

Investing in Nature

**The Economic Benefits of Conserving
Natural Areas in Northeast Florida**



Acknowledgements

This booklet highlights the findings of *Economic Benefits of Natural Land Conservation: Case Study of Northeast Florida*, a detailed economic analysis prepared for Defenders of Wildlife in late 2002 by Clyde F. Kiker, Ph.D., and Alan W. Hodges Ph.D., of the University of Florida's Food and Resource Economics Department in Gainesville. Defenders is grateful to the Beaubouef Family Foundation for making this booklet and the more extensive University of Florida study possible and to Laura Hood Watchman of Defenders of Wildlife, Judy Beaubouef, Barbara Bunch and all who reviewed the manuscript.

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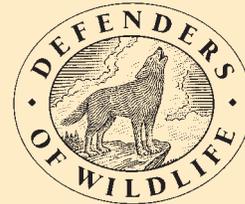
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About Defenders of Wildlife

Defenders of Wildlife is a leading conservation organization recognized as one of the nation's most progressive advocates for wildlife and its habitat. Known for its effective leadership on endangered species issues, particularly wolves and other predators, Defenders is also a proponent of new approaches to wildlife conservation that protect species before they become endangered. Defenders is a 501(c)(3) organization with more than 450,000 members. Defenders has had staff in Florida since 1993 and opened an office in 2003 at 446 Second Street, North, St. Petersburg, Florida 33701.



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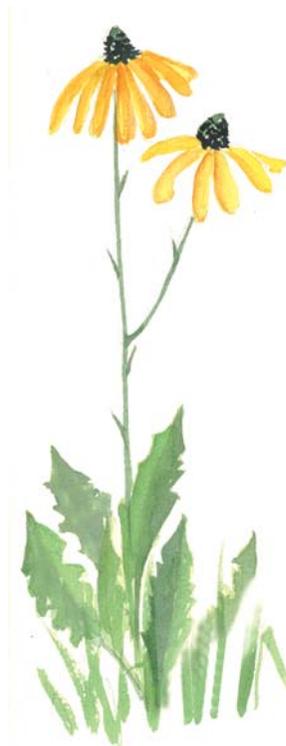
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Table of Contents

The Value of Nature	4
The Economic Benefits of Natural Areas	8
• Tourism	
• Recreation	
• Agriculture and Natural Resources	
• Natural Amenities and Quality of Life	
• Ecosystem Services	
• Existence Value	
Centerfold: Mapping Nature Investment Priorities in Northeast Florida.....	14
Threats to Natural Areas: Population Growth and Sprawl.....	18
• Florida’s Booming Northeast	
• The Development Dilemma	
Protecting Natural Areas: Comprehensive Economic Analysis and Land-Use Planning	22
• Putting a Price on the Priceless	
• Recognizing the High Cost of Growth	
Investing in the Future	26





The Value of Nature

For many of us, the value of nature is apparent in a quiet walk in the woods, a sip of cool, clear spring water, a glimpse of a flock of migratory birds — experiences that carry an awareness of the elements and cycles of life that sustain us all. In addition to aesthetic and ecological benefits, natural lands (pristine or relatively undisturbed native habitat) also provide economic benefits to individuals, businesses and communities. Unfortunately, the mone-

tary value of nature is often unrecognized or underestimated and is not given adequate consideration in land-use planning or development decisions.

To address this issue, Defenders of Wildlife commissioned economists Clyde F. Kiker, Ph.D., and Alan W. Hodges, Ph.D., of the University of Florida to study the benefits and costs of natural areas in some of the Northeast Florida region's fastest growing counties: Clay, Duval, Putnam and St. Johns.* This four-county area is a mix of cities, towns and farm lands, yet there are still large areas of wild lands with significant ecological value.

The researchers analyzed existing data from the four counties, such as population and demographic statistics, revenues generated by natural resources and nature-based recreation and tourism, agriculture and other uses. They also looked at related studies done in Florida and elsewhere and came to several important conclusions:

- **People perceive Northeast Florida as having a high quality of life, which is directly tied to the region's climate and abundance of natural resources.** This is one of the major factors attracting residents and tourists, and the area's economy is likely to become increasingly dependent on its natural amenities.



NATURAL ASSETS

In a state many scientists consider at highest risk of losing its remaining natural habitat, Northeast Florida is still a biologically diverse mosaic of native habitat and wildlife:

- The Atlantic Ocean, the intracoastal waterway, expansive marshes, long beaches and islands furnish habitat for numerous species of shore and wading birds, nesting sites for sea turtles and even offshore calving grounds for the endangered right whale.

- The coastal zone and maritime forests are essential links in the western hemisphere's migratory bird flyway, offering resting, nesting and foraging areas for swallow-tailed kites, hawks, falcons and numerous species of neotropical songbirds.

