. A field study by Secoges et al. (2013) examined SMZ width and its effects on nitrogen and phosphorous movement into a creek, following the fertilization of a young loblolly plantation in Virginia. They observed essentially no change in stream water quality across all of their SMZ width treatments, and even relatively narrow (7.6m) SMZ buffers appeared to be effective at reducing surface, litter level, and shallow soil movement of the nutrients. The study suggested that some fertilizer movement might be taking place in deeper soils and groundwater, however, and that this occurrence might also need to be considered when looking at buffer width requirements across a state or region.

Another important function of an SMZ is to provide thermal protection during the hotter seasons of the year in the form of cooling shade. Without the overstory

canopy of the riparian vegetation, streams can warm significantly and many cold-water aquatic species would find it hard to tolerate the elevated temperatures, especially at the southern edges of their range. The Southern Appalachian brook trout is one example, and removing the canopy over trout streams can have rapid negative effects on the natural water conditions. Many darter and shiner species in the piedmont and mountain regions would fall into the same category. Loss of the overstory in riparian areas can even significantly affect the humidity of the microhabitats along the stream. One example of this is microhabitat degradation can be seen in some locations of the Appalachian Mountains where **eastern hemlock trees** once inhabited the local gorges and canyons. In recent years, an exotic insect called the hemlock wooly adelgid has infected the hemlocks of that region and many trees were lost, sometimes the entire stand. The loss of the canopy that was once provided by the hemlock forest, and the sudden influx of sunlight, had a warming and drying effect in some areas and herbaceous plant communities were changed. Ferns and other moisture-

sensitive plant species desiccated and declined, and thick shrubby encroachment responded, thus changing the riparian systems in the canyons.

So now that we have established the need for SMZ buffers and examined their applications across different states and management situations, let's look at the habitats within the SMZs themselves.



Acadian flycatchers are one of the most predictable riparian birds in the Southeast during the spring and summer. Like many other species, it is drawn to these shady moist habitats by the abundant insect populations that typically thrive in the riparian areas. Photo credit: Wikipedia Commons, Aitor, no changes made.



Several bat species, including the federally listed Gray and Indiana bats, regularly forage within riparian areas, especially over the stream itself and beneath the canopy, through the "tunnels" created by overhanging limbs and foliage. Gray bats shown here.

Typically, riparian forests and the associated vegetation do not look the same as the adjacent stands, especially if there is some topography involved. Riparian vegetation can consist of both generalist or moist soil obligate trees, shrubs, and herbaceous plant species.

Generalist species like sweet gum, loblolly pine, sycamore, or red maple for example are typical along streams and waterways in

many regions of the eastern US. These species, however, can also be found in much drier habitats, even high on the slope. Other varieties like river birch, black willow, and hazel alder on the other hand, are usually more closely associated with water, and they are usually considered riparian species. Green ash, tupelo, black walnut, cottonwood, cypress, beech, bay, magnolia, swamp chestnut oak or laurel oak can also be common in the riparian zone, depending on the region. Herbaceous vegetation in the riparian zone can also vary greatly depending on the size of, and surrounding topography of, the stream or river. On a slow-moving blackwater creek in the lower coastal plain for example, a riparian system may consist of bald cypress,

water tupelo and red bay in the overstory, titi (*Cyrilla racemiflora*), fetterbush (*Lyonia lucida*), and inkberry (*Ilex glabra*) in the shrub layer, and ironweed (*Vernonia noveboracensis*), poverty rush (*Juncus tenuis*), bulrush (*Scirpus atrovirens*), and sensitive fern (*Onoclea sensibilis*) closer to the ground. In the topography of the upper piedmont region, more typical riparian vegetation might include Eastern hophornbeam, American beech, and sycamore, with river oats (*Chasmanthium latifolium*), mountain-mint (*Pycnanthemum tenuifolium*), and joe-pye-weed (*Eupatorium fistulosum*) in the understory. Rivercane (*Arundinaria gigantea*), or switch cane (*A. tecta*), in the lower coastal plain, is another common riparian species across the southeastern US. Riparian species in the floodplain or bankside zones can transition into emergent aquatic species as one moves into the actual stream or over standing water. Sedges (*Carex/Scirpus*), rushes (*Juncus* spp.), and water willow (*Justicia americana*) are common southeastern emergent species. This mix of vegetative structure above and below the water enhances habitats for many invertebrate species. Gnats, midges, mosquitoes, flies, and many other aquatic and semi-aquatic insects take advantage of ideal habitat conditions found here, and in turn, are food for many other animals.

Riparian habitats are also very important to a number of wildlife species. Acadian flycatchers are one of the most predictable riparian birds in the Southeast during the spring and summer. Like many other species, it is drawn to these shady moist habitats by the abundant insect populations that typically thrive in the riparian areas. The Acadian flycatcher is one of several similar-looking flycatchers in the *Empidonax* genus, and it breeds from the Gulf coastal plain

up to the Great Lakes. In fall it migrates back down to parts of Columbia, Venezuela, Ecuador, and Panama, in Central and South America. The Acadian flycatcher has drab brown and tan plumage and can be commonly observed perching on a low branch near or directly over streams in shaded riparian habitats. It is readily identifiable by its short and distinctive song, “pah-reet”. The Northern parula is another common species that breeds in southern riparian habitats. This small warbler is a more colorful specimen with a slate-blue head and back, a yellow chin and breast, and a blue belt across the chest. Unlike the Acadian flycatcher, this species typically utilizes the higher parts of the riparian canopy, often the treetops. Louisiana waterthrush, Prothonotary warbler, Wood thrush, and Yellow-throated warbler also frequent southeastern riparian habitats. Although some individuals spend much of their time outside streamside zones, some raptors like the Red-shouldered hawk, Broad-tailed hawk, and Barred owl have been shown to prefer riparian habitats in many locations. In the desert habitats of the Southwest, these riparian zones are even more heavily utilized since they are often the only source of forested habitat. Species like the Gray hawk and the Common black hawk stick fairly close to the forested wetlands and riparian forests in the canyons and drains there.

