

# The Rise of Natural Capitalism And The New Frontier of The Restoration ECONOMY

**With GreenTrees, participating landowners now have the potential to sit back and watch their forest grow while revenues increase.**

BY: CHANDLER VAN VOORHIS, CO-FOUNDER AND MANAGING PARTNER OF GREENTREES, LLC



A CRITICAL WETLAND RESOURCE, THE BOTTOMLAND HARDWOOD ECOSYSTEM OF THE MISSISSIPPI ALLUVIAL VALLEY (MAV) IS ONE OF THE MOST IMPORTANT ON THE NORTH AMERICAN CONTINENT. CONSIDERED NORTH AMERICA'S RAINFOREST, THE MAV IS A VITAL HABITAT FOR MIGRATORY BIRDS AND NUMEROUS PLANT AND ANIMAL SPECIES. FORTY PERCENT OF NORTH AMERICA'S WATERFOWL AND 60% OF ALL BIRD SPECIES MIGRATE ALONG THE MISSISSIPPI RIVER, ALTHOUGH THEIR POPULATION HAS BEEN DWINDLING FROM HABITAT LOSS.



GREEN TREES



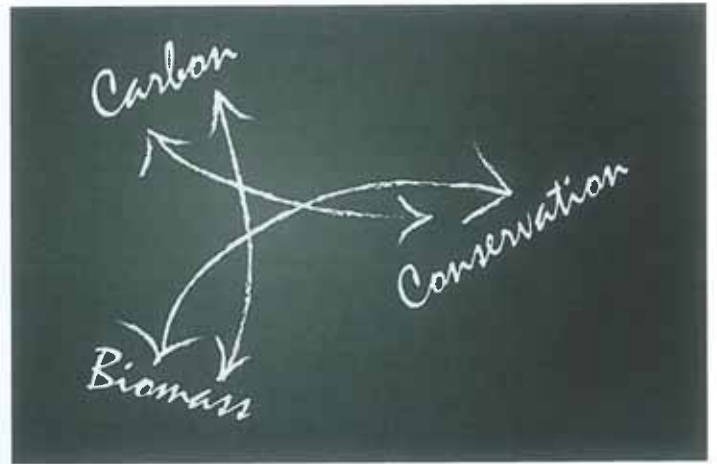
GREEN TREES

**T**he Mississippi River is a critical body of water in North America for commerce, climate and energy. It is the largest river in the United States, and the third longest in the world. It drains the water of 33 states and two Canadian provinces — approximately 41% of the United States. Each year over 505 million tons of product valued between \$80-\$114 billion travel down the river.

Conversion from forestland to agricultural land in the MAV accelerated with the arrival of mechanized agriculture following World War II and dramatically affected the ecosystem. The conversion from forests to agriculture resulted in a decline in the quality of the water and wildlife in the watershed due to the loss of its natural flood control buffer. According to the U.S. Geological Survey, for every 100,000 acres of farmland restored to its natural bottomland forest, the release of 1,550,000 pounds per year (23,250,000 pounds over 15 years) of nitrogen and phosphorous into the Mississippi River would be avoided. EPA estimates that at least 12 tons of soil wash into the Gulf from every acre of cropland in the MAV.

For many years, our economy has not rewarded natural assets even though some of the earth's resources, such as

## THE NEXUS OF VALUE



clean water, shrink due to steadily increasing levels of human consumption.

But now, things are changing in the Mississippi Delta through some innovative silvicultural techniques. These innovative solutions are provided by GreenTrees®, A privately managed forest restoration and carbon sequestration program created for landowners in the Lower Mississippi Alluvial Valley.

Green Trees was created and is managed by C2I, LLC of Virginia. Green Trees' goal is to provide landowners the highest combination of financial and conservation values possible from bottomland hardwood restoration. Landowner enrollment in GreenTrees creates regional scale to produce multiple conservation, wildlife, and ecosystem benefits by using a specific (and heavily researched) inter-planting of 302 cottonwood trees with 302 mixed hardwood trees per acre. This silvicultural method directly addresses the growing demands for verifiable forestry carbon offsets and renewable biomass feedstock supplies.

