Open Space Institute

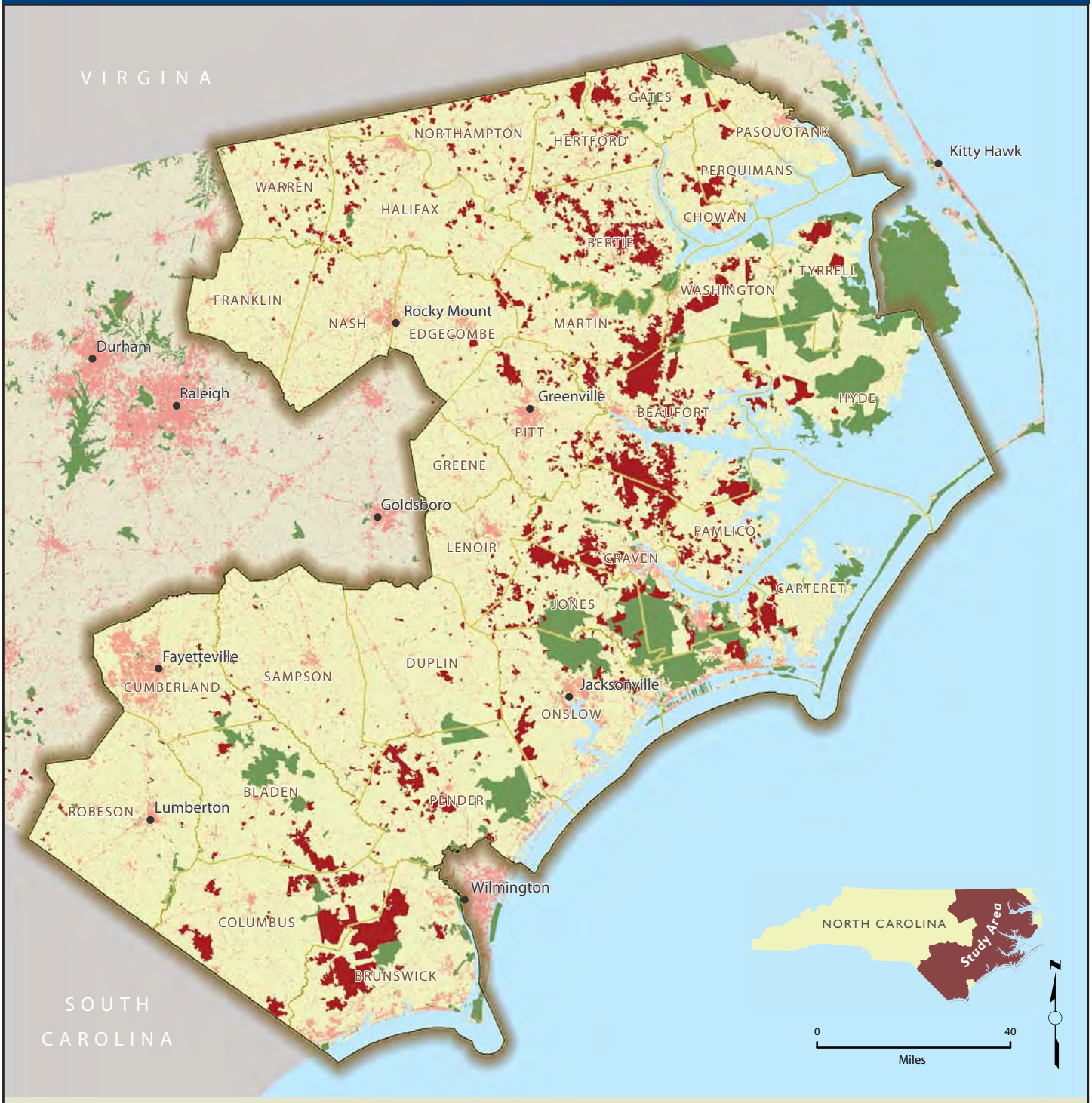
Retaining Working Forests: Eastern North Carolina

Prepared in collaboration with the

Partnership for Southern Forestland Conservation



Map 1: Study Area



Key to Features

- Investor-owned forest land
- Conserved lands/Open space properties
- Urban/Developed

Data Sources

Open Space Institute, National Land Cover Data (2006), N.C. Center for Geographic Information and Analysis, North Carolina Coastal Land Trust, U.S. Census Bureau, Natural Earth

Map Design: Center for Community GIS

Retaining Working Forests: **Eastern North Carolina**

by Abigail Weinberg

February 2012

Open Space Institute, Inc.

Open Space Institute
1350 Broadway, Suite 201
New York, NY 10018
Phone: 212.290.8200
Fax: 212.244.3441
Email: webmaster@osiny.org
www.osiny.org

Highlighting the Opportunities

The goal is to retain working forests for the economic and ecological values provided by these broad swaths of open space. What are the opportunities? Below is a list of conventional and not so conventional revenue streams that may provide part of the answer and are explored in the report.

Working Forest Easements

This tool has been used extensively in the northeastern United States but has had limited application in eastern North Carolina to date. We explore why in the section on "Conservation to Date" and suggest some ways that this model could be adapted for the southeast.

Retaining and Bolstering Traditional Wood Markets

Forestland owners emphasized the importance of being able to depend on traditional wood markets as a critical element of successful forest investment. Recent studies have pointed to wood as the greenest building material, and wood product certification is one tool to promote wood use. Such efforts can be considered a valuable conservation strategy.

Military Base Buffer and Habitat Mitigation Programs

Finding ways to match Department of Defense (DoD) buffer program funds will help bring more capital into the region for forestland conservation. Given the shortage of public funding, private philanthropy and donor funds will be needed to attract DoD funds. Land trusts should identify specific areas for habitat restoration as they examine opportunities under DoD's Section 7 mitigation program.

Longleaf Pine

Incentives for restoration and management have traditionally targeted small landowners; extending longleaf pine incentives to TIMOs and REITs, which typically own larger tracts of land, may accelerate restoration and reduce conversion of important forestlands. Mapping the exact locations of restoration areas could help make the region eligible for funding.

Biomass

Eastern North Carolina has the wood supply and proximity to ports needed to access wood energy markets. Pulpwood for wood energy may bring slightly higher prices, and landowners believe it can supplement existing markets.

Ecosystem Services

TIMOs and REITs may derive revenues from wetland and species mitigation markets. Inventorying lands for possible mitigation sites and understanding market demand are the first steps. Although carbon markets are speculative, California's market could offer some revenue opportunities for using longer forest rotations on marginal tree-growing lands.

Recreation Leases

Currently, the majority of TIMOs and REITs lease land to private hunting clubs. Public agencies and NGOs would like to explore opportunities to partner with TIMOs and REITs on ecotourism and habitat management for outdoor activities. Private "sponsorship" by outfitters or others to pay for public access is one possibility.

Supply Agreements

Deeded fiber supply agreements that ensure a flow of wood for regional mills currently restrict fragmentation and development of TIMO and REIT land; however, the majority of the agreements in eastern North Carolina will expire within the next five to 10 years. Land conservation groups should better understand the importance of these agreements in retaining land in forest use. An estimated 880,000 acres of TIMO and REIT land is currently protected.

Introductory Letter from North Carolina Commissioner Steve Troxler

Eastern North Carolina is one of the most productive locations in the world for growing timber, a fact that lures investors from around the world to the region. Retaining these working forests is critical for many important reasons.

North Carolina leads the eastern United States in forest-related employment. One thousand acres of forestland in the state supports 10 direct jobs. In addition to employing nearly 80,000 people, working forestry here brings irreplaceable value to the public by protecting clean water sources and wildlife habitat while buffering the public's investment in lands already under conservation.

Statewide, forestry contributes nearly $5 billion to North Carolina's gross domestic product while producing $445 million in income taxes each year.

Forestland in eastern North Carolina also plays a critical role in maintaining rural drinking water quality. The conversion of these forests to other uses increases sediment and nitrogen loading within estuaries, degrading household and municipal water sources for some 4 million people.

Retaining large tracts of forest lands also helps retain our significant military presence and gives them a unique and safe place to train without disturbing their neighbors.

Eastern North Carolina boasts the richest coastal biodiversity in the United States outside of Florida. The region supports critical wildlife habitat, with as many as 83 at-risk species per county, including red-cockaded woodpecker, Bachman's sparrow, red wolf, Carolina crawfish frog and mimic glass lizard.

Retaining Working Forests, an Open Space Institute report produced in collaboration with the Partnership for Southern Forest Conservation looks at the 33-county eastern North Carolina region, examining both the opportunities for conservation and the economic realities facing forest landowners. The report focuses on Timber Investment Management Organizations and Real Estate Investment Trusts managers of the largest forest ownerships for investors and critical partners in conserving forestland at scale.

The report collects critical information to make the case for retaining working forest in North Carolina. OSI's study emphasizes the importance of non-governmental organizations (NGO, landowner and policy makers identify ways to incentivize retaining forestland in forest use.

I highly encourage giving careful consideration to this report. We must make thoughtful decisions to ensure that North Carolinians continue to reap the benefits of our working forests.

Sincerely,

Steven W. Troxler

Commissioner of Agriculture for the State of North Carolina

Contents:

I. Introduction 2

II. What's at Stake? 5

III. Conservation to Date 10

IV. Challenges 16

V. Opportunities 21

VI. Next Steps 29

Appendix A: Overview of TIMO and REIT Structure 30

Appendix B: Local Partnerships in Eastern North Carolina 31

Bibliography 33

I. Introduction

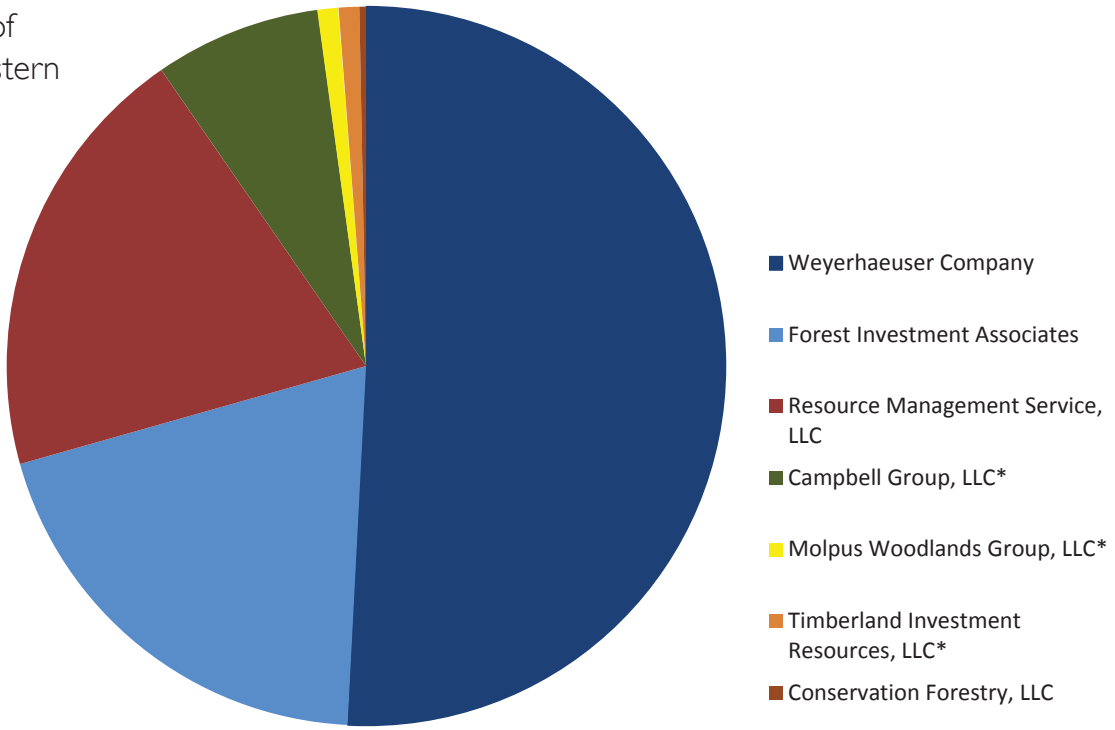
Eastern North Carolina is a critical anchor for active forest management in the United States, but much of its forestland is vulnerable to economic challenges, regulations and, ultimately, conversion to other uses.

The report identifies 375,000 acres of critical conservation land on TIMO and REIT land, describes the public benefits of these lands, and discusses opportunities and challenges for retaining this land in forest use, including an analysis of working forest easement use in the South. The 33 eastern counties making up the coastal plain of North Carolina contain 5.8 million acres of private forestland, of which 1.1 million acres, or 19 percent, is managed by seven large forest owners – both privately held timber investment management organizations (TIMOs) and publicly traded real estate investment trusts (REITs). These seven companies were consulted in the creation of this report, and together they represent an estimated $1.5 billion in investment in the region. Table 1 shows the relative holdings of major REITs and TIMOs in eastern North Carolina, and Map 1 shows the 33-county focus area and distribution of holdings across the landscape.

TIMO and REIT managers support wood markets and forestry infrastructure critical to a range of private forestland owners. All forestland owners are important to retaining forests in forest use, but this report focuses on TIMOs and REITs for two reasons. First, their sheer size offers a rare opportunity to create partnerships that achieve

Table 1

Relative Land holdings of TIMOs and REITs in Eastern North Carolina



forest conservation at scale, and second, they are especially vulnerable to development pressures because they are fiscally responsible for providing the highest possible returns to investors (see Appendix A).

Taken together, the private forestlands of eastern North Carolina protect water quality critical to human and wildlife populations, and they buffer and sometimes constitute some of the most biodiverse habitats in the United States. These lands provide recreation, clean air, and jobs – more than 80,000 direct jobs across the state – that support communities both within the study region and beyond. Conservation groups have identified a full 375,000 acres of TIMO and REIT forests critical for environmental protection (J. Allen and H. McIver, pers. commun.).

Even though North Carolina has been a leader in using fee acquisition to protect sensitive wildlife areas, less than 3,500 acres, or about two percent, of TIMO and REIT working forestland has been conserved with permanent easements. Surprisingly, perhaps the most important protection of these vast forestlands comes from supply agreements with local mills – deeds that require TIMOs and REITs to retain enough land in forest use to supply the mills with a specified flow of wood. However, many of these agreements will expire within five to 10 years.

Long term, as the economy recovers, the majority of TIMO and REIT land will be subject to the development pressures that have already affected much of the eastern North Carolina landscape. During the real estate boom of 2006, small forestland tracts accounting for more than 200,000 acres were sold at an average price of $1,800 per acre, well above the forest management value (J Kaufman, pers. commun.). Over the next 50 years, another 344,000 acres of private forestland will be likely be converted to agriculture or development (SFFP 2011).

