AGRICULTURAL EXTENSION SERVICE
THE UNIVERSITY OF TENNESSEE

Forestry, Wildlife & Fisheries Update Newsletter

Department of Forestry, Wildlife and Fisheries *June 2002*
George Hopper - Professor and Head *Website: http://fwf.ag.utk.edu*

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June 23 - 25
Master Logger - Clarksville

August 7
Inservice Training for Establishing & Managing Native Warm Season Grasses for Wildlife
- Smoky Mountain District

August 8
Inservice Training for Establishing & Managing Native Warm Season Grasses for Wildlife
- Central District

Faculty:

Brian Bond, Forest Products
Wayne Clatterbuck, Forest Management
Craig Harper, Wildlife Management
Thomas Hill, Fisheries Management
George Hopper, Natural Resources
David Mercker, Forest Management
Larry Tankersley, Forest Management

Fish Grubs in Freshwater Ponds and Lakes

Tom Hill, Professor, Fisheries Management

If you fish in ponds and lakes and dress the fish caught for the table, you have probably seen some fish grubs. Although fish grubs are not harmful to humans, the fish flesh may lose visual appeal and you or other consumers might not want to eat the fish. This is particularly a problem with the yellow grub. Others such as white grubs, black grubs and eye grubs usually are removed in the dressing process.

Fish grubs are the immature forms of parasitic worms that invade fishes. Grubs are contained in spherical or oval cysts and appear as round or bead-like structures embedded in the fish. If a cyst is opened, the immature worm will straighten out and flatten into a form that resembles the adult.

The yellow grub infects bass, bream, catfish and several other fishes. Its size and color make it easily visible in the muscles or edible part of the fish. Its life cycle involves a snail, a fish and a bird.

The cycle begins in the water with the hatching from a microscopic egg and release of the stage known as a miracicium. The ciracidium is longer than it is wide and is propelled through the water by hair-like cilia on the body surface. After a few hours of swimming, the miracidia die unless they come in contact with appropriate snails.

Once a miracidium comes in contact with a snail, it enters the snail, sheds its cilia and forms a sporocyst. The sporocyst produces several stages known as rediae, each of which produces larvae know as cercariae. Thus, a grub parasite entering a snail as a single individual multiplies into numerous cercariae.

The cercarioae leave the snail and move about in the water by the swimming action of their tails. As they come into contact with and penetrate the fish, they lose their tails and form cysts.

Yellow grubs within the cysts of the fish's flesh are known as metacercariae. The cysts typically have two walls. A thinner inner wall is thought to be secreted by the parasite and a thick outer wall is thought to be provided by the fish.

When an infected fish is consumed by a fish-eating bird, the cysts are digested by enzymes. The freed grubs migrate up the esophagus where they attach themselves. They become sexually mature adults in 4-6 hours and can sometimes be seen in the mouths of the birds. As an aquatic bird thrusts its beak into the water, eggs laid by the adult worms are released into the water. Once the eggs hatch, the cycle is completed.

Development time for the parasite in the egg is a few hours; in the snail, about 5 months; and in the bird, a few days. The grubs may live for as long as 3 years in a fish.

White grubs, black grubs and eye grubs all have different life cycles. They are similar, however, in that a snail, a fish and a bird are involved in every one of them.

Preventing grub parasites in fish requires altering the pond environment to discourage snails and birds. Since snails eat aquatic plants, reducing submerged vegetation would help reduce the number of snails. Deep pond edges, chemical applications and plant-eating fish could help reduce vegetation. Deep pond edges also discourage wading birds.

However, chemicals that will kill the snails also kill fish. Bird control is impossible because the birds involved are migratory and killing them is illegal.

Draining and drying a pond is an effective control for grubs. The real disadvantage of this method is the time required to get the pond back into production.

Another way to reduce the snail population is to stock shellcrackers. These fish eat lots of snails and can make a real difference over a period of time.

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Chainsaws for Private Landowners

David Mercker, Associate Extension Forester, Forest Management

The size of nonindustrial private forestland ownerships continues to shrink. Larger parcels are being divided into smaller parcels; so much so, that the average ownership in the United States is projected to be only 16.7 acres by the year 2010 (Sampson and DeCaster, 1997).

