Wildlife and Fish Management Calendar for Texas and the Southeast

A Landowner’s Guide
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Natural Resources Conservation Service
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Landowners interested in managing their properties for wildlife or fish should find the information in this calendar helpful. There are specific suggestions for each month of the year, along with space in the calendar for recording the dates and the management tasks you perform. Having a written record of the activities you carry out, with corresponding dates, could be very useful in documenting the wildlife management of your land for tax purposes.

While this calendar was developed for Texas, the management recommendations also apply to states in the southeastern United States. However, each state may have different regulations governing some wildlife management activities. Therefore, you must check with the appropriate agency in your state about regulations that affect

- the stocking of grass carp to control aquatic vegetation,
- the supplemental feeding of wildlife,
- the control of double-crested cormorants, and
- the stocking of tilapia as supplemental forage for largemouth bass.
Fish

If the soils in your area are acidic, collect water samples and submit them to your county Extension agent for testing. Request that the pH and total alkalinity be analyzed. Apply lime according to the test results. Sportfish ponds that were drawn down in November or December should be kept 2 to 4 feet below normal to give largemouth bass better access to forage fish.

Summarize last year’s harvest records and determine the Percentage Size Distribution (PSD) and Relative Weights (Wr) for all bass and bluegill caught (see Appendix 1 for details). Start your record keeping for the new year by recording the number of fish of each species caught and the length of each. Do this whether the fish are released or kept for PSD analysis.

If double-crested cormorants are depleting your fish populations, obtain a permit to control them from the Texas Parks and Wildlife Department (TPWD). Follow the permit procedures.

If you plan to stock grass carp to control aquatic vegetation, submit your application to TPWD this month so you will receive the fish before weeds start growing.

Quail

Disking in January encourages the germination of heavy-seeded quail foods such as ragweed and partridge pea. To create a diverse plant population favorable for quail, consider prescribed burning. A burn should be conducted on a cool, damp evening or early morning following a rain, and only when there is little or no wind.

If you provide supplemental feed for quail, be sure the grain has a low (less than 20 ppb) aflatoxin content.

Examine the crop contents of harvested quail to identify the plant seeds they are eating.
Mourning Doves

Disking also encourages the growth of forbs, which produce the seeds doves prefer. If both quail and doves are present, begin disking adjacent to cover.

Ducks

Install or clean out wood duck nesting boxes and replace wood shavings. Repair the predator guards if needed. Maintain water levels in greentree reservoirs and flood additional moist soil areas, if possible, to increase food supplies.

Deer

Identify the most important browse plant species on your land and monitor the level at which deer are using them. If you need to reduce the total number of deer or if over-browsing is evident, use late and special hunting seasons, when available, to reach your goal for the number of antlerless deer harvested.

Analyze harvest records and compare them with your goals. Conduct post-season deer census surveys before antler casting occurs (see Appendix 2 for details).

Continue to provide supplemental feed through-out late winter. If you established small grain food plots (oats, wheat or rye) in the fall, top-dress them with additional nitrogen (34-0-0 or equivalent at 300 pounds per acre) at the first sign of yellowing. Conduct prescribed burns, when conditions permit, according to your wildlife management plan.

Turkeys

If you have supplemental feeders, continue to offer a corn/milo mix. Make sure feeders are not adjacent to heavy brush that can be an ambush point for predators.

Miscellaneous

If feral hogs are present, start an intensive trapping program while native foods are still in short supply. Use large traps and pre-bait them for several days. Set the traps only after hogs have begun to enter them regularly (see Appendix 3).

Did you know…
that if wood duck nesting boxes are too close together the hens will often “dump nest,” or lay a clutch of eggs and then leave without incubating them? Always place nest boxes where there is an unobstructed view of the water and no other nest boxes are in sight.

Management Tip of the Month
Prescribed burning benefits more wildlife species than does almost any other habitat management technique. It sets back plant succession, returns nutrients to the soil, and creates a mosaic of habitat types. This encourages plant diversity for deer, quail, doves and turkeys. Before you begin a burn program, be sure you know about all state and local ordinances and obtain the required permits.
Fish

Is your pond located on acidic soil? If so, and you didn’t have your pond water tested for pH and total alkalinity last month, do it in February. Apply lime according to the test results. Allow ponds that were drawn down last fall to refill to normal levels by the end of the month.

Continue recording the number, species and length of all fish caught for the Percentage Size Distribution (PSD) analysis (see Appendix 1 for details).

Continue to control double-crested cormorants if they are depleting fish populations. Follow your state game and fish agency’s permit procedures.

If you did not submit a TPWD application for grass carp last month, do so now in order to receive the fish before aquatic weeds start their growth.

Ducks

Continue to install new wood duck nesting boxes or clean out existing ones. Be sure to replace the wood shavings and repair the predator guards. Begin draining water from greentree reservoirs to encourage the germination and growth of native food sources such as smartweed, barnyardgrass and sprangletop.

Deer

Continue to summarize and analyze harvest records and compare them with your goals. Conduct post-season deer census surveys early in the month before deer cast their antlers.

Continue feeding supplemental corn to provide energy throughout the late winter. Examine browse species for signs of overuse (especially on second-choice and third-choice plant species), which may indicate an excessive population of deer.

Weather permitting, conduct prescribed burns according to your wildlife management plan.
Quail

Continue the disking begun last month to encourage the germination of heavy-seeded quail foods such as ragweed and partridge pea and to promote overall plant diversity. Prescribed burns increase not only the plant species available for food and cover but also the number of summer insects.

Be sure that the grain used for supplemental feeding contains no more than 20 ppb aflatoxin.

Continue to examine the crop contents of harvested quail to identify the plant seeds they are eating. If quail numbers are low, discontinue hunting so there won’t be a shortage of breeding birds.

Mourning Doves

Continue shallow disking to encourage the growth of forbs. Forb seeds are preferred by doves. Begin disking adjacent to cover if both quail and doves are present. Check the crops of harvested birds to determine which plants are their primary food sources.

Miscellaneous

Continue the intensive trapping of feral hogs this month while native foods are in short supply.

Did you know…

that February is the beginning of the prime time for finding recently shed deer antlers? During this month deer will frequent cool-season food plots and crop lands in search of food. Check the fields and also the fence crossings leading into fields. The jarring motion of jumping a fence often causes a loose antler to fall off. Shed antlers are good evidence of bucks and can give you a head start on patterning your buck movements for the next season.

Management Tip of the Month

Next to prescribed burns, one of the best wildlife habitat management practices is disking several disk-widths out from cover. Disking adjacent strips on a staggered basis every other month sets back plant succession and causes numerous native plant seeds to germinate. This practice benefits many wildlife species for a very small investment.
Fish

Largemouth bass may begin spawning later in the month, especially in the southern states. Once the water temperature has stabilized at about 70 degrees F near the surface, you can begin applying liquid fertilizers such as 10-37-0, granular fertilizers such as 16-16-4, or crystalline water-soluble fertilizers such as 10-52-4 to establish a phytoplankton bloom.

Continue to keep catch records for PSD analysis (see Appendix 1 for details).

Forage species and catfish may begin to respond to supplemental floating rations, especially when feed is offered in late afternoon on warm, sunny days.

In the Gulf States, Florida bass fingerlings can be stocked into native or northern bass populations at 20 to 50 per surface acre to introduce the Florida gene into the bass population. Channel or blue catfish (at least 8 inches long) can be stocked into existing bass ponds at the rate of 50 to 100 per surface acre every 3 to 5 years. New or renovated catfish-only ponds (with no fish present) can be stocked at 100 to 1,000 per surface acre, depending on the frequency of the feeding program to be used.

Grass carp can be stocked now if susceptible weed species were growing last fall. Start chemical control of filamentous algae.

Deer

Collect soil samples from food plot sites and submit them to your county Extension agent for testing. Continue the prescribed burning program begun before spring green-up. Once spring green-up occurs, remove all residual corn from feeders.

If coyotes are affecting fawn survival, control them with aerial gunning or other legal means.
Ducks

Begin checking wood duck boxes for use. Remove remnants from early broods and replace wood shavings. Continue drawing down greentree reservoirs. Begin draining water from moist soil units, draining 15 to 20 percent of the total acreage at a time.

Quail

Discontinue supplemental feeding once spring green-up occurs.

Mourning Doves

Continue the shallow disking of fields to encourage the growth of native forbs that produce seeds.

Miscellaneous

Continue trapping feral hogs. If squirrels are present but mature cavity trees are scarce, nest boxes can be used to improve the nesting habitat. Place the boxes 20 feet above the ground in trees at least 10 inches in diameter.