Green Trees pays landowners to interplant a grid of fast growing cottonwoods and sheltered quality hardwoods on former farmland, creating 10-foot cottonwoods and 4-foot hardwoods within a year of planting. Landowners can also enroll newly planted acreage in the USDA's Conservation Reserve Program (CRP). Participating landowners now have the potential to sit back and watch their forest grow while revenues increase.

Advantages for participating landowners and society in general include:

- Expedited tree growth
- Accelerated carbon sequestration
- Maximized use of the reforestation site (more trees per acre)

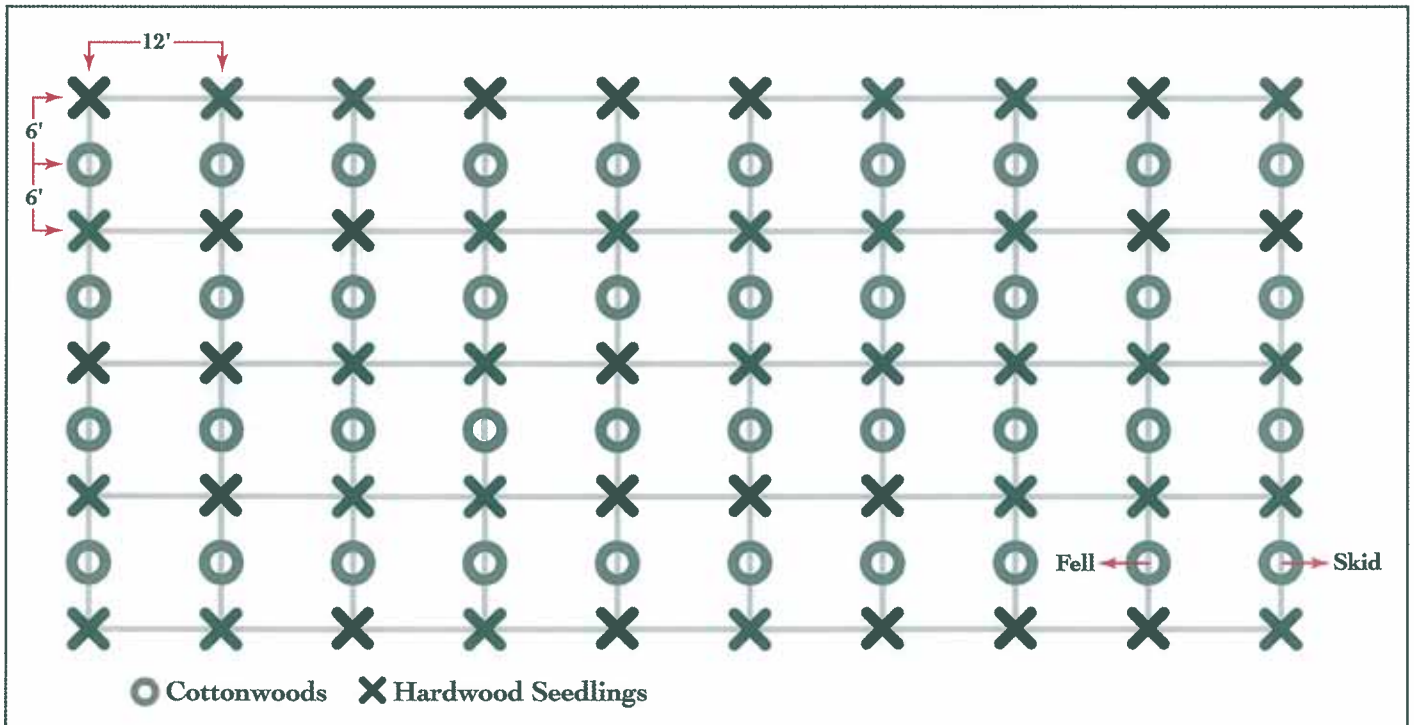


U.S. FOREST SERVICE

GreenTrees' Pat Weber, Bob Misso, and Jim Rhinehart consulting with Emile Gardiner, U.S. Forest Service, on the Phillips' property.