Landowners of small forested tracts soon find uses for chainsaws, whether for creating trails, cutting firewood, deadening cull trees, enhancing wildlife habitat or severing vines. There are a number of features common to chainsaws, some for safety, some for comfort and some for function.

The following features should be considered when purchasing a chainsaw for woodlot use:

Length of bar – a mid-weight bar will have a 14 – 18 inch bar length – a good size for most common jobs.
Chain brake – important safety feature, designed to stop the chain quickly if kickback occurs.
Vibration reduction system – these rubber bushings at the base of the handle reduce vibration and operator fatigue.
Automatic chain oiling – now mostly standard, keeps the bar and chain oiled while operating.
Safety bar tip – reduces likeliness of kickback when saw tip contacts anything.
Balance – the saw should not tip or rock but rather feel balanced to the operator.
Bumper spikes – spikes are found on the front of the engine and help grip the wood, holding it in place while cutting.

A number of other features exist, including: hand guard, spark arrester, trigger or throttle lockout, chain catcher, automatic chain sharpening, compression release starting and chain sheath. Your local chainsaw dealer can show and explain these features to you.

Remember to dress accordingly while operating a saw. Ear, face and head protection is critical. Clothing should fit well (snug) without loose/dangling edges. Gloves, leg chaps and safety boots will help protect against kickbacks, carelessness or fatigue.

(Ref. Baker and Day. 2001. University of Missouri Extension Service)

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# # #

Leave Young Wildlife Alone

Craig Harper, Assistant Professor, Wildlife Management

It's that time of year when people commonly find young wildlife they believe have been orphaned. Young songbirds and deer may seem relatively helpless and some folks think they are doing these animals a favor by picking them up and "saving" them. In fact, the best way to help them is to leave them alone. Usually, these animals have not been orphaned, but are waiting on their parent(s) to return. Often, the parent(s) is present, but out of sight to the well-meaning onlooker.

Female deer regularly hide their fawns in high weeds and grass and leave the fawn(s) while feeding in the surrounding area. Although the doe may give birth to two (and, in some cases, three) fawns, they are kept separate (hidden in separate locations) until approximately 3 weeks of age when they join the doe in her daily travels. This strategy actually aids in the fawn's survival. Fawns give off very little scent early in life and by keeping still and hidden the probability of surviving predation is higher than by trying to run with undeveloped legs.

Young songbirds go through a tough period upon leaving the nest. Initially, the chicks appear to have fallen out of the nest, and, in reality, that is exactly what they did, but they did so on purpose! They have "outgrown" the nest and are ready to learn to fly. During the first few days out of the nest, they are quite vulnerable to a host of predators. However, food is generally not a problem because the parent(s) remain nearby and continue to feed them. Once they become fairly proficient flyers, their survival rate increases dramatically.

Survival of young wildlife is relatively low—most die before reaching one month of age. That is nature. Exposure and predation are primary causes of mortality during this period. It is important to keep in mind that young foxes, bobcats, hawks, and owls have to eat as well. In addition, it is a violation of Tennessee state law to take animals from the wild and keep them in captivity while trying to "raise" them. Although it may seem cruel, it is best to let nature take its course and leave young wildlife alone.

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Forests for Wildlife

Larry Tankersley, Extension Assistant, Forest Management

Trees and woodland browse are important to many of our favorite wildlife species. Working open areas into native warm season grasses and food plots are very important activities for improving wildlife habitat. However, many areas are limited by the condition of the woodlands adjacent to the open areas.

Trees provide important cover and nesting sites. Dead trees and cavities in trees are also important for a variety of wildlife species as they forage for insects, spiders, and other sources of nutrition. Trees and other woody shrubs in the woodlands provide most of the "mast" that many wildlife species require during the year. Nuts and acorns are most important especially during the fall and early winter when animals are bulking up for the winter. Too many of our forests lack thrifty oaks as many have been "selectively" removed for timber without adequate plans for the next crop. Limited acorn production many be the reason animals can't be found on certain places during fall hunting seasons.