Several mammals prefer riparian habitats also, at least seasonally. It is common knowledge that raccoons spend a great deal of time in creek bottoms and foraging in and along streamsid es, often finding refuge in hollow riparian den trees. Across some regions of the North American continent, large mammals also use riparian forests

as migration corridors. In the Southeast, deer, bears and other species frequent riparian areas for the food opportunities as well as for bedding or loafing, and to seek refuge from the heat in the peak of summer. Several bat species also regularly forage within riparian areas, especially over the stream itself and beneath the canopy, through the “tunnels” of overhanging limbs and foliage. The federally endangered Gray bat and Indiana bat are two such examples, and when researchers are surveying for these species, one of the best locations for their capture is to set up a series of mist nets over creeks and streams. These bats use the cover of the canopy and openness of the stream tunnel as nightly travel corridors.

Many riparian habitats across the North American continent are known to harbor rare species. This trend is more common in western regions. In California alone, dozens of federally listed plants and animals reside in and rely on important riparian environments. The Riparian brush rabbit of the San Joaquin Valley, for example, was listed as federally

endangered in 2000. Drought and habitat loss will likely keep this species’ population low enough to remain on the list for some time to come. The association between rare species and riparian ecosystems can



Many riparian habitats across the North American continent are known to harbor rare species. The Bankhead National Forest in the Cumberland Plateau region of north Alabama contains unique riparian habitats of mature hardwoods and eastern hemlocks. Here, the southernmost breeding population of Cerulean warbler occurs. Below the forest canopy near the same locations, the federally listed Alabama streak-sorus fern inhabits bluff and rock house microhabitats.

also occur in the East, however. The Sipsey Wilderness Area of the Bankhead National Forest, in the Cumberland plateau of north Alabama, for example, hosts unique cove forests of mature hardwoods and eastern hemlocks. Here, the southernmost breeding population of Cerulean warbler occurs, and this species can be heard as it forages high in the forest canopy. Below the forest canopy near the same locations, the Alabama streak-sorus fern (*Leptogramma burksiorum*), which is one of the world's rarest ferns, limited in range to a few miles of the Sipsey River and its tributaries, along with the somewhat less rare Taylor's filmy fern (*Hymenophyllum tayloriae*), inhabit bluff and rock house microhabitats in this riparian ecosystem. Just as in upland terrestrial habitats, a multitude of factors can influence the quality and significance of riparian habitats within a property or

geographic area, regarding importance to rare or endemic wildlife species. Obviously, geographic location would be one determining factor related to species presence, but management history and past disturbance can be important as well. If SMZ's were not observed in previous timber operations and the riparian habitats were cleared, this could have lasting effects above and beyond the reduction of tree species diversity and loss of the canopy habitats. Sedimentation from upland soils into the floodplain could cover and remain deposited over the native organic soils in portions of the riparian area, degrading or at least altering plant communities. This sedimentation could be ephemeral in some cases, but in other areas it could take several decades for natural conditions to return, and in some instances this period of time could be enough to cause permanent

losses for many sensitive plant species.

In summary, streamside management zones are one of the most important and effective BMP tools available to land managers when natural resource integrity is being considered. Although SMZ buffer width recommendations can vary by state and organization, they provide proven cost-effective protections for maintaining water quality during timber harvests, clearing operations, or other forest disturbance activities. Riparian vegetation inside and outside the SMZ itself can vary across physiological regions and forest types, but these zones will almost always contain habitat components that serve a vital role in ecosystem functionality of the local landscape. The wildlife and native plant communities found in riparian habitats can be diverse, and in some cases, quite rare.

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Managing for Fish Other Than Largemouth Bass

By Scott Brown



Most landowners with lakes want a quality fishery, and most of those are targeting quality or trophy largemouth bass. But there are a few single lake owners and several multiple lake owners that can afford to designate a second, or more, lakes to other species that interest them, usually for food, sometimes for sport and possibly for both. Today, more lake owners want to grow quality bream (bluegill, redear, pumpkin seed and even warmouth) than channel catfish. This trend away from channel catfish has been gradual over the past several decades, but lake owners ordering channel catfish are much less now than years past.

The **bluegill** is one of the most

common pond fish in the country and are native to the eastern half of the United States. However, they have been stocked and relocated to waterbodies throughout the country.

Your waterbody objectives will dictate how you stock and manage your bluegill. For new waterbodies, designated as panfish or bluegill lakes, stocking rates are about 500 per acre depending on the size fish stocked. The larger the fish, the more expensive. However, with no predators present you will have a high survival rate even if fingerlings are stocked. The initial stocking can be any size fish your budget allows, or mix the sizes so some will reach breeding and harvestable size sooner, while others grow into those

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Some landowners want to manage a lake for species other than the largemouth bass. This mess of fish fried up is top notch in anybody's book. This landowner set his goal for this lake as, wanting to fish 1-2 evenings a week and catch fish for dinner. The management strategy worked.

size range. They will reproduce and growth rates will be determined by how much habitat and supplemental food is available.

With no predators, it may become overpopulated with stunted bluegill and lots of mid-size individuals if not enough are being harvested and/or if the supplemental food supply is insufficient. If you have bass present, but want a quality bluegill fishery, not harvesting small bass is recommended. Let them become stunted so there are fewer that consume larger bluegill. If you do catch a bass over 14 inches, remove it from the population.