### THE 302/302 COTTONWOOD/HARDWOOD PLANTING SCHEME

Hardwood seedlings are planted on a 12' x 12' spacing in the subsoil trench at the row mark crossing. Immediately following the hardwood seedling planting the cottonwood cuttings are planted in the trench at approximately 6 foot intervals between the hardwood seedlings. Both the cottonwoods and the hardwoods benefit from the subsoiling, from any fertilizer that is applied in the trench, and from any mechanical and/or chemical weed control measures that are applied. Survival, growth rate and growth form are substantially improved by this planting approach. The cottonwoods are available for thinning in approximately year 10, then again in approximately year 17 and a final harvest cut may occur in approximately year 25. The mixed hardwood forest remains and will provide the landowner with a sustainable hardwood forest that will have high economic and ecological value for many years into the future. Sustainable harvest of the hardwood forest will begin at approximately year 35 and at 10 year intervals into the future.



- Improved tree quality
- Higher survivability
- Faster cash flow
- Stimulated recreational income opportunities within 1-2 years
- Rapid growth of biomass and pulp tonnage
- Quality wildlife habitat established quickly for both game and non-game species

### THE GREENTREES APPROACH

GreenTrees' approach enables a natural control mechanism for mitigating disease and insect infestation, as well as weed control, and increased survival. Furthermore, the approach accelerates establishment and growth rates of hard mast-producing hardwood species, and light seeded hardwood. The GreenTrees approach accelerates the typical succession and maturation cycle from 150-plus years to an impressive 30- to 70-year succession and maturation cycle.

### THE PARTNERSHIP

Whereas most projects are created to oversee a depleting asset by extracting resources from the earth, GreenTrees is designed to give the world a permanent asset of greatly increased value

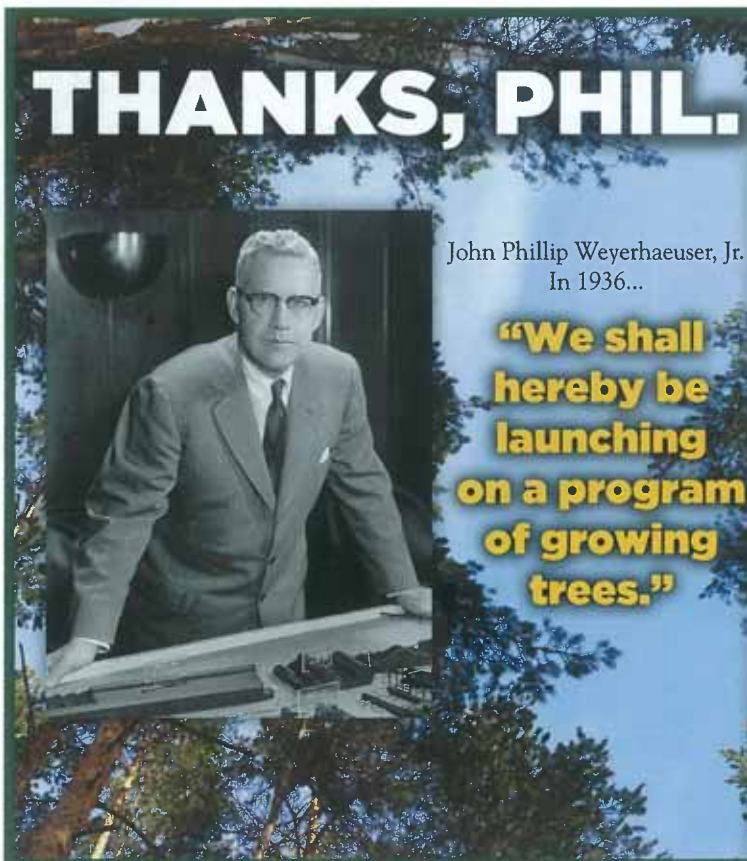
through reforestation and carbon sequestration.

