



# Update Newsletter

Department of Forestry, Wildlife and Fisheries

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Dr. Keith Belli, Department Head

Website: <http://fwf.ag.utk.edu>

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**Eugene Pleasants Odum** (September 17, 1913 - August 10, 2002) was an American scientist known for his pioneering work on ecosystem ecology.

*"When both the study of the household (ecology) and management of the household (economics) can be merged, and when ethics can be extended to include the environment as well as human values, then we can indeed be optimistic about the future of mankind."*

*"The focus on preserving biodiversity must be at the landscape level, because the variety of species in any region depends on the size, variety and dynamics of patches (ecosystems) and corridors."*

The average schoolchild of today knows that humans, along with other life forms, depend on adequate conditions of food, water, and shelter from inclement elements, and also that weather, geological, and biological factors (among others) are involved in the web of life that affords this environment. Further, the average schoolchild of today has heard the word "ecology." But back in the 1940s and 1950s, "ecology" was not yet a field of study that had been defined as a separate discipline. Even professional biologists seemed to Odum to be generally under-educated about how the Earth's ecological systems interact with one another. Odum brought forward the importance of ecology as a discipline that should be a fundamental dimension of the training of a biologist.

### Life and work

Son of the sociologist, Howard W. Odum, and brother of Howard T. Odum, E.P Odum credited his father for imparting to him a holistic approach to looking at things. When contemplating his advanced education, he rejected both the University of Michigan and Cornell University, as he did not feel that this holism was embodied in their approach to their biology departments. Instead, he chose the Graduate Department of Zoology at the University of Illinois where he earned his doctorate degree. He had one son William with his wife Martha.

Upon his graduation, Odum took up a teaching position in the University of Georgia in 1940. In the late 1940s, while serving on the University's biology faculty committee, which was then drawing up a new curriculum, he perceived an urgent need to incorporate the subject of ecology when he found that his colleagues generally did not know what ecology (in its own right) might be.

Odum adopted and developed further the term "ecosystem". Although, sometimes said to have been coined by Raymond Lindeman in 1942, others assert that the term, "ecosystem", first appeared in a 1935 publication by the British ecologist, Arthur Tansley, and had in 1930 been coined by Tansley's colleague, Roy Clapham. Before Odum, the ecology of specific organisms and environments had been studied on a more limited scale within individual sub-disciplines of biology. Many scientists doubted that it could be studied on a large scale, or as a discipline in itself. Odum wrote a textbook on ecology with his brother, Howard Thomas Odum, a graduate student at Yale. The Odum brothers' book (first edition, 1953), *Fundamentals of Ecology*, was the only textbook in the field for about ten years. Among other things, the Odums explored how one natural system can interact with another. Their book has since been revised and expanded.

While Odum did wish to influence the knowledge base and thinking of fellow biologists, and college and university students, his historical role was not as a promoter of public environmentalism as we now know it. However, his dedication in his 1963 book, *Ecology*, expressed that his father had inspired him to "seek more harmonious relationships between man and nature". By 1970, when the first Earth Day was organized, Odum's conception of the living Earth as a global set of interlaced ecosystems became one of the key insights of the environmental movement that has since spread through the world. He was, however, an independent thinker who was at times, gently critical of the slogans and fashionable concepts of the environmentalist movement.

After he died, Odum's will stipulated that his 26-acres on the Middle Oconee River in Athens, Ga. would be sold, and developed according to plans he laid out before his death. The plans included that over 50 percent of the property would be protected greenspace and walking trails, managed by the Oconee River Land Trust. Profits from the sale of the land would go to the Eugene and William Odum Ecology Fund, after \$1 million is set aside for a professorial chair at UGA in Odum's name. The land was sold to builder John Willis Homes who is honoring Dr. Odum's wishes at Beech Creek Preserve.

In 2007, the [Institute of Ecology, which Odum founded at the University of Georgia, became the Odum School of Ecology](#), the first stand-alone academic unit of a research university dedicated to ecology.