There is nothing more enjoyable than catching large bluegill on ultralight tackle or fly rod. Small flies, similar to common area insect



This channel catfish snuck past the best size to harvest for table fare, but it is still fun to catch and release.

species, small beetle spins, small hook with split shot on bottom or suspended by float with worm or even a small piece of hotdog. For kids or novice anglers, a piece of softened fish feed on a small hook suspended or on bottom works well where supplemental fish feed is used. But the go to bait for bluegill are crickets. On surface, suspended or on bottom, have all produced harvestable fish throughout the year. In spring and fall, bluegill may bite any time. In summer just after daylight and just before dark. During winter, midday when waters at the surface get warmed by the sun. Small and light is the key when choosing line, bait, hook or lure. In waterbodies with high fishing pressure, they can become educated, and periodically changing angling techniques may be required.

Harvest numbers and size to harvest depends on the size and numbers of bluegill your waterbody can grow and support. In a highly productive lake with a feeding

program, allowing bluegills to reach 9 or 10 inches before harvesting is advised. In colder climates or less productive areas, harvesting 7-8-inch bluegill may be necessary to reap benefits from your efforts. As you progress in the management of your lake, you will learn what the bluegill growth potential and carrying capacity is and adjust size and harvest number guidelines accordingly.

The **reardear sunfish**, (identified by the red edge of the ear flap), is usually stocked in conjunction with bluegill. A common stocking ratio is 75%

bluegill/25% redear. Their main forage is snails and small clams, hence the name “**Shellcracker.**” These fish rarely feed near the surface. They can reach over 12 inches and not uncommon weights around two pounds. The best bait for redear is worms, grubs and beetle spin fished deep. We only recommend stocking redear sunfish if there is a food source. Walk or ride around your pond and look for snail and clam shells in the shallows. If the pond does not have a good supply of snails and/or small clams, they will not do well. Redear sunfish will generally not consume floating fish feed, but have been documented to intake sinking feed once it has settled on the bottom.

The **redbreast** and **pumpkin-seed sunfish** don't grow as fast as the redear or multiply as often as the bluegill. These species can



Not available from hatcheries, but silversides (glass minnows) are a favorite food for crappie. If you have them, embrace them, and watch your crappie grow. And you can watch crappie feed on schools of them at sunrise and sunset at the surface.

reach lengths of 10 inches and weigh 0.5-0.75 lbs. These species feed on insects and their larvae, grass shrimp, snails, and small fish. They traditionally like gently flowing clearer water with gravel or sandy bottom, but on occasion do appear in ponds. They create beds similar to bluegill, but prefer spawning in water temperatures around 68 degrees. They will consume fish feed. If targeting these two species, similar angling tactics for the bluegill are recommended.

The **warmouth**, (identified by its large mouth and 3-4 dark bars coming from the eye back and stopping at the edge of the gill plate), has a ravenous appetite and competes with small bass for food. The only way to manage these is in a bass free ecosystem. These fish prefer organic, (muck or muddy bottoms), with little or no flow. They feed similar to a bass by waiting in vegetation, around woody snags and rocks to ambush their prey. Warmouth can get to 12 inches and weigh up to two pounds, but typically reach eight inches 0.5-0.75 lbs. They like to spawn at about 71-degree water temperature and will spawn all summer. Their nests look like other panfish, but usually next to some cover such as vegetation, woody snags or stumps, as opposed to being in the open. Small minnows and beetle spins are the best baits, but also worms, grubs and tiny rattle traps work. In a traditional management strategy, this species is unwelcomed, as they do compete with small bass for food. However, we know land owners that like to catch and eat them, so if desiring to encourage their success in an old waterbody with an abundance of vegetation and/or stumps and woody snags, stocking fathead minnows and/or mosquitofish annually will help them grow.



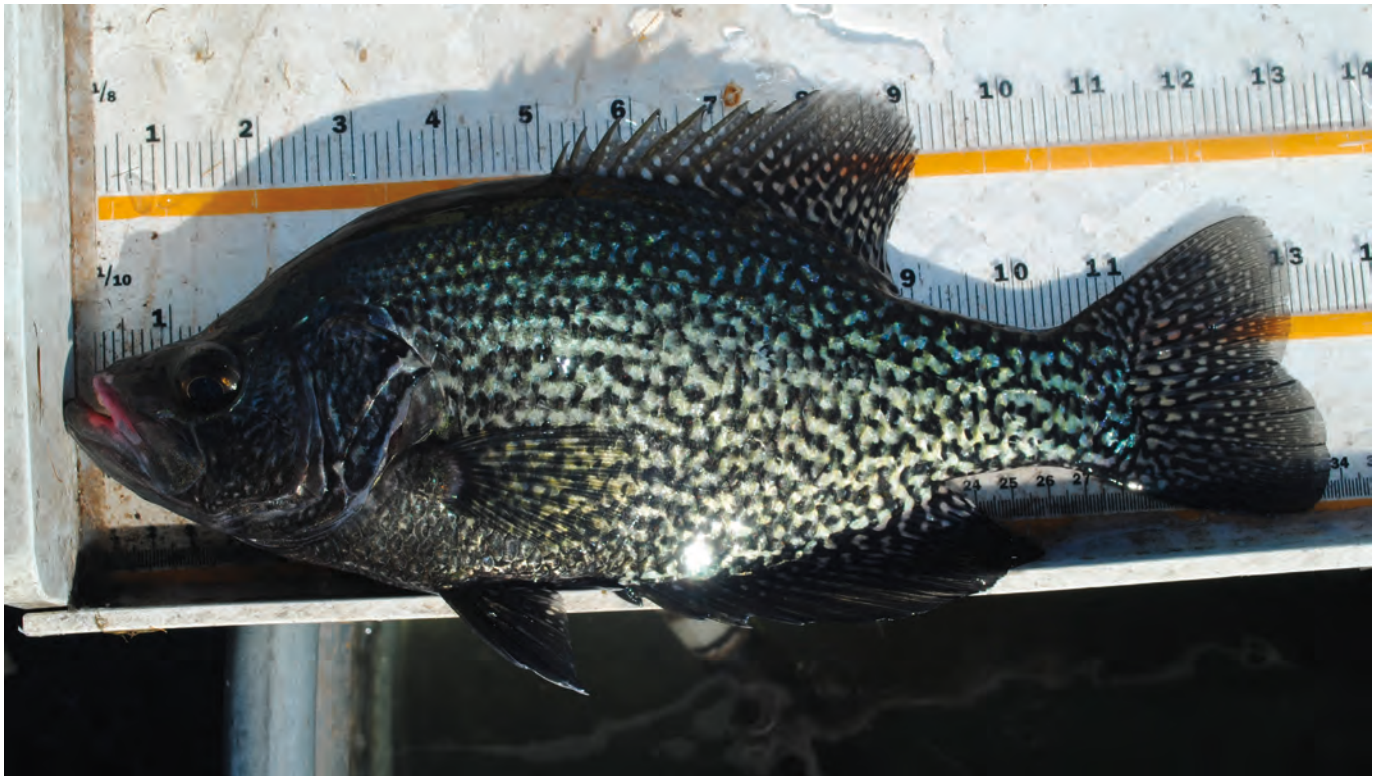
This artificial fish habitat will benefit catfish, crappie and/or bream when managing for alternative species.