Did you know...

that Texas has more feral hogs than does any other state? The population of feral hogs is estimated to be 1.5 to 2 million (of about 4 million nationwide). Although feral hogs are an exotic species that can be hunted year-round, most landowners see them as an economic and environmental liability because of the damage they cause to livestock, crops and equipment. In a 2004 survey, landowners estimated economic damage at an average of $7,515 (since hogs first appeared on their land), and reporting spending an average of $2,631 to correct damage or control hogs. Feral hogs cause about $52 million in damage annually to Texas agricultural enterprises.

Management Tip of the Month

All wildlife species require food, cover, water and adequate living space. No two species can occupy exactly the same habitat because of direct competition. The savvy wildlife manager and landowner will create a mosaic of interconnected habitats to maximize the number of animals on the land. If you know the kind of habitat your favorite wildlife species need, you can manage the land in such a way as to meet those species’ basic requirements.
Fish

Largemouth bass are actively spawning this month. In fact, some females may be nesting a second time. Begin fertilizing ponds when the water temperature reaches 70 degrees F (usually in March or April, depending on location). Use liquid fertilizers such as 10-37-0, granular fertilizers such as 16-16-4, or crystalline water-soluble fertilizers such as 10-52-4 to develop a phytoplankton bloom.

Forage species and catfish are actively responding to supplemental floating rations now, especially when feed is offered in the late afternoon on warm, sunny days.

Fishing season is in full swing as anglers take advantage of nice spring weather to stalk spawning largemouth bass. All anglers should record catches (numbers by species and total lengths) on catch record forms available at pondside. This will help determine the Percentage Size Distribution (PSD) of various fish populations (see Appendix 1 for details).

Stock catfish fingerlings (8 inches or longer) in bass ponds at 50 to 100 per surface acre every 3 to 5 years if catfish are desired. If forage species were stocked in a new or renovated bass pond in the fall, bass fingerlings can now be stocked at 100 per surface acre. In the Gulf States, Florida bass fingerlings can be stocked in existing native or northern bass ponds at 20 to 50 per surface acre to introduce the Florida gene. New or renovated (no fish present) catfish-only ponds can be stocked at the rate of 100 to 1,000 fingerlings per surface acre, depending on the frequency of the feeding program.

If you have obtained a permit, stock grass carp to control susceptible weeds.

Quail

Disking this month promotes the growth of grass-like vegetation that will produce both seeds and cover. Leave a 15-yard buffer zone around the
edges of agricultural fields to create a transition area for quail entering the field to feed later in the season. In West and South Texas, half-cut 10 to 20 mesquite trees per acre to enhance escape cover.

**Turkeys**

Go spring turkey hunting!

**Ducks**

Continue monitoring wood duck nests. Remove remnants and replace wood shavings after early broods. Draw down another 20 to 25 percent of moist soil units to encourage the germination of smartweed and millet. Disk areas where invasive brushy species, such as willow, are growing if the ground is dry enough to support equipment.

**Deer**

If you plan to establish warm-season food plots, order seed and fertilizer now. Plant 2 percent (2 of every 100 acres) of the habitat base.

**Miscellaneous**

The acorn crop this year strongly affects squirrel production next year. Manage your oak stands to maintain about 10 oaks per acre. About half the stand should be 30- to 40-year-old trees and about half should be 50- to 80-year-old trees. Stands with species from both the red and white oak groups will have a more continuous supply of acorns. Other trees whose buds, seeds and fruits provide food for squirrels include beech, sweetgum, mulberry, black gum, elm, huckleberry, pecans and hickories.

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**Did you know...**

That the key to producing more bass is to grow more forage? A pond fertilization or supplemental feeding program can double or triple the pounds of forage fish (e.g., bluegill, redear sunfish, threadfin shad, tilapia) and double or triple the pounds of bass present. Pond fertilizers are available in granular, liquid and powder formulations. However, ponds that are muddy, acidic or full of weeds are not good candidates for fertility programs.

**Management Tip of the Month**

Improve fish nutrition and growth with pond fertilization. **Liquid fertilizers:** Make the initial application with 2 gallons of fertilizer mixed in 25 gallons of water per surface acre. Follow that with 1 gallon of fertilizer per surface acre on an as-needed basis. **Granular fertilizers:** Place 100 pounds per surface acre on sunken platforms or in shallow water. Follow up as needed with 40 pounds per surface acre. **Crystalline water-soluble fertilizers:** The first application should be 4 to 8 pounds per acre. Follow up as needed with about half the initial rate. Make follow-up applications whenever the water clears to a depth of 18 to 24 inches.
Fish

Largemouth bass spawning is ending while bluegill—their primary forage species—are beginning to spawn. Bluegill and catfish respond well to supplemental floating rations and should be fed daily with all they will eat in 10 to 15 minutes.

All fish caught should be logged into the angler catch records for PSD analysis (see Appendix 1).

Continue fertilization as needed to maintain a greenish algae bloom to a depth of 18 to 24 inches. Use the reduced fertilizer rate described in the April Management Tip of the Month.

If aquatic weeds are a problem and interfere with the use of the pond, identify the weed species (aquaplant.tamu.edu is a good resource). Then select the proper biological, mechanical or chemical control methods. Grass carp can be stocked where permitted.

If new or renovated, fertilized bass ponds were stocked with forage last fall, continue stocking largemouth bass fingerlings at the rate of 100 per surface acre. An alternative in such ponds is to stock forage (fathead minnows at 1,000 per surface acre and bluegill at least 3 inches long at 50 per surface acre) simultaneously with the bass fingerlings. In the Gulf States, existing bass ponds also can be stocked with 20 to 50 Florida bass fingerlings per surface acre to introduce the Florida gene into a native bass population. New or renovated catfish-only ponds can be stocked at the rate of 100 to 1,000 fingerlings per surface acre, depending on the feeding program to be used.

Deer

If food plots will be planted, establish them on 2 percent of your habitat base (2 of every 100 acres of habitat). Plant fewer and larger plots to reduce browsing pressure. Enclose the plots with wire so you can monitor deer use. Follow recommended seeding rates and planting procedures, including the inoculation of all legume seeds. Fertilize the plots according to soil test results (see Appendix 2).
If supplemental rations are fed as part of an intensive management strategy, begin offering protein supplements now, especially if there has been little spring rain or range conditions are below average.

**Ducks**

Continue to check wood duck nesting boxes and clean them out as necessary. If undesirable species such as cocklebur or coffee bean have sprouted, disk or temporarily reflood the area, or spot-treat the plants with herbicide. Continue the drawdown of 20 to 25 percent of moist soil areas. Disk areas where willow and other invasive brushy species are growing.

**Mourning Doves**

Plant grain sorghum or browntop millet seed by drilling at 10 to 20 pounds per acre.

**Quail**

Warm-season food plots of cowpeas, soybeans, corn, milo and millet planted in the spring will provide insects in the summer and seeds in the fall and winter.

Establish a call count route. At 1-mile intervals along the route, count all birds that are calling “bob-white” over a 2-hour period beginning at daylight. Conduct the count three times in May and compare the results with counts from previous years. (See Extension publication B-6173, “Counting Quail,” for complete instructions.)

If the spring has been dry, reduce the density of grazing livestock to conserve some of last year’s grass for nesting quail. Basketball-size clumps of bunch grasses every 15 feet make ideal nesting habitat.

**Turkeys**

Leave unmown strips 30 to 50 feet wide around hay fields to protect nesting habitat. Warm-season food plots of cowpeas, soybeans, corn and other grains planted in the spring will provide food in fall and winter. The insects these crops attract during the growing season are also an excellent source of protein for turkey poult.

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### Did you know...

that catfish populations are not self-sustaining if bass and bluegill are in the pond?

Although catfish readily spawn in farm ponds (beginning at 3 years of age), eggs and fry seldom survive because of depredation by bass and bluegill. To maintain catfish in a multi-species pond, they should be restocked every 3 to 5 years. Stock 50 to 150 8-inch or longer fingerlings per surface acre.

Threadfin shad and tilapia are susceptible to winterkill. If they are stocked as supplemental forages for bass, they may have to be restocked to maintain populations.

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### Management Tip of the Month

**Forages planted for deer should**

- produce at least 2,000 pounds of dry weight forage per acre,
- be plants the deer will readily eat,
- meet the nutritional needs of deer (at least 16% crude protein content in late summer), and
- be available when deer need them most (July/August and January/February).

Make spring plots larger and plant fewer of them to spread out the browsing pressure. In the fall, plant many small, cool-season plots at the rate of 1 acre per 100 acres of habitat.
Ponds

Largemouth bass have spawned and bluegill will continue spawning through September. You can verify the production of these two species by seineing shallow areas with a minnow seine. Look for the young of both species. Continue feeding bluegill and catfish all the floating ration they can eat in 10 to 15 minutes. Feed one to three times a day.