### **Books**

*Fundamentals of Ecology* (with Howard Odum)

*Ecology*

*Basic Ecology*

*Ecology and Our Endangered Life Support Systems*

*Ecological Vignettes: Ecological Approaches to Dealing with Human Predicament*

### **Full-Text On Line Articles**

*The Strategy of Ecosystem Development*

*Comparison of population energy flow of a herbivorous and a deposit-feeding invertebrate in a salt marsh ecosystem* (with Alfred E. Smalley)

### **Documentary**

*"Eugene Odum: An Ecologist's Life"*

To order: Georgia Center Collection: Books and Videos, Georgia Center for Continuing Education, The University of Georgia, Athens, Georgia 30602-3603, Phone: 1-800-359-4040.

## Wildlife Management Calendar for May

by Craig Harper, Associate Professor, Wildlife Management

### Habitat Management

Plant native warm-season grasses and associated forbs

- non-native cool-season grasses (such as tall fescue, orchardgrass, and bromegrasses) should have been killed last fall before planting!
- spraying cool-season grasses in spring before planting nwsgr often does not eradicate the csg
- use preemergence herbicides when planting native grasses
- plant before early June
- plant bluestem, indiagrass, switchgrass, and sideoats grama seed **no deeper** than ¼ inch; eastern gamagrass approximately 1 inch
- be patient!
- refer to *Native Warm-Season Grasses: Identification, Establishment, and Management for Wildlife and Forage Production in the Mid-South*, PB 1752, [http://www.utextension.utk.edu/publications/pbfiles/PB1752\\_C5.pdf](http://www.utextension.utk.edu/publications/pbfiles/PB1752_C5.pdf), for additional information

Plant firebreaks and other disked strips not left for natural vegetation

- iron-clay cowpeas, re-seeding soybeans, grain sorghum, Egyptian wheat, and various millets provide forage and seed for a variety of wildlife species
- see *Growing and Managing Successful Food Plots for Wildlife in the Mid-South*, PB 1743, <http://www.utextension.utk.edu/publications/pbfiles/PB1743.pdf>, for seeding rates and additional information

Plant warm-season food plots

- see *Growing and Managing Successful Food Plots for Wildlife in the Mid-South*, PB 1743, for planting recommendations

Mow and spray perennial forage food plots for weed control if necessary

- see *Growing and Managing Successful Food Plots for Wildlife in the Mid-South*, PB 1743, for management recommendations

Collect soil test samples from plots to be planted this fall and lime now as needed

- applications of lime require about 6 months before full effect on pH is realized

Establish salt/mineral licks for white-tailed deer

### Wildlife Damage/Population Management

Leave young wildlife alone

- let nature takes it's course; you'll do more harm than good by trying to save "orphans"

Do not allow pet cats outside; report all feral cats to the animal shelter for immediate removal

- putting a bell around a cat's neck does not keep it from killing birds and young rabbits and squirrels
- house cats are not natural predators as they are not native to North America

Put up chicken-wire fence 2 feet high around vegetable gardens to protect them from rabbits

Put up a 2- or 3-strand electric fence (one strand 6 inches above ground and the other 6 inches higher) to keep groundhogs and raccoons out of vegetable gardens

To repel deer from vegetable gardens, erect a single-strand electric fence (2 ½ feet above ground)

- attach aluminum tabs every 3 – 5 feet. Smear peanut butter on the aluminum tabs. Deer are attracted to the peanut butter; however, when they touch the aluminum tabs with their mouths, they learn to stay away.

Plant “alternative” forages for wildlife on the outside of fencing around a garden to satiate the appetite of deer, groundhogs, and rabbits, further helping to keep them out of the garden.

Snakes are beginning to appear with warmer days

- clean up around the house (mow, remove piles of wood, brush, and trash) to repel snakes
- there is no reliable “repellent” for snakes; only “snake oil”

Snapping turtles and others are also more visible as they move about selecting sites to lay eggs

Most skunks are born in May; females will be choosing sites to give birth;

- close all entrances to crawl spaces and other areas where skunks are not wanted.

The best way to get rid of moles is by trapping, but you have to set the traps *correctly*!

Refer to *Managing Nuisance Animals and Associated Damage Around the Home*, PB 1624, <http://www.utextension.utk.edu/publications/pbfiles/pb1624.pdf>, for additional wildlife damage management information.

For more information contact: Craig Harper @ 865-974-7346 or [charper@utk.edu](mailto:charper@utk.edu).

###

### **What is a Healthy Forest?**

Larry Tankersley, Extension Forester

This is a fun/difficult question with a many definitions from utilitarian to ecosystem perspectives. Consider this list from *Forest Health and Protection* by Robert Edmonds et al. 2000, McGraw-Hill Series in Forest Resources.