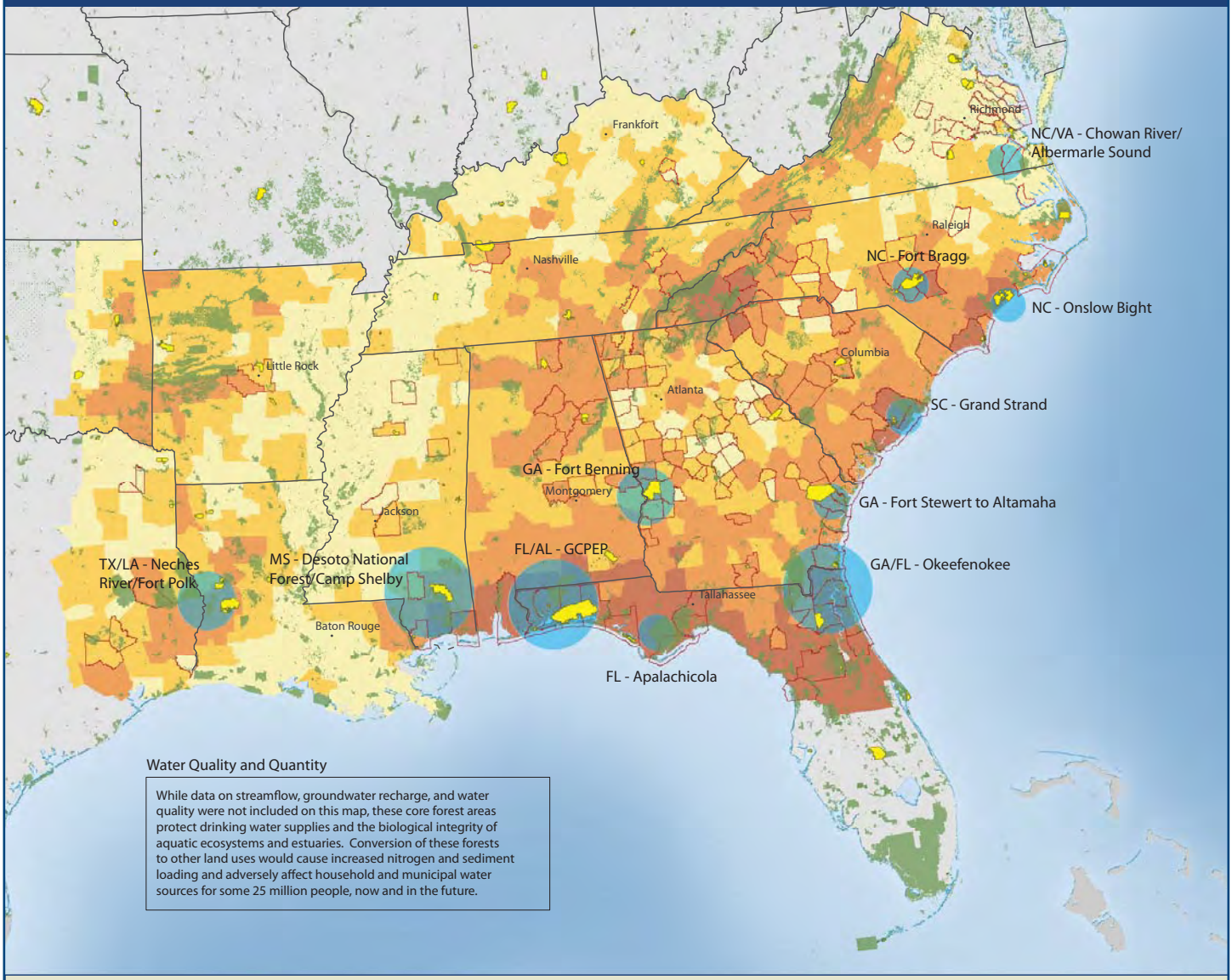
TIMO and REIT managers believe that increasing and even redundant federal regulations are the greatest challenge to sustainable forest management. Depressed sawtimber markets, a significant hardship for all forestland owners in North Carolina, are causing what many fear to be a permanent decline in logging contractors. Taxation is also higher than in states where TIMO and REIT owners qualify for "current use" property tax status.

Ultimately, the question is whether eastern North Carolina, and similar areas across the Southeast, can adapt to changing market conditions and compete globally while retaining working forests as a major private and public asset. Because both jobs and natural resources are at risk, the question is of keen interest to landowners, policy makers and conservationists. The answers will thus require innovation and collaboration across traditional boundaries.

Albert Shaw, North Carolina Tree Farmer of the Year in 2010 on his farm near Whiteville, NC
photo: North Carolina Forestry Association

The private forestlands of eastern North Carolina protect water quality critical to human populations and aquatic wildlife, and they buffer and sometimes constitute some of the most biodiverse habitats in the United States.

Map 2: Core Working Forest Areas



Eastern North Carolina in Context

Eastern North Carolina is not alone in facing the challenges and opportunities described in this report. The map above shows areas across the South that serve as critical anchors for working forestry and provide multiple environmental benefits yet are at risk of conversion to other uses. Three of the 11 priority locations extend into eastern North Carolina. The region shares the broader challenges faced by locations with both excellent tree-growing conditions and desirable housing. Eastern North Carolina is thus a test case for whether working forestry can remain viable as development makes inroads into once-remote areas. We encourage all stakeholders in this and other regions across the Southeast to adopt or expand on these findings in order to develop a vibrant conversation about how to meet these challenges.

II. What's at Stake?

TIMO and REIT lands provide irreplaceable economic, ecological, and recreation values to North Carolina.

Working forestry in eastern North Carolina supports many public values. Just east of the 1.1 million acres of private TIMO and REIT lands lies 840,000 acres of public land (see **Map 1**). The TIMO and REIT lands provide a critical buffer to this large public conservation investment and help protect remaining intact watersheds, including some of the most biodiverse estuaries in the eastern United States. The region has valuable wildlife habitat, high levels of biodiversity, excellent growing conditions for wood, and a critical role in the state economy.

Jobs and Economic Benefits

Eastern North Carolina is one of the most productive locations in the world for growing timber, competitive with South America. The fast growth rates and intensive silvicultural treatments create jobs and generate state and county income. Statewide, the industry contributes nearly $5 billion to North Carolina's gross domestic product. In the eastern United States, North Carolina ranks number one for direct forest-related employment (**Table 2**), with an estimated 61,000 to 80,000 individuals directly employed in forestry (Forest2Market 2009; NC DFR 2010).

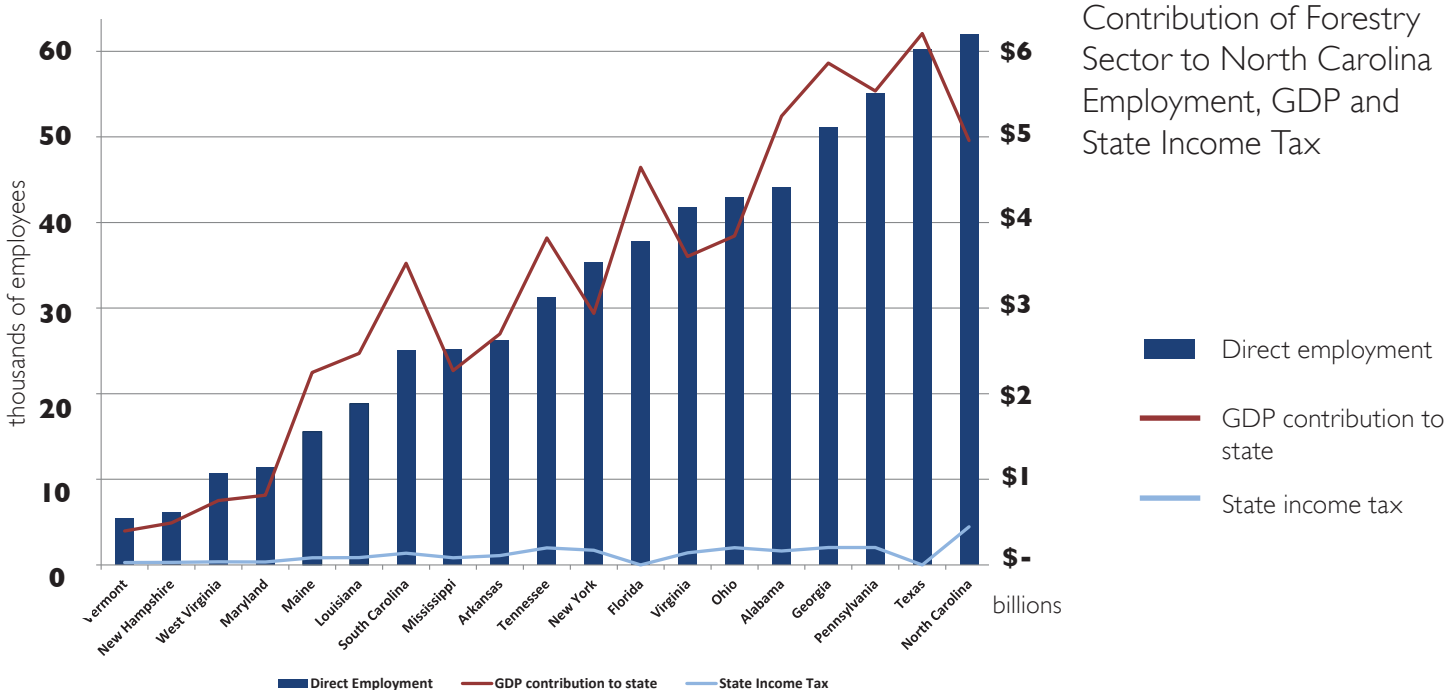
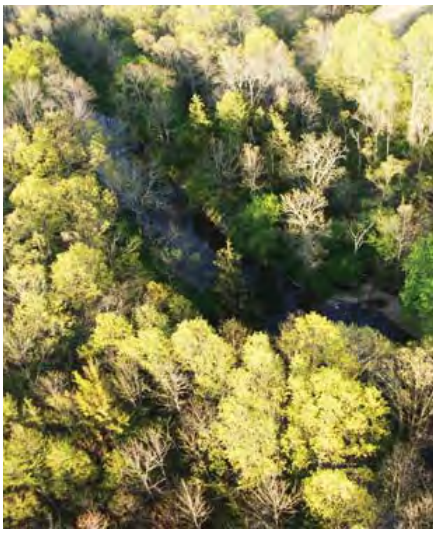


Table 2

Contribution of Forestry Sector to North Carolina Employment, GDP and State Income Tax



A forested buffer along each side of the stream has been shown to be very important for stream health.

photo: Watershed Forestry Resource Guide

Studies on the cost of community services show that counties across the South receive an average of three times the income in taxes from forestland as they spend to maintain services to this land. In comparison, residential ownerships cost 14 percent more in maintenance than the tax dollars returned (American Farmland Trust 2010).

Water Quality

Forestland in eastern North Carolina plays a critical role in maintaining rural drinking water quality and the health of aquatic and estuarial ecosystems. Conversion of these forests to other uses would increase sediment and nitrogen loading within the estuaries and degrade household and municipal water sources for some 4 million people.

Watersheds that are at least 70 percent forested filter drinking water for downstream communities; below this forest cover threshold, water quality declines and municipal filtration costs rise (TPL & AWWA 2002). In North Carolina, only 45 percent of the watersheds that serve as surface water sources for millions of residents meet the 70 percent forest cover threshold (NCDFR 2010), and the number of watersheds with forest cover sufficient to filter drinking water is dropping quickly. Between 1992 and 2001, 20 percent of watersheds in eastern North Carolina dropped below the 70 percent threshold because of land-use change. **Map 3** illustrates the watersheds in the region that still have at least 70 percent forest cover today (green) and those that recently dropped below the 70 percent threshold (purple). In 2001, only 4.5 million acres, or 35 percent of the study region, remained in intact watersheds – a 50 percent reduction from 1992.

As is evident in **Map 3**, TIMO and REIT lands are a critical part of intact watersheds in eastern North Carolina and constitute more than 10 percent of intact watersheds. Conversion of these lands will lower water quality and raise filtration costs.

At-Risk Species

Longleaf Pine

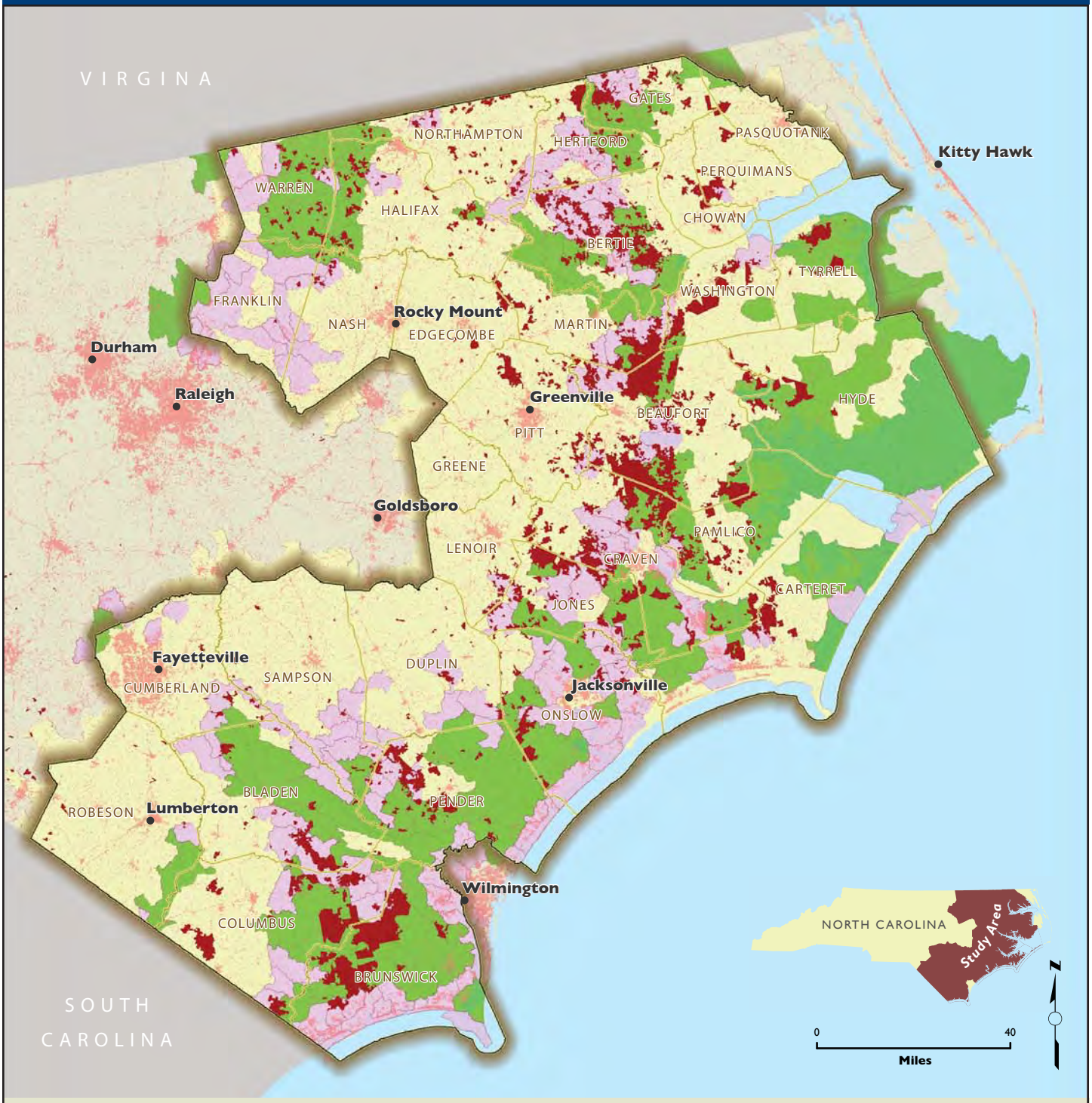
photo copyright ©2006 Irisha Z

Eastern North Carolina has the richest coastal biodiversity in the United States outside Florida (TNC 2011). The region supports critical wildlife habitat, with as many as 83 at-risk species per county (**Map 4**), including red-cockaded woodpecker, Bachman's sparrow, red wolf, Carolina crawfish frog, and mimic glass lizard.