The **green sunfish**, (identified by its large mouth and turquoise spots), at one time had a limited range in the United States, but is now found almost everywhere in the country. It can be found in a wide variety of waterbody types and is very adaptive. Green sunfish feed on insects and their larvae, small fish and crayfish. Due to its ability to quickly over populate, out compete more desirable panfish, desire and success rate to hybridize with other sunfishes and its small size compared to other species, it is not welcome in ponds. Unfortunately, through intentional and unintentional stockings, this species can and is causing issues in both public and private waterbodies. Green sunfish rarely exceed 10 inches in most areas. When angling for green sunfish, use similar baits as when targeting the warmouth.

The final type of sunfish that is available for pond stocking is various crosses of males and females of different species to create a hybrid, which I refer to as “genetically enhanced”. There are several out there and all claim to be better than the next. Growth rates of these original individuals after

stocking are very impressive if on a properly run supplemental feeding program, but because of the hybridization, as future generations arrive, those individuals get smaller and smaller and grow slower and slower, until starting the population over may be required. Before stocking these, check your state’s regulations, as some states have created laws prohibiting the stocking of hybrid fish to protect the pure genetic strain of native species.

Many lake owners ask about improving their **crappie** fishery or creating one in a lake they are not currently present. In my opinion, there is no better eating freshwater fish than fried crappie. Sometimes a crappie population is easily created and/or maintained, but in other situations it’s a disaster or not recommended in the first place. Crappie require a larger waterbody and a different forage other than bream. Their forage of choice are threadfin shad, and silversides, (glass minnows). A few small pond owners questioned me for my caution regarding crappie in small ponds and said their small crappie pond has been quite successful and my response is to enjoy it because



No one would argue with catching a bunch of 13–14-inch black crappie and frying them up for dinner.

once they are there, it takes drastic measures to get them out. There are genetically altered crappie that do not multiply, so those can be stocked into small waterbodies with the appropriate forage and restocked to replenish those that have been removed. Minnows or small jigs with ultralight tackle make for some exciting fishing for both experienced and novice anglers.

The two fish attractors that you can add to your waterbody that will help your panfish (bream and crappie) population are **brush piles** and **gravel beds**. Everyone is familiar with fish attractors using oak treetops, cedar type, (Christmas trees), trees or synthetic materials arranged in a tree-like form to create brush piles. Besides providing an area for these species to hide from predators, they create areas for the larger individuals of these species to congregate and catch. Installing areas of gravel in 3-6 feet

deep water provides spawning habitat for some panfish species. These areas can be created in a new lake, or the gravel can be spread from a boat in older lakes that may not have an abundance of quality spawning habitat. We use #57 limestone gravel to create these sites and have seen bluegill spawning on them within two days of installation.

Not all panfish consume floating fish feed. Use a mix of floating and sinking, variable sized pellet feed to benefit more species and various sized fish. Set the automatic fish feeders to go off twice per day (mid-morning and mid-afternoon) when water temperatures are 55-70° F. Feed four times per day; twice in the AM and the same in the PM when water temperatures are between 70° and 85° F. During hot weather, (water temperatures between 85 and 90 degrees), feed at daylight and dark when fish are most active. In extremely hot

weather, (water temperatures above 90° F), stop feeding if fish are not consuming the feed. During cold weather, (water temperature below 55° F), do not feed, or feed once per day during the afternoon, (warmest part of the day), in 4-8 feet deep water. Feed dispensed on the bottom of the deepest part of the lake in the winter or summer may not get consumed if there is insufficient Dissolved Oxygen, (DO), present. If all feed dispensed is not consumed within 15 minutes, reduce time dispensed to reduce waste. If all feed is consumed in less than ten minutes, increase feed dispensed per feeding. We recommend one feeder per five acres. Most feeding attracts fish, so feeding times throughout the day need to remain the same for long periods of time so the fish will be nearby when the feed is dispensed to ensure most is consumed and waste is reduced. Feeder locations can be points to sight and evaluate bream and catfish populations while fish are at the surface consuming floating feed. If you have a newly stocked pond, use high protein



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The striped bass hybrid has become popular to stock into ponds under one acre to avoid dealing with the overpopulating largemouth bass, but still providing a quality light tackle sportfish and good table fare.