Landowners can improve acorn production from their oaks by encouraging development of the individual oak tree's crown. Crop tree management is intended to remove adjacent trees which are shading the oak's crown and inhibiting its expansion. Deadening or felling trees around preferred mast producers should encourage better acorn production by providing room for the tree's crown to expand.

What about fertilizing the crop trees? There is no direct evidence that this improves acorn production in the short-term. Although fertilization of orchards has historically been recommended for horticultural/food production. If you wish to fertilize remember that your forest floor is to a large extent a "mat" of overlapping roots thus we are certainly fertilizing something whether it is our crop tree or not. If you do fertilize use phosphorus as it is important for energy production and acorn production requires a lot of energy.

Another potential problem in acorn production is the age of your trees. Older trees over100 years of age generally are not as prolific as the younger 40-70 year old trees. Many stands may need to be replaced to improve acorn production in the long-term.

Thinning your forest of too many trees also improves wildlife habitat by allowing more sunlight to the forest floor. Sunlight warms the ground and encourages the development of broad-leaved herbs and grasses. A number of wildlife related problems are the result of too little

browse in the forest as animals move into yards and gardens for daily roughage. Many forest managers notice a "browse line" in woodlots where there is literally no green vegetation below about 7-8 feet as the wildlife have eaten all they can reach. Wildlife species that live on the ground would be scarce in these situations. More light penetrating the canopy also improves
conditions for the development of shrubs and smaller trees that produce soft mast and add vertical structure. Let's not forget that with this "bloom" we also get improved conditions for insects, spiders and other "invertebrates". Herpetafauna such as lizards and salamanders and of course snakes. Selective removal of less desirable plants in favor of others is a great activity that gets you out into the woods. Contact your favorite natural resources professional so see if your woods are limiting your wildlife.

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# # #

Oak-Hickory Pests

Larry Tankersley, Extension Assistant, Forest Management

Persons observing the southern pine beetle epidemic which has recently swept through east Tennessee should consider the effects a similar pest could have on their oak hickory forests. Many landowners are already noticing tree death occurring in their woods. Several successive years of rainfall shortages have reduced the general vigor of our forest. In efforts to maintain themselves many forests react with "defensive dieback". Defensive dieback is noticed both at the tree level with branches dying and at the forest level with trees dying. Insects and diseases are commonly accused of being the problem and in fact they are often the death knell of the tree. These pest and pathogens however are regular members of the community but are simply fulfilling their niche or role in the forest by eliminating stressed trees. Epidemics arise when there are large numbers of weakened hosts and the population of pests and pathogens becomes larger enough to overtake otherwise healthy trees.

Forest management should be aimed at maintaining plenty of room for each individual tree such that the trees are not interfering with each other and that there is enough water to go around. Forest managers should also consider replacing trees of advanced age as these "old generals" may have run their race.

Another thing to consider relative to the "business" of growing timber is the fact that losses from drought, insects and diseases are **not** considered casualty losses for tax purposes even if you have a "basis" in the timber.

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Timber Taxes

Larry Tankersley, Extension Assistant, Forest Management

Timber is defined by the IRS, as the portion of a "standing" tree that could be used as a wood product, such as firewood, pulpwood, or sawtimber. Uncut Christmas trees that are 6 years old or older also qualify as timber. (It is important to note the word standing because once the tree is on the ground it becomes a log and is no longer a capital asset. Selling logs is ordinary income).

By virtue of this definition tax treatment of production costs and income for growing and selling timber are favorable to timber owners. Income from timber sales can be treated as a long term capital gain which is taxed at reduced rates and has no liability for self-employment taxed. Money spent on qualified reforestation expenses also qualifies for reforestation tax incentives which includes a tax credit and a seven year amortization of the expenses.

Forest trees are owned for a variety of reasons, from aesthetic enjoyment to well defined business intentions. From the IRS perspective timber is held by four groups of taxpayers.

The first are trees held for personal use. These owners do not view their trees as wood products and have no intention of ever selling timber.