The majority of conservation land is located along the coast, where sea level rise will harm many species and habitats. The TIMO and REIT holdings directly west of wildlife reserves will play a critical role in providing corridors and inland refuges for wildlife.

Longleaf pine (Pinus palustris), which once covered most of eastern North Carolina, is habitat for several at-risk species. America's Long Leaf Initiative has identified three critical landscapes in southeastern North Carolina that could be restored to create 350,000 acres of longleaf forests. About 13,000 acres of TIMO and REIT land in this region is currently managed in longleaf habitat, according to The Conservation Fund and the North Carolina Long Leaf Alliance (**Map 5**). Additional TIMO and REIT areas have the soils and current land cover that could support restoration efforts.

Map 3: Natural Land Cover Change (1992-2001)



Key to Features

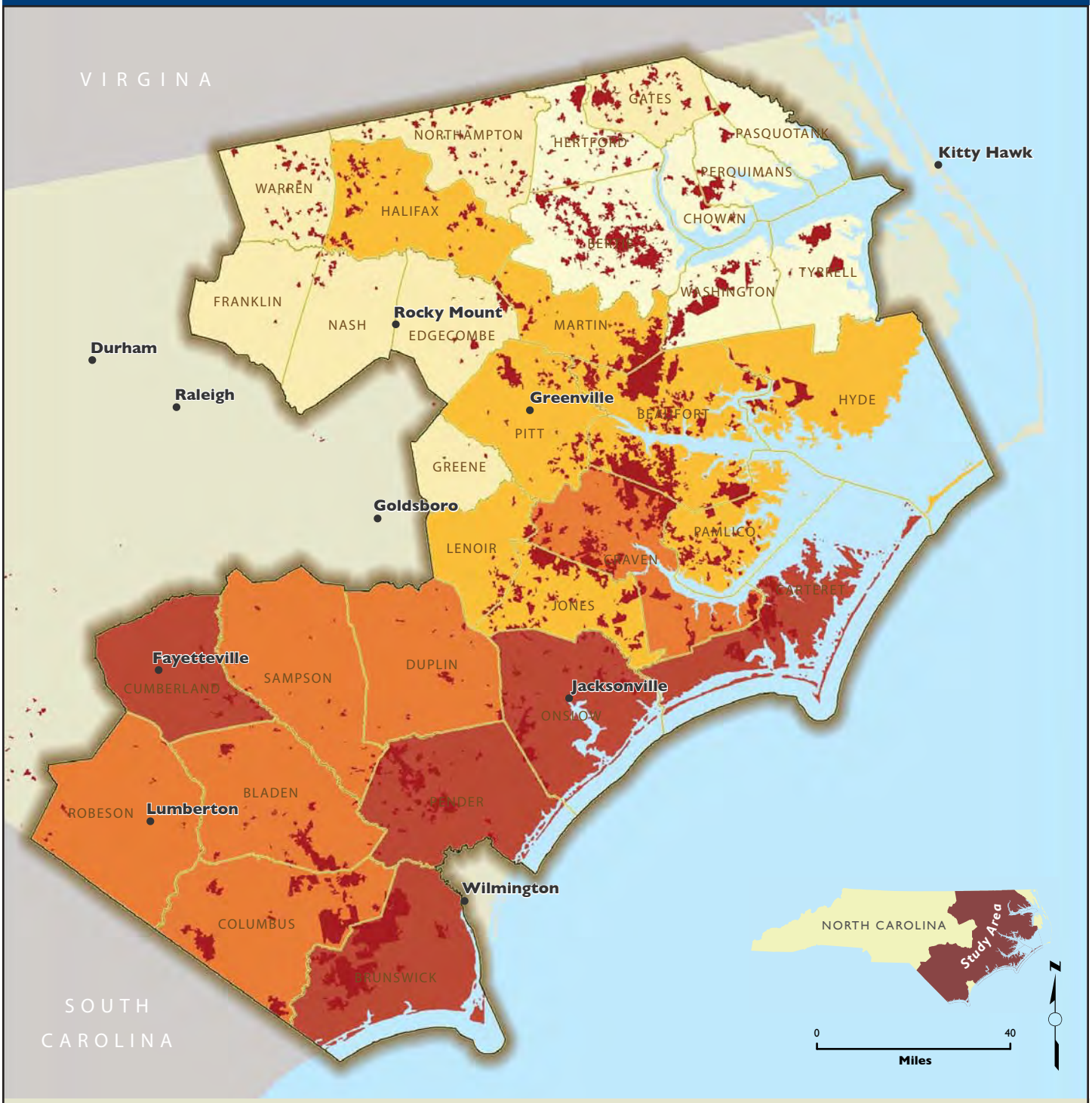
- Watershed with >70% natural land cover in 2001
- Watershed with >70% natural land cover in 1992 and < 70% natural land cover in 2001
- Investor-owned forest land
- Urban/Developed

Data Sources

Open Space Institute, National Land Cover Data (2006), N.C. Forest Service, U.S. Census Bureau, Natural Earth

Map Design: Center for Community GIS

Map 4: Habitat and Conservation Values



Relative Index Value

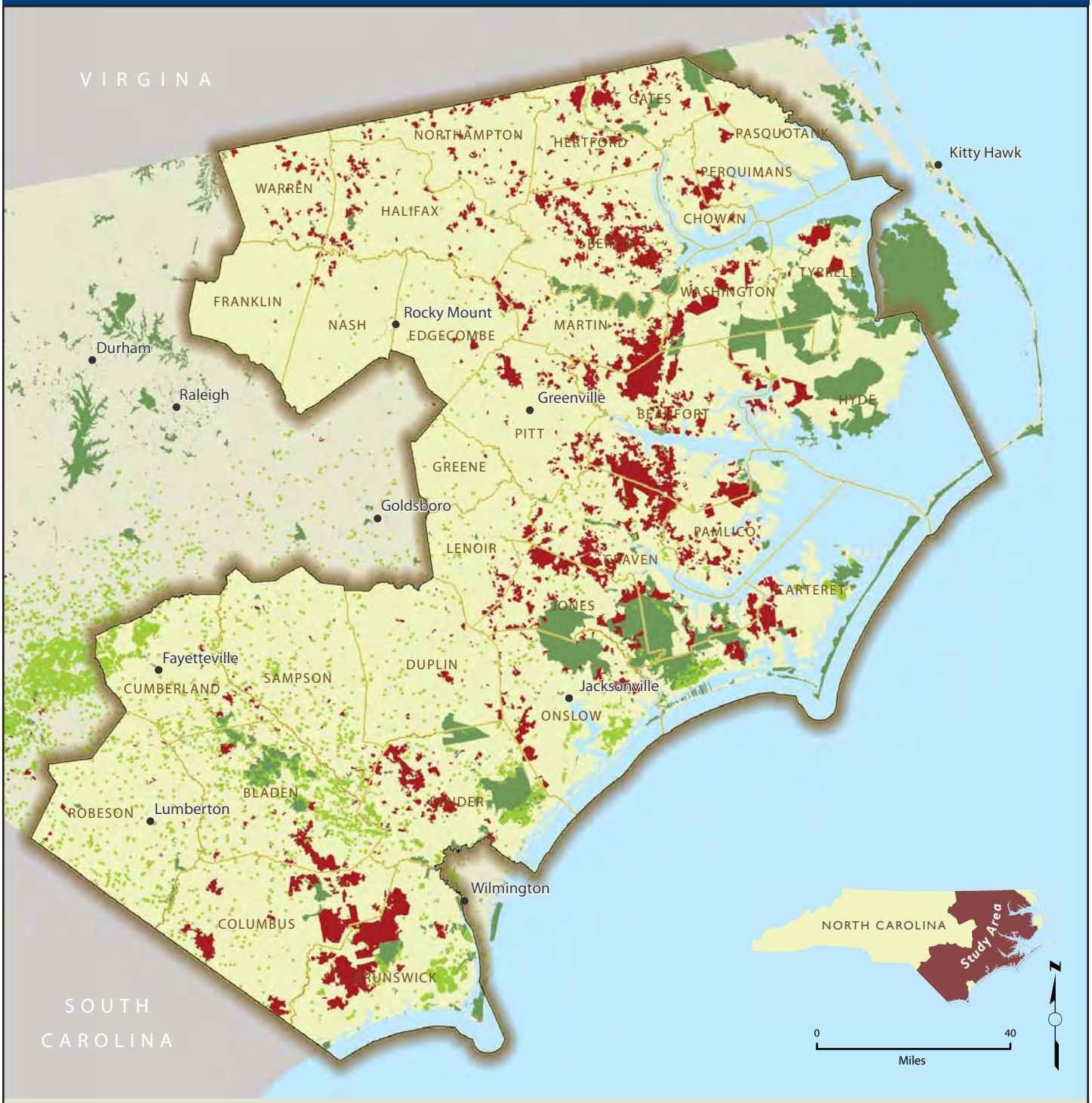
- Low
- Low/Moderate
- Moderate
- Moderate/High
- High
- Investor-owned forest land

Data Sources

U.S. Forest Service, Nature Serve,
U.S. Census Bureau, Natural Earth

Map Design: Center for Community GIS

Map 5: Longleaf Pine



Key to Features

- Longleaf pine stands
- Investor-owned forest land
- Conserved lands/Open space properties

Data Sources

North Carolina Longleaf Coalition, N.C. Natural Heritage Program, Open Space Institute, N.C. Center for Geographic Information and Analysis, North Carolina Coastal Land Trust, U.S. Census Bureau, Natural Earth

Map Design: Center for Community GIS

Over the past 10 years, North Carolina has been a leader in conservation, spending an average of $30 million per year on conservation between 1998 and 2008 (TPL 2011).

Recreation

In 2006, 5 million hunters, anglers, and wildlife viewers spent more than $2.5 billion in North Carolina (U.S. Fish and Wildlife Service 2008, see Table 3). Almost the full 1.1 million acres of TIMO and REIT land is available for private recreation leasing and provides the high-quality opportunities that are critical to supporting the recreation industry. Surveys show that even when offered the option of using public areas, hunters often prefer private lands that offer a safe, controlled hunting environment.

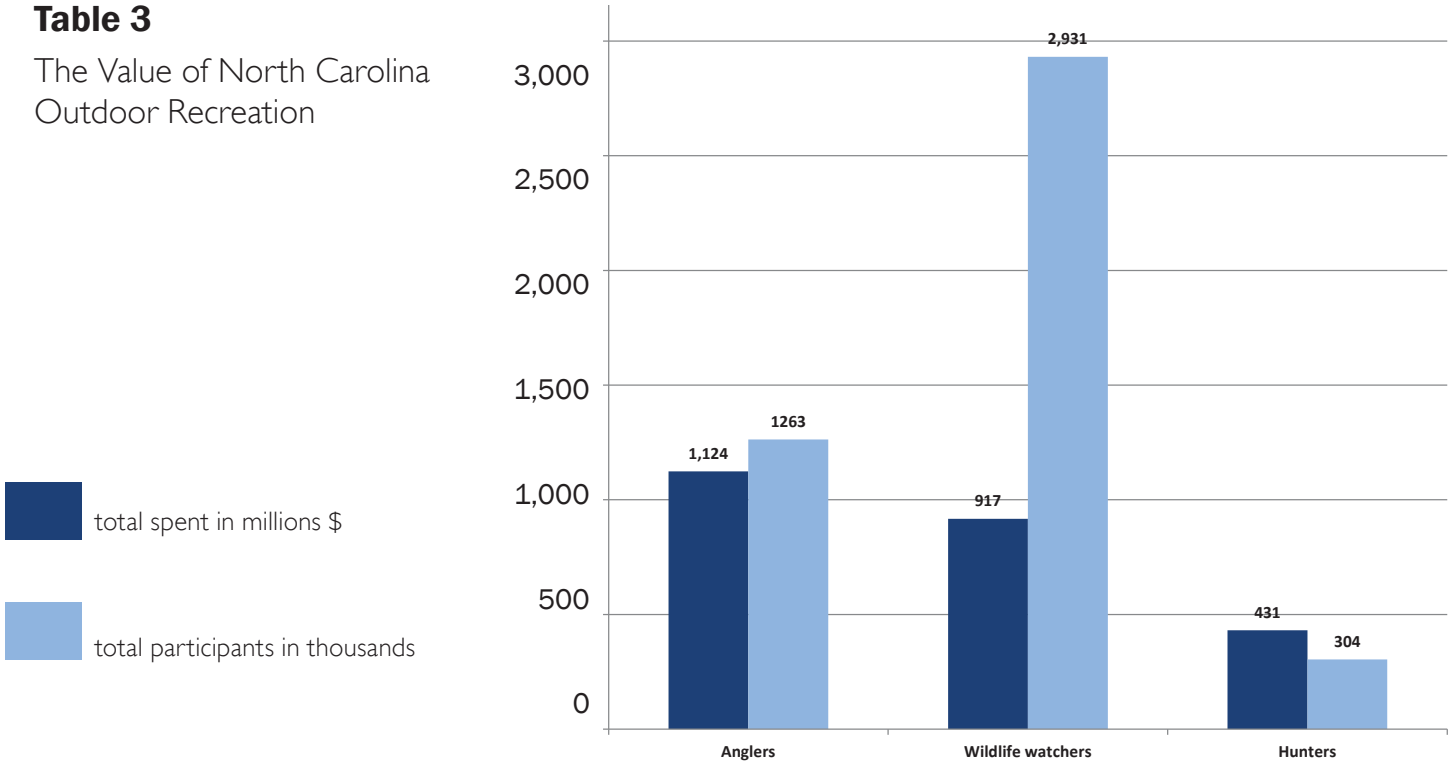
III. Conservation to Date

Working forest easements have been a major tool for conservation elsewhere in the United States, but their role may continue to be limited in eastern North Carolina unless NGOs and landowners can agree on conservation priorities and the state can better advance its Forest Legacy projects.