To achieve this investment opportunity, three partners — conservation, private landowner and private capital — must interface in a classic public-private partnership.

### THE ROLE OF PRIVATE CAPITAL

Since most conservation has been funded through philanthropic or governmental money, private capital in conservation represents a new frontier. Bringing private capital into conservation forces the conservation mind-set to look to returns — both economic and environmental. We call this the blended return. As conservation becomes more centered in economics and economics become more focused on purpose, the blended return becomes a powerful and dynamic proposition, enabling a wider net of available dollars available to create exponential impact.

A sustainable investment is a good thing. But a sustainable investment that is hooked to a sustainable investment process becomes a force for exponential change. GreenTrees, by design, has been engineered to create a sustainable investment process thru large-scale replication. We believe these are fundamental design elements of Natural Capitalism.




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GREEN TREES

Receding floods in June of 2011, Vicksburg, Mississippi

### LAYERS OF VALUE IN EACH ACRE

In order to stitch this partnership together, and produce a sustainable investment process, GreenTrees recognized that the creation of a forest produces layers of value. Some we can price today, others we cannot.

In order to capture all the values, GreenTrees employs a concept called ACRE (patent pending), or Advanced Carbon Restored Ecosystem. The ACRE is a series of ecological assets that represent all the values and attributes associated with one acre of restored property. ACRE's value stream is rooted in a common, traditional denominator — one acre of property.

ACRE is an appreciating asset that produces valuation and uneven revenue streams. Investors will purchase these assets for a period of time through a lease of rights rather than fee simple ownership of land. The rights of the ACRE translate to an equivalent number of acres of land the investor's money will touch.

In turn, private landowners receive income as the stock change is quantified each year. The faster the trees grow, the faster the incomes flow to the landowner. And as a result, conservation is an outcome of the business deal.

To this end, both Duke Energy and Norfolk Southern Railways have invested in GreenTrees. Today, we have over 5 million trees

planted with 5 million more to go. This accounts for 2 million tons of carbon credits over time from 17,000 acres restored.

### THE ROLE OF PRIVATE LANDOWNERS

With a proven means to accelerate the growth of bottomland hardwood forests and with a conduit called ACRE in which investors are investing capital, the private landowner is the key to the initiation of this partnership. It is their stories, their belief, that helps us drive towards the rise of Natural Capitalism and the Restoration Economy.

So, here is to the landowners. The ones who care enough to plant trees under whose shade they may never sit. The ones that plant hope, purify the air, clean the water and create life. 🌱

*For more information contact Chandler Van Voorhis, Co-Founder and Managing Partner of GreenTrees, LLC, a member of the Outdoor Writers Association of America and co-recipient of the 2002 ChevronTexaco Conservation Award. He can be reached at [chandler@green-trees.com](mailto:chandler@green-trees.com)*

# FOREST SERVICE RESEARCH PROVIDES FOUNDATION FOR CONSERVATION CAPITALISM PARTNERSHIP

**B**uilding on a pioneer interplanting regimen of cottonwoods and hardwoods developed to an operational scale by the U.S. Forest Service Southern Research Station's Center for Bottomland Hardwoods Research (CBHR), **GreenTrees**, the conservation arm of C2I, works with private landowners to reforest the Mississippi Alluvial Valley (MAV) and deliver carbon credits to corporations. The CBHR, U.S. Fish and Wildlife Service (FWS), USDA Natural Resources Conservation Service (NRCS), Mississippi State University, the National Council for Air and Stream Improvement, and Crown Vantage Corporation developed the initial regimen of interplanting cottonwoods with other hardwoods, such as Nuttall oak. This regimen quickly creates a forest environment in which slower growing hardwoods can develop straighter, less branchy stems while sheltered by fast growing cottonwoods. The rapidly growing, denser forest enhances wildlife habitat, improves water quality, and captures carbon quickly. The initial interplanting regimen called for 302 cottonwoods per acre. Interplanted with 151 oaks per acre Ted Leininger, CBHR project leader, led the research and day-to-day site operations at the Sharkey Restoration Research and Demonstration Site to refine the interplanting technique and determine its effectiveness for plantations on private lands.