Fingerling or Grow-Out sized pellets. Various fish feeds are sold at feed stores, but use a 32% protein or higher feed. Be sure the feed is fresh and not moldy, Certain feed molds can be toxic to fish.

A less common sportfish in pond management than the largemouth

bass is the **hybrid striped bass**. These are sometimes referred to as the hybrid striped bass or more specific the **Sunshine Bass**, (white bass [Morone chrysops] female crossed with a striped bass [Morone saxatilis] male or **Palmetto Bass**, (white bass male crossed with a

striped bass female). Some other names may be **Morone hybrid** or “**Wiper**”. For decades this fish has been developed and stocked by State and Federal fish and wildlife agencies as an alternative sportfish in public waters and occasionally in private lakes and ponds. In some situations, this species may be right and desired for your situation and lake management goals.

As with any sportfish, only stock



Fathead minnows, along with these mosquitofish, provide food for almost every fish in your waterbody. Some predators will consume them in their younger years, and some will consume them their entire life like bluegill and other bream.

hybrid striped bass where they are supported by proper forage. Trying to get these fish to adapt and target shoreline forage species such as shiners or bream does work, but does not promote the best growth rates or survival. The presence of threadfin shad and silversides is the best scenario we have found. If no other predators exist, golden shiners will add to their growth rates and size. Stocking Hybrids as opposed to largemouth bass in small ponds to regulate predator numbers is feasible. Stocking multiple years, two years apart, helps create a more natural fish population and alleviates having all Hybrids present from one single year class and one size. If all individuals are the same size, they will need to be replaced as they die out or are harvested. One scenario that works well for hybrid striped bass is

a small one-acre pond, where controlling predator numbers is desired. Largemouth bass numbers are hard to control in small waterbodies one acre or less, where the hybrid striped bass is controlled by the numbers stocked.

Stocking rate recommendations vary from 50-100 per acre. If multiple year classes are desired so the fishery will have various year classes and sizes, staggering stockings will work. Year one stock 50 per acre, and follow-up every other year with 50 per acre. This will spread the predation out on various forage sizes and alleviate a boom/bust where all fish disappear the same year or two and you will not have to wait for individuals to grow into that quality size range, as they will already almost be there as the year class ahead diminishes through

natural mortality or harvest.

The **smallmouth bass**, (*Micropterus dolomieu*), is in the Black Bass Family Centrarchidae, and it is a close relative to the **largemouth bass**, (*Micropterus salmoides*). Many say the smallmouth bass is a stronger, harder pulling, longer fighting sportfish than the largemouth and is highly sought after, only second to the largemouth bass in angling effort. Several pond and lake owners have, (some successfully and some unsuccessfully), tried to create a smallmouth bass fishery in their private lakes and ponds. It can successfully be done, but the right water temperature, water chemistry, habitat and forage need to be present before it should even be attempted.

For the greatest success, your water-

body objectives will have to be entirely addressing smallmouth bass. These fish are slow reproducing and slow growers compared to the largemouth bass and other common species. Eliminating largemouth bass from an existing waterbody or not stocking them at all in a new waterbody is mandatory. It is also recommended that waterbodies up-stream from the smallmouth pond be rid of largemouth bass so they cannot be washed in from upstream flooding or natural migration. To start an existing fishery, over use Rotenone, (fish toxicant), applied by a licensed and insured professional. Applying Rotenone at lethal levels to remove all fish present is necessary, as a partial treatment will not work for bass. You cannot hook & line or electrofish all the largemouth bass out of an existing waterbody. What little literature there is regarding smallmouth bass in ponds advises that these two species will not coexist in a pond and the largemouth will outcompete smallmouth for food and reproduction numbers.

To be successful with raising quality smallmouth bass providing quality water chemistry, habitat and forage they need is crucial for success. The presence of clean water, hard bottom, gravel, larger rocks like rip-rap and even boulders will help the smallmouth. Some habitat will benefit the fish directly, and some will benefit the forage species it needs to flourish. Smallmouth do not need flowing water, but they do prefer water with no sediment, (suspended dirt particles), but the waterbody can have a mild to medium algae bloom. Hypereutrophic, (excessive algae bloom), water is not ideal for smallmouth growth and reproduction. Good dissolved oxygen levels from top to bottom in the water column is required. This can be achieved by installing a bottom aeration

system. When water temperatures approach 80° F, these fish will be seeking deeper, cooler water, and the more oxygen present deeper, the better for the fish.