- > A condition where abiotic and biotic influences do not threaten current or future management objectives,
- > A fully functioning community of plants and animals and their physical environment,
- > An ecosystem in balance,
- > A condition of forest ecosystems that sustains their complexity while providing for human needs.
- > A healthy forest is resilient to changes.
- > The ability of forest ecosystems to bounce back after being stressed.
- > The ability of a forest to recover from natural and human stressors.
- > A healthy ecosystem should be free from "distress syndrome," where this syndrome is characterized by reduced primary productivity, loss of nutrient capital, loss of biodiversity, increased fluctuations in key populations, degradation of biotic structure and widespread incidence and severity of insect and disease outbreaks.

You can see the range of definitions for Forest Health, pretty exciting! Pick one and talk among yourselves.

For more information contact Larry Tankersley at 865-973-7346 or [ltanker1@utk.edu](mailto:ltanker1@utk.edu)

###

## **The “T” in Tennessee Stands for “Trees”**

*David Mercker, Extension Forester, Forest Management*

Tennessee owes much of its identity to trees. Some even say that the “T” in Tennessee stands for “trees.” Our land, with its rolling hills, striking mountains, and impervious swamps, is well suited for the growth of trees. It’s what we do in Tennessee; we grow trees, harvest and convert them into products, then we grow more. We have done this for centuries and because trees are remarkably renewable, we’ll continue doing it.

Over one-half (55 percent) of our landscape is covered with trees. That’s even more -much more - than covered the state in 1900. It was in that year that the Society of American Foresters formed, birthing the new profession of *forestry*. Since then approximately five million acres of highly erodible farm and pasture land have been restored to forest in Tennessee, bringing the state-wide total to 13.9 million acres. Most of these new forests have been harvested numerous times and are still growing *trees for tomorrow*.

Through efforts of professional foresters, harmful forest practices have been reduced or eliminated. Forest health has been improved by controlling fires, fencing out livestock, eliminating non-native exotic plants, deadening residual culls, thinning to encourage more rapid growth, and administering timber harvests in ways that encourages forest renewal. Professional foresters are required to obtain continued education in a range of subjects, including: soil and water protection, wildlife management, ethics and more.

While traditional uses of the forest continue, future demands on the forest will increase. The role and focus of foresters will change too as the 21<sup>st</sup> century brings innovative and exciting opportunities. Two of the most prominent are: (1) wood as a source of biofuel, and (2) forests as a carbon sink. With the first, foresters must become expert in growing short-rotation trees to produce ethanol to fuel automobiles. With the second, as part of mitigating global warming, forest landowners will be paid by outside sources to sequester (or absorb) carbon. Foresters will participate by auditing the amount of carbon forests sequester from the atmosphere. Subjects such as tree genetics, chemistry, and physiology will gain in importance as demand for cleaner, healthier, renewable fuel rises.

For Tennessee, trees are the answer, not the problem. A large portion of commerce activity in Tennessee centers on forests and the forest products industry. This industry directly and indirectly employs 184,300 people and has a total annual economic contribution of \$21.8 billion. It will be vital to continue supporting and improving this industry. Foresters will be very important in this process and will focus on techniques for planting, growing, marketing, harvesting and processing trees. All this will ensure that the “T” in Tennessee continues to stand for “trees.” For a list of professional foresters operating in Tennessee, contact your local County Extension Office or the Tennessee Division of Forestry.

*For more information contact David Mercker at 731-425-4703 or [dcmercker@utk.edu](mailto:dcmercker@utk.edu)*

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## **Forestry Best Management Practices (BMPs) and Stream Crossings**

*Wayne K. Clatterbuck, Professor, Forest Management and Silviculture*

Stream crossings probably are the greatest risk to water quality during harvesting operations. Streams are the lowest point on the landscape where water drains. Roads and skid trails provide a conduit for runoff to enter the stream. With stream crossings, stream banks are often altered with the potential to slough off, soil is rutted or compacted, runoff from the road is concentrated at the crossing, and vegetation is removed, all increasing the chance of sediment entering the stream.

A few general guidelines for stream crossings include:

- > Avoid crossing streams, if possible. Access the timber from the other side of the stream.
- > If streams are crossed, cross at right angles where channels are straight.
- > Do not interfere with stream flow.