Log all fish caught into the angler catch records for PSD analysis.

Continue applying the reduced rate of fertilizer to maintain a greenish bloom to a depth of 18 to 24 inches.

Identify aquatic weeds and control them with biological, mechanical or chemical methods. Grass carp can be stocked this month if you have weed species that are susceptible to them. To prevent oxygen depletion, apply chemical weed control products to no more than 20 percent of the surface area at one time, with a 1-week interval between treatments.

Catfish will be spawning this month, but if bass and bluegill are present, most of their eggs and fry will be eaten. To eliminate undesirable fish, apply a product containing rotenone early in the month and restock the pond 2 to 3 weeks later.

If new or renovated, fertilized bass ponds were stocked with forage last fall, stock largemouth bass fingerlings at the rate of 100 per surface acre. An alternative in such ponds is to stock forage (fathead minnows at 1,000 per surface acre and bluegill at least 3 inches long at 50 per surface acre) simultaneously with the bass fingerlings. In the Gulf States, consider stocking existing bass ponds with 20 to 50 Florida bass fingerlings per surface acre to introduce the Florida gene into a native bass population. Stock new or renovated catfish-only ponds at the rate of 100 to 1,000 fingerlings per surface acre, depending on the feeding program to be used.
Deer

If food plots were not established last month, they can be established in early June if there is adequate soil moisture. Plant 2 acres of forages for every 100 acres of habitat. Make fewer and larger plots to spread out the browsing pressure. If you are feeding supplemental rations as part of an intensive management strategy, continue this month, especially if there has been little rain in early summer or the range condition is below average.

Ducks

Drain another 20 to 25 percent of moist soil areas and disk or burn to stimulate native plants such as smartweed and barnyard grass. Plant 70- to 120-day-maturing Japanese millet at 20 pounds per acre and fertilize it with 13-13-13 at 200 pounds per acre.

Quail

Conduct “dummy nest” counts to determine the effect of predators on nesting success. Create a dummy nest in a native grass clump every 50 yards along a 300-yard-long transect. Establish a total of five transects, resulting in 30 dummy nests. Place three chicken eggs in each dummy nest. Check each nest after 2 weeks and record the results. If 70 to 100 percent of nests are intact, nesting success is excellent. If 50 to 75 percent of nests are intact, nesting success is good. Nesting success is only fair if 25 to 50 percent of nests are intact, and it is poor if fewer than 25 percent are intact.

Also estimate the abundance of nesting cover. Count prickly pear or bunch grass clumps found within a 6-foot-wide strip along a 300-yard transect. If there are 50 or more clumps per transect, there is excellent nesting cover, while 35 per transect indicates average cover.

To estimate the abundance of predators, establish a scent station on every quarter section of land. Sprinkle flour inside a hoola hoop and place a fatty acid scent tablet in the center. On two consecutive mornings, check each station for predator tracks.

Mourning Doves

Use a chisel plow on wheat fields to maximize the number of seeds on the soil surface.

Did you know…

that quail hens will attempt to re-nest up to three times if their nests are disturbed or destroyed? Nesting success generally declines with each subsequent clutch of eggs, but it is not uncommon for hens to have multiple broods if nesting conditions are ideal.

Management Tip of the Month

Rotenone in a powdered or liquid form is used to kill fish so ponds can be restocked with desirable species. The recommended application rate for products containing 5% rotenone is 1 gallon of liquid formulation or 10 pounds of powdered formulation per acre-foot of water. Fish usually begin to die within an hour. Threadfin shad and grass carp are among the first species to die, while bullheads and gar are the most difficult species to kill. Rotenone can be applied throughout the summer. Wait 2 to 3 weeks for rotenone to dissipate completely before restocking.
**Fish**

Bluegill spawning will continue through September. Verify the reproduction of both bluegill and largemouth bass by seining shallow areas with a minnow seine and looking for the young of these species.

You should continue feeding bluegill and catfish. Offer all the floating ration they will eat in 10 to 15 minutes.

Log all fish caught into the angler catch record for Percentage Size Distribution analysis.

Fertilize the pond to maintain a greenish bloom to a depth of 18 to 24 inches.

Control aquatic weeds as necessary. If chemicals are used, treat no more than 20 percent of the surface area at one time and wait 1 week between treatments.

Apply a product containing rotenone to kill undesirable fish species in ponds that are to be restocked in the fall.

Small ponds that are intensively managed for catfish should be watched closely during periods of hot, still, cloudy weather to make sure oxygen is not depleted. Ponds should not contain more than 1,000 pounds of fish per surface acre during the summer. Do not stock fish this month to avoid heat-related stress.

**Ducks**

Drain an additional 20 to 25 percent of moist soil areas. Disk or burn to stimulate native plants such as arrowhead. Moist soil units or beaver ponds lowered by 18 inches can be planted in 70- to 90-day-maturing Japanese millet at 20 pounds per acre. Fertilize with 13-13-13 at 200 pounds per acre.

**Mourning Doves**

Chemically or mechanically kill selected trees 200 yards apart around the border of dove fields.
This will produce the dead snags that are the staging areas for birds entering the fields to feed.

**Deer**

Begin making observations of deer, and classify all sightings as bucks, does or fawns. If you are feeding supplemental protein, continue it this month.

**Miscellaneous**

Use binoculars to monitor acorn production on all oak species. If feral hogs are present, begin summer trapping before food supplies increase in the fall. If shelled corn fails to attract hogs to traps, try the following recipe: Place 100 pounds of shelled corn in a metal trash can with 5 pounds of sugar, a packet of yeast, and 3 to 4 packets of raspberry or strawberry gelatin. Cover the mixture with water. Place the lid on the can and set it in the sun for 2 to 3 weeks so the mixture will ferment. Stir the contents daily. Bait traps with the fermented corn mixture—but do not spill it on your clothes!

**Did you know…**

that farm ponds “turn over” every year? The water stratifies in the summer, with a warm, light layer on top and a cool, dense layer down deep. In the fall, the top layer slowly cools until it reaches the same temperature as the bottom layer. Then the two layers mix, or turn over. The only sign that a turnover is occurring may be organic matter floating on the pond surface or poor fishing for a few days. Turnovers also can occur suddenly during the summer if a cold wind and/or rain cools the top layer rapidly. Then the top layer mixes violently with the heavier bottom water. This can deplete oxygen and cause partial or total fish die-offs.

**Management Tip of the Month**

Pond owners can easily produce 1,000 pounds of edible-size catfish per surface acre per year in small farm ponds. Up to 1,000 6-inch fingerlings stocked in March or April will gain a pound of weight by November if they are fed six or seven times a week with a good-quality floating fish ration containing at least 28% crude protein. However, the total pounds of fish in the pond should never exceed 1,000 per surface acre in the hot months. Otherwise, oxygen depletion could be a problem.
Fish

Bluegill continue to spawn, providing bass with forage. Continue fertilizing to keep a greenish phytoplankton bloom to a depth of 18 to 24 inches.

Continue feeding bluegill and catfish daily, offering as much floating ration as the fish will eat in 10 to 15 minutes.

Log all fish caught into the angler catch records for Percentage Size Distribution (PSD) analysis (see Appendix 1 for details). Beginning this month, weigh all bass, in addition to measuring their total length, for a Relative Weight (Wr) analysis.

Identify aquatic plants that need to be controlled. If chemicals are used for weed control and if you want to preserve the fish population, treat no more than 20 percent of the pond surface area at one time and wait 1 week between treatments.

If a pond contains undesirable fish species, use a rotenone product to kill all fish in preparation for restocking in the fall.

Small ponds that are intensively managed for catfish should be watched closely during periods of hot, still, cloudy weather to make sure oxygen is not depleted. Ponds should not contain more than 1,000 pounds of fish per surface acre during the summer. Do not stock fish this month to avoid heat-related stress.

If you have too many pounds of catfish in your pond, it’s time for a fish fry!

Mourning Doves

Begin shredding strips through dove fields to create bare ground and provide feeding areas.

Ducks

Complete the draining of moist soil areas and/or disk and burn to stimulate native plants such as arrowhead. Moist soil areas or beaver ponds lowered by 18 inches can be planted in 70- to 90-day-matur-
Did you know…
that there are two general categories of oak trees? The white oak group (species that flower and fruit in the same year) includes the post, white, overcup and swamp chestnut oaks. The black or red oak group (species that flower one year and bear fruit the next) includes southern red oak, blackjack, willow and water oaks. To tell the two groups apart, look at the leaves. Members of the black oak group have bristle-tipped leaves. Maintaining a variety of species will increase your chances of having a good acorn crop each year. Protect older oaks (40 to 60 years old), the champion acorn producers. Acorns are relished by many kinds of wildlife.