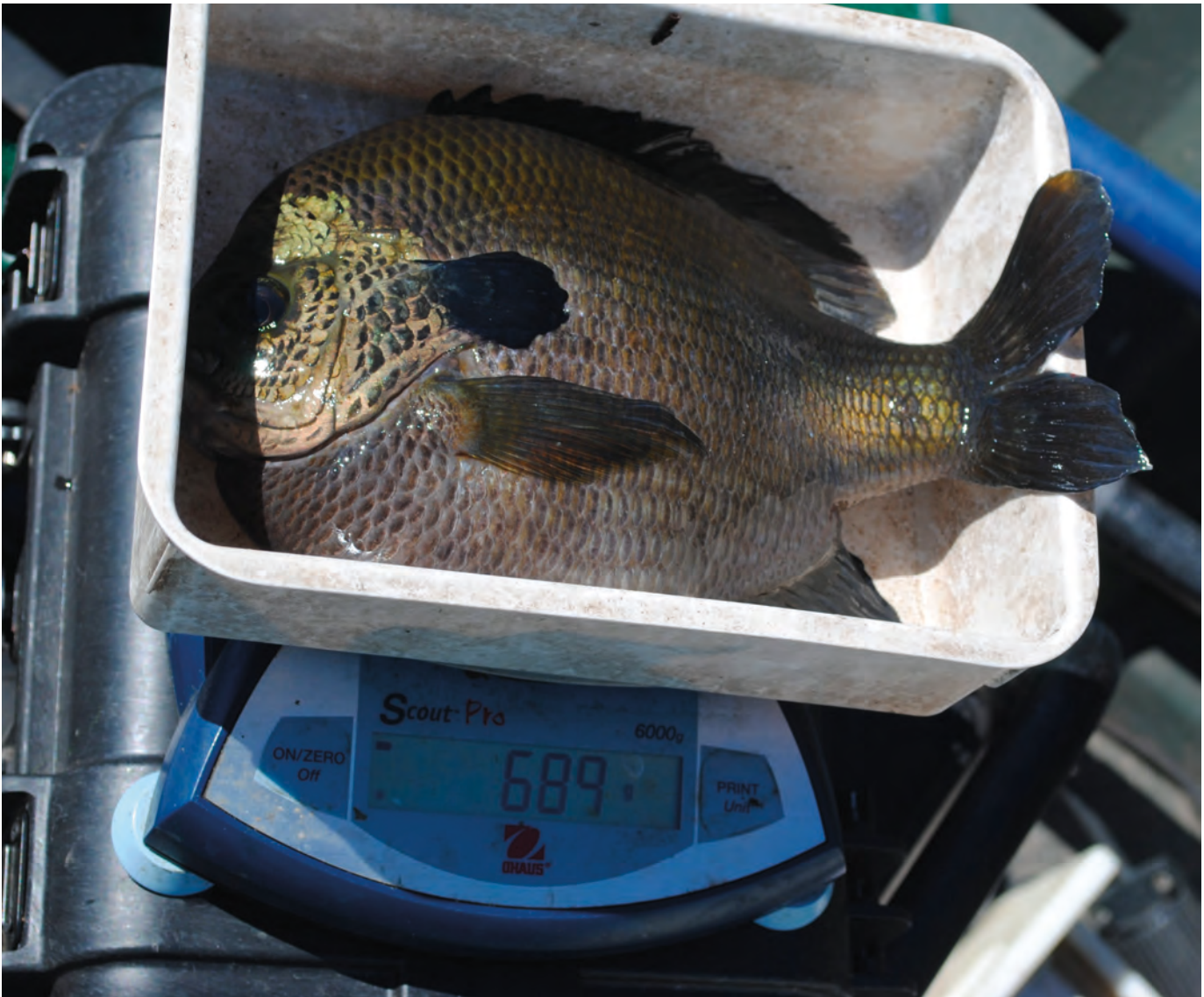
Most small lakes and ponds lack the smallmouth habitat and it needs to be added. This is much easier with a dry lakebed, (either new or old lake drained), than a full lake. Boulder piles in various depths can provide hiding areas for smallmouth bass. These surfaces can also be areas where algae and small invertebrates will be for juvenile smallmouths to feed. Rip-rap along the dam will provide areas for crayfish to hide, feed and reproduce. The rip-rap will also help prevent erosion on the dam. Gravel (#57) along the shoreline in 3-6 feet deep water near cover or drop-offs will supply the smallmouth bass with bedding areas. Beside boulders found on your property, concrete rubble or pipes can also be used if available to improve habitat.

Smallmouth bass like soft finfish such as fathead minnows, golden shiners, threadfin shad, crayfish and large insect larvae for forage. They do eat bluegill, but they are only the consumable size for a short period of time before they get too large. Large bluegill can be a competitor for forage with small smallmouth bass. We have seen lakes with bluegill and smallmouth bass do well when both are present with abundant quality habitat and forage for the smallmouth and a supplemental feeding program for the bluegill. If you are lacking much of the previously mentioned habitat, stocking redear sunfish only as your panfish may be a better alternative for your particular situation if bream are desired. At minimum, stock forage fish species and crayfish the fall prior to smallmouth stocking and if possible, stock forage a year before

smallmouth are stocked to allow the lake to have maximum forage available for new smallmouths. Recommended crayfish stocking rates are 50 lbs. per acre for forage. If small, smallmouth bass are stocked, it will be a while before they can utilize crayfish due to their size. Once crayfish begin reproducing, they will provide smaller forage and become beneficial to smaller smallmouth bass. For larger waterbodies, this crayfish stocking rate can be reduced to help cut costs. Fathead minnow stocking rate 1,000-2,000 per acre. Threadfin shad can be stocked at 1,000 per acre if there is a supporting algae bloom. There are few hatcheries around the country that supply smallmouth bass and locating a hatchery and reserving your smallmouth bass in the fall prior to spring stocking is advised. Stock smallmouth bass at a rate of 50-100 per acre (depending on fish size). Obviously, the larger the better for survival, they are more expensive per fish, but you would stock the lower rate, so costs may be nearly the same. Do not stock smallmouth smaller than two inches. Continually monitoring forage and restocking, when necessary, will be required to keep smallmouth numbers up and growth rates accelerated.

Harvesting these fish, (thinning the population), is not as important as with creating a quality largemouth bass fishery. Once a good smallmouth population is established, removing a few fish where the bottleneck size occurs will be necessary. This is identified by large numbers of the same size fish being caught and they are skinny.