- > Approaches should climb away from streams. If possible, approaches should be graveled to provide stability and reduce erosion. Dips and turnouts should be installed to turn water off the road above the crossing.
- > Choose narrow places with low banks to cross the stream. Deeply cut channels and those in soft, muddy soil should be avoided.

Stream crossings should be “red flag” areas during harvest planning. Recent BMP surveys in Tennessee indicate that about two-thirds of the sampled harvest operations avoided crossing streams completely. However, most of the potential water quality threats statewide were still associated with stream crossings.

In reality, some streams must be crossed during harvesting operations, but utmost care should be taken to ensure that the crossing is not a detriment to water quality. Low water fords, portable bridges and log or pole fords are options for crossing small streams.

The streams of **low water fords** must have a solid rock or gravel bottom so that no muddy water will result from the crossing. Locate fords where stream banks are low. Logs cannot be dragged/skidded across the stream bottom according to Tennessee BMP guidelines. Dragging logs across streams can stir-up and dispense soil particles at the bottom of the stream.

**Bridges** vary in expense and design. Portable bridges that can be carried from site to site are commercially available and are excellent temporary options for narrow stream crossings. Metal grating is another alternative. Log or timber bridges can be constructed from low-grade lumber and logs from the site. However, safety and load (weight) concerns should be considered. The ability to maintain traction on the bridge surface and the safety of the bridge approach is critical when the surface is wet or frozen.

**Log or pole fords** may be used by placing a pyramid of poles in the streambed. Green or small diameter tops, limbs and brush should not be used for this purpose. The crossing surface can be improved by use of secured decking or panels. Old gas line pipes could also be used to allow the flow of water through the crossing structure. Logs, poles and pipes must be removed immediately after use to prevent clogging with debris and obstructing streamflow.

Do not use fill material over these temporary crossings. Wood planking, decking, mats or panels; geotextile fabric; expandable metal grates; or even pallets are acceptable alternatives. All temporary stream crossing materials should be removed from the stream channel after use.

The Tennessee Agricultural Enhancement Program is providing 50% cost-share funding to loggers for the purchase, construction and use of temporary stream crossing structures. For more information about this program, contact your local Division of Forestry office. An informational brochure is available at the following website: [http://www.tnforestry.com/Attachments/Skidder\\_Bridges\\_&\\_Pallet\\_Mats\\_brochureSD.pdf](http://www.tnforestry.com/Attachments/Skidder_Bridges_&_Pallet_Mats_brochureSD.pdf)

Stream crossings should be avoided, if possible, during harvest operations. However, if stream crossings are necessary, care should be taken to ensure that sediment does not enter the stream. Using BMPs in your stream approaches and spending some time and effort in using temporary crossing structures will ensure that your stream crossing is not a water quality problem.

*For more information contact Wayne Clatterbuck at 865-974-7346 or [wclatterbuck@utk.edu](mailto:wclatterbuck@utk.edu)*

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## **Planting Trees and Shrubs**

*Wayne K. Clatterbuck, Professor, Forest Management and Silviculture*

Trees and shrubs enhance the aesthetic, environmental and economic value of your property. A few tips to ensure planting success of trees and shrubs are outlined below.

**Pick the right tree for the right purpose.** What is the tree’s purpose? If for shade, the tree should grow to be large and sturdy. For aesthetics, the tree should feature a graceful form and showy foliage or flowers. For wildlife, berry-producing shrubs are useful. A wide variety of species and sizes are available for planting.

**Avoid fast-growing, weak-wooded species.** Trees such as silver maple, lombardy poplar, Bradford pear or Siberian elm are susceptible to breakage from wind and ice.

**Pick the right tree for the available space.** Avoid planting large forest and shade tree species in areas with limited space for root or crown growth (next to homes, under power lines, near sewer or water lines, driveways). If space is limited, select a smaller tree species.

**Pick the right tree for the environmental conditions.** Many species require full sunlight and well-drained soils and will not survive in shady or wet sites. Match the species requirements with the site conditions.

**Plant your tree right.** Take the extra time to dig a planting hole that will be large enough to accommodate all the roots and to allow them to grow and expand. Use the natural soil to fill the planting hole. Do not add soil amendments or fertilizer.