Management Tip of the Month
If soil moisture is adequate, consider planting a combination of warm-season legumes (such as forage cowpeas) and cool-season small grains (rye, oats, wheat) and clovers (red or arrowleaf) for deer late this month or early next month. The warm-season plants will grow quickly and attract deer during the archery season. The cool-season forages will be available by the first frost and the clovers will last until late spring.

August

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<th>Sunday</th>
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Did you know…

Deer

Conduct a deer census using a spotlight count or an aerial count, if visibility is good enough (see Appendix 2 for instructions). Continue making incidental observations of deer, and classify all sightings as bucks, does or fawns. If you have offered a protein supplement, continue doing so this month. Order seed and fertilizer for fall food plots.

Quail

If grass is encroaching into sunflower fields, allow cattle to graze the fields to control grass.

Miscellaneous

If feral hogs are on the property, begin an intensive trapping effort before native food supplies increase in the fall. Using binoculars, continue monitoring the potential acorn crop.

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Quail

If grass is encroaching into sunflower fields, allow cattle to graze the fields to control grass.

Miscellaneous

If feral hogs are on the property, begin an intensive trapping effort before native food supplies increase in the fall. Using binoculars, continue monitoring the potential acorn crop.
**Fish**

Continue managing your pond as described for August. If you use rotenone to remove all undesirable fish, make the application early in the month so the pond will be ready for restocking beginning next month. Continue monitoring small, intensively managed catfish ponds to be sure oxygen isn’t depleted on hot, still, cloudy days. Keep the total weight of fish in the pond at less than 1,000 pounds per surface acre. Do not begin stocking fish unless the weather has cooled down. Fertilize as necessary to maintain a phytoplankton bloom to 18 to 24 inches.

**Deer**

Continue with deer censuses, either by spotlight or aerial counts. Supplement census data with counts from remote-sensing cameras if bucks are out of velvet (see Appendix 2 for details). Classify all deer seen as bucks, does or fawns. Begin formulating harvest quotas based on your management goals.

If you use corn feeders to attract deer, be sure the corn has a low aflatoxin content. If you feed a mixture of corn and a protein supplement, begin doing so this month.

If there is enough soil moisture, begin planting cool-season food plots. Plant at least 1 percent of the land base (or 1 acre for every 100 acres of habitat) in small grains and cool-season legumes. Plant many small plots to maximize edge and encourage more deer to use them. Place wire enclosures around the plots so you can monitor their use (see Appendix 4).

Set up stands and make necessary repairs. Trim brush and limbs for good visibility and to provide shooting lanes.

**Quail**

Conduct roadside counts by driving a predetermined route and counting all quail observed along
the route. Repeat the count at least three times and compare the information to data from previous years.

**Mourning Doves**

Continue shredding strips through dove fields to create bare ground and create feeding areas. Leave a 10-foot-wide strip of unharvested grain around field perimeters. If not already present, add some native sunflower seed to fall-planted small grains.

Mow areas along pond shorelines to improve access to water.

Collect the crop contents from harvested birds to identify important seeds they are using as food.

Do not hunt doves on properties where deer feeders are in use or you might violate baiting regulations.

**Turkeys**

Cool-season plantings of small grains and clovers are normally established for deer, but they will also provide food for turkeys during the cold weather stress period from January to spring green-up.

**Ducks**

Continue to catch rainfall in moist soil units. Go teal hunting in special early seasons.

**Miscellaneous**

If feral hogs are a problem, intensify your trapping efforts before acorns begin to fall.

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**Did you know...**

that Texas hunters and landowners feed about 300 million pounds of shelled corn to wildlife every year? By law, corn sold as wildlife feed cannot contain more than 50 ppb aflatoxin (a toxin that occurs in certain crops during drought years). However, most companies in Texas offer a product that contains no more than 20 ppb aflatoxin—the same level deemed safe for dairy cattle and human consumption. That is particularly important where quail and turkeys are also using corn feeders, because their small size and physiological makeup makes them more susceptible to aflatoxin.

**Management Tip of the Month**

Remote-sensing cameras are a great way to photograph bucks and estimate the pre-season buck:doe and doe: fawn ratios. Once bucks are in hard antlers, set up one camera per 160 acres. Place them at feeders or corn bait piles and monitor them for 14 days. This technique tends to underestimate the number of does and fawns present, but is more accurate for estimating the number of bucks present. Post-season counts are better indicators of the doe:fawn ratio and a good way to confirm the presence of those post-rut bucks you spent so many hours searching for during the previous hunting season (see Appendix 2).
**Fish**

Stop fertilizing ponds as cool weather arrives. Continue feeding bluegill and catfish, although feeding may be affected by cold fronts that lower the water temperature.

Log all fish caught into the angler catch records for PSD and Relative Weight (Wr) analysis (see Appendix 1 for details).

Chemical control of aquatic plants should end this month, but identify problem weeds now so you’ll be ready to control them next spring. Grass carp can be stocked (by permit) if susceptible plants are in the pond.

Stock new or renovated bass ponds with forage species such as fathead minnows and bluegill at 1,000 each per surface acre. If you’d like to add catfish to a bass pond or lake, stock channel and/or blue catfish (8 inches or longer) at a rate of 50 to 100 per surface acre every 3 to 5 years. If you have native or northern bass, consider stocking Florida bass fingerlings at 20 to 50 per surface acre to add the Florida gene to the population.

**Deer**

Complete the spotlight or aerial counts and continue making incidental observations (classifying deer as bucks, does or fawns). Also continue using remote-sensing cameras if hunting has not begun.

Continue feeding corn with low aflatoxin content. Protein supplementation can be discontinued or restricted until spring.

If cool-season food plots were not planted in September, plant them this month. Plant 1 acre of small grains and cool-season legumes for every 100 acres of habitat. Plant many small plots.

Continue setting up and repairing stands, and trimming brush and limbs for good visibility. Participate in the archery season and other early hunting seasons.
Turkeys

Begin supplemental feeding with milo and corn.

Ducks

Flood one-third of moist soil units and diked crop (i.e., rice) acreage to 10 inches. Repair and brush duck blinds.

Quail

Begin feeding milo and corn. Conduct covey call counts for 20 minutes per day beginning 45 minutes before dawn. Record the number of different covey calls you hear and compare these numbers to data from previous years.

Mourning Doves

Delay field preparation (deep plowing) until late this month so that some grain residue will remain. Continue shredding strips through dove fields to create bare ground and feeding areas. Leave a 10-foot-wide strip of unharvested grain around the field perimeters. Include native sunflower seeds with small grains planted at this time.

Do not hunt properties where there is supplemental feeding of deer, turkey or quail to avoid violating baiting regulations.

Miscellaneous

If there are few good den trees for squirrels, install nest boxes to create additional denning sites. Nest boxes should 10 inches wide x 10 inches deep x 24 inches tall. There should be one entry hole, 3 inches in diameter, near the top on one side. The box top should be a solid board but the floor should be made from ½-inch wire mesh. Place nest boxes in trees that are at least 10 inches in diameter. Boxes should be at least 20 feet above the ground and should rest on limbs if possible. The box opening should be next to the tree trunk, not facing away from it. Add leaves to the bottom one-third of the box to make it more squirrel friendly.

**Did you know...**

that land currently taxed as agricultural land in Texas, and that has been in agricultural or timber production for 5 of the last 7 years, can keep its agricultural tax rate if the owner changes its use to wildlife management? A management plan must be filed with the local tax appraiser. The plan must include at least three of the following practices to manage wildlife for human use (including food, medicine or recreation):

- habitat control
- erosion control
- predator control
- census counts of populations
- supplemental water
- supplemental food
- supplemental shelter

**Management Tip of the Month**

Be sure to relocate supplemental feeders every year. Moving the feeders just 20 to 30 feet from last year’s location helps reduce the transmission of diseases and parasites. If turkeys are present, place the feeders in open areas so predators such as coyotes and bobcats can’t easily ambush the birds.
Fish

Fish activity will slow as water temperatures cool. Feed bluegill and catfish only on warm afternoons. Log all fish caught into the angler catch records for PSD and Relative Weight (Wr) analysis (see Appendix 1).

Stock new or renovated bass ponds with forage species such as fathead minnows and bluegill at 1,000 each per surface acre. Bass ponds also can be stocked with 8-inch or longer channel or blue catfish at a rate of 50 to 100 per surface acre. Catfish should be restocked every 3 to 5 years. Stock Florida bass fingerlings at 20 to 50 per surface acre to introduce the Florida gene into the population.

Stock grass carp for weed control if you have a permit.