Most freshwater anglers that want catfish, want the **channel or blue catfish**. Bullheads are rarely desired and it is preferred to not be introduced, as they can easily



This almost 11-inch, 1.5-pound bluegill is ready to harvest. Catching these on light tackle or flyrod, then frying them up for lunch or dinner is hard to beat.

become overpopulated. The most common catfish stocked in both public and private waterbodies and raised for food fish, is the channel catfish. The channel catfish grows quickly in a pond with supplemental feeding and under most situations will not reproduce in small, manmade waterbodies. It is easy to control numbers when channel catfish are stocked in most private lakes and ponds, and occasionally need to be restocked when numbers become depleted. Historically, every lake and pond owner wanted channel catfish stocked so they had a fish to eat. They are relatively easy to grow

and catch, which makes it appealing for novice and youth anglers, and lake owners. I have seen them caught on anything from artificial lures, stink bait, liver, hotdogs and live bait, (worms, nightcrawlers, minnows, crayfish, bream, golden shiners and threadfin shad). Their growth can be accelerated by supplemental feeding commercial fish feed. Routine feeding also concentrates them to increase angling success.

Hard to believe I wrote an entire article on fish management and hardly mentioned the King-of-the-Lake, the **largemouth bass**. As

stated in the beginning, the largemouth bass is the most targeted freshwater species in the country and managing in private reservoirs, lakes and ponds, but there are situations where managing an entire waterbody for another fish species is possible and not that unusual. So, if you have a small waterbody, or multiple waterbodies, consider managing for another species that makes for great flyrod or conventional sport tackle fishing, table fair or the grandkids to fish for that's not a largemouth bass.

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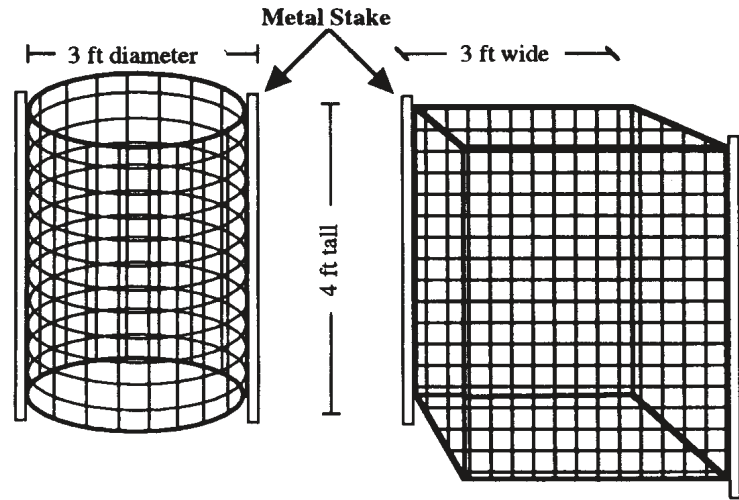
Strategically managed food plots not only provide deer and other wildlife with a quality food source, but offer excellent hunting opportunities.

Coordinate food plot planting with good soil moisture

October through early November are often 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. Do not 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 any idea of 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 could 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. If an abundance of acorns are present during this time, plots

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Round or square exclusion cages can be easily constructed from 2 x 4 inch mesh netwire and metal t-posts. Cages remain the best method to determine production and use of food plots by deer.

Excluder cages allow you to observe or monitor deer use of a food plot and overall plant growth.

receive less browsing pressure by deer which allows the plots to grow even more. I commonly get calls from hunters in November asking why deer are not really using their food plots. The most common reason is the crops were planted two months ago and the crop/food plot plants are mature, not vigorously growing, and “hardened” up making them less palatable. There is also increased chances of army worm problems in September when temperatures are 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 extremely attractive to deer and other wildlife during hunting season. 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 excluder cages on your food plots

Excluder cages are simply small, fenced structures that are placed on food plots to “exclude” or prevent deer from accessing food plot crops inside the excluder cage. Doing so allows you to observe or monitor deer use of the plot and food plot success. Excluder cages do not need to be big, just enough to prevent deer from eating a small area of the food plot. In general, excluder cages 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 excluder cage can then be placed on a food plot and anchored down with a T-post or a couple pieces of rebar. Excluder cages 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. In this situation, it is common for the landowner or land manager to get frustrated thinking they planted the food plot

incorrectly, or that the particular seed mix planted isn’t growing well on the property. When, deer had 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!). I religiously use excluder cages because they help assess plot success and provide insight when seemingly crop failure occurs.

Consider split applications of nitrogen on food plots (not on perennial legume/ clover plots)

Applying a split application of nitrogen means that you apply half of the recommended rate of nitrogen at or slightly before planting time, then apply the remaining half a month after crops have germinated and are growing. Split application reduces the exposure of nitrogen in the soil to elements that can create losses such as leaching and denitrification. The second application of nitrogen provides a boost to the growing crop when it can utilize the added fertilizer resulting in better forage produc-

tion. Before deciding to apply this technique, consider normal rainfall and soils of your property. If you are in an area that receives a good bit of rainfall during early winter and your soils get muddy easily preventing you from driving on food plots with equipment needed to spread the second application of fertilizer, split applications may not be an option. Not only will applying a boost of nitrogen increase forage production, but deer and turkeys are attracted to plants that are nutritious and actively growing which will result in better hunts on your property.

Clean and service walk-in-cooler

Making sure the walk-in cooler is ready is often overlooked until the first deer is harvested; then to find out that it is not working. If you are fortunate enough to have one, servicing and preparing the walk-in cooler should be on your pre-

season task list. As with any area where food is stored, the interior of a walk-in cooler should be sanitized regularly. This includes the floor, walls, racks, meat hooks, etc. A plastic 2-gallon hand-held pump up sprayer is a great tool to apply disinfectants. Drains should be inspected, cleaned, and disinfected as well. Be sure to inspect weather stripping along the door and threshold. Air leaks due to the door not sealing well can reduce the life of the compressor as it must run more often to cool the air. Performing normal preventative maintenance, such as cleaning the coils, should be done to the cooling system. Lastly, give the cooler a good test run. Turn it on and let it run a day or two to make sure all is well, and that the thermostat works.

