

SOUTHEASTERN SWAMPLANDS AND PAPER PACKAGING:

A REPORT ON THE WORLD-CLASS BIOLOGICAL DIVERSITY OF THE REGION
THREATENED BY BIG PAPER COMPANIES AND THEIR CORPORATE CUSTOMERS



DOGWOOD
ALLIANCE

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THE MIDDLE ATLANTIC COASTAL FOREST ECOREGION

A DOGWOOD ALLIANCE FOCAL AREA REPORT

EXECUTIVE SUMMARY

From the cypress swamps, pine bogs, pocosins and longleaf pine savannas to the alligators and the unique Venus flytrap, the Middle Atlantic Coastal Forests are home to a rich and diverse swath of the natural world. Indeed this diversity of life is of national and global significance.

Beyond the importance of the amazing biological diversity in these forests, they also provide a broad array of resources that are integral to both our quality of life and are an essential part of our cultural heritage. We all rely on clean, healthy air to breathe. Our forests act as important air filters and with global warming expected to intensify the power of the storms hitting the southern coasts; these forests also play a major role in moderating climate and preventing flooding.

This report details outstanding ecological values of the Middle Atlantic Coastal Forests and gives an account on how they are distributed across the 31 million acre region. In addition, it focuses on the negative impact

of the industrial pulp and paper industry which holds broad economic, social and political influence over the management of these forests and over the ecological values of the region with a particular focus on the impact of three large paper packaging mills owned by International Paper which sources wood fiber from these forests.

Finally using market research this report documents the connections between the forests and the marketplace. Wood fiber from the forests of the region is tracked from the mills where the paper is produced through the packaging converter and finally to packaged product bearing a nationally recognized brand. This chain of custody from the woods through various stages of production all the way to the marketplace allows us to engage with these large corporate packaging customers about the impacts that their packaging decisions have on the forests of the region. And it allows the broader public to understand the impact of their marketplace choices as well and to communicate their issues and concerns about the chain leading back to destructive logging practices on the ground in the forests of the Middle Atlantic Coast.



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SOUTHERN FORESTS: THE GLOBAL SIGNIFICANCE OF THE REGION'S NATURAL DIVERSITY

From the cypress swamps, pine bogs and pocosins of the Middle Atlantic and Gulf coasts to the mixed pine-oak and hardwood forests of the Piedmont and Cumberland Plateau to the rich and diverse landscapes of the Appalachians and Ozarks, Southern forests are places of amazing natural beauty. Our forests are home to more plants and wildlife than any other region in North America and in the case of freshwater aquatic diversity, more than anywhere else in the world.

Southern forests provide an amazing array of resources that are integral to both our quality of life and are an essential part of our cultural heritage. Millions of people in the South rely on clean drinking water from our forested watersheds. We all rely on clean, healthy air to breathe. Our forests act as important air filters and also play a major role in both moderating climate and preventing flooding.

For generations, our forests have supported community saw mills and local wood products industries like manufacturers of fine furniture, hardwood flooring, and

high quality lumber. They are also an amazing resource for medicinal plants such as ginseng and golden seal. We hunt in our coastal forests for game species like deer and grouse, fish our mountain streams for brook trout and photograph migratory songbirds making stopovers between the Boreal forests of Canada and South American rain forests.

In addition to hunting, fishing and bird-watching, forest-based recreation such as hiking, mountain biking and whitewater rafting bring hundreds of millions of dollars to our local economies in the South every year. Our whitewater paddling is considered by most experts to be some of the best in the entire world. In addition to work and play, our forests provide an amazing place to find peace and solitude and refresh and replenish our spirits.

When you think of biodiversity, the tropical rainforest of the Amazon or Indonesia might come to mind, but you do not have to travel beyond Southern forests to find biodiversity of global importance.

SOUTHERN FORESTS ARE HOME TO:

The highest concentration of tree species diversity in North America;

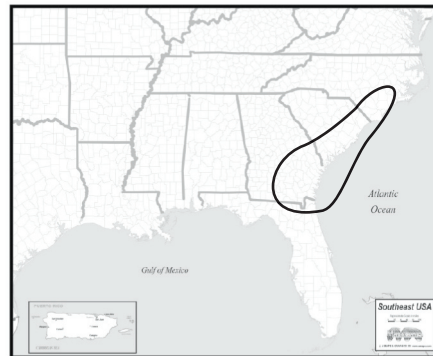
The highest concentration of aquatic diversity in the continental United States, including the richest temperate freshwater ecosystem in the world; and

The highest concentration of wetlands in the U.S., 75% of which are forested.

“Nowhere in America is there a greater variety of native plant communities, native plant species, or rare and endemic plants”

USFS 2002

MIDDLE ATLANTIC COASTAL FORESTS: UNIQUE DIVERSITY AND SPECIAL BEAUTY



Southern Swampland Focal Area

Covering approximately 31 million acres along the coastal plain of the southeastern United States stretching from Delaware in the north through the Chesapeake Bay area, through the Carolinas and into northern Georgia, the Middle Atlantic Coastal Forests eco-region is home to important ecological values and represents a compelling conservation opportunity. World Wildlife Fund U.S. characterized the Middle Atlantic Forest ecoregion as endangered and the area has been heavily impacted by human uses and development, yet is still home to

globally important biological features across the forested landscape. Indeed large industrial paper mills across the South and Middle Atlantic have made the region the largest paper producing region in the world. The paper mills including 3 large paper packaging mills located in Franklin, Virginia, Riegelwood, North Carolina and Augusta, Georgia discussed in this report serve to represent the broader threat industrial forestry imposes on the Middle Atlantic coastal forests.

Endemism is the ecological state of being unique to a place. Endemic species are not naturally found elsewhere. The place must be a discrete geographical unit, such as an island, habitat type, or other defined area or zone. For example, the Waccamaw Killfish is endemic to Southeastern North Carolina, meaning it is exclusively found in Lake Waccamaw

THOSE IMPORTANT BIODIVERSITY COMPONENTS INCLUDE:

1. Rare forest types
2. Forests of high species richness;
3. Forests containing high concentrations of rare and endangered species;
4. Forests home to unique species
5. Important core habitat for aquatic and terrestrial species
6. Forests exhibiting rare ecological and evolutionary phenomena.

Taken together this region contains significant biological and environmental values worthy of protecting, enhancing and restoring.