If a siphon tube is in place, begin drawing down bass lakes to 2 to 4 feet below full pool. This will make forage fish more accessible to the bass. Drawdowns also expose submerged vegetation to winter temperatures, which helps with weed control. Plant exposed areas by broadcasting rye grass seed at 20 pounds per acre. This will provide good nursery habitat for young fish when the areas are reflooded next year.

Deer

Go deer hunting!

Continue observing deer and recording the number of bucks, does and fawns seen through the opening weekend of deer season. Continue to feed corn, making sure it has been tested and meets the requirements for aflatoxin content.

Collect harvest data for all deer harvested. This includes age, sex, dressed weights, lactation status and antler measurements.
Ducks
If a hard freeze has occurred, flood greentree reservoirs 2 to 3 feet deep. Flood another one-third of moist soil areas and diked crop areas to 10 inches.

Quail
Maintain records of the quail harvested and the age of the birds. Collect the crop contents from harvested birds to identify the seeds they are consuming.

Mourning Doves
Disk fallow fields to stimulate native sunflowers.

Turkeys
Continue supplemental feeding with corn and milo.

Did you know...
that the wings of bobwhite quail can indicate reproductive success? Examine the feathers called the primary coverts. They are located in the outer portion of the top of the wing toward the leading edge. If the tips of these feathers are somewhat pointed and buff in color, the quail is a juvenile or a young of the year. In adults, the primary coverts are usually more rounded and uniformly gray. A ratio of three or more juveniles per adult harvested indicates that it was a good year for quail reproduction.

Management Tip of the Month
Begin “painting an antler picture” of the various age classes of bucks on the property you hunt. Take a photograph of all bucks harvested and mark each with its age (from jawbone measurements) and antler measurements. Post the photos on a bulletin board. Over time, you will be able to use your age data to help identify younger bucks. If increasing your buck herd age structure is important, the data can help you protect younger age classes of bucks so they have time to mature to their full antler potential.
December

**Fish**

Feed bluegill and catfish only on warm, sunny afternoons after a day or two of mild weather. Stop using automatic feeders to feed catfish and/or forage species.

Log all fish caught into the angler catch records for PSD and Relative Weight (Wr) analysis.

Continue to stock channel or blue catfish (at least 8 inches long) in bass ponds at a rate of 50 to 100 per surface acre. Stock Florida catfish at a rate of 20 to 50 per surface acre to introduce the Florida gene.

Stock grass carp (by permit) if required for weed control.

Keep pond levels at 2 to 4 feet below full pool to concentrate forage fish and kill submersed shoreline vegetation. Continue seeding exposed areas with ryegrass at 20 pounds of seed per acre.

If double-crested cormorants are depleting the fish population, obtain a permit from the Texas Parks and Wildlife Department and begin controlling them.

**Quail**

Keep records on the age of birds harvested. Examine the crop contents to learn what seeds quail are eating most, and continue supplementing natural foods with corn and milo.

**Turkeys**

Continue the supplemental feeding of corn and milo.

**Mourning Doves**

Disk fallow fields to stimulate native sunflowers.

**Deer**

Continue feeding corn that has been tested for aflatoxin and meets the requirements for aflatoxin content.
Collect harvest data (age, sex, dressed weights, lactation status and antler measurements). Photograph all deer harvested and mark the photos with the date and harvest data.

If small grain (oats, wheat, rye) food plots show signs of yellowing, top-dress them with 300 pounds of 34-0-0 (or equivalent) per acre.

**Ducks**

Wait until after the first hard freeze, then flood greentree reservoirs to 2 to 3 feet deep. Flood the remaining moist soil units and diked crop acreage to 10 inches.

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**Did you know...**

that the double-crested cormorant, which used to migrate from the Great Lakes to winter in the south, now calls Texas home? Each winter morning, thousands of these fish predators (also known as water turkeys) fan out across public and private lakes to eat fish all day long. Until recently, landowners had little recourse because the birds were under federal protection as a migratory species. Now, however, a landowner can request a permit from the Texas Parks and Wildlife Department to control cormorants that are depleting fish populations.

**Management Tip of the Month**

Turkeys may benefit from having supplemental feed during the fall and winter. To build a turkey feeder, erect a 5-foot x 8-foot platform 5½ feet above the ground. Attach a 2-foot-wide skirt of aluminum flashing around the outer edge of the platform to keep out raccoons. Place a barrel-type or wooden box feeder on the platform. Turkey feeders should be in open areas away from brush where predators could hide. Feed offered to turkeys should be free of aflatoxin.
Appendix 1: Fish Management

Interpreting Angler Catch Data

**Percentage Size Distribution (PSD)**

The Percentage Size Distribution (PSD) is a way to assess fish populations using angler catch records. Here’s how to do it.

For largemouth bass:

- Record the total lengths of all bass caught throughout the year while fishing with different size lures (1- to 2-inch, 2- to 4-inch and 4- to 8-inch) to sample all sizes of bass in the pond. Ideally, anglers will fish each lure type for 30 minutes each on every trip until a minimum of 20 bass 8+ inches long are caught.

- Divide the number of largemouth bass caught that are at least 12 inches long by the total number of bass caught. (A number of fishing trips may be required to catch enough bass this size to make the calculation.)

- Multiply this number by 100 to get the PSD. For example, if 40 largemouth bass more than 8 inches long were caught but only 10 were at least 12 inches long, the largemouth bass PSD would be 25 percent.

- A bass PSD of 40 to 70 percent is desirable. You would also like for 25 to 33 percent of the bass you catch to be at least 15 inches long. If your bass PSD is too low, it may be a sign of poor water quality, lack of forage, too much aquatic vegetation, or too many small bass. An overabundance of 8- to 12-inch bass is a common problem because too few small bass are harvested and removed. Removing 15 to 20 of the 8- to 12-inch bass per surface acre per year is a good idea because it makes more forage available for the growth of remaining bass.

For bluegill:

- Catch at least 100 bluegill with appropriate bait(s) using a #8 size hook. This may require several fishing trips.

- Divide the number of bluegill caught that are at least 6 inches long by the total number caught.

- Multiply this number by 100 to get the PSD. For example, if 120 bluegill were caught and 80 of them were at least 6 inches long, the bluegill PSD would be 66 percent.

- A bluegill PSD of 40 to 60 percent is desirable. If the bluegill PSD is higher than 80 percent, it is possible that bass are becoming overcrowded and exerting too much pressure on the bluegill population.

<table>
<thead>
<tr>
<th>Stunted or overcrowded bass and large bluegill.</th>
<th>Optimum situation (but temporary).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harvest more 6-inch+ bluegill and more 8- to 12-inch bass.</td>
<td>Harvest large bluegill. Release 12- to 15-inch bass.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Harvest more 8- to 12-inch bass but release 12- to 15-inch bass and all bluegill.</td>
<td>Release 12- to 15-inch bass (1/4 to 1/3 of bass should be &gt; 15 inches.)</td>
<td>Low bass recruitment. Poor bluegill growth. Bluegill-bass competition.</td>
</tr>
</tbody>
</table>

**Possible habitat problems.**


**Possible bluegill overcrowding.**

- Release 12- to 15-inch bass. (1/4 to 1/3 of bass should be > 15 inches.)

**Balanced pond.**

- Release 12- to 15-inch bass.

**Low bass recruitment. Poor bluegill growth. Bluegill-bass competition.**

- Release 12- to 15-inch bass.
Once the largemouth bass and bluegill PSD values have been calculated, consult the chart above to determine the relationship of the two population structures. Find the bluegill PSD value on the y (vertical) axis and then draw a straight line across the chart from that point. Plot the largemouth bass PSD value on the x (horizontal) axis and draw a line upward through the chart from that point. The point (or cell) where the two lines intersect gives you information about the size structure relationship between the two species and recommends management strategies to follow.

Using the previous examples of a bass PSD of 25 percent and a bluegill PSD of 66 percent, the point at which the two lines intersect is in the upper left cell on the chart. The interpretation would be “Stunted bass and large bluegill.” The corrective measure would be “Harvest more 6-inch + bluegill and more 8- to 12-inch bass.”

**Relative Weight – Largemouth Bass**

Another handy fish population index is Relative Weight (Wr). This index compares the weight of bass in a pond at a given length to a standard weight for that length. If fish are consistently less than 95 percent of the standard, the situation should be corrected. For this technique to be useful, very accurate total lengths and total weights of fish must be measured. In fact, total length should be measured to the nearest $\frac{1}{10}$ of an inch and total weight to the nearest $\frac{1}{10}$ of a pound. The proper way to measure the total length of a fish is from the tip of the closed mouth to the tip of the compressed tail. To avoid bias from pre-spawn or post-spawn fish, Relative Weights should be calculated only for those fish caught from August through December. Using fish caught at other times of the year will give false readings on the health of the bass population.