**Give your new tree a helping hand.** Water twice a week during the growing season to maintain soil in a moist condition, but do not overwater. Mulch the area around newly planted shade trees. Mulch helps to control weeds, conserves moisture, adds nutrients as mulch breaks down and protects trees from lawnmowers and string trimmers.

A series of UT Extension publications entitled “Trees for Tennessee Landscapes” have been developed on tree selection, tree care and landscaping. The publications may be accessed online at the following address: <http://www.utextension.utk.edu/publications/forestry/default.asp>

Contact your local University of Tennessee Extension Office for more information about species selection, tree planting and tree care.

*For more information contact Wayne Clatterbuck at 865-974-7346 or [wclatterbuck@utk.edu](mailto:wclatterbuck@utk.edu)*

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## **Does Timber Harvesting Practices Cause Soil Erosion and Pollution of Streams and Lakes?**

*Wayne K. Clatterbuck, Professor, Forest Management and Silviculture*

Timber harvesting practices are often accused of generating soil erosion and contributing to water pollution. Often harvested areas are viewed as unattractive and disruptive. These attributes are perceived as causing site degradation. However, research has repeatedly shown that cutting trees does not cause soil erosion, regardless of the cutting practice employed, if best management practices (BMPs) are implemented.

Erosion occurs in areas where leaves and other organic debris, which cover the forest floor, have been pushed back, scraped or incorporated into the soil and where the soil itself has been disturbed or loosened. Areas where the organic litter remains undisturbed are protected from raindrop erosion. The energy of falling rain is absorbed by the litter layer preventing detachment of soil particles.

The greatest potential for erosion in forestry is from activities related to removing the timber from the forest, such as construction of haul roads, log landings and skid trails. Erosion may occur when the protective litter layer is removed and when the soil is loosened during road construction and use. Soil compaction may also occur on log landings and roads, which will prevent infiltration of water into the soil and lead to erosion caused by water running across the soil surface.

Soil erosion and water pollution may be prevented or minimized through the use of best management practices (BMPs). Proper location and construction of logging roads, log decks and skid trails will minimize soil movement. Water control structures on roads and skid trails such as broad-based dips, out-sloping, water bars, water turnouts and culverts; and revegetating disturbed surfaces are all practices to manage potential water and sediment runoff. Use of streamside management zones (SMZs) will protect stream channels and banks to ensure that streams and lakes remain free from sediment.

Although water pollution from forestry operations contributes less than one percent of the total water pollution in Tennessee (2006 305(b) Report, *The Status of Water Quality in Tennessee*), any sediment entering waterways from forestry operations is unacceptable. If soil disturbance is minimized and ground cover is



maintained during harvesting operations, soil movement and water pollution can be prevented through the conscientious use of forestry BMPs. Consider hiring a Master Logger who has been trained in the use of BMPs and SMZs when harvesting timber.

For more information contact Wayne Clatterbuck at 865-974-7346 or [wclatterbuck@utk.edu](mailto:wclatterbuck@utk.edu)

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### **Wood Products Can Prevent Deforestation**

*Adam Taylor, Assistant Professor, Wood Products Specialist*

Most of us enjoy forests and see them as valuable assets that provide wildlife habitat, recreational opportunities and beauty for society as a whole. Many people instinctively dislike cutting trees, fearing that these benefits will be lost. However, it is important to remember that cutting one tree provides the opportunity to grow another. Harvesting trees as a part of forestry is not the same as deforestation. In fact, the money made from wood products can help to ensure the continued existence of the forest by providing the landowner with an incentive not to convert forestland to another use.