Over the past 10 years, North Carolina has been a leader in conservation, spending an average of $30 million per year on conservation between 1998 and 2008 (TPL 2011). Most of the state's high-priority coastal habitat is protected. In total, the eastern part of the state contains 840,000 acres of conserved land. Notably, more than 50 percent of all conservation funding in this region has been spent in six counties: Columbus, Tyrell, Carteret, Onslow, Brunswick, and Pender.

Table 3

The Value of North Carolina Outdoor Recreation



Easement Versus Fee Conservation

Nationwide, over the past 30 years, when forest product companies sold their forestland, about 5 million acres—or 5 percent—was purchased for permanent conservation through easements or fee. In the northern states, 85 percent of this conservation protection occurred through large working forest easements. The Southeast represented a smaller portion of overall conservation, primarily through fee sales, leaving the majority of its working forest vulnerable to fragmentation. Development pressure in the early 2000s was intense, and the region anticipates significant further growth in the coming years.

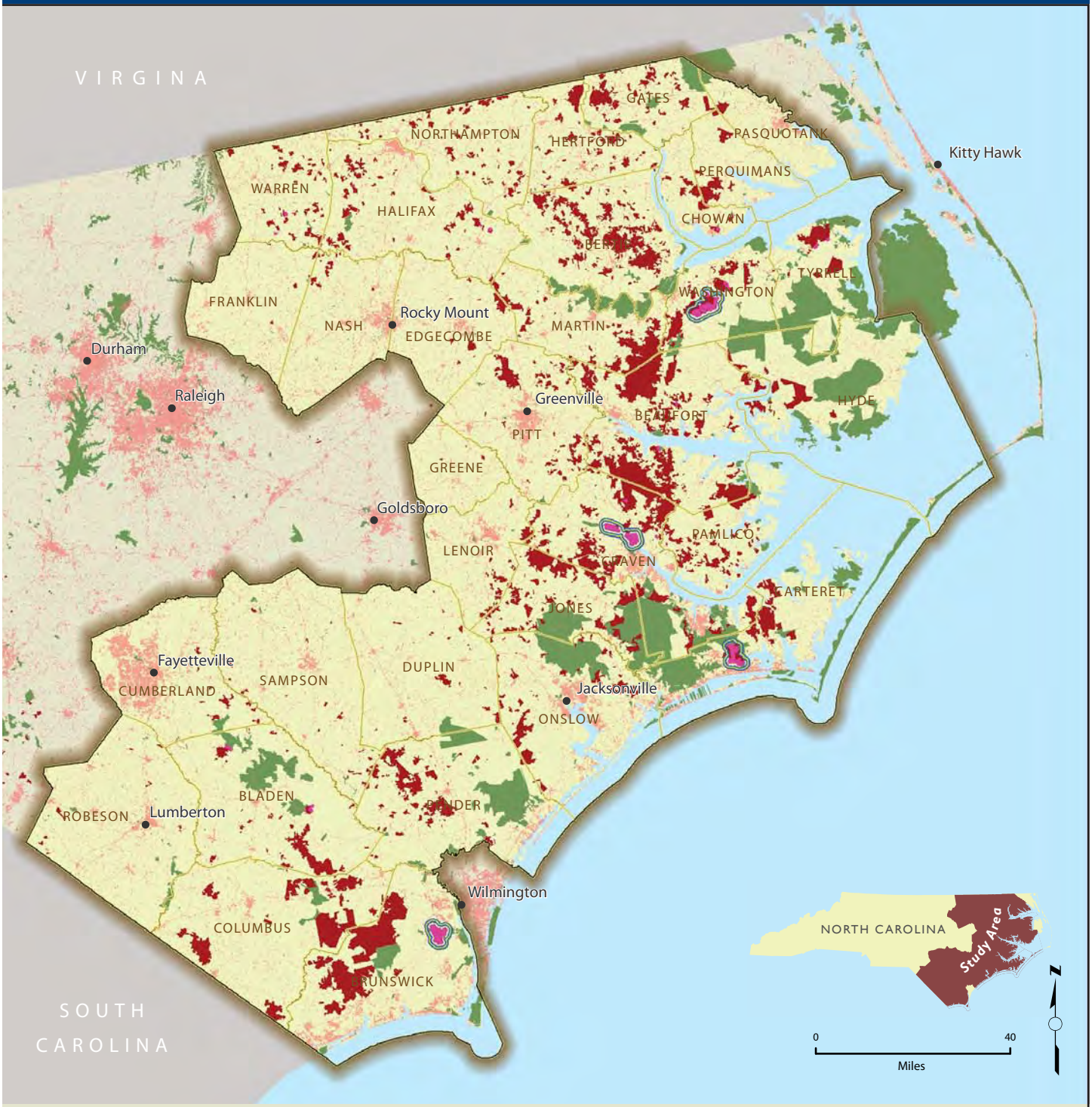
Plum Creek's conservation portfolio provides an example of the disproportionately small amount of conservation in the South. This REIT, which has made some of the largest conservation sales of any forestland group, has sold 1.35 million acres (20 percent of its land) in fee or easement for conservation, largely in Montana and Maine. Even though 50 percent of Plum Creek's land is in the 13 southeastern states, only 9 percent of its conservation projects are located there (Plum Creek, 2011a and b).

Altogether, some 98 percent of conservation in eastern North Carolina has been in fee acquisitions, and only 2 percent in easements. During the selloff of International Paper's lands in eastern North Carolina in 2006, The Nature Conservancy and the Conservation fund protected over 115,000 acres – one of the largest single conservation deals completed to date in the Southeast, all in fee purchase. The North Carolina Coastal Land Trust has been responsible for two working forest easements totaling

Altogether, some 98 percent of conservation in eastern North Carolina has been in fee acquisitions, and only 2 percent in easements.

Hikers in the Onslow Bight
photo: Mark Daniels

Map 6: Investor-owned Forest Lands with Conservation Easements



Key to Features

- Easement on investor-owned forest land
- Investor-owned forest land
- Conserved lands/Open space properties
- Urban/Developed

Data Sources

Open Space Institute, North Carolina Coastal Land Trust, National Land Cover Data (2006), National Conservation Easement Database, North Carolina Coastal Land Trust, U.S. Census Bureau, Natural Earth

Map Design: Center for Community GIS

about 4,200 acres, or less than 1 percent, of all TIMO and REIT lands. The TIMO and REIT lands under easement are illustrated in **Map 6**.

A Role for Working Forest Easements?

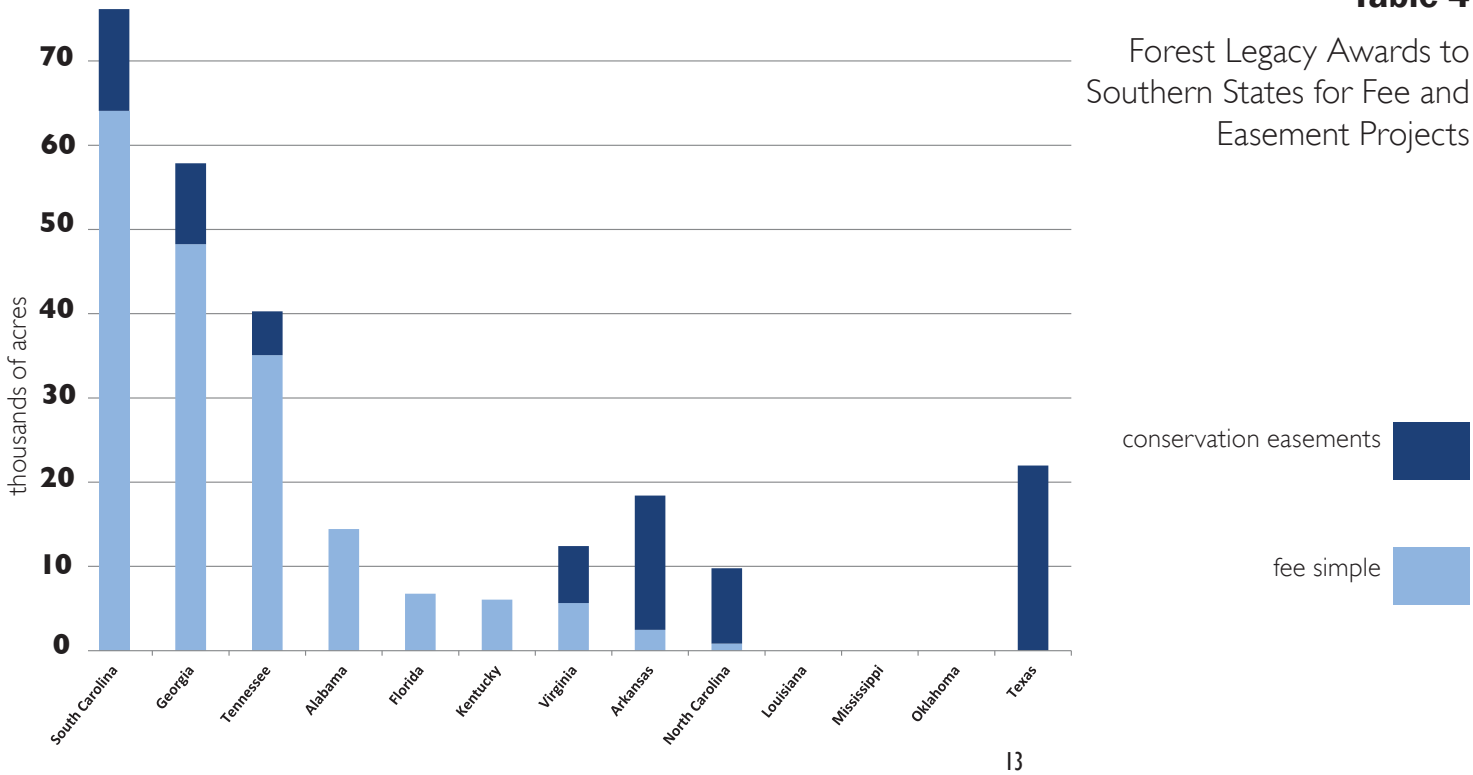
The Forest Legacy Program, established by the 1990 Farm Bill, is one of the few funding sources dedicated to the conservation of working forestland. Overall, the 13 southeastern states represent only 10 percent of total Forest Legacy projects, with North Carolina representing 4 percent of the total acres conserved under this program in the South (see **Table 4**). The type of projects in the Southeast differs as well: whereas Forest Legacy has largely been used to purchase easements in the Great Lakes and Northern Forest states, 70 percent of southern Forest Legacy projects have been fee acquisition and only 30 percent are easements (M. Murphy, pers. commun., July 15, 2011).

Historically, both land trusts and TIMO and REIT owners in the South have preferred in-fee transactions for conservation land. High development values have pushed easement prices to as much as 80 percent of fair market value, and under those conditions, land trusts would rather pay slightly more and buy the land in fee to gain complete control over its management. TIMO and REITs have also preferred selling the land rather than encumbering it with easements that might complicate future resale.

From the landowners' perspective, delays in conservation funding discourage participation in the Forest Legacy Program. Representatives of TIMOs and REITs consider a six-month transaction period reasonable, whereas most conservation funding sources, including Forest Legacy, require more than a year to process. In addition, TIMOs set management expectations with investors at the initiation of a fund and want major management decisions, such as the sale of easements, included at the outset – lest

Table 4

Forest Legacy Awards to Southern States for Fee and Easement Projects



Overall, land trusts identified an additional 375,000 acres of TIMO and REIT land in the region that needs to be conserved

the TIMO have to go back to investors for approval. TIMO representatives also say that conservation doesn't offer them the same public relations value it has for publicly traded REITs and forest product companies.

Which working lands are best protected by Forest Legacy remains an issue. Land trusts would select the most ecologically important tracts for Forest Legacy protection; landowners have expressed that funds are better spent in protecting the most economically productive lands. For some NGOs, plantations have less public value because the use of herbicides and even-aged management can limit habitat; others focus on protecting land from development, even if the land is not natural forest. There will be some overlap in priorities, but the difference in goals has created some division among NGOs and limited the support of landowner groups for this conservation tool.

Another factor, especially for Forest Legacy funding, is public access to private lands. As discussed elsewhere, the majority of TIMO and REIT land is leased to private hunting clubs. Forest Legacy's preference for public access may explain why many southern states would rather purchase forestland in fee rather than retain it in private holdings. Conversely, the history of public access in the Northeast this may give these states an inherent advantage with Forest Legacy funds.

Despite those obstacles, land trusts and TIMOs and REITs have good reason to find ways to expand the easement model. With severe cutbacks in state and federal funding, conservation dollars need to stretch further. In today's depressed real estate market, with lower development pressure, prices for easements are closer to 50 percent of market value. Furthermore, land trusts working in the region say that the majority of land that requires full fee conservation has been protected, and that the remaining priorities are working forest buffer lands, which can be protected with easements. Overall, land trusts identified an additional 375,000 acres of TIMO and REIT land in the region that needs to be conserved (see below), 78 percent of it through working forest easements. Conserving this land through easement and fee would likely cost a total of $300 million. Reflecting on the cost of such conservation, TIMO managers and forestry association representatives question the value of perpetual easements and suggest that policy makers explore protection for less than forever. For example, "term easements," used in USDA's Conservation Reserve Program, expire in 10 to 20 years (see discussion of supply agreements, below). Land trusts are generally less comfortable with the concept of term easements, though middle ground may be identified through continued dialogue.

Loading a truck at a logging site in northeastern North Carolina

photo: North Carolina Forestry Association

Land trusts' conservation targets in eastern North Carolina are as follows (J. Allen and H. McIver, pers. commun.):

- Average project size, 5,258 acres.
- Largest project identified, 75,000 acres.
- Potential acreage in working forest easements, 275,000 acres.
- Total remaining conservation priorities, 375,000 acres.

Looking Afield for Conservation Models

The Northern Forest is a 26-million-acre swath of woodland stretching from New York through Vermont and New Hampshire and across Maine. Unlike the extensive public lands of the western United States, the vast majority of the Northern Forest was privately owned by industrial timber companies. When rural real estate prices rose in the 1980s, these companies sold their lands to new owners, mostly TIMOs and REITs, and conservation groups were ready to get involved. By 2006, conserved land had increased from 3 percent of the region to 30 percent, more than 80 percent of which was protected with working forest easements.

One striking example of a conservation easement is the Connecticut Lakes project, 171,300 acres of ecological reserves and working forests across the northern tip of New Hampshire. The intact mixed forest of northern hardwoods and conifers provides high–quality habitat for wildlife, including large populations of moose and deer. It also has important lands for the timber–and tourism–based economy of the region.

When the Connecticut Lakes land went up for sale, Coos County residents feared for their traditional uses, especially if a public agency was involved. Instead, The Trust for Public Land (TPL) bought the land in 2001, vowing to engage a broad array of stakeholders in determining its future. Collaboration among conservationists, politicians, and industry and community members followed.

As a result of the stakeholder process, 15,000 acres were set aside as a no–harvest ecological reserve, 10,000 are managed for wildlife habitat, including selective harvest, and the remaining 146,300 acres are devoted to sustainable forestry. The Nature Conservancy, working in partnership with TPL, holds an easement over the two smaller parcels, which are owned by the state. The remaining acreage was sold to Lyme Timber Company, known for its commitment to sustainable forestry, with the state of New Hampshire holding an easement.