BIOLOGICAL DISTINCTIVENESS – SPECIES RICHNESS AND ENDEMISM

Based on a continental assessment by World Wildlife Fund U.S., the Middle Atlantic Coastal Forests ecoregion scores high or very high in species richness and endemism (or centers of species origin) for many animals. In order to get a continental perspective on these important biological values, we provide a series of maps from that final report (Ricketts et al. 1999), which clearly communicate the importance of the region in terms of species richness and endemism.

Taxonomic Group	Species Richness (#)	Species Endemic (#)
Vascular Plants	1,488	16
Conifers	12	0
Mammals	47	0
Birds	237	0
Reptiles	64	0
Amphibians	49	3
Butterflies	154	1
Land Snails	108	12
Totals	2,147	32

Species richness and endemism totals for eight taxonomic groups for the Middle Atlantic Coastal Forests ecoregion (Ricketts et al. 1999, DellaSala et al. 1999).

HIGH TERRESTRIAL SPECIES DIVERSITY

Terrestrial species richness is high, but endemism is lower than in the neighboring Appalachians. The richest taxonomic groups include birds, reptiles, and trees, and endemism is concentrated on trees, land snails, and amphibians

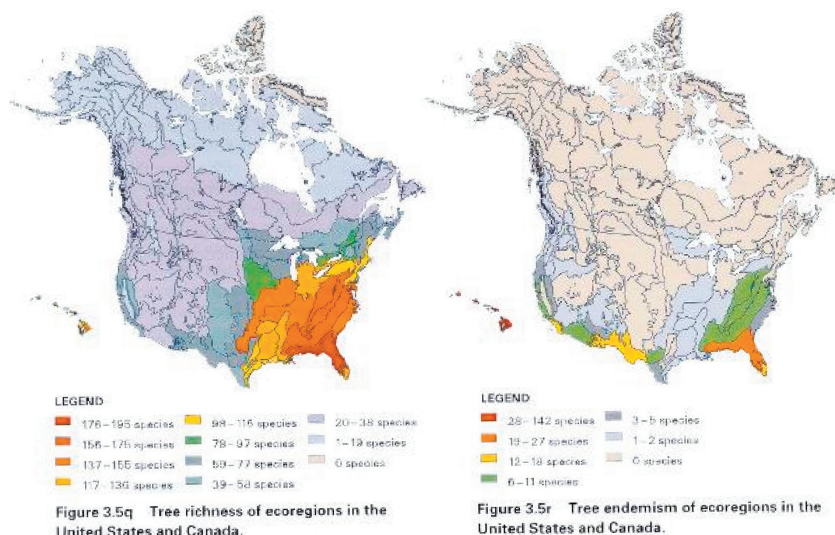


Figure 13. Tree species richness and endemism for the U.S. and Canadian portion of North America (Ricketts et al. 1999).

This map presents species richness and endemism results for trees for the U.S. and Canadian portions of North America. The southeast is clearly the hotspot for tree diversity and

endemism, with the Middle Atlantic Coastal Forests ecoregion ranked just few classes below the neighboring ecoregions where richness and endemism are a little higher.

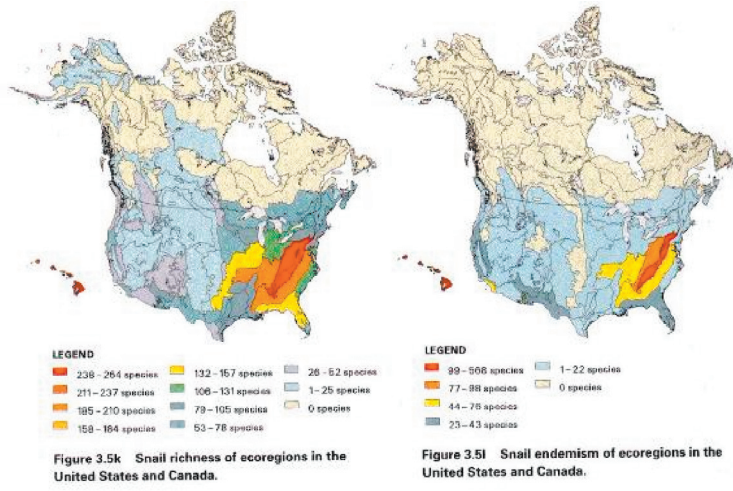
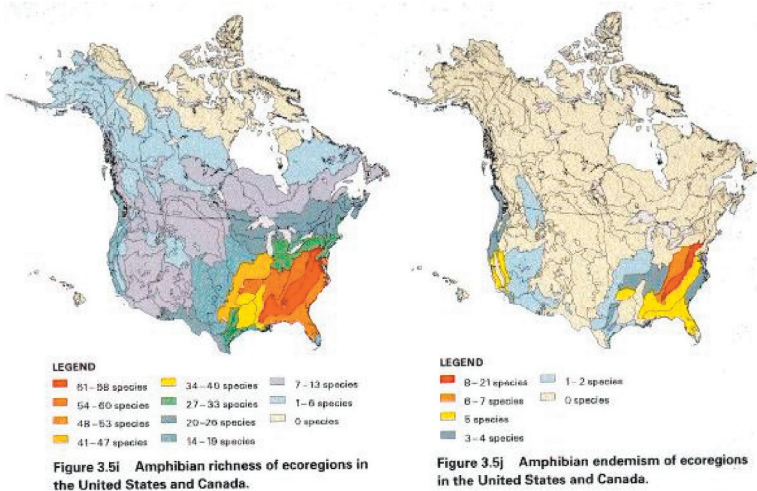


Figure 14. Amphibian species richness and endemism for the U.S. and Canadian portion of North America (Ricketts et al. 1999).

This richness is also true for amphibians including the unique Neuse River Waterdog. This map presents the same data for amphibians.



Neuse River Waterdog endemic to Northeastern North Carolina

Figure 15. Land snail species richness and endemism for the U.S. and Canadian portion of North America (Ricketts et al. 1999).