The next group are persons who view their timber as an investment. These taxpayers consider the trees to be income producing property but manage them with modest activity and expenses. Expenses for this group of timber owners are best claimed as investment expenses which are itemized deductions subject to the 2% of Adjusted Gross Income rule.

A third type of forest owner is active in their management generating expenses and income associate with growing their timber almost every year. These owners are considered tree farmers and are entitle to treat their activity as businesses/farms. Ordinary and reasonable expenses can be deducted every year. Consecutive years of losses can be allowed as long as you can show that you expect and have a reasonable chance of profiting from the money spent over the years when you sell the timber.

The fourth group according to the IRS would be businesses whose ordinary trade is in forest products. Persons who sell forest products (loggers and sawmillers) but also grow trees can declare that they consider these trees to be timber and benefit from capital gains tax rules when these trees are cut. Interested persons should investigate a section 631(a) election.

Timber can be any of these types of property depending on the owner and his/her reasons for owning the timber. The tax treatment of production costs varies depending on which of these categories you choose. At that point you or your tax preparing can follow the appropriate rules.

Income-producing property and business property requires the establishment and maintenance of capital accounts. An appraisal of the timber volume and value is required to establish a "basis" in the timber which is ultimately recovered as the timber is sold or "depleted". You deduct your basis and sales expense from your gross proceeds before calculating your net/taxable capital gain. Form T(Timber), *Forest Activities Schedule* is used for recordkeeping and reporting activity in your capital accounts.

Money spent on timber establishment or reforestation is eligible for a 10% tax credit (off your taxes owed) with an amortization deduction allowed for eight tax years that allows the recovery of your timber basis well before the timber is harvested.

Timber can also qualify for deductible casualty losses when it is rendered unfit for use by a sudden, unusual and unexpected event such as a wind storm or ice load. The applicable rules will depend on your status as a business or investor and is usually limited to your adjusted basis in the damaged tree. Losses to insects are generally not deductible with Southern Pine Beetle being the exception due to a specific Revenue Ruling.

(Abstract for Milan No-till Field Day talk. Look forward to seeing you there!!)

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# # #

Why is Kudzu Difficult to Control?

Wayne Clatterbuck, Associate Professor, Forest Management

Kudzu is a perennial, leguminous vine that was introduced to the United States from eastern Asia for use as a forage for livestock and for erosion control. The vine has the ability to grow more than a foot a day and is frequently found on trees, shrubs, utility poles, fences and buildings. Kudzu can damage or kill most of the vegetation where it resides. It is a difficult plant to control, spreading from seed, vines, and root sprouts. The large tuberous root system, which is much like a potato with large starch reserves, resprouts prolifically.

Kudzu is deciduous, losing its leaves each year following a heavy frost. Purple flowers form in late June and July on vines draped in trees, fences and other objects. Flowers are rarely produced on open patches of flat ground. Seeds are hard-coated and can remain viable for several years.

Vines grow from buds on a root crown at the soil surface. As the vines spread, rooting occurs from buds at each node on the vine. With vine growth of up to 50 feet per growing season, a single plant can spread to cover large areas each year. Roots developing from the vine nodes usually enlarge into root crowns from which additional vines will arise. Mature stands of kudzu may have root crowns every 1 to 2 square feet.

Although some literature refers to kudzu as a climbing vine, the vine is not actually able to climb on its own accord. Kudzu is a semi-woody vine that cannot support its own weight and it does not have tendrils for climbing like a grape vine. Kudzu vines get into tree crowns by wrapping itself around successively growing small limbs or on smaller vegetation underneath tree crowns and then reaching 3 to 5 feet above for another source of support. Without tendrils and woody support, kudzu is not able to wrap itself around large diameter stems. Thus, it gets into tree crowns by wrapping around small, successive limbs or wrapping around smaller adjacent vegetation and reaching into tree crowns.

Kudzu is often referred to as an invasive exotic. Most of the kudzu present in Tennessee is spread from runner vines of established plants. We generally do not see kudzu spread by seed or colonizing inhabited areas. Most kudzu infestations originate from old, well-established rootstocks at field edges. Annual cultivation once kept vines from spreading into fields.