Spruce along river, Connecticut Lakes, NH
photo: Jerry Jenkins

This example from the Northeast illustrates a few critical factors for successful large–scale working forest easements: (1) the need for balancing ecological and economic values; (2) the importance of public access—perhaps one of the largest differences between the traditions in the South and North; and (3) the importance of strong working partnerships among NGOs, landowners, and state agencies.

While the Northern Forest offers many lessons for working forest conservation, it also offers some cautions. While easements ensure the maintenance of large intact swaths of forestland, they cannot insulate forestland managers from depressed wood markets. As mills continue to close or reduce capacity, some landowners wonder about the future economic viability of large eased lands. As well, the distribution and attributes of wildlife and other ecological values is quite different in the relatively uniform Northern Forest than in the Southeast, where unique geological features often create pockets of critical habitat.

photo: North Carolina Forestry Association

Southern Forest Future Report's model predicts that 344,000 acres will be converted to nonforest use by 2060, with some counties slated to lose as much as 27 percent of their private forestland.

IV. Challenges

Global competition, federal regulations, taxes, fragmentation of ownerships, and the uncertain future of timber and land markets create major challenges for large-scale forestry in eastern North Carolina.

The long-term future of the forestry sector – including manufacturing, logging, and forest management – is difficult to predict. Understanding traditional U.S. wood markets is only one piece of the puzzle. Growing global competition, shifting global demand, federal regulations, and competing land uses all create uncertainty. Although TIMOs and REITs have some flexibility about when they sell both real estate and timberland, they need to fund their basic harvesting, thinning, and planting operations and, in the case of REITs, pay quarterly dividends to investors.

Creating revenue streams is one side of the ledger; reducing operating costs is the other. Industry leaders say property taxes and the expenses of regulatory compliance are two factors that can contribute to a loss of operational forestlands. Short-term and long-term solutions are needed to help landowners adapt to changing market conditions and compete globally. Although many of the issues affecting these landowners, such as broader changes in real estate values and federal regulations, lie outside the sphere of action of state or even most federal policy makers, understanding them helps explain the decisions that landowners make. Ultimately, landowners will weigh their options and make financially prudent decisions. The conservation community can promote an even playing field by paying for the public benefits that come from forestland.

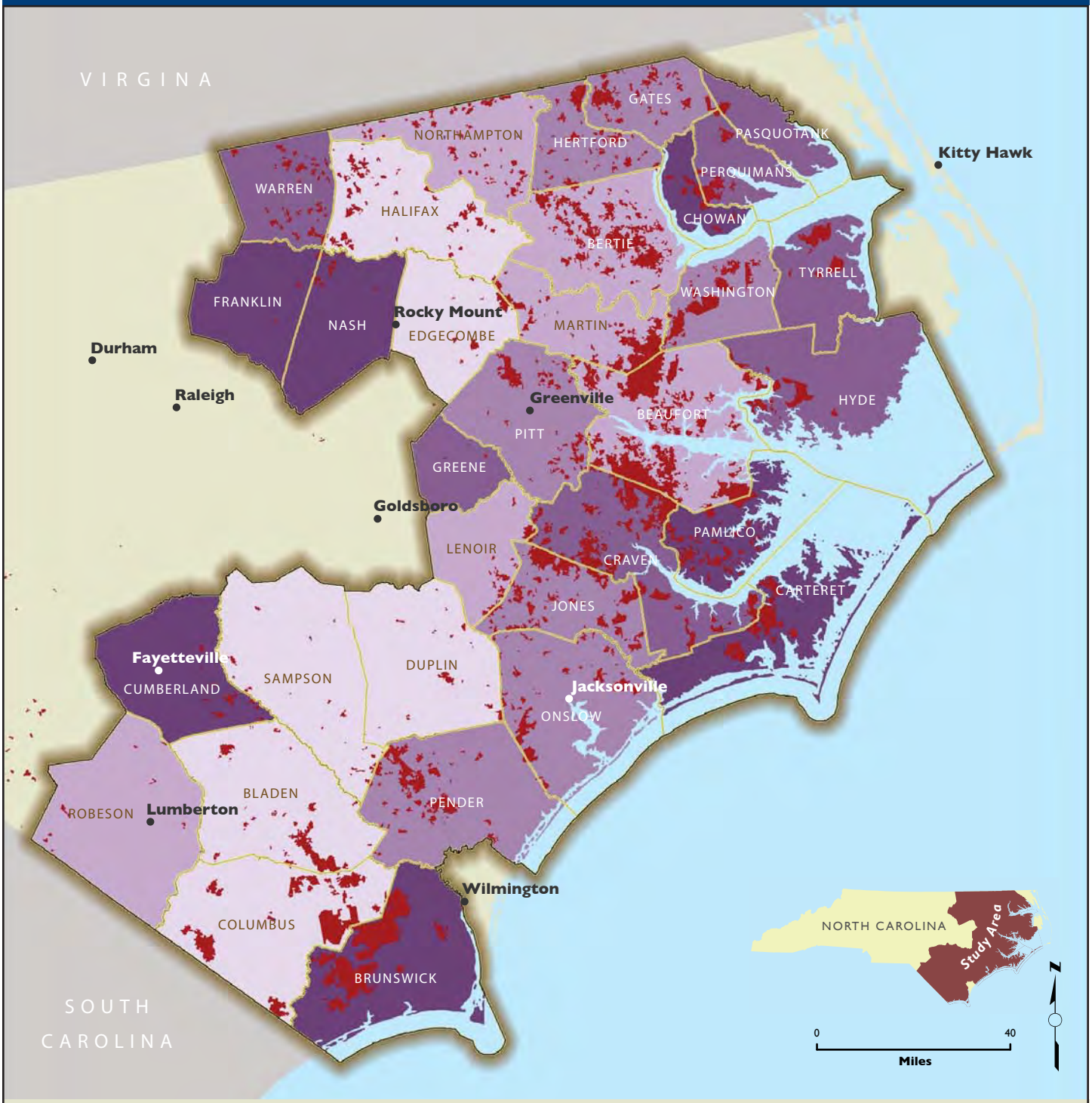
Fragmentation and Development Pressure

Most of the landowners in eastern North Carolina are relatively new to the region. Weyerhaeuser and Forest Investment Associates have held their lands for at least two decades, but the other owners entered the region when International Paper sold its holdings in 2006. The first round of sales resulted in significant fragmentation of ownership, and further fragmentation should be anticipated as some of the investment funds that own the land mature. As detailed below, finer-scale fragmentation is occurring as these landowners market parcels for hunting and private recreation camps or development.

Compared with the Southeast as a whole, eastern North Carolina experiences above-average development. Summary statistics from the Sewall Company show that over 200,000 acres of forestland was sold between 2005 and 2011, at an average price of $1,800 per acre, well above the $1,100 bare-land value (or the value of managing the land for forest use). The Southern Forest Future Report's model predicts that 344,000 acres will be converted to nonforest use by 2060, with some counties slated to lose as much as 27 percent of their private forestland. Development pressure is likely to result in the conversion of more than 18 percent of private forests in Brunswick, Carteret, Craven, Pamlico, Tyrrell, Chowan and Perquimans counties (see **Map 7**), and TIMO and REIT land holdings would account for some of this land-use change.

Because the real estate market collapsed after TIMOs in this region had purchased much of their land, they now need to recoup that investment and are actively

Map 7: Conversion Pressure



Relative Index Value

- Low
- Low/Moderate
- Moderate
- Moderate/High
- High
- Investor-owned forest land

Data Sources

U.S. Forest Service, Nature Serve, Open Space Institute, U.S. Census Bureau, Natural Earth

Map Design: Center for Community GIS

marketing their lands on their own real estate websites and through third-party real estate agencies. Investment losses, fragmentation, and development are the likely consequences.

As of October 2011, 13,000 acres (1 percent) of TIMO and REIT land in the study region was being marketed through the owners' real estate websites. The average size of parcels for sale is 215 acres; the median size is 128 acres. The highest current land values, reaching $6,000 per acre, are in Pamlico and Carteret counties. Onslow County represents 50 percent of all posted sales by acreage, mostly driven by Camp Lejeune, the largest military base on the East Coast, with more than 40,000 Marines – and an area where DoD is focusing its buffer program.

Real estate sales have been down significantly (**Table 5**; dark blue bars). However, according to Sewall, a major appraiser in the region, land sales are picking up and properties are spending less time on the market.

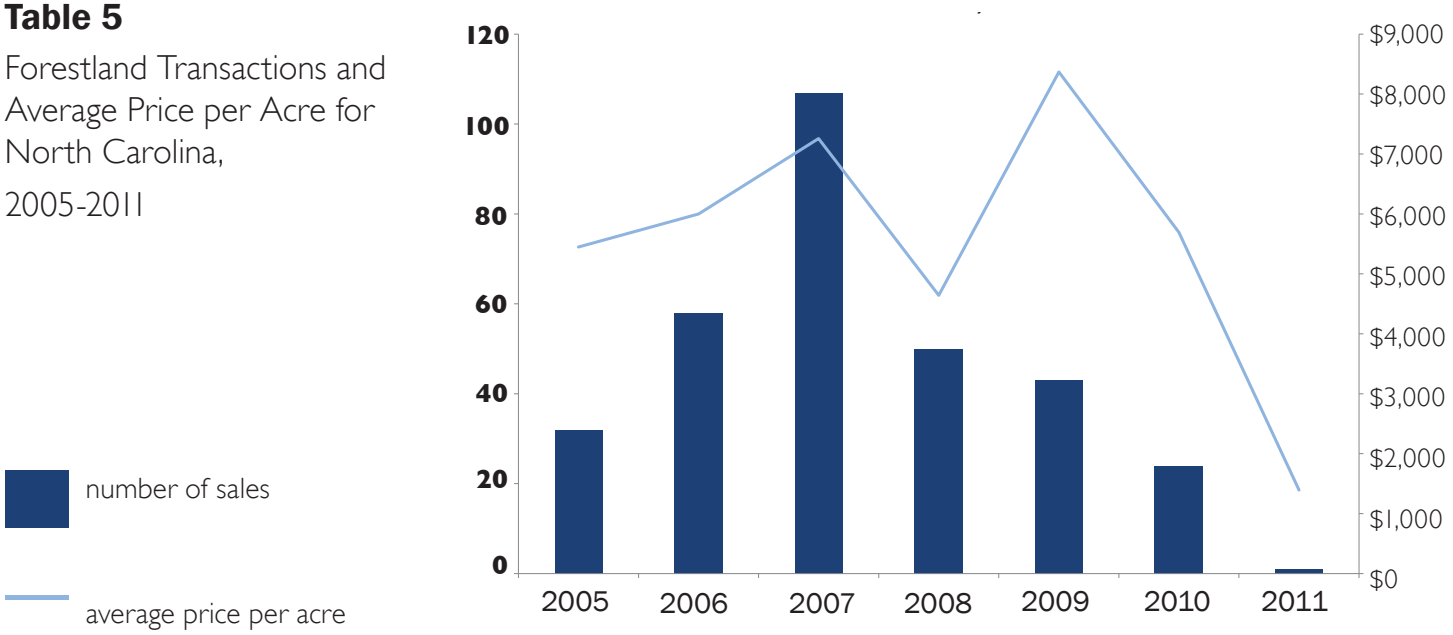
Sluggish Timber Markets

When wood product prices are high, TIMO and REITs are motivated to retain their land in forest use. As of 2009, saw timber prices were down 54 percent in eastern North Carolina and 41 percent across the Southeast, compared with 1997 prices (Forest2Market 2009, adjusted for inflation).

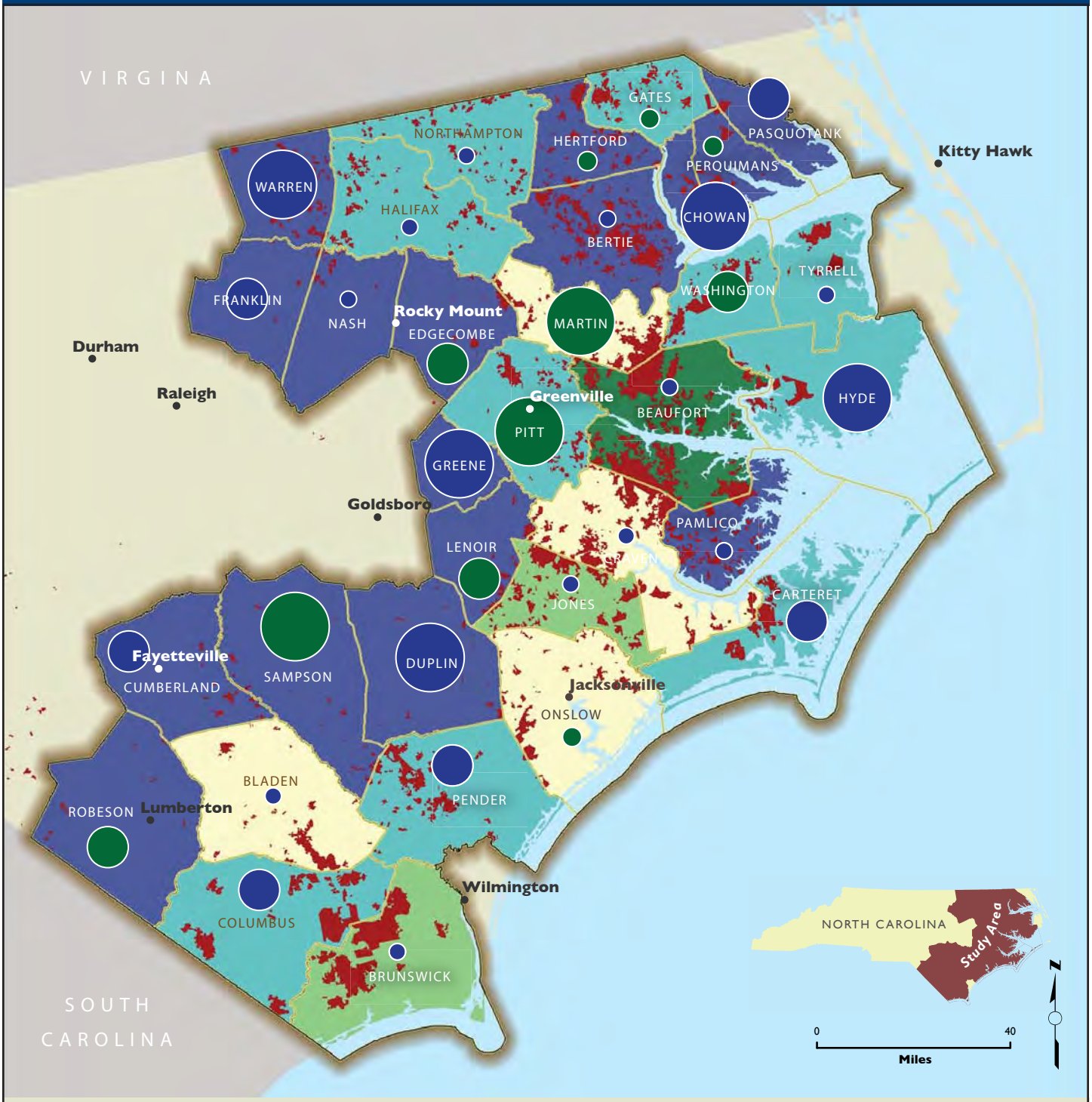
Map 8 shows the change in pulpwood (dots) and saw timber (counties) harvests between 1997 and 2009 for eastern North Carolina. The areas with the most TIMO and REIT holdings experienced harvest volume declines up to 60 percent. Those declines affect jobs and harvesting and manufacturing infrastructure. For example,

Table 5

Forestland Transactions and Average Price per Acre for North Carolina, 2005-2011



Map 8: Market Strength



Percent change pulpwood harvests from 1997-2009 (cords)

- 0% to -30%
- -30% to -60%
- -60% to -91%
- 0% to 30%
- 30% to 60%
- 60% to 162%

Percent change sawlog harvests from 1997-2009 (MBF)

- -89% to -60%
- -60% to -30%
- -30% to 0%
- 0% to 60%
- 60% to 90%
- Investor-owned forest land

Data Sources

Open Space Institute, American Forest Management, U.S. Census Bureau, Natural Earth

Map Design: Center for Community GIS

between 1999 and 2008 in North Carolina, nearly 200 logging contractors left the industry, a 33 percent decline (NC DFR 2010). Although the region has not experienced the permanent mill closures seen in other areas, many mills are operating at decreased capacity.