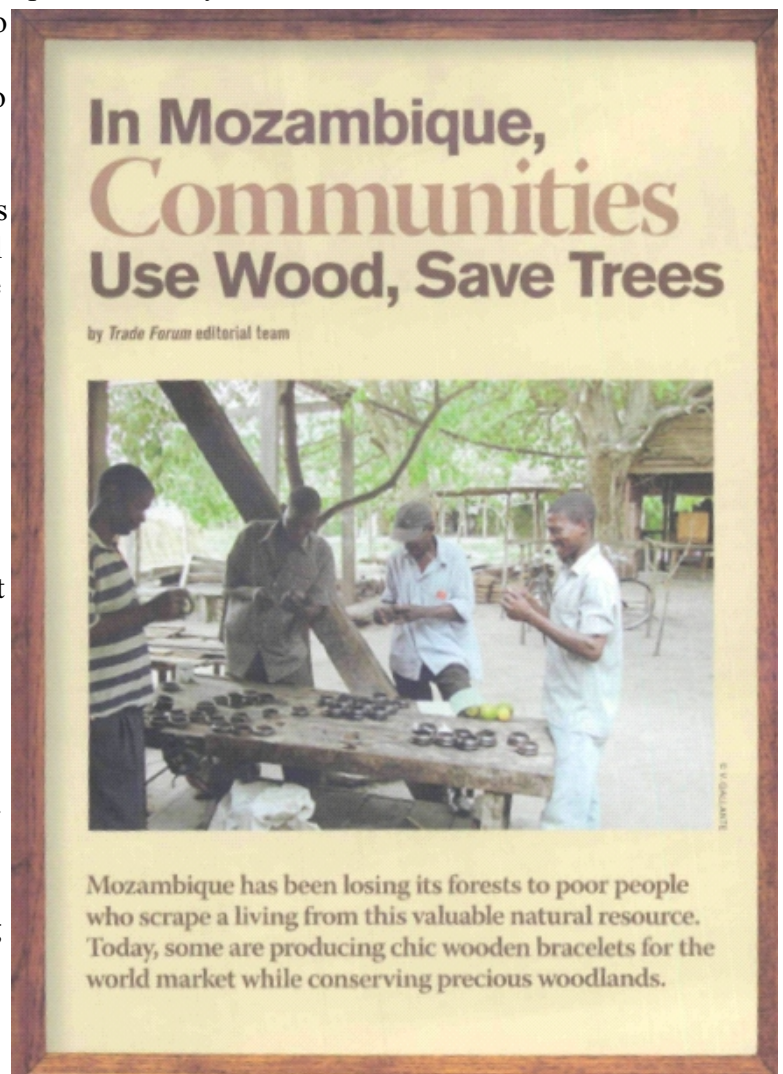
The link between financial reward for forest products and the conservation of forest resources exists around the world. An article in the journal International Trade Forum discusses an example from Africa where the production of high-value carved wooden items is encouraging forest protection. In this case, the people are receiving a greater benefit from harvesting trees for forest products than they would from clearing the land for agriculture, so they have a clear incentive to protect their forest resources.

This link also exists here at home. The forest products industry is one of the biggest components of our economy. This industry depends on – and pays for - raw material (logs) from many small landowners. However, the market for forest products is currently quite weak and the prices paid for logs is low compared to other possible uses for the land, e.g. conversion for development for new housing and shopping centers. The population of Tennessee is growing rapidly and this is providing an incentive for many landowners to sell their forestland for development. This is likely to be the biggest threat to our forests in the future.

The forests of Tennessee are abundant and provide society with many benefits. Continuing to value wood products and support our local forest products industry may be one of the best ways to save the trees.

For more information, contact Adam Taylor at 865-946-1125 or [AdamTaylor@utk.edu](mailto:AdamTaylor@utk.edu)

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## **Control Watermeal in Farm Ponds This Spring**

*Thomas K. Hill, Professor Emeritus, Fisheries Management*

Be on the look out for this deathtrap for fish. It looks like pollen, but is not! It is an obnoxious weed known as watermeal!

Many farm pond owners fertilize their ponds regularly during the warm months to ensure a dense phytoplankton bloom, the basis of a plenteous food supply for the fish. These ponds have a green appearance and an ideal visibility into the water of 16 - 18 inches. Emergent type aquatic weeds and filamentous algae cannot grow without sunlight, another benefit from fertilization.

There is another condition with farm ponds when the water takes on a bright green color that is not good. Watermeal is the culprit in such instances and can turn the entire surface of a pond into a deathtrap for the fish unless it is controlled right away.

Here's what happens. **As the pond water warms in the spring, watermeal appears on the surface of the water as tiny green, spherical fronds that are about 1.2 mm in diameter.** The source of the infestation is rarely obvious. It might be wind borne or transported by some animal. Fronds feel like tiny grains of sand when rubbed between the thumb and fingers. Since watermeal is very small and bright green in color, without the feeling test, it is often misidentified as pollen floating on ponds.

A member of the duckweed family, watermeal is the smallest flowering plant and is capable of reproducing by both seeds and buds. Flowers and fruits do occur but are rarely seen.