Although kudzu was originally planted for erosion control, it is not particularly effective. The tuberous root system is not exceptionally fibrous. Soil will continue to erode through overland flow underneath the mat of vines during summer and winter. The mat of vines and leaves will hinder raindrop erosion during the summer.

Roots (tubers) of established crowns can reach several inches in diameter and may grow to depths of three feet. The high starch content of the roots supports early spring growth and vigorous regrowth if vines are damaged by mowing or grazing. The starch-rich roots make control difficult because this stored root reserve supports regrowth. Considering the new root growth from expanding nodes and the fleshy tubers, 3 to 10 years of repeated treatments are necessary to deplete the root reserves and to completely control kudzu. The above-ground vines are usually controlled the first year. Resprouting vines and root crowns are treated in successive years. Some of the control alternatives for kudzu are considered in the accompanying article.

Sources: David J. Moorhead. 1996. *Controlling Kudzu in CRP Stands.* University of Georgia Cooperative Extension, Forest Resources Unit.

Max Williamson. 2001. *Difficult Kudzu Control.* USDA Forest Service.

James Miller. 1999. *Controlling Exotic Plants in Your Forest.* Forest Landowner 58(3):60-64.

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# # #

Control Strategies for Kudzu

Wayne Clatterbuck, Associate Professor, Forest Management

With a large tuberous root system and aggressive growth habit, control of kudzu requires persistent treatment. Several strategies can be employed to control kudzu: herbicides, prescribed burning, mowing and livestock grazing. When selecting a control strategy, consider restraints that may prevent broadcast of herbicides, use of tractors to spray or mow, proper burning procedures and times, and presence of desirable vegetation. Thick mats of kudzu can hide ditches, gullies, logs, wells, and other hazards. Be careful and plan accordingly!

Mowing --- Repeated mowing can weaken and ultimately control kudzu. Mowing is generally a good first step towards control, provided it can be done without risk to the operator and equipment. Close mowing reduces the above-ground biomass and makes treatment of regrowth much easier. Generally, without adequate photo synthetic area to support the root system, the roots begin to decline over time. Thick mats of vines are often difficult to mow with light, rotary mowers. Flail mowers with horizontal blades cutting in a chopping motion may operate more effectively.

Burning --- Prescribed fire can be used to consume vines and leaves to permit inspection of the site and to determine the size and density of the kudzu root crowns. Burning should be done in late winter and early spring to limit the exposure of bare soil to winter rains, thus minimizing soil erosion on steeper areas. Prescribed burning promotes kudzu seed germination. Burning is usually used in conjunction with other control treatments. Repeated or annual burns are difficult to sustain because of the lack of fuel to carry the fire.

Grazing --- Kudzu can be used as a forage for cattle and other livestock. Other sufficient grazing areas are needed to rotate livestock as the kudzu is grazed down. Only by repeated grazing of the regrowth over successive growing seasons will the root reserves of starch be depleted.

Herbicides --- Several herbicides are labeled for kudzu control. Their use requires careful site evaluation and prescription according to the information contained on the herbicide label. Herbicides can be used in combination with other treatments, such as prescribed fire or mowing, or following grazing which reduce the amount of vegetation and allow easier application of the herbicide to the somewhat weakened plants. A few herbicides labeled for kudzu control are outlined below. All these herbicides are foliar sprayed and use a surfactant to encourage wetting and penetration.

Chemical	Trade Name	Manufacturer	Time of Application	Amount
Picloram	Tordon 101	Dow	Late June to early Oct. Must be actively growing & not under drought stress	1 to 2 gallons/acre 0.5% surfactant
Picloram Triclopyr	Tordon K & Garlon 4	Dow	Same as above.	1 gallon of Tordon K + 3 quarts of Garlon 4 per acre 0.5% surfactant
Clopyralid	Transline	Dow	Early to midsummer	21 ounces/acre
Metsulfuron Methyl	Escort	Dupont	After full leaf until Sept.	4 ounces/acre in 30 gal. of water 0.5% surfactant
Additions with Escort				
Imazypyr	Arsenal	BASF		10 ounces /acre
Glyphosate	Roundup	Dow		2 qts/acre

Tordon is a water soluble, broadleaf herbicide that does not work well on sedges and grasses. Tordon is a restricted–use herbicide and can only be applied with certified applicators. Do not apply near water. If Tordon is sprayed within the root zone of shrubs, hardwood or pine trees and other sensitive plants, they may be damaged or killed. Tordon K and Garlon mixture contains no 2,4-D.