- The St. Johns River flows north for 310 miles, providing habitat and serving as a movement corridor for species as varied as manatees, river otters, bobcats, bass and the ancient Atlantic sturgeon.

- Upland scrub and sandhill are inhabited by a variety of rare plants, gopher tortoises and the endangered Florida scrub jay. Old long-leaf pine forest is habitat for deer and turkey and essential territory for the endangered red-cockaded woodpecker.

- The threatened Florida black bear, a wide-ranging omnivore, relies on large tracts of contiguous wetland and upland habitats in the region.

* The report summarizing the study, "Economic Benefits of Natural Land Conservation: Case Study of Northeast Florida" (C.F. Kiker and A.W. Hodges, University of Florida, Food and Resource Economics Department, Gainesville, Florida, December 2002, 69 pages) is available at <http://economicimpact.ifas.ufl.edu>.

• **Northeast Florida's growing population is creating pressure to urbanize natural areas and agricultural land.** To maintain the high quality of life residents seek, these areas must be protected from development, and new building must be focused in areas with existing development and infrastructure.

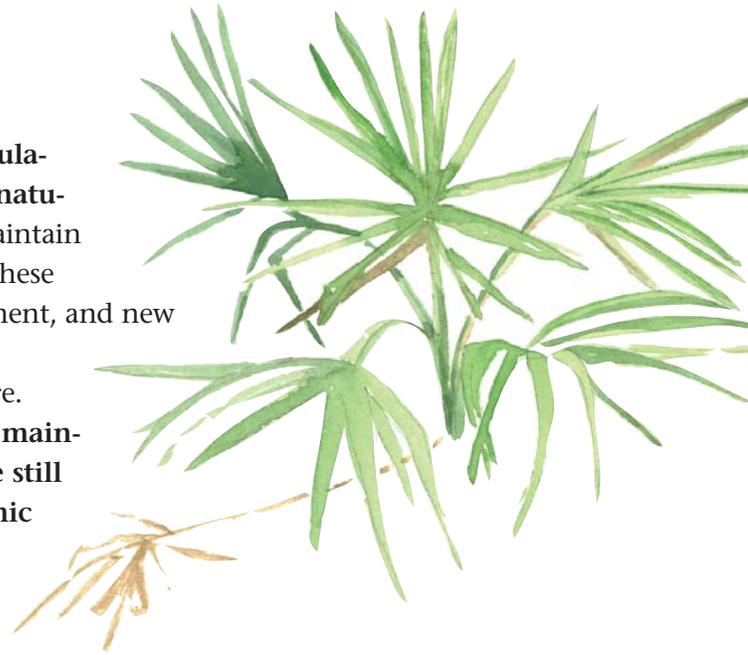
• **Well-planned development can maintain the value of natural lands while still allowing for population and economic growth.** Much of the agricultural and forest land usage in Northeast Florida is compatible with habitat conservation goals. In addition to relatively untouched natural lands, rural working lands that are carefully managed to provide ecological and economic benefits should also be protected.

• **As the population of a region grows, the economic value of its natural lands increases, but only if the health of the ecological and hydrological systems is maintained.** If ecosystems deteriorate, so do the natural amenities that attract and sustain residents and visitors.

• **People are willing to pay to maintain natural ecosystems.** Studies conducted in Florida and elsewhere show that people are willing to pay for a cleaner, healthier environment and access to natural amenities.

To complement the economic study, Defenders asked Margaret Carr, associate professor in the Department of Landscape Architecture at the University of Florida to develop a map (see centerfold, pages 14-15) identifying and ranking the areas of greatest value to wildlife, forests, ecological and hydrological functions and nature-based recreation and tourism in Northeast Florida. The map provides a clear picture of Northeast Florida's valuable natural lands and the development encroaching on them. Maps such as this can help decision-makers to identify lands in need of protection and ultimately to create a regional network of designated conservation areas on public and private lands. This information is essential to the development of the smart and sustainable growth policies so important for the people, ecosystems and economy of the area.

In the following pages we will examine the findings of the University of Florida study and discuss the challenges facing Northeast Florida. We will also meet Joe Smith, a fictional businessman and outdoors enthusiast, whose story helps illustrate the economic concepts covered in the study and the changing situation in Northeast Florida. We present this information to show Northeast Florida citizens, planners and civic leaders how investing in nature is investing in a healthy and prosperous future.



Joe Smith sits in the stern of a canoe on a tributary of the St. Johns River, working his fishing rod in an eddy of water near a fallen tree branch. Kim, his eight-year-old daughter, is in the bow trying out the new binoculars he bought her for this vacation. Joe is a partner in an accounting firm based in Atlanta. He thinks in numbers, as in how many fish he can catch before digging into the picnic lunch he's brought along. He's got to keep an eye on Kim, though — not only is this her first fishing trip, it's her first time in a boat.