Calibrate deer scales before hunting season

Whether the scales you use to weigh harvested deer at your hunt-

ing 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 provides insight to the health of deer on your property and will assist in making management decisions, (herd and habitat), to achieve overall goals.

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Hold a preseason meeting to discuss the progress of the deer management program and harvest strategies planned for the upcoming season

Hosting 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 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

Hosting a pre-season meeting to review deer harvest management strategies and other general hunting rules is a great way to ensure everyone understands the goals.

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.

The pre-season period is also a good time to host a cookout for your neighbors and local wildlife officers. Not only is this a great way to meet your neighbors and/or wildlife officers, but a cookout provides opportunities to exchange ideas on deer and habitat management as well as harvest strategies. If you are trying to convince an adjacent landowner or hunting club to practice quality deer management, this is a great time to show them some of the success you have had. Pictures of harvested bucks and/or scouting camera photos are usually all it takes to convince others to join your efforts. These cookouts often result in long-term relationships between landowners, hunting

clubs, and game wardens that are mutually beneficial. I have yet to meet a game warden that doesn't like BBQ – particularly free BBQ! Making friends with your local game wardens has obvious benefits.

Mow lanes through CRP, grassy powerlines, corn fields, or fallow areas 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 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,



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

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 exciting hunting.

Implement timber stand improvements – kill undesirable tree species

Removing undesirable trees is an effective habitat management strategy to enhance wildlife and/or timber value. Killing undesirable

trees is commonly used to remove non-native invasive species or to “release” desirable tree species like oaks, (often referred to as timber stand improvement or TSI). Removing undesirable trees reduces competition for resources such as sunlight, nutrients, and water resulting in better health and growth of remaining desirable trees. In some cases, removing undesirable trees stimulates natural understory vegetation growth providing quality food and cover for wildlife. One of the simplest and most effective techniques for removing select trees without cutting them down is called the “hack-and-squirt” method. Implementing the hack-and-squirt method is as simple as it sounds. Simply hack small cuts in the trunk

of target trees and squirt an herbicide solution into the cut. One advantage of this method is that you can target trees you want to remove and leave those you want to promote or encourage. Using a sharp machete, brush axe or hatchet, chop into the trunk being sure to penetrate the cambium layer below the bark. With the blade still in the cut, twist the blade downward to open the cut and spray herbicide into the cut. The cut should form a “cup” that will hold the herbicide. If the cut is too shallow, herbicide will leak out reducing the effectiveness of the application. A common plastic utility spray bottle works well and generally delivers one milliliter of herbicide mixture per trigger pull. The number of cuts made in the tree will vary depending on the herbicide used and size of the tree. Although there are several effective herbicides available, I normally use Arsenal AC, (imazapyr), because it controls a wide range of species. Arsenal AC’s label recommends one cut per 3 to 4 inches of tree diameter at breast height (DBH). The mixing rate for Arsenal AC is 10 percent, or one part herbicide to nine parts water. Regardless of which herbicide you choose, always read the label for appropriate dosages, cut spacing, and mixing instructions. For example, Arsenal is soil active which means you would not want to apply it if there is a desirable oak tree adjacent to the tree you are treating. Also be sure to wear appropriate clothing and protective equipment as recommended by the label. It may be worth noting that the “hack & squirt” method is effective almost any season except early spring when trees are experiencing heavy sap flow/sap rise. However, I typically schedule hack & squirt treatments during late summer and before leaf drop of fall.

Use the time lapse feature of trail cameras to scout food plots

Using time lapse may be the most overlooked feature of modern trail cameras. If you have not used it before, it essentially triggers the camera to take photos at set intervals. For example, you may set the time lapse to trigger the camera every 30 seconds during a specified time period. That is, photos are triggered by a time interval verses animal movement across the infrared sensor. This feature has opened up a whole new way to effectively scout fields, food plots or other openings. In the not-so-distant past, the only way to scout these areas was physically watching these areas either from a hunting stand or another vantage point. This not only took time, but was done at the risk of alerting deer or turkeys and adding “hunting pressure”.

However, using trail cameras set to operate on time lapse feature only requires two quick visits to the area (ideally during mid-day to reduce chances of disturbing deer or turkeys) – one to set the camera up, and after a period of time, one to pull the SD card. Installing a trail camera to monitor a field or food plot requires a different set up than the standard set used to monitor trails, scrapes, or bait. For best results, I have found that installing cameras 10-12 feet high and slightly angled down towards the field works well. Although you could use a small ladder (which is the safest method), I normally pull the ATV, tractor, or cart, (whatever I’m driving), up to the tree then stand on top of it to install the camera. Depending on the make of the camera, there are many “delay”/or interval options for the time lapse. Obviously, shorter

delays will result in more photos but will consume batteries quicker. I have found that setting the time lapse to operate the first couple of hours after daylight and the last couple before sunset at intervals of 1 to 2 minutes work well. At this setting, you will get enough photos to identify where and when deer enter the field over a week or so. Although the time lapse feature is great to determine when and where deer enter and use a field, it is generally not good for identifying details of a particular animal unless they are relatively close to the camera. If I see a specific animal I am interested in, (like a buck that is a potential “shooter”), I use the time lapse to identify where he is entering the field, then find the trail and install a trail camera in the normal fashion.

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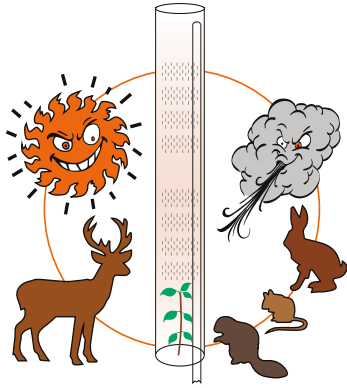
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