To find the Relative Weight of a largemouth bass, use the table. First find the length of the fish, in whole inches, in the left column and then read across the row to the column representing the nearest tenth of an inch. The number where the top row and left column coincide is the standard weight for that length. For example, the standard weight of a 17.5-inch bass would be 2.997 pounds (see asterisk).

Now calculate the Relative Weight (Wr) as follows:

$$ \text{Wr} = \frac{\text{actual weight}}{\text{standard weight}} \times 100 $$

For example, if a 14-inch largemouth bass caught in September weighed 1.45 pounds, the calculation of Wr would be as follows:

$$ \text{Wr} = \frac{1.45}{1.47} \times 100 $$

$$ \text{Wr} = 98.6 \text{ percent} $$

The Relative Weight (Wr) of this fish is acceptable because it is at least 95 percent of the standard weight.

Average the Wr’s for bass 8 to 12 inches, 12 to 15 inches, and 18+ inches for more detailed information on fish by length class.

To improve Relative Weights, examine water quality and fertility, the composition of forage species, the amount of aquatic vegetation in the pond, and the abundance of small bass. This should help you decide what corrective steps to take.

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<th>0.4</th>
<th>0.5</th>
<th>0.6</th>
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Releasing Fish to Fight Another Day
The concept of “catch and release” fishing easily spread from over-fished public waters to mostly under-fished private waters. In most cases it is a mistake. In well-managed ponds, fish must be removed to maintain a healthy balance between predator and prey. However, under certain management strategies, the angler and pond owner may find it advantageous to release certain sizes and species of fish to fight another day. Here are some tips for increasing their survival.

- Land the fish as quickly as possible. Exhausted fish become stressed and are more susceptible to disease and predation.
- If possible, remove the hook from the fish while it remains in the water.
- Use needle nose pliers to remove hooks. A “swallowed” hook should be clipped free and left in the released fish.
- Wet your hands before handling a fish.
- If a net is used to land the fish, use one with small, soft mesh and wet the mesh thoroughly before it comes in contact with the fish.
- Lift the fish out of the water vertically by grasping the lower jaw. To hold the fish horizontally, support its weight in front of the tail with your free hand.
- Don’t keep the fish out of water for more than 30 seconds if at all possible.
- If fish are held in a boat’s live well:
  ◦ Exchange the water frequently to reduce ammonia and add oxygen by aeration if fish are held for a long time.
  ◦ Avoid holding fish in the summer if they will ultimately be released.
  ◦ Add 1/3 cup of livestock salt per 5 gallons of live well water to reduce fish stress.
  ◦ Add a commercial fish calmer to reduce stress and reduce oxygen consumption rates.

The Top Ten Mistakes Pond Owners Make
Are you “guilty” of these infractions? Try to eliminate these mistakes as you manage your pond for better fishing!

10. **Stocking your pond with wild fish.** Many pond owners decide to supplementally stock their ponds with fish from another pond or reservoir. This often results in an imbalance between the forage and sportfish populations, which can lead to poor fishing. Besides, you never know if those wild fish you are bringing in are host to a disease or parasite pathogen. Stick with farm-raised sport and forage fish. You won’t regret it in the long run.

9. **Stocking more bass when bass fishing is already poor.** A common knee-jerk reaction to poor bass fishing is to stock more bass. In reality, if something is keeping the existing bass population from performing well, stocking more bass will only complicate the situation. Determine what the limiting factor is, then work to correct it! The only time additional bass should be stocked on top of an existing bass population is for genetic purposes (e.g., stocking the subspecies of Florida bass into a native bass population to produce trophies).

8. **Harvesting improperly.** Yep, you know who you are! You go out there on a pretty spring afternoon and over-harvest your bass. You have removed too many pounds of bass in too short a period of time and this causes an imbalance between the bass and forage. The result is stunted and overpopulated forage species and a pond full of trotline bait! Remember that a bass filleted at 5 pounds seldom reaches 10 pounds. So if your goal is trophy bass, harvest selectively but don’t release all the smaller fish you catch. What about you catfish producers? You may stock heavily and feed heavily, both of which are OK, but then fail to harvest enough fish to keep the total weight of fish present below 1,000 pounds per surface acre during the warm months. The stage is set for an oxygen depletion to occur. When you start recognizing and naming individual fish as they come up to feed, it’s way past time for a fish fry!

7. **Failing to properly identify weeds before you attempt control.** It’s easy to think there is “scum,” there is “moss,” and everything else is a “weed.” But herbicides and triploid grass carp are not cheap, so make sure you know what plants you need to control so you can choose the most effective methods. Many pond owners waste lots of cash each year by guessing at the species of weeds they want to control.

6. **Managing for bass in a muddy pond.** This is a classic mistake. Remember, bass are sight-feeding predators and need 10 to 12 inches of visibility throughout the year to find their prey. Bass in water the color of peanut butter are usually in poor condition. Take steps to clear the pond, or stock it with species that will do well in muddy water, such as blue or channel catfish.

5. **Stocking hybrid sunfish as bass forage.** Hybrid sunfish are the result of crossing two sunfish species, usually bluegill and redear sunfish or green sunfish. These crosses greatly skew the male-to-female ratio (95 percent may be males) and cause inadequate forage production. The result will be poor bass growth and condition. DO NOT stock hybrid sunfish in a bass lake! DO make sure that either the native bluegill or coppernose bluegill is the basis of your forage population. Other forage species (e.g., redear sunfish, threadfin shad, tilapia) can supplement the bluegill, but none can match its forage production capabilities.

4. **Improperly aerating the pond during an oxygen depletion.** Pond owners who see their entire fish population up on the pond’s surface gasping for air go into panic mode. A common mistake is to hook up a pump and pull the cooler deep water from the pond bottom and spray it back over the surface. This is the
poorest quality water in the pond and may add to the problem rather than solve it. If you need to aerate your pond on an emergency basis, set the intake of the pump near the pond surface and spray the water back over the top.

An even better technique is to trailer a boat into the water and run it in place at a low speed to circulate the pond and bring more water into contact with the air at the surface. Remember, the oxygen level is always lowest just before daylight and a depletion may be compounded by cloudy, windless weather or having too many pounds of fish during the summer months.

3. **Fertilizing ponds that already have a weed problem.** The rumor that you can fertilize your weeds to kill them persists throughout Texas and the southeast. It’s true that a proper fertilizer program increases the phytoplankton and gives the water a greenish hue, which can block out sun and prevent submerged weeds from getting started. However, if the vegetation is already growing before you fertilize, it will effectively compete for the nutrients in the fertilizer and the result may be an increased population of healthy weeds!

2. **Failing to have pH and total alkalinity tested.** This applies only to pond owners whose ponds are on acid soils. Low pH and alkalinity will hamper fish production no matter how much your pond cost to build or how much you spent on your fish. Have a water sample tested and apply agricultural limestone if required.

And the Number One mistake pond owners make:

1. **Failing to keep harvest records.** How are you going to know what to harvest if you don’t know what you have? Even if the barn needs painting, the cows need worming and the pasture needs mowing, you must go fishing and keep catch records to determine the size structures of the species in the pond. This allows you to keep track of which and how many fish should be harvested using Percentage Size Distribution and Relative Weight. And the best thing about harvest records is—they cost you nothing!

Remember, good fishing is the result of good fish populations, so make the most of your management efforts by avoiding these common mistakes!
Appendix 2: Deer Management

Conducting a Deer Census

Biologists often refer to deer populations or densities in terms of “acres per deer” or “deer per square mile.” These data come from conducting censuses. A census is not an absolute count of the deer on your property, but an estimate. By conducting your census in the same way, at the same time of year, and under the same conditions year after year, you can determine long-term trends in the population and will know whether the population is increasing, decreasing or remaining stable. More importantly, census data (along with harvest data) helps you establish your management plan. There are two common methods of conducting a deer census. To be effective, both require that bucks be in hard antler.

Spotlight census. The spotlight census is done at night in pre-season (September or October) and again in post-season (January or February) but before antler casting. It works best with a driver and two observers stationed in the back of a pick-up truck. The observers have hand-held spotlights and each observes one side of the route. The driver drives an established route through all types of habitat found on the property. The visibility every 0.10 mile can be estimated beforehand, or it can be done during the census by having the observers take turns estimating how far they can reliably see deer at right angles to the truck out to a maximum of 200 yards. The visibility distance at each 0.10 mile is recorded. The driver records the length of the route, using the truck’s odometer. As the route is driven, the observers record all the deer sighted as bucks, does, fawns or unidentifiable.

When the census is completed, the length of the route is multiplied by the average width of the visibility strips and this number is converted to acres.