Transline is a selective herbicide having a narrow spectrum affecting legumes, thistle and other composite plants. Transline is labeled for spot applications on sites adjacent to right-of-ways.

Escort can be applied over the top of one year old pine. Usually some attempt has been made to control Kudzu before pine planting and broadcast or spot treatments of Escort are necessary for retreatment. Mixtures with

Arsenal or Accord give broader spectrum control, however the spray should be directed away from pine foliage. Some stunting of pine growth will occur.

To protect people and the environment, pesticides should be used safely. This is everyone's responsibility, especially the user. Read and follow label directions carefully before you buy, mix, apply, store or dispose of a pesticide. According to the laws regulating pesticides, they must be used only as directed on the label. Persons who do not obey the law will be subject to penalties

Kudzu control programs require commitment to annual follow-up treatments for at least three growing seasons. The older the kudzu, the more difficult the control and the more follow-up treatments required to deplete the starch reserves of the root system.

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# # #

FOREST LEGACY PROGRAM

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In June of 1999, Governor Don Sundquist approved Tennessee's participation in the Forest Legacy Program. The Forest Legacy Program (FLP) is a USDA Forest Service conservation program dedicated to keeping our state's forestland in production. As population and development in our state increases, available productive forestland continues to diminish. The FLP is intended to help stem this tide.

Through the Forest Legacy Program, private forestland can be protected from this development threat. One way this is accomplished is through FLP funds being paid to landowners to purchase the development rights on their forestland. Another is for the State of Tennessee to accept donations of development rights on forestland from the landowner. Both options place forestland in the lowest possible tax status. The donation route has valuable income tax credits and deductions for the landowner.

The first year of Tennessee's participation in the program (FY 2000) resulted in 400,000 federal dollars being earmarked for various private forested tracts in our state. Last year (FY 2001) netted $2,300,000 for FLP use in our state. This year's FLP allocation has not been announced, but it is expected it to be larger still.

To be eligible for consideration for these FLP funds, a nominated tract must be reviewed by a sub-committee of the State Forest Stewardship Committee. At this annual meeting, the nominated tracts are considered according to FLP objectives and are ranked accordingly. These ranked tracts are then submitted to the USDA Forest Service for funding consideration. The next meeting of this committee will be on August 27, 2002. At this meeting, submitted tracts will be reviewed and ranked for consideration against FY 2004 FLP funds.

A private forestland owner should decide now if he wants his property included in the review process on August 27, 2002. There are several preparatory steps that must be taken before a nomination can be made to the "Stewardship" subcommittee. Those interested in learning more about the program and the nomination process should contact:

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11th Annual Tennessee Urban Forestry Conference

The 11th Annual Tennessee Urban Forestry Conference is scheduled October 24 - 25 in Nashville at the Cheekwood Botanical Gardens. This is an educational conference featuring program topics on Improved Tree Cultivars, Nursery Practices that Arborists Should Know, Urban Forestry Research, and Urban Infrastructure with Trees. A pesticide track on Asian Long Horn Beetles, Pine Beetles, and Tree Pests will be presented along with Building Better Quality Tracks. There will also be opportunities to go on tours, attend the Urban Forestry Trade Show, as well as a reception and a dinner at an area attraction. A Tree Board breakfast and an awards luncheon is also scheduled. This conference is presented by the Tennessee Urban Forestry Council and the Tennessee Department of Agriculture, Forestry Division. Full and partial reservations are available.

For more information please contact the Tennessee Urban Forestry Council at 615-352-8985 or visit the web site at www.tufc@wave3online.com or www.tufc.com.