This incredible species richness is true as well for landsnails. This map presents the land snail data:



Drymacus Multilineatus Land Snail

EXTREMELY HIGH AQUATIC DIVERSITY

The Middle Atlantic Coastal ecoregion contains very high levels of native terrestrial diversity, but it is in the freshwater aquatic world where the region scores extremely high. In a companion assessment to the terrestrial one, World Wildlife Fund U.S. examined the major freshwater aquatic taxa according to major watersheds for all of North

America. Two major drainage basins intersect this region – Chesapeake Bay and South Atlantic. Species richness and endemism or uniqueness results are very high for three groups: fishes, mussels, and crayfishes. As you can see the Middle Atlantic Coastal Forests ecoregion is either at the top or near the top in all of these maps.

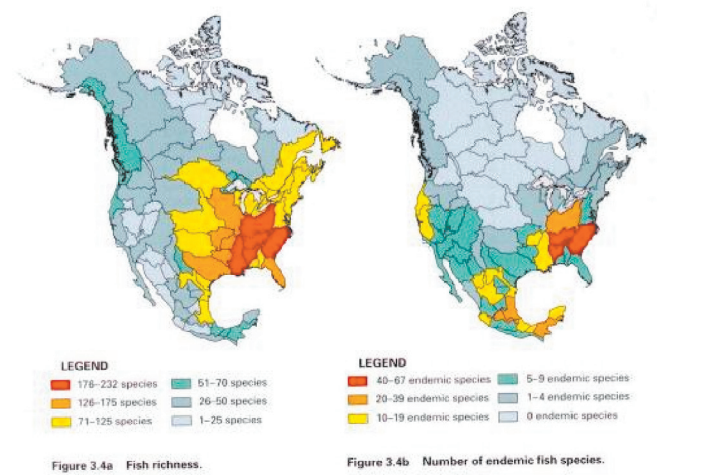
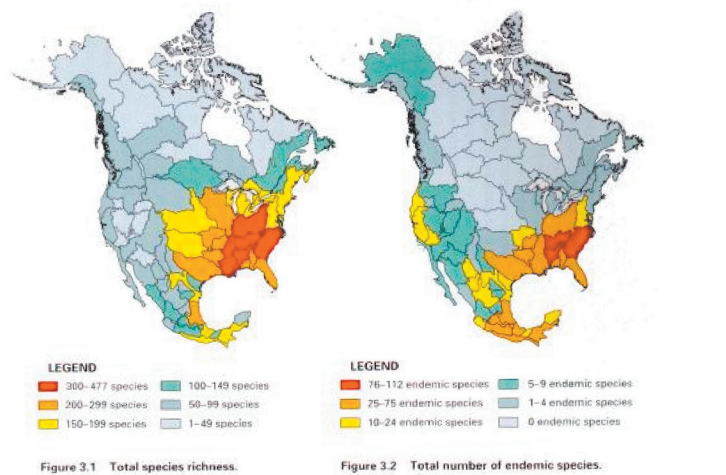


Figure 16. Total freshwater aquatic species richness and endemism for North America (Abell et al. 2000).

Figure 17. Total fish species richness and endemism for North America (Abell et al. 2000).

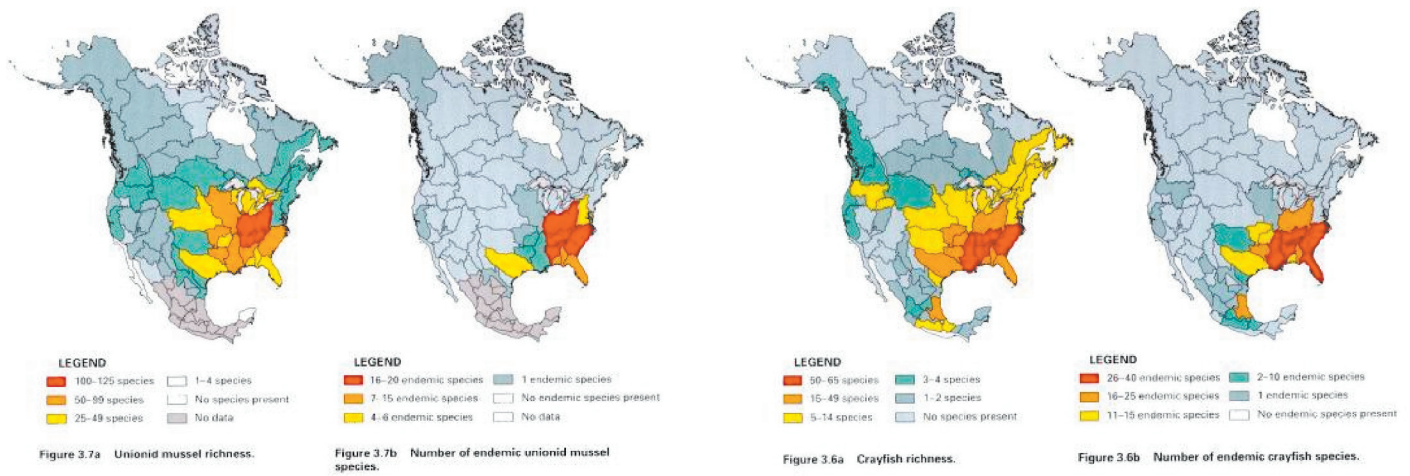


Figure 18. Total unionid mussel species richness and endemism for North America (Abell et al. 2000).

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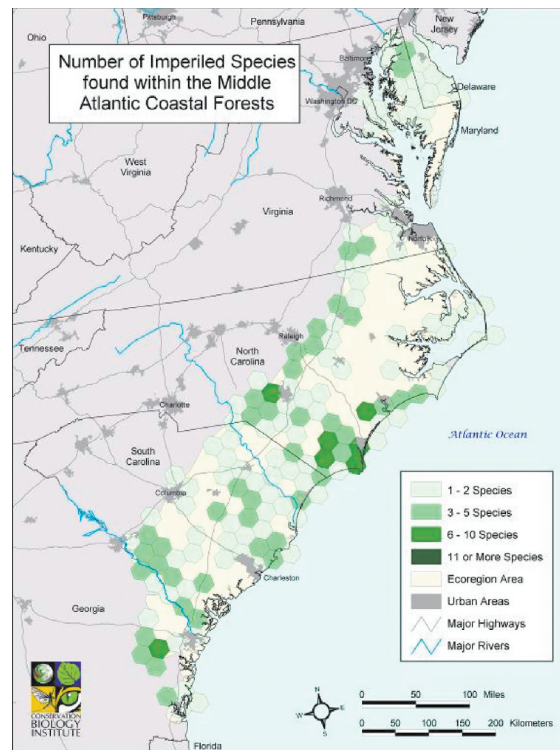


Figure 25. Number of imperiled species within the Middle Atlantic Coastal Forests ecoregion (Source: NatureServe).