For example: If the average strip width was 94 yards on the left side of the truck and 117 yards on the right side, the total average strip width would be 211 yards. If the route was 3 miles long, the area covered would be 230 acres. (Total average strip width in yards x yards in a mile x miles in the route) ÷ square yards in 1 acre = acres covered

\[(211 \times 1760 \times 3) \div 4,840 = 230 \text{ acres}\]

If 36 deer were observed along the route, there would be 6.38 acres per deer.

\[(230 \text{ acres} \div 36 \text{ deer}) = 6.38 \text{ acres per deer}\]

NOTE: Check your state game and fish regulations to be sure spotlighting deer is legal. Even in states where it is legal, contact your game warden or conservation officer before conducting a spotlight census.

Camera count. Remote-sensing cameras are often used to obtain estimates of deer populations. Cameras are set up for 14 days, with one camera for every 160 acres. They should be evenly spaced across the property. Counts are made in September or October and again in January or February before antler casting. Piles of corn or automatic feeders attract deer to the camera sites. As the pictures are reviewed, deer are classified as bucks, does or fawns. The pictures of bucks are re-examined to determine the number of different bucks photographed.

The doe:buck ratio and the fawn:buck ratio are determined. These ratios are then multiplied by the number of individual bucks observed to estimate the number of individual does and fawns observed. The number of bucks, does and fawns are totaled to estimate the deer population in acres per deer.

For example: Photographs collected over a 14-day period on a 1,000-acre property revealed 29 bucks, 79 does and 51 fawns. Examination of the 29 buck photos revealed that there were eight individual bucks.

\[\text{Doe:Buck ratio} = 79 \div 29 = 2.72 \text{ does per buck}\]
\[\text{Fawn:Buck ratio} = 51 \div 29 = 1.76 \text{ fawns per buck}\]

Deer density = 1,000 acres ÷ 44 deer = 22.7 acres per deer

Aging White-Tailed Bucks in the Field

If you want to increase the age structure of a buck herd, an important management skill is being able to age bucks before a harvest decision is made. After all, the easiest way to double a 1½-year-old buck’s antler score is simply to let him grow 1 year older! Careful field judging also can prevent the harvest of buck fawns, which is important if protecting future bucks is a goal.

½ year of age (5- to 8-month-olds). Buck fawns are often the first antlerless deer seen because they are less wary. A clear view from the side with good optics will reveal the presence of pedicels or antler bases covered with skin. A buck fawn’s head is flatter on top than a doe fawn’s head. Both buck and doe fawns have short noses and their body shape is square as compared to the rectangular shape of adult deer.
1½ years of age. Yearling bucks look somewhat like does with antlers. Their legs are long and thin and they lack muscle development in the neck. The hindquarters look thin and the rump is slightly higher than the shoulders. The waist arrow is narrow. The skin on the face and neck is taut. Bucks of this age will appear submissive in the presence of older bucks. The inside spread of antlers is inside the ear tips in an alert position.

2½ years of age. The buck’s neck is more developed than in yearlings, especially during the rut. The legs still appear rather long for the size of the body. Hindquarters have a more angular and “filled out” appearance. The skin on the face and neck remains taut. The brisket area appears thicker or wider than the neck.

3½ years of age. The body is more filled out and the neck becomes heavily muscled during the rut. However, there is a clearly discernable juncture where the neck meets the shoulders. The chest appears deeper than the hindquarters, which have become more rounded than the 2½-year-old’s. The brisket is much more pronounced. Antler inside spread may meet or exceed the distance between ear tips in the alert position.

4½ years of age. Bucks of this age class are considered to be physically mature. The neck is fully muscled and blends smoothly into the shoulders. The waistline has become as deep as the chest. The legs appear to be in proportion to the body or slightly short compared to the body. The hindquarters are fully developed.

5½ to 6½ years of age. Bucks of this age have reached their peak. The neck remains heavily muscled during the rut. The belly and the back appear to sag. The face skin may appear to be wrinkled and the eyes are not as round as in younger age classes.

7½ years of age and older. These bucks move in a deliberate fashion. Loose skin is evident on the face and neck. The bucks may have swayed backs and “potbellies.” Antler size should begin to show signs of decline from previous years.

Aging deer in the field is not an exact science, but practice can help you protect your bucks, which improves antler quality.
Aging Deer Using the Tooth Wear and Replacement Model

Deer biologists encourage landowners and hunters to record the ages of all bucks and does harvested to glean important management information. Why age deer? A major reason is to correlate age with field-dressed body weights. With proper population and habitat management, the landowner should see, over time, an increase in field-dressed body weights by age class. For example, if the field-dressed weights of 1½-year-old bucks averages 70 pounds at the beginning of a management program and increases to 80 pounds a few years later, the manager knows that strategies for managing habitat and/or population are having a positive effect. These same data are charted over time for bucks and does at all other age classes as well.

The technique of examining tooth wear and replacement used today was developed in 1949 by C.W. Severinghaus. By this method, deer are aged ½, 1½, 2½ years and so on because they are born during the spring/summer and harvested during hunting seasons that occur some 6 months later in the fall/winter.

Like other mammals, deer wear their teeth down as they chew their food. Soft parts of the teeth (brownish colored dentine) tend to wear more quickly than the harder, whiter, outside parts (enamel) of the teeth. In large herbivores such as deer and elk, teeth wear down in a predictable manner. To age a deer by its teeth, the width of the dentine layer is compared to the width of the enamel layer along the tooth ridge adjacent to the tongue (also known as the lingual crest). The rate of tooth wear can vary among geographical areas because of different vegetation and soil types, so the method is not 100 percent accurate. However, biologists have fine-tuned the criteria for assigning age to individual deer to make this a very useful method.

But which teeth should be used for determining the age of white-tailed deer? Since deer grow, shed and replace their front teeth by 7 months of age, examining these teeth would provide only limited information. The lower jaw teeth have the most predictable wear patterns and, therefore, can be correlated to age.

The white-tailed deer is born with three lower jaw teeth on each side. At about 18 months of age these teeth are shed and replaced by three permanent teeth called premolars. Over time, three additional permanent teeth (molars) are added behind the premolars. Therefore, any deer at least 18 months of age should have six jaw teeth per side. If only four or five teeth are present, the deer is a fawn (approximately ½ year old).

If six jaw teeth are present, the next step is to determine if the deer is 1½ years old or older. Examine the third jaw tooth (premolar) from the front and the sixth (back) tooth or molar. If the third tooth has three cusps and is badly worn (indicating that the three premolars have not yet been replaced with permanent molars) or if the sixth tooth is not fully erupted, the animal is 1½ years old.

However, occasionally a 1½-year-old deer will have a third tooth with only two cusps, which means the permanent tooth has come in. If that two-cusped third tooth is much whiter than the fourth tooth and the sixth tooth is not fully erupted, the deer is still only 1½ years old.

If the third tooth has two cusps, is the same color as the fourth tooth, and the sixth tooth is fully erupted, the deer is at least 2½ years old. If the deer is 2½ years old, the back cusp of the sixth tooth will be sharp and pointed and the enamel will be wider than the dentine along the lingual crests (inside ridge of the tooth) of the fourth, fifth and sixth teeth.
At 3½ years of age, the dentine on the fourth tooth is as wide as or wider than the enamel and its lingual crest is blunt. On the fifth tooth, the dentine is not wider than the enamel. The sixth tooth’s back cusp is beginning to wear.

At 5½ years of age, the lingual crest of the fourth tooth is worn away and only a small amount of dentine remains in its center. The lingual crest is beginning to round in the fifth tooth and is becoming blunt in the sixth tooth. The dentine in the sixth tooth is now wider than the enamel, as it is in the other teeth.

At 7½ years of age, the fourth and fifth teeth are worn smooth and have a dished out appearance. Only a small enamel ridge remains in the center of the sixth tooth.

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At 4½ years of age, the lingual crest on the fourth tooth is blunt and the dentine along the lingual crest is twice as wide as the enamel. The dentine on tooth five is wider than its enamel and the back cusp of the sixth tooth is badly worn.

At 6½ years of age, the fourth tooth (oldest of all jaw teeth) is worn smooth and the enamel ridge in the center of the tooth is gone. The enamel ridges in the centers of the fifth and sixth teeth are worn but still visible. Bucks of this age are fully mature and likely carry their largest (highest scoring) set of antlers.

Studies have shown that teeth may not wear at the same rate on a deer’s left and right jawbones. Errors are easy to make, particularly when aging older deer. Some biologists maintain that it is most important to be able to differentiate deer into only three classes: fawns, 1½-year-olds and 2½-year-olds and older. Nevertheless, if the management goal is to increase buck population age structure and decrease doe population age structure, all deer harvested should be carefully aged by the tooth wear and replacement method.