Many TIMOs cite flexibility on timing harvests and the ability to extend their funds as ways to preserve value during down markets. REITs, however, must deliver quarterly dividends or risk reductions in their stock price.

High Property Taxes

High taxation is a top concern for landowners and landowner industry groups. Unlike other states in the South, North Carolina does not extend property tax deductions for forestlands (or current-use assessment) to corporate ownerships. In 2010, property taxes paid by one forest investment firm in this study accounted for 28 percent of its total expenses in North Carolina but less than 10 percent elsewhere in the Southeast. This may be one factor in driving forestland investment away from the region if it is not changed.

Landowners say that many of the regulatory practices prescribed for safeguarding water, air, and habitat quality are acceptable, but administrative and operational costs are not commensurate to the environmental protection.

Command-and-Control Regulation Versus Voluntary Efforts

Conservation organizations and state and federal regulators fought hard for environmental regulations that maintain habitat and water quality values at low public cost. Landowners say that many of the regulatory practices prescribed for safeguarding water, air, and habitat quality are acceptable, but administrative and operational costs are not commensurate to the environmental protection. Currently, each TIMO and REIT may have as many as four full-time staff dedicated to compliance with regulations and forest certification.

Forestland owners point to the strides made through state-designated best management practices (BMPs). Studies show that historically, BMP implementation has been erratic. With the widespread use of third-party certification for sustainable forest management, however, adherence to BMPs has risen; recent implementation rates were 85 percent throughout North Carolina's coastal plain, according to a survey conducted by the state Division of Forest Resources (NCASI 2009), and 87 percent across the Southeast

prescribed burn used to help the Longleaf on a farm in Wilson, NC
photo: North Carolina Forestry Association

(SGSF 2008). In North Carolina, forestry operations have been regulated under the North Carolina Sedimentation Pollution Control Act since 1990, and compliance has been strong.

Without taking a stance on the environmental value of any specific regulations, we list three pending regulations likely to affect TIMO and REIT owners:

- A change in classification of silviculture from a nonpoint source of pollution to a point source under the Clean Water Act may necessitate permitting through the National Pollutant Discharge Elimination System (NPDES) program (*NEDC v. Brown,* 2010), which would require additional permits.
- Pesticide application for forestry is regulated under the Federal Insecticide, Fungicide, and Rodenticide Act, but additional NPDES permits may soon be required when chemicals are used near federal waters or wetlands (*NCC v. EPA,* 2009).
- The Environmental Protection Agency (EPA) may begin to enforce new rules for boilers, affecting many wood and paper mills that burn waste wood to generate energy on site. Mills will have to purchase new equipment to comply with national emissions standards for hazardous air pollutants. Weyerhaeuser estimates the changes will cost approximately $45 million (N. Thompson, pers. commun., July 29, 2011).

Perhaps the largest factor influencing the sustainability of working forests is the strength of traditional timber markets for sawlogs and pulp.

pellet mill
photo copyright ©2009 The Wild Center

V. Opportunities

How can eastern North Carolina forestland adapt to changing market conditions and retain its base of working forestlands?

All interested parties will need to work together to maintain forest cover in the region. In the near term, Department of Defense funding, new opportunities for conservation of working forestland, and emerging markets may help offset the challenges facing the region.

Robust Markets for Wood Products

Perhaps the largest factor influencing the sustainability of working forests is the strength of traditional timber markets for sawlogs and pulp. Landowners say they rely on mill demand and stable prices to achieve sustainable management goals. A study released by the U.S. Forest Service in September 2011 documented the environmental and job benefits of using wood as a building material, finding that wood products manufacturing supports at least 25 percent more jobs per unit than steel or concrete and concluding that wood is the greenest standard building material.

As well, certification for wood products from well-managed forests and architectural standards for 'green building' that support wood use are market mechanisms that can increase demand for traditional markets. Finding ways to advance certification, green building standards and objective research may be important elements for bolstering wood markets.

Military Base Conservation Buffers

The Department of Defense offers one of the best opportunities for land protection in eastern North Carolina. DoD is active in the conservation of working forests in two ways. First, to comply with Section 7 of the Endangered Species Act, DoD has identified priority areas around its military bases at Cherry Point and Camp Lejeune for protection under the 2003 Red Cockaded Woodpecker Recovery and Sustainment Program. To meet the species' habitat requirements without infringing on base operations, Camp Lejeune officials are exploring ways to protect 120 pairs of birds off-base, likely requiring conservation of 40,000 to 80,000 acres.

Second, with funding from its Readiness and Environmental Protection Initiative, DoD works to buffer its bases with working farmland and forestland that limit encroachment of neighboring land uses. Its buffer program has a $150 million matching fund for use across its 58 bases, three of which are in eastern North Carolina.

The DoD buffer program funds will be directed to projects that protect military bases from encroachment, reduce pressures on DoD wildlife habitat, and leverage its funding. States and counties that can produce matching funds will likely receive more funding. North Carolina has so far responded to this challenge and recently allocated $2 million of a very slim budget for matching funds from DoD at Cherry Point. Given the shortage of public funding, private philanthropy and donor funds may be another important source of match to draw DoD funding to the region.

With scarce funding, partnerships are the wave of the future. The Southeast Regional Partnership for Planning and Sustainability (SERPPAS), led by DoD and engaging 24 federal, state, and NGO partners, is coordinating partnerships around DoD bases across the country. SERPPAS has an active place-based project in eastern North Carolina run by North Carolina State University.

The Cape Fear Arch Collaborative and Onslow Bight Forum are two other partnerships with strong relationships with forestry owners. The Onslow Bight Conservation Forum was jointly initiated by The Nature Conservancy and Camp Lejeune in response to encroachment problems at the military installation. The partnership has identified high-priority lands for conservation (**Map 9**). The area is a rich mosaic of saltwater marshes, wetlands, longleaf pine savannahs, and other coastal ecosystems that support several rare and endangered plant and animal species; it is also one of the most rapidly growing regions of eastern North Carolina. TIMO and REIT lands will play an important role in ensuring protection.

Working with established reserves, groups are aiming to create 350,000-acre blocks of longleaf forests around Bladen Lakes and a 30,000-acre forest block in the Onslow Bight.

Ecosystem Services: Longleaf Pine Restoration

Southeastern North Carolina is a priority area for restoration of major longleaf pine ecosystems, on which the endangered red-cockaded woodpecker depends. The open spacing that characterizes longleaf ecosystems is maintained by periodic burning; the seedlings are fire resistant but grow slowly as their large tap roots develop. America's Long Leaf Initiative has determined areas where it is possible to restore large blocks of longleaf forests. Working with established reserves, groups are aiming to create 350,000-acre blocks of longleaf forests around Bladen Lakes and a 30,000-acre forest block in the Onslow Bight. The North Carolina Longleaf Coalition is currently

developing the GIS resources needed to support longleaf pine ecosystem restoration, working to introduce controlled burning, and analyzing growth-and-yield for longleaf.

In eastern North Carolina, about 13,000 acres, or slightly more than 1 percent of TIMO and REIT land, is in longleaf stands, according to data collected for the North Carolina Long Leaf Initiative. With incentives that make up for owners' lost timber revenue, the restoration initiatives could be expanded to include TIMO and REIT forestlands. TIMOs and REITs are critical partners in restoring longleaf ecosystems across the Southeast, yet they have less access to restoration dollars than other private owners. Most of the $50 million in federal funds allocated annually across the Southeast for longleaf maintenance has been focused on small private landowners, who have been seen as the more likely participants and more in need of assistance.

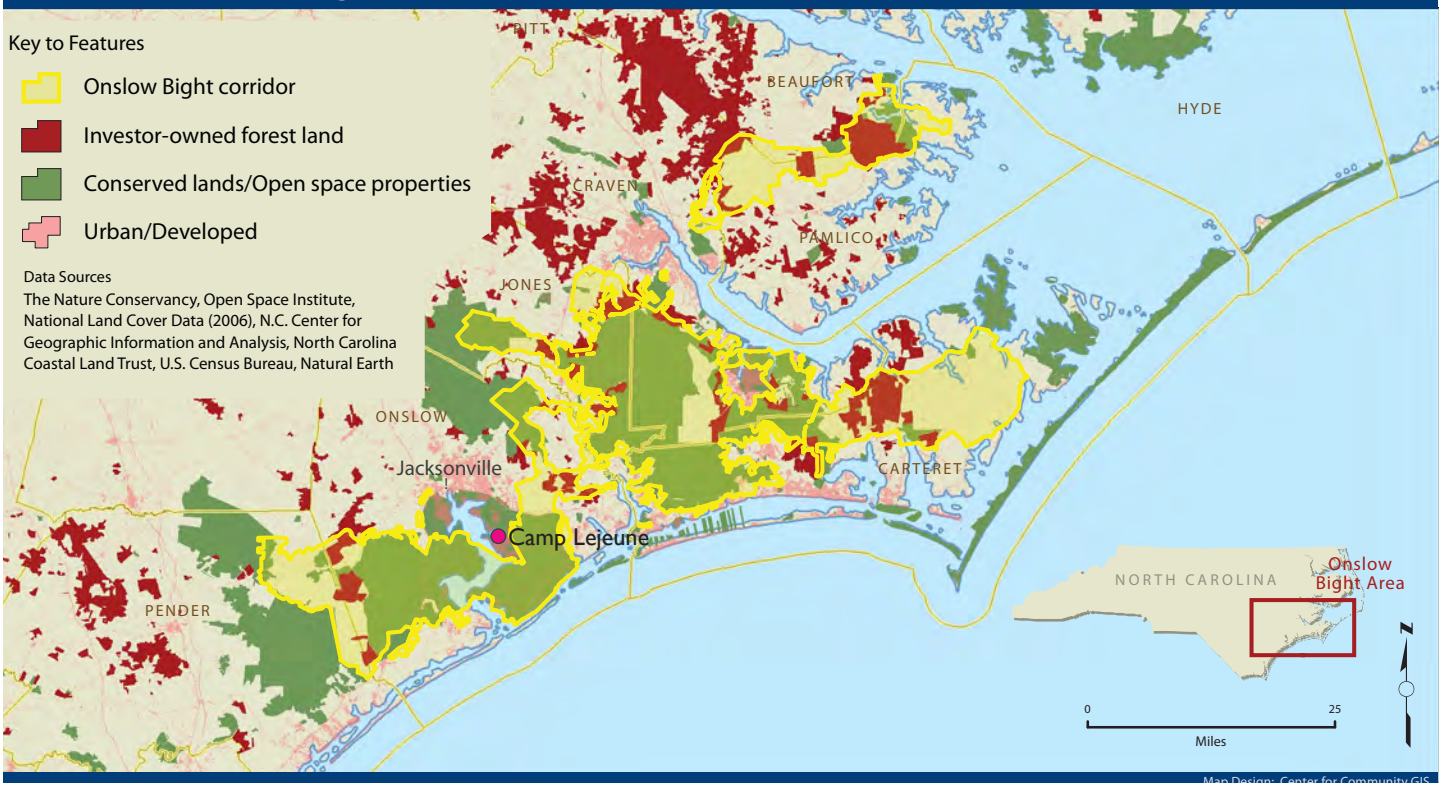
Extending longleaf pine incentives to TIMO and REIT owners may accelerate restoration and reduce conversion of important forestlands. The Conservation Fund has begun mapping most suitable locations; **Map 5** (p. 9) illustrates areas of potential overlap with TIMO and REIT lands. These areas will likely also be of interest to DoD for Section 7 mitigation (discussed above).