Watermeal reproduces rapidly and occurs in such abundance that it can completely dominate a pond within a few days. The surface of the water may be obscured. All of the nutrients in the pond that would usually be available for phytoplankton production are tied up in watermeal. Rake the watermeal away and the water underneath will be very clear.

It is not unusual for the watermeal to become so dense that oxygen exchange from the atmosphere to the pond water cannot take place. A fish kill may result as the dissolved oxygen under the watermeal is completely consumed by the fish and other organisms that are present. Aeration of the pond can help avoid this problem.

What can be done about this noxious aquatic weed? The herbicide Sonar in the aqueous solution formulation is the recommended chemical treatment. Fluridone, the active ingredient in Sonar, interferes with the plants ability to make food by inhibiting carotenoid synthesis. Once this happens, the chlorophyll is exposed to photodegradation and is gradually destroyed so the watermeal dies.

**A typical treatment may take 30 to 90 days to work.** As an example, a still-water pond with one surface acre area and an average depth of four feet requires one quart of Sonar as treatment. Since this herbicide treatment has some residual effect, some workers have gotten good control results by **dividing the treatment quart into three equal amounts applied at 21 day intervals.** Dilute the Sonar with several gallons of water and spray it over the surface. There is not a waiting period either for fish consumption or for livestock water from a treated pond.

There is not a native fish in Tennessee that consumes watermeal, but the **exotic blue tilapia (*Oreochromis aureus*)** is reported to eat it in large amounts. When **stocked at 15 lbs/A after the water warms in the spring and before a watermeal infestation becomes so bad,** these fish have **helped greatly** in controlling the weed. Stock 3-inch tilapia particularly where largemouth bass are already established. Tilapia of this size are sexually mature and will reproduce right away. More watermeal consumers will be available as the offspring grow. The tilapia cannot overwinter in Tennessee, but will die when the water temperature gets down to about 50F in the fall.

Sonar is quite expensive and tilapia may not be available everywhere, but if you experienced watermeal in your pond last summer, you should **consider your alternatives before spring.** It is very likely to recur. The combined treatment of Sonar and tilapia is more likely to be effective than either treatment alone. Reference to Sonar is made with the understanding that no discrimination of other products is intended and no endorsement by Extension is implied.

**Aquatic Weeds and Algae in Ponds**

*Thomas K. Hill, Professor, Fisheries Management*

During the months of April, May and June, marginal weeds and filamentous algae are at their worst in ponds. For the good of the fish population, they need to be controlled. Get specific identification before you decide on treatments. Many times your county agent can help you identify the problem weeds and make recommendations for treatments. In case the agent cannot decide, he can always contact a specialist. Refer to the following publications:

- Aquatic Weed Management Control Methods, SP375-C;**
- Aquatic Weed Management - Herbicides, SP375-D;**
- Algae in Farm Ponds, PB1095; and**
- Calculating Treatments for Ponds and Tanks, SP374-R.**

Check out the following website Southern Regional Aquaculture Center website at [www.msstate.edu/dept/srac/fslist.htm](http://www.msstate.edu/dept/srac/fslist.htm)

Be prepared to aerate your pond after chemical treatments, during the decay process a lot of oxygen will be used so aerate your ponds. See

- Pond Aeration SP 375-O and**
- Types and Uses of Aeration Equipment SP 375-P.**

Continue to fertilize ponds through the summer months to provide adequate food supply for fish that depend on natural food production. **However, do not fertilize a pond until the weeds and algae are under control.**

###

**CORRECTION...In The March HAT article should have said:**

Consider the following:

Over a 49-year span **ending** in 2002, the volume of US hardwood growing stocks have increased 98 percent and this after losses from fire, losses from mortality and urban sprawl, and after supplying wood for the world's use! Is there any other natural resource that has enjoyed a net increase of 98 percent in the last 49 years? Good news is that supply is not an issue; we have championed the science of growing trees."

Instead of ...."beginning" in 2002 . . . . .

TheUNIVERSITYofTENNESSEE

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Programs in agriculture and natural resources, 4-H youth development,  
family and consumer sciences, and resource development.

University of Tennessee Institute of Agriculture, U. S. Department of Agriculture  
and county governments cooperating.

UT Extension provides equal opportunities in programs and employment.