"It's so quiet," Kim says. "It's like a library or something."

"It is, but maybe not as quiet as you think. Try listening for birds. They're out there — in the trees and bushes, flying around, building nests, digging around for food."

Moments later they hear a raucous cry.

"Could have been a blue jay," says Joe, "but I'm not so good at identifying birds by their song. Some people can do that really well. They hear a couple of notes, and they can tell you what kind of bird it is. Some can even identify fish by the sounds they make."

"People listen to fish?"

"Sure, you can hear them jumping or rising to the surface to eat insects. Listen. You might hear manatees coming to the surface to breathe. You might hear lots of things in the woods from here, too — squirrels, foxes, bobcats, bears. All kinds of creatures."

Kim's eyes widen. "Wow, there are bears in Florida? I don't think I'd want to be so close I could hear one, though."

Joe laughs. "Back to fishing," he says.





The Economic Benefits of Natural Areas

Tourism

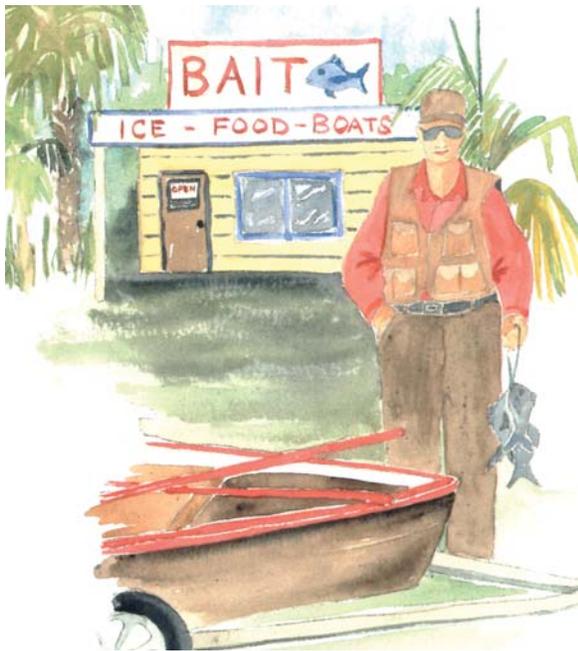
Tourism is Florida's top industry, accounting for more than 20 percent of the state's economy. Tourism is important throughout Florida, including the Northeast, and the state's diverse natural amenities are a top draw for visitors.

St. Johns County, one of the fastest growing areas in Northeast Florida, reported 3 million day-trip visits and 3.26 million overnight visits in 2002. A St. Johns County Visitors and Convention Bureau study estimated that tourism is responsible for **23,456 jobs** in the county and generates a total economic output of **\$1.86 billion per year**. This tourism-related activity has impacts throughout the region.

Tourism brings new money into local economies, creating new jobs and wealth. To keep that new money coming, the amenities that attract visitors must be maintained. As stated in the University of Florida economic study, "if the natural environment and the human-built environment deteriorate, the perception of amenity value and quality of life decreases, causing a downward

spiral in the attractiveness to retirees and tourists, and thereby retarding economic growth.”

The Florida tourism industry recognizes the need to preserve and protect nature. According to *Outlook for Florida Tourism 2004*, a survey conducted by the University of Miami for Visit Florida, the state’s official tourism marketing corporation, **92 percent** of Florida’s tourism industry leaders agree or strongly agree with the statement that “the conservation of Florida’s natural and historical assets is necessary for the long-term success of my business.”



THE ECONOMIC VALUE SYSTEM

The science of economics and government policy recognize the legitimacy of many types of values, not just those that can be quantified in dollar amounts. At the most general level, the valuation of natural landscapes and their services considers two types of benefits, use and non-use benefits.

Use benefits refer to those values associated with active and passive human interests. Active uses include forestry, agriculture, the use of natural plant or animal resources and intensive residential, commercial or industrial development. Passive uses are varying degrees of less intrusive recreational activities such as wildlife watching, swimming, boating, hiking, nature education, photography and some forms of tourism.

Non-use benefits of nature are wide-ranging and include ecosystem services, open space and scenic views. They also include nature’s intrinsic value, existence value (the satisfaction of knowing nature exists) and option values associated with maintaining future opportunities to enjoy and benefit from nature.

By mid-afternoon, Joe and Kim have caught and released a dozen fish. Kim has even seen an osprey catch one right before her eyes. Some of their fish were beauties, including a nice-sized bass. Joe stows their gear and they paddle the canoe downstream, arriving in about an hour at the prearranged take-out spot. The outfitter who rented Joe the canoe has a van, and the deal is that he will meet Joe at 4 p.m. Joe beaches the canoe just a few minutes before the scheduled time, but he sees that the van has already arrived.