Onslow Bight
photo: Mark Daniels

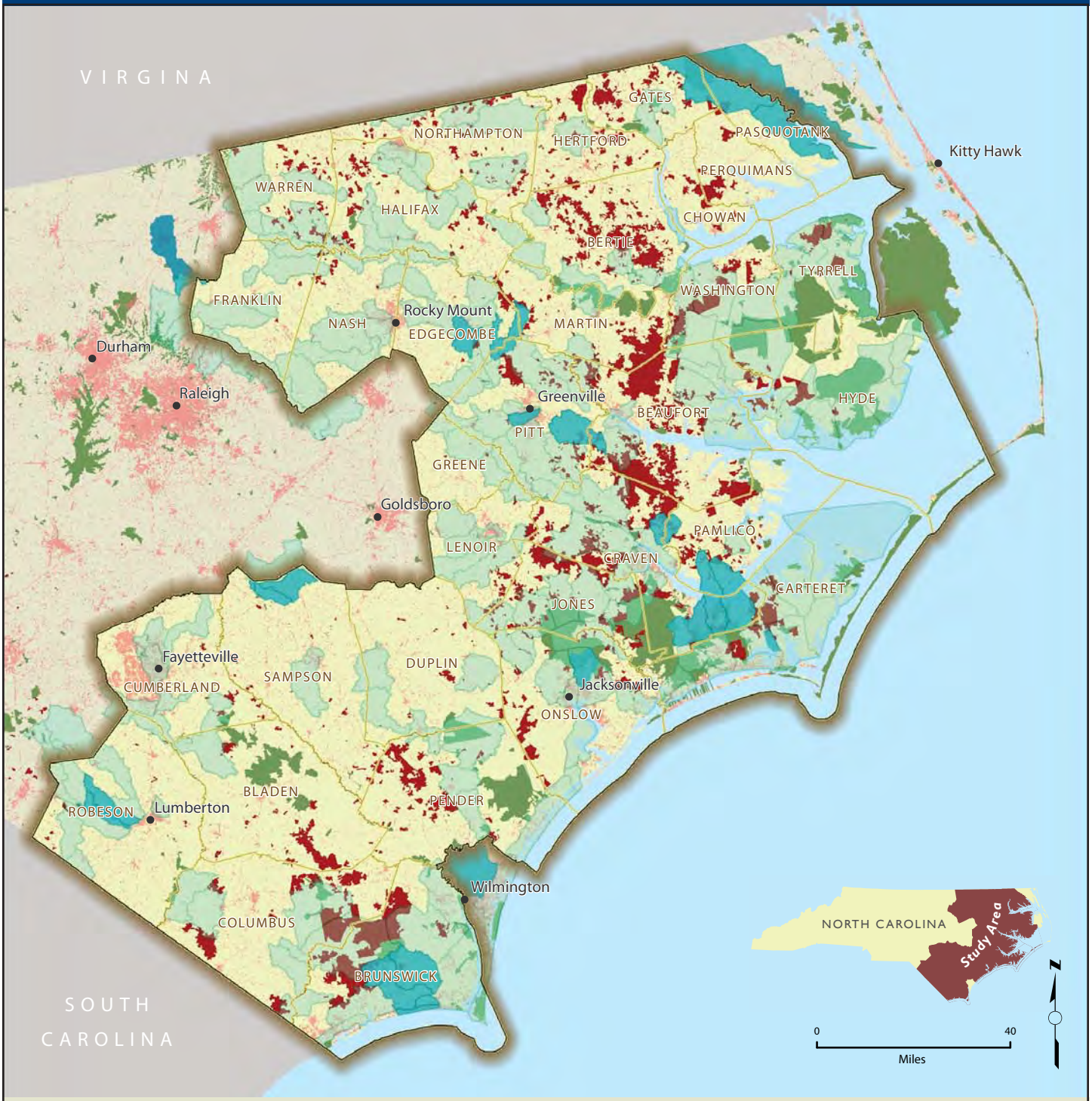
Ecosystem Services: Wetland and Species Mitigation

The wetlands market pays for the creation of additional water quality through restoration or permanent protection of wetlands; it sells credits to developers who

Map 9: Onslow Bight Corridor



Map 10: Focus Watersheds



Key to Features

- Local watershed planning area
- Target watershed
- Investor-owned forest land
- Conserved lands/Open space properties
- Urban/Developed

Data Sources

Open Space Institute, National Land Cover Data (2006), N.C. Ecosystem Enhancement Program, U.S. Census Bureau, Natural Earth

Map Design: Center for Community GIS

mitigate wetland destruction. Wetland credits are opportunities to realize as much as $50,000 per acre, but compliance with the environmental regulations is costly and requires expertise. TIMOs and REITs are encouraged to examine specific opportunities on their lands and enter the market with caution.

North Carolina's Ecosystem Enhancement Program (EEP) has an active state wetland mitigation program, with more than 500 active watershed mitigation projects in progress. The state effectively sets the market price for wetland mitigation credits, currently $23,000 per acre. Over the past 10 years, credit prices have ranged from $15,000 to $50,000 per restored wetland acre; the higher prices were realized at the height of the development boom. Since its inception, EEP has purchased 188 wetland acres for mitigation.

A TIMO or REIT could develop a wetland mitigation bank on its own – at great risk but with the possibility of appreciable income. One risk is fluctuating market demand. North Carolina has more than 20 private wetland banks, including eight in the eastern part of the state, making it a market with abundant credits (i.e. more supply than demand). Further uncertainty is introduced by whether the project will meet ecological goals. Often, restored wetlands do not fully meet regulatory standards over the seven years of compliance monitoring. Environmental Banc and Exchange (EBX), which has completed 50 projects, counts at least one compliance issue with every project (Randy Wilgis, pers. commun., 2011). Lastly, projects often take five years or more to complete leading to significant discount in the total revenue that is earned on projects.

For TIMO and REITs interested in accessing these markets, the state's wetland mitigation sites indicate likely locations. **Map 10** shows EEP's target watersheds, which need restoration and protection, and planning watersheds, where specific projects are being identified. TIMO and REIT lands cover 350,000 acres of target areas and 30,000 acres of planning watersheds. TIMOs and REITs can also look for historical wetlands that were drained under forestry exemptions before 1987 (more recent drainages are not eligible, to prevent double-dipping).

A related opportunity may lie in payments for clean water. Slightly west of the focus area for this report, Durham has recently taken a leadership role in pioneering water quality trading markets. In June, the Durham city council approved a water rate increase of one penny. The surcharge will raise about $100,000 annually to help local land trusts and the city buy land for conservation. The city is particularly interested in conserving land in the Lake Michie, Little River, and Jordan Lake watersheds.

The North Carolina Clean Water Trust Fund has been used to fund stream buffer protection on working forests, but it provides little other opportunity for working forests because of strict requirements. The Farm Bill might also be a source of funding for water quality, but payments are generally limited to small landowners. Direct payments to forestland owners who contribute to water quality are another potential approach.

The unique habitat in eastern North Carolina creates some opportunities for credits from species mitigation markets. Only 115 species mitigation banks operate in the United States, 90 percent of them in California. Credits sell from $4,000 to $300,000 with the median price at $15,000, depending on demand and land values (Madsen et al. 2010). To date, nationally, 80,000 acres of wildlife habitat has been protected using

Mimic Glass Lizard
photo copyright ©2010
kellyandsarah.blogspot.com

To date, nationally, 80,000 acres of wildlife habitat has been protected using species mitigation. North Carolina has one of the highest number of endangered species (64) in the nation, and theoretically more mitigation banks could develop if demand for credits expands.

For generations, American landowners and farmers have proudly posted their Tree Farm signs as a way of displaying their stewardship values.

photo: North Carolina Tree Farm Program

TIMOs and REITs often realize income ranging from $4 to $8 per acre per year, depending on the wildlife values; total revenues can account for 5 to 15 percent of total income.

species mitigation. North Carolina has one of the highest number of endangered species (64) in the nation, and theoretically more banks could develop if demand for credits expands. To date the only credits developed in the state were by The Conservation Fund on its Palmetto-Peartree Preserve in Tyrrell County. Experts in the area have noted that demand for species banking is largely driven by local regulators' expertise in using conservation as a tool for species recovery and largely depends on local Fish and Wildlife Service professional knowledge (B Madsen pers. Commun.).

Ecosystem Services: Carbon Sequestration

The carbon markets have alternately buoyed and dashed hopes for a new source for supporting working forests. Leaving aside the more speculative opportunities, California's active carbon market has established a role for offsets, including forestry. Under the new rule, 8 percent of a company's emissions can be covered using credits from offset projects, including forest management, certified by the state's Air Resources Board. The U.S. Climate Action Reserve, an NGO, has developed detailed protocols for these forestry projects, which can be located anywhere in the United States; the requirements include avoided deforestation and 100-year easements.

At this early stage, carbon and other ecosystem service markets offer North Carolina landowners a narrow but real opportunity to receive payments for services provided by lands less suited to traditional forest management. Ideally, landowners could stack multiple conservation values; for example, extending rotations on less productive sites could generate income from carbon, wetland, and biodiversity markets. However, the time and costs involved in participating in these markets remain major hurdles.

Recreation Leases

Recreation is perhaps the most established market for nontimber forest values. TIMOs and REITs often realize income ranging from $4 to $8 per acre per year, depending on the wildlife values; total revenues can account for 5 to 15 percent of total income. TIMOs and REITs incorporate management practices for wildlife (both game and other species), provide access and road maintenance, and allow hunt clubs to have campsites, all of which benefit hunt club customers (Jimmy Bullock, pers. commun., 2011).

The demand for outdoor recreation may increase as much as 113 percent in the next 50 years, with "passive" recreation, such as hiking and bird watching, driving the growth (SFFP 2011). As population grows and the area of open-space conservation stagnates, TIMO and REIT lands will play an important role in providing high-quality private recreation opportunities other than hunting and fishing. TIMO and REIT owners might consider how trends towards passive recreation might influence their management as there may be limited opportunity in plantation environment.

When the lands were held by forest product companies, state agencies often obtained recreation leases for as little as $1 an acre a year. This greatly expanded public recreation opportunities across the Southeast, and the companies used recreational access to offset taxes. As the costs of landownership and recreational access rose, many state agencies discontinued those leases, reducing public access. To ensure future access at a stable price, public wildlife agencies may need to pursue innovative strategies. For example,

Alabama recently purchased a 99-year recreation lease on 65,000 acres. This project is the largest easement in that state and one of the largest in the South (Dan Dumont, pers. commun.,2011).

Public agencies and NGOs can explore opportunities to partner with TIMOs and REITs to increase public recreational access. As well, there may be opportunities to defray the cost of public recreation access by charging user fees, partnering with private sponsors, and purchasing term recreation access at a lower cost.

Supply Agreements

When forest product companies sold off their land base to TIMOs and REITs, many contracts stipulated a continued supply of wood to the mills at a specified price. These supply agreements are conveyed with the property. In the South, they generally have a fixed term of up to 20 years and may have an option for renewal. Supply agreements ensure a steady supply of raw material to regional mills but have the side effect of protecting TIMO and REIT land from fragmentation and development.

In large transactions, supply agreements limit the sale of the core area needed to produce the wood volumes required by the agreement. Supply agreements can thus limit the liquidity of land, particularly if they prohibit subdivision and sale. However, noncore acres may be transferred to other parties with no strings attached. This outside acreage, which is often limited to 1 to 2 percent of the total land base per year, may be land with substantial real estate value.

Across the South an estimated 50 percent of TIMO and REIT land is under supply agreements, covering an estimated 12 million acres (10-ks and A Ferguson, 2011). In eastern North Carolina a much greater amount, closer to 80 percent of the 1.1 million acres of TIMO and REIT land, is covered. Weyerhaeuser, for example, has internal supply agreements with its own mills, and the TIMOs that purchased land from International Paper continue to supply its mills under these agreements.

Covering 880,000 acres, supply agreements may be the largest defense against fragmentation and development of eastern North Carolina's land base in the near term. However, the majority of these agreements will expire within the next five to 10 years. Might conservation groups leverage this tool for conservation outcomes? Could the agreements be renewed in ways that align the interests of the state's timber industry with those of forest conservation, thus offering an alternative to fee acquisition and traditional, perpetual working forest easements? This is an interesting area for further inquiry.

Biomass Markets

Biomass remains controversial: landowners seek new markets, but paper producers do not want to see competition for pulpwood, and wildlife interests are increasingly concerned about converting lands to more intensive management regimes. Regardless, markets for this wood use are growing as Europe looks to the United States to fill demand. Eastern North Carolina has both fast-growing softwoods and access to ports for export (SFFP 2009).

Covering 880,000 acres, supply agreements may be the largest defense against fragmentation and development of eastern North Carolina's land base in the near term. However, the majority of these agreements will expire within the next five to 10 years.

The owner of this Longleaf Tree Farm in Sand Hills generates additional income by allowing pine straw to be raked.
photo: North Carolina Forestry Association

EPA predicts that biomass energy could increase pulpwood harvest levels in the Southeast by 54 to 113 percent (SFFP 2009). Small private landowners are asking when it is in their economic interest to stop managing for saw timber and cut at even shorter intervals for pulpwood (**Forisk News,** November 7, 2011). Some landowner associations, however, believe that saw timber will remain the primary focus of large landowners, and the TIMO and REITs in our study area expect to wait for improved saw timber markets.

Wood pellet demand is the fastest-growing segment of the wood bioenergy market across the South, and eastern North Carolina is a hotspot. Two mills have already located in the eastern part of the state, and one is just over the state border in Courtland, Virginia. Although domestic markets are stalled by uncertainty about federal regulations on the carbon neutrality of wood bioenergy, Europeans are creating a strong demand for wood pellets, exceeding 10 million tons annually. The high-quality pulp needed for pellets receives $10 to $15 per ton, which is competitive with paper pulp markets. In eastern North Carolina, a new pellet mill is replacing lost demand from scaling down of the Franklin pulp mill (A. Ferguson, pers. commun., August 9, 2011).

Although new demand would buoy some wood markets, it will not fully compensate for the declines in the higher-value saw timber market.

combination field for agriculture and timber on a farm near Whiteville, NC
photo: North Carolina Forestry Association

VI. Next Steps

As partnerships for working forestry expand and conservation NGOs, government, and landowners interact more regularly, the opportunities for identifying mutually acceptable approaches to keeping forests as forests also expand.

Eastern North Carolina stands out as a leader in fee conservation and effective partnerships among diverse stakeholders (see Appendix B). This suggests that land trusts, the state, DoD, and landowners all agree that conservation of working forests in this region is a top priority. Below we list approaches that could benefit the interests of multiple groups. Some of these efforts are already underway in eastern North Carolina, and others are being advanced elsewhere in the Southeast or the United States.

- Build on certification as a way to support and grow traditional wood markets.
- Use water markets and water payments to develop conservation funds or make direct payments to forest landowners for ensuring water quality.
- Identify opportunities for private forest landowners to access credit markets for wetland and species mitigation.
- Quantify the value of supply agreements to conservation and seek opportunities to use this tool to conserve working forests.
- |Understand the consequences of regulatory burdens on landowners and explore ways to use BMPs, forest certification, and other voluntary programs to meet conservation goals.
- Identify tracts that conservation and TIMO and REIT interests agree should remain working forests. These would likely be productive forests near mills where conservation values are high.
- Further examine overlap with longleaf restoration and potential DoD interests. Identify leveraging opportunities from private donors and foundations to attract more DoD funding.
- Identify the implications of the growing wood pellet market for North Carolina forests.
- Explore opportunities for private sponsorship of long-term recreation leases for public use of TIMO and REIT lands.
- Consider the benefits of extending current-use tax credits and Farm Bill credits to TIMO and REIT owners.

Active nest of Red Cockaded Woodpecker, an endangered species, on a longleaf tree farm. The farm generates additional income by being home to several nests.
photo: North Carolina Forestry Association

Appendix A. Overview of TIMO and REIT Structure

Investors in timberland have replaced the forest products industry as a significant private owner of U.S. forestland. Privately held timber investment management organizations (TIMOs) and publicly traded real estate investment trusts (REITs) seek returns from timber or asset appreciation; their managers are fiduciaries of private and public investments and are responsible for delivering the highest possible, risk-adjusted returns to investors.

TIMOs are limited liability corporations. They typically hold timberland for a set period and, studies have shown, derive one-third of investment returns from operations (largely timber sales) and two-thirds from asset appreciation (both land appreciation and timber growth) at the end of the investment period (Ravenel et al. 2002). Because land appreciation and timber gains are both free from double taxation, even if forest management is their main business, these owners are economically indifferent to harvest income versus returns from real estate values. Thus, they emphasize market timing and economically optimized harvest schedules over cash-flow considerations (Ravenel et al. 2002). To attract investors, a TIMO must deliver returns to investors within a predefined period, generally seven to 15 years, though the trend now is toward longer investment periods. Some funds are now running as long as 30 years and a few TIMOs have operated open-ended funds.