More detailed information on aging deer by tooth wear and replacement can be found in Extension publication B-1453, “Determining the Age of a Deer.”
Test Soil Before Planting Supplemental Forages

Whether you intend to supply supplemental forages for turkey, quail, waterfowl or deer, careful planning before you plant can help ensure success. This is why a soil test is especially important. The soil test is the best measure of the soil’s inherent fertility. It is also cheap insurance when it comes to plant health and maximum crop production.

Mineral nutrients are removed by plants during the growth process; therefore, a soil test every 3 years is the best way to determine the fertility level of your food plot.

Soil pH directly affects nutrient availability. Some plants grow well over a wide range of soil pH, but most supplemental forages perform best in a pH range of 6.0 to 7.0. Lime is used to correct low pH. A soil test also tells you the amount of fertility needed to maintain optimum growing conditions for a specified crop. This reduces the waste caused by guessing at fertilizer formulations and rates.

To have your soil tested:

- Take a sample from 10 areas across each food plot by removing a 1-inch-wide slice of soil to a depth of 6 inches. Clear away litter from the surface only. Take separate samples from areas with different soil types or terrain.
- Do not sample gullies, terraces, waterways or other unusual areas.
- Mix the samples from each plot together thoroughly and collect about 1 pint of the mixture for analysis.
- Collect one composite sample per food plot or for every 10 acres.
- Allow the sample to air-dry before sealing it in a soil sample bag. These bags, along with shipping instructions and a test form, are available from your county Extension agent.
- On the form, specify the crops you intend to plant so fertility recommendations can be tailored to your needs.

- If you suspect that limestone is needed, sample the plot 6 months before the planting date so limestone can be disked into the soil well in advance.

**The Top Ten Mistakes Deer Managers/Hunters Make**

In Texas and the Southeast, the deer hunter and the deer manager have become one. Are you guilty of any of the following infractions? Remember, deer management is a mix of manipulating the age, nutrition and genetics of a deer herd. The exact mix is more art than science, and varies between any two individuals and properties. Recommit yourself to improving your deer habitat, deer hunting and deer experiences by eliminating these errors!

1. **Failing to follow the basic safety rules.** Do you go through the 10 Commandments of Hunter Safety? Many elevated hunting stands would make OSHA cringe, so inspect them annually and make repairs as needed. Do you wear that

2. **Improperly managing supplemental forages.** Many landowners, managers and hunters choose to supplement their deer herds, but how many are committed to getting the most out of the investment? If you plant supplemental forages, does their production, quality, availability and acceptance by deer mesh with the warm- and cool-season stress periods in your region? Remember, supplementation solely to increase the deer population is a risky venture at best. The extra mouths produced could place extra pressure on the habitat. So supplementation comes with the weighty responsibility of managing total deer numbers to prevent long-term damage to the habitat.

3. **Failing to control deer numbers.** It’s easy to forget that the by-product of any successful habitat management technique is an increased number of deer. If the deer population did not increase in response to a habitat manipulation technique, the effort did not work! Understand that habitat manipulation and supplementation will result in more deer. Careful record keeping and a keen eye on the habitat will be necessary to determine when more deer becomes too many deer. Be proactive and have a harvest strategy in place that will allow you to remove enough animals from the range before a real problem develops.

4. **Failing to establish achievable goals.** Are you trying to manage for trophy bucks on 1,000 acres surrounded by heavy hunting pressure? Is the prevailing land use (e.g., livestock management, timber production) integrated with the deer management program? If deer are simply a by-product of the land requiring no management effort, your goals may not be achievable. Establish reasonable goals that foster buy-in from all concerned.

5. **Failing to collect and properly interpret census and harvest records.** Do you go through the effort of collecting census data and harvest data (including ages, weights, antler measurements, lactation status, etc.), then cast it all aside and forget about it? The only thing worse is to not collect the data at all. Use your census data to determine what the harvest should be during the upcoming season. The harvest data will help you determine whether you are moving toward your goals.

6. **Harvesting button bucks.** The one thing most hunters fear is that they will mistakenly shoot a “button buck” while trying to harvest a doe. Unrestricted harvest of buck fawns means fewer bucks in future years. A good set of binoculars and a view from the side is the only sure way to avoid this mistake.

7. **Restricted harvest of buck fawns means too many does.** If you determine whether you are moving toward your goals.

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5. **Stocking new bloodlines to grow big deer.** While there has been an exponential increase in the stocking of deer to manipulate genetics, the effects are largely unknown. What we do know is that the full benefit of a particular bloodline—native or import—cannot be realized without managing for the proper age structure and nutritional plane. Make sure age and nutrition requirements are met before worrying about genetics.

4. **Failing to follow the basic safety rules.** Do you know the 10 Commandments of Hunter Safety? Many elevated hunting stands would make OSHA cringe, so inspect them annually and make repairs as needed. Do you wear that
safety harness with your tree climber? Have you checked for wasps and other critters that sting, bite and scratch and can make you hurt yourself as you beat a hasty retreat? Does everyone in your hunting party know the basics of 4-wheeler safety before riding? Don’t let your hunting season be ruined by a breach of safety basics.

3. **Failing to sight-in and practice with “old Betsy.”** I often hear hunters proclaim: “My gun was sighted-in last season and shot just fine. I didn’t drop her or bump the scope, so how could she be off?”Scoped rifles get off center easily, often because of the slight warping of the stock and forearm that may occur in the off-season. Do yourself a favor and sight-in BEFORE you miss. Practice as much as possible. Don’t miss the opportunity of a lifetime or lose a wounded animal because of an inaccurate rifle. It is your ethical responsibility.

2. **Over-harvesting bucks.** Without harvest and census records, you really don’t have a good idea how many bucks can be harvested from a given property. Of course, this is highly dependent upon the goals that are set. For example, a heavy buck harvest normally lowers the buck age structure, which lowers antler scores. In some heavily hunted areas, more than 70 percent of the entire 1½-year-old buck age class may be harvested in a given year. Is there anything wrong with harvesting 1-year-old bucks? Maybe not—that depends on your goals (see #10 above). The heavy harvest of bucks in the younger year classes means that fewer will reach full maturity—the point where they have maximized their body and antler potential. In some Texas counties, there is a regulation that the inside spread of antlers must be at least 13 inches. This has substantially increased the buck age structure and, therefore, antler quality.

And the Number One mistake deer managers/hunters make:

1. **Forgetting that managing and hunting deer is supposed to be fun!** Value the time spent afield. There are never enough days to share with family and friends, so make the most of them. Don’t ever let managing and hunting the white-tailed deer become work. Instead, work at having fun as you achieve your goals and share good times with others!
Landowners intent on managing their native wildlife species should have little tolerance for feral hogs. The estimated 4 million feral hogs nationwide compete with native wildlife species for food and space and may prey directly upon certain species or destroy their habitats.

Most landowners rely on shooting when attempting to control feral hogs, but this is an inefficient method at best. Trapping—with traps large enough to accommodate the largest groups (called sounders) of hogs seen on the property—is a much better method. With large traps, there is maximum distance from the gate to the trigger in the back of the trap. This allows the entire sounder of hogs to enter before the trap door is triggered. (For more on controlling feral hogs, visit this Web site: http://feralhog.tamu.edu.) Here are some tips for trapping success.

- Use large traps so all the hogs in a sounder can enter before the gate is tripped.
- Construct traps without corners unless the top of the trap can be covered. Hogs have a tendency to pile up in a corner when humans approach, and they may climb out of the trap.
- Use the smallest mesh feasible (4 x 4 inches). The idea is to catch and retain all hogs trapped, regardless of size.
- Share one gate among many traps to reduce cost. Set the gate in place only after hogs are responding to the bait.
- If hogs will be hauled from the trap site, use a round or “tear drop” shape design, which helps funnel the hogs back through the gate for loading into a trailer. (See feralhogs.tamu.edu for details.)
- Pre-baiting traps outside and inside is essential. Once you see hog sign inside the trap, set the gate and continue baiting.

- Set several traps in different locations, or coordinate trapping with neighboring landowners. Don’t wait until damage occurs to begin trapping hogs.
- Vary baits between traps whenever possible. Take advantage of hogs’ acute sense of smell by using baits/attractants with odor appeal. Effective baits include corn, corn fermented in water (see Miscellaneous for July), corn fermented in beer or mixed with used fish grease, dog food, ripe fruit or spoiled produce.
Appendix 4: Forage Plants for Wildlife (a partial listing)

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<tr>
<td>Oaks (acorns)</td>
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<td>Bicolor lespedeza</td>
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</table>

Varieties of adapted plant species vary geographically because of differences in soils, precipitation patterns and temperatures. Before planting, consult your county Extension agent, Natural Resources Conservation Service technician, or state game and fish agency wildlife biologist. These experts can make specific recommendations about the best species/varieties, combination plantings, and planting procedures for your area.