SPECIAL NATURAL COMMUNITIES

It has been estimated that the majority (approximately 90 percent) of the ecoregion has had its natural ecosystems either converted or degraded in some way. The largest fundamental changes and losses in natural systems have come from

conversion of native forests to plantation forests, draining of wetlands, and urban development. Yet ecologically important values remain across the region including special biological communities with high conservation values.

WOODY AND HERBACEOUS WETLANDS



Forested wetland in Merchants Mill State Park, North Carolina

Perhaps the most important special community across the region is the forested wetlands which are extremely important ecological communities. Home to such a rich diversity of species, according to the most recent satellite-based mapping efforts, approximately 30 percent of the ecoregion is in either woody or herbaceous wetlands. However, the National Wetlands Inventory, which is based on more detailed aerial photography and ground mapping, puts the ecoregion percentage closer to 42 percent. Many of the larger, more intact wetlands are in public ownership, and wetland cover differs among the

three mill sourcing zones. The Franklin sourcing region contains the most wetlands (5,671,194 ac) according to the National Wetlands Inventory. Riegelwood was second with 4,440,712 ac and Augusta last with 2,881,871 ac. While according to the US Forest Service industrial forestry and the conversion of these forested wetlands into pine plantation has been the leading cause of the loss of these systems, important examples remain. These extremely important communities should be included in a High Conservation Value or Endangered Forest assessment.

CAROLINA BAYS



Lake Waccamaw, Southeast North Carolina

Various ecosystem types are becoming exceedingly rare throughout the ecoregion. One very unique community type characteristic to the region is the Carolina bay – oval-shaped, bogs scattered along the coast of North Carolina, South Carolina, and Georgia. Carolina bays contain special assemblages of plants and animals – some species are rare. Few Carolina bays, which once numbered over 6,000 remain intact. Most have been converted to agriculture or urban development. Pocosins are another

special community type that develops on damp, nutrient-poor flats dominated by pond pine and evergreen shrubs such as gallberry, titi, and sweetbay. Pocosins have also been widely destroyed with less than 1/3 of its original area extent still remaining. A particularly rich example of a Carolina Bay which is home to many endemic species and has been protected is Lake Waccamaw State Park located in South Eastern North Carolina.

BOTTOMLAND OR WETLAND FORESTS

Bottomland or wetland forests historically dominated the ecoregion with species such as Atlantic white cedar, bald cypress, and swamp tupelo. Logging interests for many decades targeted forests dominated by bald cypress and Atlantic white cedar, and few old-growth forests of this type remain. Bald cypress is a very slow growing species but long-lived (e.g., trees that are hundreds of years old or more are common in pristine bald cypress forests). White

cedar has been all but eliminated in Virginia (the Great Dismal Swamp was once a stronghold for this important species) and approximately 90 percent has been lost in North Carolina. Most of the remaining bottomland (or swamp) forests are associated with the numerous and extensive tidal river systems or in a few larger, non-linear areas (e.g., Great Dismal Swamp) even though most of those have been seriously degraded.

LONGLEAF PINE SAVANNAHS



Oak and longleaf pine in Southeast Virginia

In addition, the longleaf pine communities of the uplands have been almost entirely replaced by plantation forests. Once covering more than 60 million acres of the southeast, longleaf pine communities occupy less than 3 million acres today with many of these acres highly fragmented and degraded. The open savannas have a diverse herb layer with many orchids

and insectivorous plants. Much is also comprised of a dense evergreen shrub bog (pocosin) dominated by gallberry, titi, and sweetbay. The more pest and disease resistant loblolly pine has replaced many of the original longleaf pine communities throughout the southeast.

ECOLOGICALLY IMPORTANT CORE PROTECTED AREAS: PARKS, RESERVES, REFUGES, ETC.



The region is blessed with a wide variety of protected land which serves as core for the region's important biodiversity. Geographically, the main protected area concentrations (running north to south) include: (1) the Great Dismal Swamp along the Virginia/North Carolina border, (2) cluster of National Wildlife Refuges between the Albemarle Sound and Pamlico River, (3) wilderness area complex within the Croatan National Forest, (4) Great Green Swamp region in southern North Carolina, (5) the cluster of protected areas in and around the Francis Marion National Forest and (6) the Fort Sumpter National Forest across the Savannah River from August, Georgia. Well-loved protected areas across the eco-region are home to critical biodiversity and include many popular parks and reserves and refuges.

Figure 8. Protected areas status for the three International Paper mill sourcing areas highlighting key areas mentioned in the text.

GREAT DISMAL SWAMP, SOUTHEAST VIRGINIA AND NORTHEAST NORTH CAROLINA



Great Dismal Swamp, Northeast North Carolina

The Great Dismal Swamp National Wildlife Refuge is located in southeastern Virginia and northeastern North Carolina. The refuge consists of over 111,000 acres of forested wetlands. Lake Drummond, at 3,100 acres and the largest natural lake in Virginia, is located in the heart of the swamp.

Five major forest types and three non-forested types of plant communities comprise the swamp vegetation. The forested types include pine, Atlantic white-cedar, maple-blackgum, tupelo-bald cypress, and sweetgum-oak poplar. The non-forested types include a remnant marsh, a sphagnum bog, and an evergreen shrub community. Tupelo-bald cypress and Atlantic white-cedar, formerly predominant forest types in the swamp, today account for less than 20 percent of the total cover. Three species of plants deserving special mention are the dwarf trillium, silky camellia, and log fern. The dwarf trillium is located in the northwestern section of the swamp and blooms

briefly each year for a two-week period in March. Silky camellia is found on the hardwood ridges and in the northwestern corner of the refuge. The log fern, one of the rarest American ferns, is more common in the Great Dismal Swamp than anywhere else on earth.