TIMOs in the United States have four types of investors (Evens 2007): public pension funds account for 40 percent of timber investment ownership, corporate pension funds 15 percent, foundations and endowments 22 percent, and high-net-worth and other investors 23 percent. Most TIMO investors are anonymous and therefore less accountable than the publicly traded forest products firms of the past; however, public pensions and not for profit corporations such as Harvard and Yale, could face scrutiny for their investing practices, which can impact TIMO prectices (Federation of Hospital and University Employees 2002).

REITs are cash-flow owners that depend on regular income. They seek to maintain a steady flow of income from timber harvests or other sources to satisfy shareholders with regular dividends. They enjoy advantages over forest industry owners because of favorable treatment of timber-related capital gains and pass-through income (Fernholz et al. 2007). They are required to distribute 90 percent of all income as dividends. To maintain or increase payouts to shareholders, REITs are under pressure to harvest timber on a regular basis (regardless of timber markets) and supplement that income with real estate sales. REITs are better set up to sell real estate in multiple sales than are TIMOs, which hit regulated limits on the number of sales they can complete in a year (if they want their preferential tax treatment).

Appendix B: Local Partnerships in Eastern North Carolina

There are an impressive number of local partnerships in North Carolina working across traditional borders. Many engage landowners, state and federal officials and NGOs. This list and many of the descriptions are adopted from **http://www.fws.gov/raleigh/conservation_partnerships.html**.

Albermarle Pamlico Community Conservation Collaboration

The Albermarle Pamlico Community Conservation Collaboration (AP3C) got underway in 2007 when an extensive group of professionals gathered to share concerns for the natural resources and important wildlife habitats of the Albermarle Pamlico peninsula, especially in light of global climate change. This group intends to explore opportunities to manage lands, restore habitats, and protect lands and waters for the benefit of species native to the region. To learn more or become involved contact Sam Pearsall at: spearsall@environmentaldefense.org

Cape Fear Arch

The Cape Fear Arch encompasses one of the most biologically diverse areas along the Atlantic Coast. It includes the watersheds of the lower Cape Fear and the Waccamaw Rivers. Like so many areas along the coast, this area is under great development pressure, creating an ever-increasing demand for supporting infrastructure, which eliminates habitat for important wildlife species. Several interested conservation partners began collaborating in 2006 with a mission to develop a community conservation vision that provides protection and stewardship of the important natural resources and raises conservation awareness. To learn more or become involved visit the partnership web site at: www.capefeararch.org

Chatham Conservation Partnership

To provide a voice for Chatham County's natural resources and perhaps a vision for their protection, more than 40 active participants from state and federal agencies, local land trusts, local conservation organization, county officials, commissioners, planners, and landowners several organizations, agencies, officials, and concerned citizens began convening in the fall of 2006. This newly formed Chatham Conservation Partnership desires a sustainable county focused on the preservation of its natural resources and rural and agricultural heritage. To learn more or become involved contact Sarah McRae at: sarah.mcrae@ncdenr.gov or visit Chatham Conservation Partnership.

North Carolina Longleaf Coalition

The mission of the North Carolina Longleaf Coalition is to promote the maintenance and restoration of North Carolina's longleaf pine ecosystem, including its cultural and economic values, by forming a collaborative network of diverse stakeholders to provide strategic leadership across the historic range while also supporting local restoration activities. To learn more or become involved visit the website at: North Carolina Longleaf Coalition.

North Carolina Prescribed Fire Council

The North Carolina Prescribed Fire Council, while not geared to a specific geographic region of the state, is a partnership of resources managers, both public and private, with the focus of promoting prescribed fire and addressing barriers to prescribed burning. The primary goal of the Council is to optimize burning opportunities for the benefit of natural ecosystems and wildlife and to reduce the risk of damage from wildfires. Fire is such a integral process for the management of much of our state's habitats. Prescribed burning benefits game, nongame, and endangered wildlife species by enhancing wildlife habitat. To learn more or become involved visit the website at: North Carolina Prescribed Fire Council.

North Carolina Sandhills Conservation Partnership

The North Carolina Sandhills Conservation Partnership was formed in 2000 with the specific intent to facilitate collaboration between various federal, state, and non-profit conservation groups for the purpose of conserving the vanishing longleaf pine ecosystem and recovering the federally-listed endangered red-cockaded woodpecker in the North Carolina Sandhills. To learn more or become involved visit the web site at: North Carolina Sandhills Conservation Partnership.

Onslow Bight Conservation Forum

The Onslow Bight Conservation Forum has among its goals "to promote the conservation, restoration, health and sustainable use of the landscape and the native terrestrial and aquatic communities that depend, in whole or in part, on the lands and waters of the Onslow Bight area." The Onslow Bight, bounded on the north by Cape Lookout and on the south by Cape Fear, contains a unique landform of saltwater marshes, riverine wetlands, pocosins, longleaf pine savannahs, and other coastal ecosystems. It also includes several large protected areas such as Cape Lejune and Croatan National Forest. To learn more or become involved contact Hervey McIver at: hmciver@tnc.org

Upper Tar Collaboration

Anchored by the Tar River Land Conservancy, the Upper Tar Collaboration includes a multitude of corporate, agency, non-profit, and private partners dedicated to preserving and managing riparian buffers and wetlands to help protect the incredible aquatic biodiversity that resides in the Upper Tar River Basin. This basin is nationally recognized as one of the most important watersheds along the East Coast because it harbors 14 federal and state rare and endangered species, including the federally endangered Tar spinymussel and dwarf wedgemussel. To learn more or become involved, contact Derek Halberg at dhalberg@tarriver.org or visit the Tar River Land Conservancy.

Bibliography

Coastal Plain Onslow Bight. (2012). The Nature Conservancy. Retrieved from http://www.nature.org/ourinitiatives/regions/northamerica/unitedstates/northcarolina/placesweprotect/onslow-bight.xml

Evens, T. (2007, September). Is timberland a serious alternative? Perspectives from investors. Proceedings of Who Will Own the Forest: Investing Globally in Forestland. Portland, OR, World Forestry Center.

Farmland Information Center Fact Sheet. (2008, August). American Farmland Trust. Retrieved from http://www.farmland.org/documents/Cost-of-Community-Services-08-2010.pdf

Federation of Hospital and University Employees. (2002). A question of stewardship: Yale and the environment. Retrieved from http://www.efc.be/ftp/public/PIPPIP/SummerAcademy2005/Presentations_and_materials/Article_Eva_and_Bengt.pdf

Fernholz, K., J. Bowyer, J. Howe. (2007). TIMOs and REITs: What, why and how they might impact sustainable forestry. Minneapolis, MN, Dovetail Partners, Inc. 14pp.

Forest2Market. (2009, September). The Economic Impact of Privately-Owned Forests [PDF] Retrieved from http://nafoalliance.org/wp-content/uploads/f2m_economic_impact_study_2009.pdf

Forisk. (2011, July). Timber REITS: Land sales offset weak log markets for PCL and PCH in 2Q 2011. Retrieved from http://forisk.wordpress.com/2011/07/27/timber-reits-land-sales-offset-weak-log-markets-for-pcl-and-pch-in-2q-2011/

Land Conservation in North Carolina. (2010). Conservation Almanac. Retrieved from http://www.conservationalmanac.org/secure/almanac/southeast/nc/index.html

Madsen, B., Carroll, N., Moore Brands, K. (2010). *State of Biodiversity Markets Report: Offset and Compensation Programs Worldwide* [PDF]. Retrieved from http://www.ecosystemmarketplace. com/documents/acrobat/sbdmr.pdf

National Council for Air and Stream Improvement, Inc. (NCASI). (2009). Compendium of forestry best management practices for controlling nonpoint source pollution in North America. Technical Bulletin No. 966. Research Triangle Park, N.C.: National Council for Air and Stream Improvement, Inc. Retrieved from http://www.ncasi.org/publications/default.aspx

North Carolina Division of Forest Resources [NC DFR]. (2010). North Carolina's Forest Resources Assessment: A statewide analysis of the past, current and projected future conditions of North Carolina's forest resources. Raleigh, NC: Bardon, R. E., Megalos, M. A., New, B., Brogan, S. (Eds.). Retrieved August 11, 2011 from http://www.ncforestassessment.com/

Northwest Environmental Defense Center [NEDC] v. Brown, 07-35266 (2010). United States Court of Appeals for the Ninth Circuit. Retrieved from http://www.ca9.uscourts.gov/datastore/opinions/2010/08/17/07-35266.pdf

Plum Creek. (2011a). Conservation Commitment. [PDF]. Retrieved from http://www.plumcreek.com/Portals/0/downloads/factsheets/conservationfactsheet.pdf

Plum Creek. (2011b). Acres by State. Retrieved from http://www.plumcreek.com/Timberland/AcresbyState/tabid/65/Default.aspx

Ravenel, R., M. Tyrrell, R. Mendelsohn. 2002. Institutional timberland investment: A summary of a forum exploring changing ownership patterns and the implications for conservation of environmental values. Yale Forest Forum, Yale University.

Southern Forest Futures Project [SFFP]. (2011). Technical Report. Retrieved July 6, 2011 from http://www.srs.fs.usda.gov/futures/reports/draft/Frame.htm *Landowner data updated to reflect REIT conversions through 2011.

Southern Group of State Foresters. (2008). Implementation of forestry best management practices: A Southern Region Report. Retrieved from http://www.southernforests.org/publications

The National Cotton Council of America [NCC] v. EPA, 06-4630 (6th Cir. 2009). Retrieved from http://www.ca6.uscourts.gov/opinions.pdf/09a0004p-06.pdf

The Trust for Public Land [TPL] and the American Water Works Association [AWWA]. (2002). The Cost of Not Protecting Source Waters. San Francisco, CA: TPL, Center for Land & Water. Retrieved from http://www.tpl.org/research/land-water/making-the-case/the-cost-of-not-protecting.html

U.S. Fish and Wildlife Service, and U.S. Census Bureau. (2008). National Survey of Fishing, Hunting, and Wildlife-Associated Recreation – North Carolina. FHW/06-NC. Retrieved from http://www.census.gov/prod/2008pubs/fhw06-nc.pdf

PERSONAL COMMUNICATIONS

Allen, J. and McIver, H. (2011, July 25). North Carolina Coastal Land Trust and The Nature Conservancy: Personal communication.

Bullock, J. (2011, August). Resource Management Service: Personal communication.

Dumont, D. (2011, April 15). Alabama Forest Resources Center: Personal communication.

Ferguson, A. (2011, August 9). American Forest Management: Personal communication.

Kaufman, J. (2011, May 12). Sewall: Personal communication.

Madsen, B. (2012, January). Madsen Environmental: Personal communication

Murphy, M. (2011, June 15). United States Forest Service: Personal communication.

Thompson, N. (2011, July 29). Weyerhaeuser: Personal communication.

Wilgis, R. (2011, October). Environmental Banc & Exchange: Personal communication.

ADDITIONAL SOURCES FOR SLIDES

BIOMASS

Enviva LP. (2011). Enviva pellets Ahoskie. Retrieved from http://www.envivabiomass.com/manufacturing-operations/ahoskie/.

Enviva LP. (2011, August 5). Enviva LP plans second wood pellet facility in North Carolina. [Press release]. Retrieved from http://www.envivabiomass.com/press-releases/enviva-lp-plans-second-wood-pellet-facility-in-north-carolina/.

Gold, R. (2009, July 7). Wood pellets catch fire as renewable energy source. The Wall Street Journal, A4. Retrieved from http://online.wsj.com/article/SB124691728110402383.html.

Green Circle Bio Energy Inc. (2007). Our plant. Retrieved from http://www.greencirclebio.com/plant.php.

RWE. (2011). RWE commissions world's largest green wood pellet factory in the US state of Georgia. [Press release]. Retrieved from http://www.rwe.com/web/cms/en/113648/rwe/press-news/press-release/?pmid=4006255.

We are thankful for the generous contributions of various funders to our work on TIMO and REIT working forest conservation across the eastern United States:

U.S. Endowment for Foresty & Communities

The Betterment Fund · Davis Conservation Foundation

Gaylord & Dorothy Donnelley Foundation · Merck Family Fund · Mr. Nathaniel Klipper

Overhills Foundation · The Moore Charitable Foundation

Private Forestland Planning Collaborative Advisory Committee

Ann Bartuska
Deputy Chief, Research & Development
U.S. Forest Service

Peter Bienstock
Liaison to OSI Board of Trustees

Clark Binkley
Managing Director
International Forestry Investment Advisors

Mike Clutter
Dean
Warnell School of Forestry and Natural Resources,
University of Georgia

John Gordon
Former Dean
Yale School of Forestry & Environmental Studies

Scott Jones
Chief Executive Officer
Forest Landowners Association

Chris Lyddan
Executive Editor
RISI Timberland Markets Report

Carlton Owen
President and CEO
U.S. Endowment for Forests and Communities

Paul Trianosky
Vice President, Family Forests
American Forest Foundation

North Carolina Reviewers and Advisors

Janice Allen
North Carolina Coastal Land Trust

Fred Annand
The Nature Conservancy, North Carolina

Jimmy Bullock
Resource Management Service

Brian Dangler
The Conservation Fund and the Partnership for Southern Forestlands Conservation

Bob Emory
Weyerhaeuser Company

Lark Hayes
Southern Environmental Law Center

Bryan Hulka
Weyerhaeuser Co.

Al Lucier
National Center for Air and Stream Improvements

Hervey McIver
The Nature Conservancy, North Carolina

Scott Pohlman
North Carolina Department of Environment and Natural Resources

Mike Shearer
RMK Timberlands

Bob Slocum
North Carolina Forestry Association

Tom Trembath
Forest Investment Associates

Open Space Institute

Open Space Institute (OSI) protects scenic, natural, and historic landscapes to ensure public enjoyment, conserve habitats, and sustain community character.

OSI achieves its goals through land acquisition, conservation easements, regional loan programs, fiscal sponsorship, creative partnerships, and analytical research.

The Partnership for Southern Forestland Conservation is a collaboration of private landowners, environmental NGOs and government agencies that have come together with the common goal of developing and promoting innovative approaches which will ensure the perpetuation of forest cover on large forested blocks in the South, to achieve a variety of societal, economic and environmental benefits.

Conservation Research Staff

Peter Howell
Executive Vice President
Conservation Finance
and Conservation Research

Abigail Weinberg
Manager

Gillian Mollod
GIS Specialist

Michael King
Program Associate

Prepared by: Abigail Weinberg
Layout by: Pati Canseco, OSI

Edited by: Sally Atwater, Public Relations and Communications

GIS analysis by: Stephen Engle, Center for Community GIS

Open Space Institute
1350 Broadway, Suite 201
New York, NY 10018-7799
Tel: 212.290.8200
Fax: 212.244.344
info@osiny.org
www.osiny.org