Emile Gardiner, CBHR research forester, led forest management research and development of applications, assessing whether a denser interplanting regimen could survive probable damage from harvesting cottonwoods. Paul Hamel, CBHR research wildlife biologist, led efforts to investigate management impacts on resident and migratory birds and small mammals, principally rodents.

The interplanting research began to be transferred into an application to provide economic sustainability and conservation benefits for private landowners and corporations in 2005 when James Cummins of Wildlife Mississippi and the Carbon Fund became interested in the interplanting concept. Cummins brought in C2I's Carey Crane, founding partner, and Chandler Van Voorhis, co-founder and managing partner, to explore the interplanting regimen's advantages. It was the beginning of a cooperative effort to modify the method to include twice as many hardwoods per acre. **GreenTrees** began to experiment with the CBHR's interplanting method for their forest restoration efforts in the mid-South. **GreenTrees**, a founding member of the American Carbon Registry, moved the project forward by assembling a team that included Leininger; Gardiner; Ray Aycock of FWS; Pat Weber of Crown Vantage Corporation; Bob Misso, **GreenTrees'**

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chief forester; and Don Anderson, nursery manager of Big River Cottonwood Nursery.

Leininger and Gardiner led the effort to modify the interplanting method to include twice as many hardwoods per acre. The reason oaks were planted between every other row of cottonwoods in the 302-151 regimen rather than between every row was due to concern that a large harvester maneuvering in the stand during cottonwood harvest would damage residual oaks. Gardiner's research demonstrated a very low amount of injury to residual oaks during cottonwood harvest, leading to the conclusion and subsequent recommendation that oaks could be planted between every row of cottonwoods. Hamel's research found that bird community response to the oak-cottonwood treatments reflected the addition of forest birds to the communities of old-field successional species that typify less structurally diverse forest restoration efforts. Cottonwood-oak stands typically had twice as many bird species as other treatment types after only seven growing seasons. Small mammal response to the forest restoration effort was prodigious, and large populations developed in those treatments that did not include control of herbaceous vegetation. The improved habitat resulted in the appearance of five woodpecker species, Carolina chickadees, and yellow-rumped warblers, among many other bird species. Approximately a third of the bird species observed were found only in the cottonwood-oak interplantings.

In 2007 **GreenTrees** launched its forest restoration project to restore open and marginal farmland in the MAV, the nation's largest watershed, to hardwood forests capable of storing large amounts of carbon dioxide, providing habitat for wildlife and birds, and benefiting landowners economically by enabling them to lease their land to **GreenTrees** and sell harvested timber at scheduled intervals. **GreenTrees** leases private lands for planting millions of trees in the MAV, including parts of Arkansas, Louisiana, and Mississippi. **GreenTrees** offers landowners a lease which aligns with the 15 year lease landowners typically enter into through the USDA Farm Service Agency's Conservation Reserve Program (CRP). The USDA Farm Bill offers the voluntary program to provide conservation and economic benefits to landowners.

This partnership among federal and state researchers and managers, nongovernmental organizations, and private consultants laid the foundation for conservation capitalism to help restore the MAV and provide landowners with a more reliable source of income than other crops. Known historically as North America's Amazon because of its biodiversity, 25 million acres of bottomland hardwoods once grew in the MAV before that number was cut to 4 million acres as the land was cleared for agriculture. The land that was marginally productive for row crops is getting a fresh start.

**Contact Ted Leininger at [tleininger@fs.fed.us](mailto:tleininger@fs.fed.us) for more information about the Center for Bottomland Hardwoods Research.**

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