Over two hundred species of birds have been identified on the refuge; ninety-six of these species have been reported as nesting on or near the refuge. Birding is best during spring migration from April to June when the greatest diversity of species (particularly warblers) occurs. Winter brings massive movements of blackbirds and robins to the swamp. Two southern species, the Swainson's warbler and Wayne's warbler (a race of the Black-throated Green warbler), are more common in the Great Dismal Swamp than in other coastal locations. Other birds of interest are the wood duck, barred owl, pileated woodpecker, and prothonotary warbler

ZUNI AND ANTIOCH PINE BARRENS, SOUTHEAST VIRGINIA

In Southeast Virginia, on the east side of the Blackwater River near the village of Zuni, lays one of the State's finest old growth loblolly pine and turkey oak woodlands. The pines are impressive in stature, especially considering that they inhabit dry sandy soils. The Pine/Scrub Oak Sandhill community supports a number of plant species that are rare in Virginia including Plukenet's flatsedge, sandywoods chaffhead and viperina. The wet swales between the sandhills create ecotones that are home to a great diversity of wildflowers. Among many others there can be found orchids, trilliums, bellworts and lilies. These herbaceous

plants are components of a woodland community that are dependent on frequent fires.

Also located on this preserve are important longleaf pine communities that represent some of the last native longleaf left in Virginia. Some of these trees are being used in a breeding program by the Virginia Department of Forestry in an effort to restore native longleaf pine to its former range in Virginia.

MERCHANTS MILLPOND STATE PARK, NORTH CAROLINA

The 3,250 acre park includes complex, mature ecosystems. Towering bald cypress and tupelo gum tree with growths of Spanish moss and resurrection ferns, shade the pond's dark, acidic waters. Numerous species of aquatic plants, such as the floating yellow cow lily and the submerged coontail, thrive in the pond.

The diverse habitats in the park support a variety of animals. Wetland wildlife and aquatic species are particularly abundant. More than 200 species of birds, ranging from graceful egrets to turkeys and owls, have been recorded in the park. Pileated woodpeckers, barred owls, and red-shouldered hawks also enjoy the swamplands.

LAKE WACCAMAW STATE PARK, SOUTHEAST NORTH CAROLINA



Endemic Waccamaw fatmucket mussel

A large shallow lake west of Wilmington that's one of hundreds of Carolina bays in North Carolina. The term "bay" for these natural basins originates from the fact that there is an abundance of sweet bay, loblolly bay and red bay trees growing beside these watery, oval depressions in the earth. The limestone bluffs give the lake its neutral pH which provides habitat for several rare fish, mussels and snails, some of which are only found at Lake Waccamaw. At Lake Waccamaw, fish endemics include Waccamaw darter, Waccamaw silverside, and Waccamaw killifish. The water also contains a diversity of unusual mollusks. The endemic Waccamaw spike and Waccamaw fatmucket

are among the 15 species of mussels and clams found in the lake. And, of the 11 snail species, the Waccamaw annicola and the Waccamaw siltsnail are also endemics.

John Bartram, the nation's first renowned botanist, gives discussions of the area in his *Diary of a Journey Through the Carolinas, Georgia, and Florida* from July 1, 1765, to April 10, 1766. Lake Waccamaw is specifically mentioned in "A New Voyage to Georgia by a Young Gentleman" in 1737. The gentleman states, "I think it is the pleasantest place that ever I saw in my life."

GREEN SWAMP PRESERVE, SOUTHEAST NORTH CAROLINA



The Venus' flytrap (*Dionaea muscipula*), is one of the most astonishing plants in the world. A relative of the sundews this remarkable species' native habitat in all the world is a narrow strip of coastal land approximately 10 miles wide and 100 miles long in North Carolina and adjacent South Carolina. When triggered by an insect, the leaf blade folds closed along its midrib bringing the two halves together. Three bristle-like hairs

near the middle of the upper side of the leaf blade are sensitive to touch and cause the blade to snap shut. A fringe of stiff hairs around the edge of the blade become interlocked (intermeshed) when the blade folds closed, thus trapping the insect like bars in a jail cell. Then, digestive enzymes from glands on the leaf surface break down the proteins of the imprisoned victim, and the plant gets a supplemental source of nitrogen.

The Green Swamp, located near Lake Waccamaw State Park, is an area of major biological significance in North Carolina. It was designated by the U.S. Department of the Interior as a national natural landmark in 1974. The 15,722-acre Green Swamp Preserve features examples of pine savannas, bay forests

and pocosins with hundreds of different plant species. Unusual animals found in the swamp include the endangered red-cockaded woodpecker, the eastern diamondback rattlesnake, Bachman's sparrow and the American alligator. The preserve is located in Brunswick County, North Carolina.

PHINIZY SWAMP NATURE PARK, AUGUSTA, GEORGIA

Located on 1100 acres and just minutes from downtown Augusta, Phinizy Swamp Nature Park offers an important refuge for migratory birds. The Park is home to blue heron, red-shouldered hawk, otter, alligator and bobcat as well as cypress

and native oaks and epiphytes. The importance of this habitat near where the coastal plain reaches the piedmont is confirmed by the impressive diversity of birdlife including wading birds, waterfowl, upland game birds and shore birds as well.

PRIVATE LAND AND THE PROTECTION OF THE REGION'S BIOLOGICAL RICHNESS

While the protected areas can serve as core areas protecting this globally important biological resource it is important to note that a large proportion of the ecoregion is owned and managed by private individuals or corporations (92%) while public ownership discussed above only makes up approximately 8 percent. Of the public lands, roughly a third is managed by the Department of Defense, another third by the U.S. Fish and Wildlife Service, with the

remainder spread out among five other agencies. With the exception of a few large protected areas in the region, the average size tends to be quite small, and the network of protected areas are widely scattered across the regional landscape mostly within 20 miles from the coastline. These factors have important conservation ramifications (i.e., protected areas are more effective at conserving native biodiversity when they are large and connected).

THREATS TO THE MIDDLE ATLANTIC COASTAL FORESTS

PAPER, PAPER PACKAGING AND SOUTHERN FORESTS

By the beginning of the 20th Century the vast majority of Southern forests had been logged by timber barons robbing the people of the region of their natural and cultural heritage. Over half a century later the forests had largely returned showing their amazing resiliency. Seizing on opportunity in a region where 90% of the forests are privately owned and legal protection is notably absent, the pulp and paper industry moved here en masse starting in the mid 1980's.

In a matter of two decades, the Southern United States was rapidly transformed into the fiber basket for the world, and now produces over 15% of the world's paper supply. By 1999, over six million acres of Southern forests were logged every year, largely for paper production.

In addition to large-scale clearcutting and its associated impacts, the paper industry brought with it the rapid conversion of our native forests to lifeless pine plantations managed with the routine use of chemical fertilizers, toxic herbicides, and insecticides. Though production levels have decreased in recent years, the South remains the largest producer of wood products in the world and is projected to remain the world leader in paper production for many years to come.

Large producers of paper and wood products hold broad economic, social and political influence over the management of the South's forests (as well as the world's).

PACKAGING AND SOUTHERN FORESTS

The Southern United States remains the world's largest paper producing region. The mills that produce paper products in this 13-state region have a tremendous impact on our forests. While these Southern mills produce a wide

variety of paper for products ranging from cigarette paper and newsprint to paper cups and swabs, paper packaging accounts for approximately 25% of all of the wood fiber coming from Southern forests. Across the South, dozens of

mills owned by large domestic and international companies produce a laundry list of packaging products: corrugated cardboard boxes, heavy bags for holding cement or dog food, ice cream boxes, milk and juice containers, boxes covering bottles of aspirin and perfume or hair gel, and even the paper boxes for music CDs, video game, and DVDs.

In 2004, more than half of all the paper produced in the United States was used in paper packaging. In other words, more than half of all of the trees, forests, and habitat cut

down, chipped up, and pulped became not products, but packaging holding the products consumed in our modern American lifestyle.

Overall, paper is the most frequently used packaging material at 34% of the total packaging industry, with plastic packaging second at 30%. Because the Southern U.S. remains the largest paper producing region in the world, and more than half of all paper production goes to paper packaging, our society's decisions about packaging directly impact Southern forests.

INDUSTRIAL FORESTRY'S IMPACTS ON SOUTHERN FORESTS AND THE MIDDLE ATLANTIC REGION



Two Clear cuts in the Green Swamp, Southeastern North Carolina

The impacts of industrial forestry on the region are longstanding and severe. Indeed according to the US Forest Service Southern Forest Resource Assessment, the leading cause of the loss of forested wetlands across the

region and the South has been conversion of those natural forests into industrial pine plantations. This process of “ditching and draining” results in the total loss of that habitat.



Ditching and draining for pine plantation Green Swamp

In addition, across the Southern United States the Forest Service estimates that over 5 million acres per year are clearcut primarily for the production of paper. The clearcutting in the region, in an area that is heavily converted to industrial

pine plantations is extreme. In addition, the maintenance of these monoculture plantations requires regular and extensive applications of fertilizers and herbicides which have ecological effects across the region.

INTERNATIONAL PAPER PACKAGING MILLS IN THE MIDDLE ATLANTIC COASTAL FORESTS

According to the University of Georgia's Center for Paper Business and Industry Studies and the 2005 Lockwood-Post Directory of Pulp & Paper Mills, in the 13 states that make up the US Forest Service's Southern Region, there are 96 mills producing paper packaging. The US South is the largest paper producing region in the world and the number one paper product coming from the region is paper packaging. As far as impact to the South, one big player rises to the top. International Paper with a focus on consumer packaging owns 5 container board mills

and 4 additional consumer paper packaging mills across the South. Across this region in particular, International Paper owns 3 large mills which source from this area.

Because of their location and their large hunger for fiber, these mills represent the point of focus to educate the broader community about the special ecological and cultural values of the area and the negative impact that business as usual forestry has had on the region.

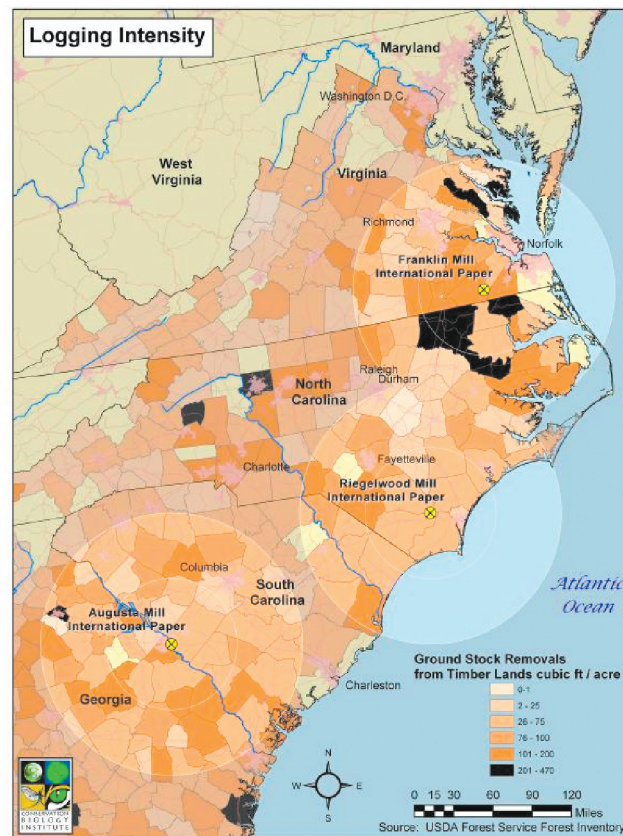


Figure 8. Logging intensity summarized by county within the survey region highlighting the three International Paper sourcing areas. Ground stock pertains to the total amount of wood harvested, including saw logs, veneer, and pulp.

RIEGELWOOD

The Riegelwood Mill, near Wilmington, North Carolina, produces 876,000 tons of paperboard per year. Located on the Cape Fear River in Southeastern North Carolina the large and efficient mill broadly draws wood fiber for its production from a large sourcing circle that includes rare and important ecological habitats. Surrounding the mill, leading east to the Atlantic Coast, down into South Carolina and extending north and east is the ecological wonder the Green Swamp. The Green

Swamp and Lake Waccamaw as reported above is home to impressive aquatic diversity including several endemic species that exist no where else on earth. It is also home to massive cypress and tupelo and contains some of the country's finest examples of longleaf pine savannas. The wetland areas have a very diverse herb layer with many orchids and rare insectivorous plants. There are also ecologically important dense evergreen shrub bogs (pocosin) dominated by gallberry, titi, and sweetbay.

FRANKLIN

In Southeastern Virginia, the Franklin Mill which produces 678,000 tons of office paper and 120,000 ton of bleached board per year. The mill voraciously feeds on wood fiber harvested from important ecological habitat with a sourcing footprint that stretches from the impressive stands of cypress and Atlantic white-cedar in the Great Dismal Swamp to the hardwoods of the ridges leading to the Appalachian Mountains. Three plant species in the Swamps deserve special mention including the dwarf trillium, silky camellia, and log fern. The dwarf trillium is located in the northwestern section of the swamp and blooms briefly each year for a two-

week period in March. Silky camellia is found on the hardwood ridges and in the northwestern corner of the refuge. The log fern, one of the rarest American ferns, is more common in the Great Dismal Swamp than anywhere else. Logging continues to be a significant activity in the region. According to USDA Forest Service FIA data from 2005, logging intensity varies among the different counties, but the data clearly shows very high logging intensity in the Franklin mill sourcing area. While the Franklin mill is a large recipient of the harvest, not all of the wood harvested goes to that mill

AUGUSTA

The Augusta Mill located in Augusta, Georgia, which creates 650,000 tons of paperboard per year. According to International Paper's own description of the mill, the Augusta Mill receives "more than 3,000 tons of wood daily at the mill, the entire process—from tree to paper—is completed on-site in Augusta." The mill is located in Georgia's southeastern plains near the Savannah River and the border with South Carolina. The fiber sourcing footprint for mill reaches both down into the coastal region and up into the Piedmont.

Within the sourcing footprint of these mills are important biological factors which are impacted by industrial logging practices. Issues of critical concern include impacts on wetlands, mussels, native fish and crayfish. In addition, the sourcing footprint impacts a number of additional imperiled species.

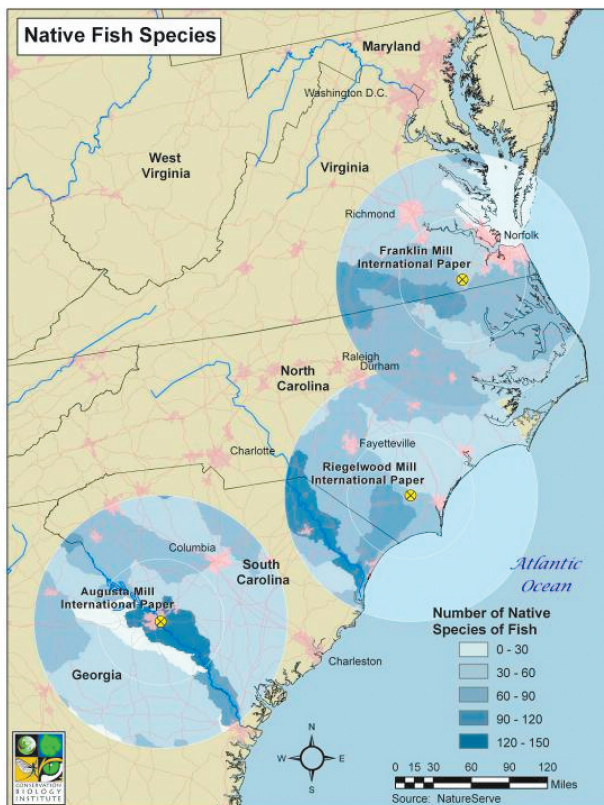


Figure 20. Total fish species richness by subwatersheds within the three mill sourcing zones (Source: NatureServe).

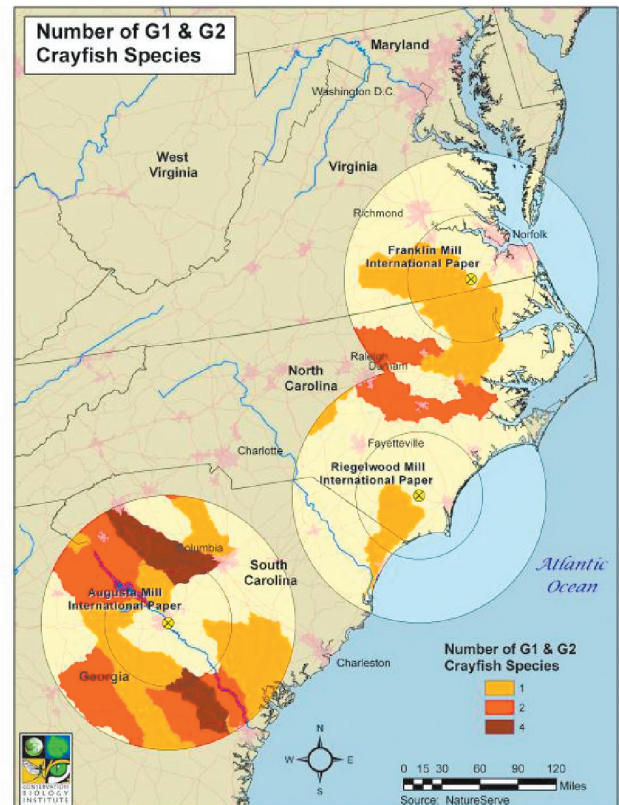


Figure 22. Total crayfish species rarity by subwatersheds within the three mill sourcing zones (Source: NatureServe).

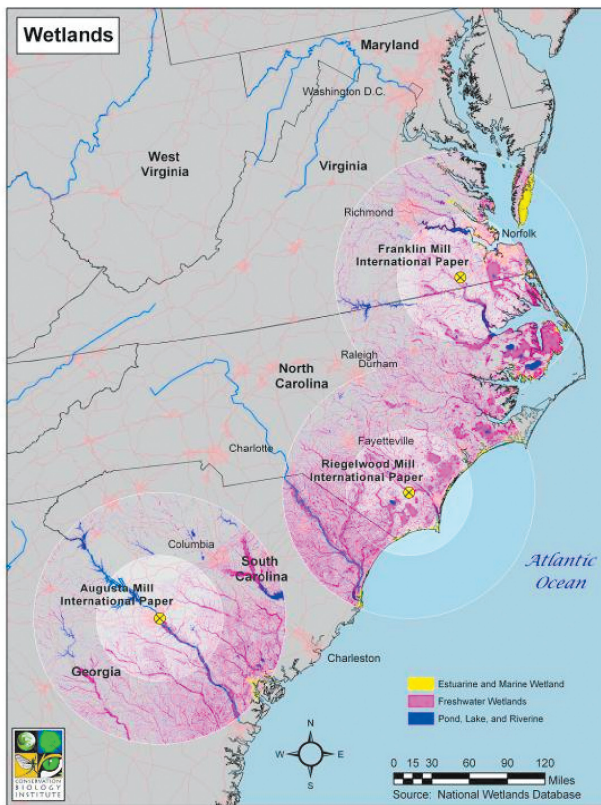


Figure 26. Wetland distribution within the three International Paper mill sourcing areas (Source: National Wetland Inventory).

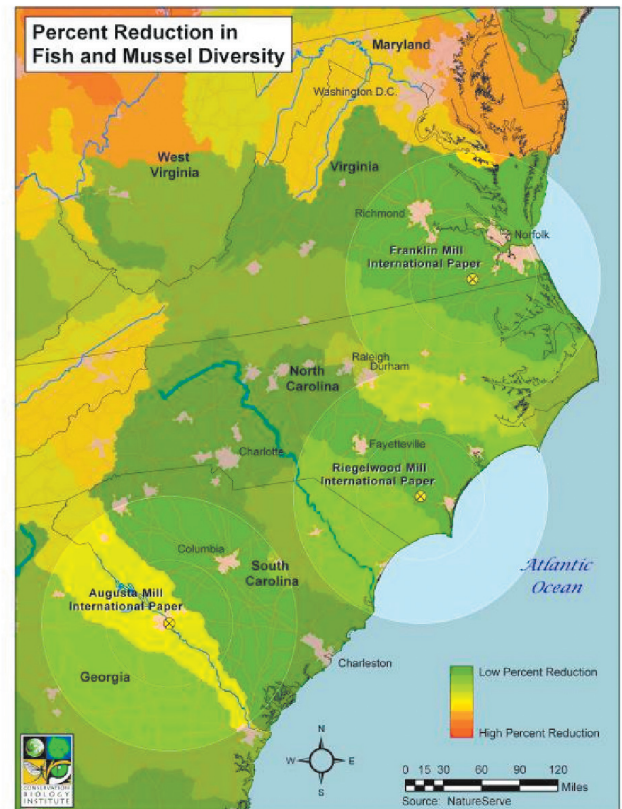


Figure 23. Percent reduction of native fish and mussel species by subwatersheds within the three mill sourcing zones (Source: NatureServe).

MARKET RESEARCH: CONNECTING THE DOTS, PAPER PACKAGING AND THE MARKET PLACE

Market research has tracked wood fiber from the forests of the region to the mills where the paper is produced through the packaging converter and finally to packaged product bearing a nationally recognized brand. Chain of custody research illuminates the path taken by raw materials harvest from a forest through processing, manufacturing, distribution and sale until it is a final product ready for sale to the end consumer. This chain of custody from the woods allows us to engage with these large corporate packaging customers about the impacts that their packaging decisions have on the forests of the region. And it allows the broader public to understand their impact of their marketplace choices as well and to communicate their issues and concerns about the chain leading back to destructive logging practices on the ground in the forests of the Middle Atlantic Coast.

Large corporate customers (such as Unilever, McDonald's and Taco Bell) can influence directly the paper producers whose forestry practices wreak such havoc on the forest of the South. Focusing on these large corporate customers Dogwood Alliance educates the public about the impact of industrial paper production on our forests and increases demand in the marketplace for sustainably produced paper products.

While these three mills produce paper packaging for a wide variety of end users it is important also to focus attention on the broader sectors of the economy that are connected to these specific mills.

For example, leaders in the Fast Food Industry including KFC, McDonalds, Buffalo Wild Wings, Taco Bell and Starbucks all source from the Riegelwood Mill in Southeast North Carolina.

In addition, many Consumer Product and Health and Beauty companies including Unilever, L'Oreal, Wal-Mart, Glaxo-Smith Kline and Schering Plough Corporation source from the large August Mill in Georgia.

Finally a diverse range of companies including giant Unilever and General Mills and Costco source from the Franklin Mill in South east Virginia.



CONCLUSION

The amazing beauty and rich biodiversity of the Southeastern Swamplands is a world-class treasure. Many plants and animals exist only in this region. The forested wetlands of the region not only provide a home to some of these amazing species but serve as an ever more critical buffer from the severe weather driven by global climate change.

Yet this is a land marked by the hand of man over many generations. The unique wetlands and some special ecosystem types are reduced to only a minute fraction of their former range. Where once stood native forests, millions of acres are now intensively managed as monoculture tree plantation providing only limited habitat. And the impact of industrial logging continues to be felt across the region – still the largest paper producing region in the world.

Three large paper packaging mills represent an opportunity to address how our society consumes paper and can serve as a vehicle for bring protection and even restoration to the region. The mills at Franklin, Virginia, Augusta, Georgia and Riegelwood, North Carolina, are major consumers of fiber from the forests of the region. The paper packaging produced at these mills eventually enters the marketplace in the form of nationally and internationally recognized products. Clearly this connects the broader public to the very act of resource exploitation in the Southern Swamplands. And it is this connection in the marketplace that will serve as a wakeup call to the concerned public, the large corporate customers of the mills and ultimately the large pulp and paper companies that hold so much sway over the forests of this very special region.

SOURCES

High Conservation Values in the Middle Atlantic Coastal Forests Ecoregion

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Conservation Biology Institute, October 2007

Lake Waccamaw State Park, Southeast North Carolina
<http://ncparks.gov/Visit/parks/lawa/main.php>

Great Dismal Swamp National Wildlife Refuge
<http://www.fws.gov/northeast/greatdismalswamp/>

Merchant's Mill State Park, Northeast North Carolina
<http://ncparks.gov/Visit/parks/memi/main.php>

Phinizy Swamp Nature Park, Georgia
<http://www.phinizyswamp.org/index.htm>

Zuni and Antioch Pine Barrens, Southeast Virginia
[http://scholar.lib.vt.edu/VA-news/VA-Pilot/
issues/1996/vp960408/04080035.htm](http://scholar.lib.vt.edu/VA-news/VA-Pilot/issues/1996/vp960408/04080035.htm)

Green Swamp Preserve, Southeast North Carolina
[http://www.nature.org/wherewework/northamerica/
states/northcarolina/preserves/art5606.html](http://www.nature.org/wherewework/northamerica/states/northcarolina/preserves/art5606.html)

Southern Forest Resource Assessment, US Forest Service
<http://www.srs.fs.fed.us/sustain/report/index.htm>



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