“So how did it go?” the outfitter asks. “You catch any fish?”

“Yes, we caught a bunch. We’re going to bring some home to eat, but we let some go. My dad says maybe some of the little fish will grow up and have babies,” says Kim.

“Just about a perfect day,” Joe says. “The river was good to us.”

The outfitter gives a thumbs up. “Good to me, too. Provides a half-way decent living

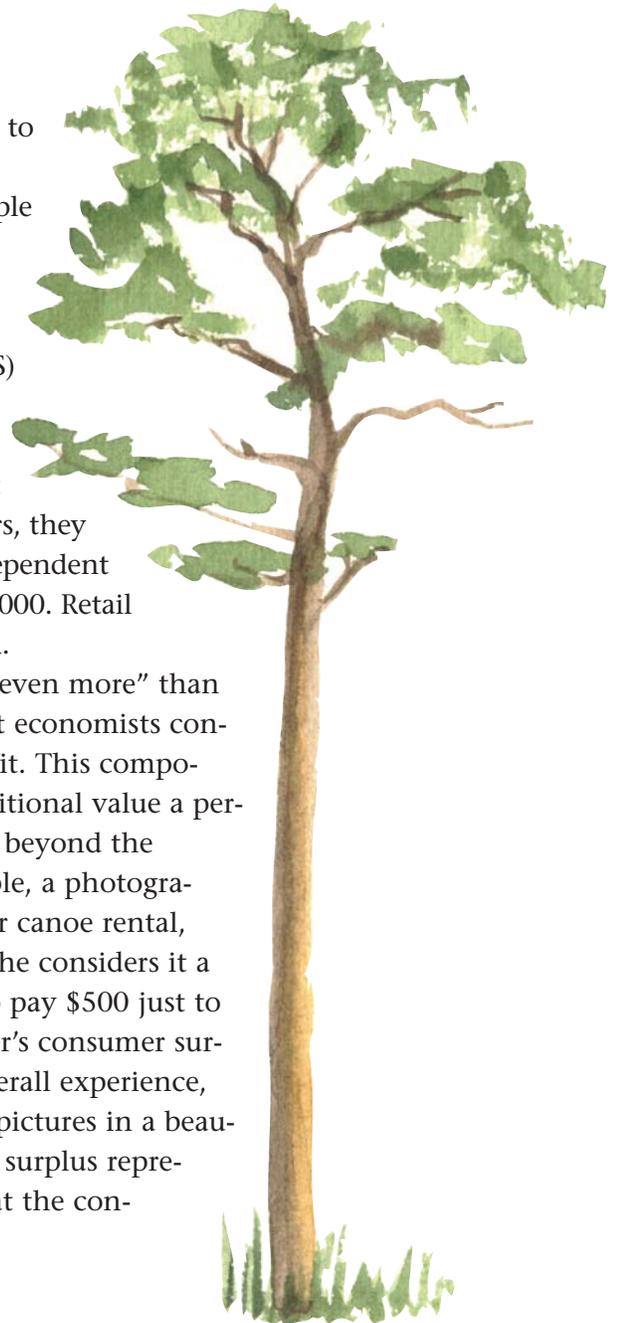
for my family, and I don't have to be cooped up inside all day."

They drive back to the outfitter's. Joe pays his bill and, ever the accountant, enters the information in his pocket computer. He figures that he'll spend about \$550 on this vacation, the bulk of it for the hotel room, meals, today's excursion on the river and gas for the car. They've got one more day before heading home, and he's thinking about another trip on the river or perhaps a day of hiking and bird watching. Maybe he'll end up spending \$650. Joe figures the vacation is worth even more to him. He is more than willing to pay to fish and hike and otherwise enjoy the natural world, especially with his daughter along. Heck, a lot of people would spend more than that just for a plane ticket to get to such a beautiful destination.

Recreation

Recreation makes an obvious contribution to the local economy that can be measured by actual transactions — how much money people spend each year on fishing or hunting or birdwatching trips, for example. For the study of Northeast Florida, the researchers used 1996 U.S. Fish and Wildlife Service (FWS) data on wildlife-related recreational activity in the four-county study area and extrapolated it for the year 2000. Taking into account inflation, population growth and other factors, they calculated that **9,771 jobs** in the area were dependent on hunting, fishing and wildlife viewing in 2000. Retail sales in those categories totaled **\$390 million**.

Joe's thought that his "vacation is worth even more" than he might spend hints at another component economists consider when calculating total economic benefit. This component is known as consumer surplus, the additional value a person places on a location, item or experience beyond the amount of money actually spent. For example, a photographer spends \$300 on a long weekend trip for canoe rental, park entrance fees, food, supplies, etc., but she considers it a deal because she would have been willing to pay \$500 just to be in the beautiful setting. The photographer's consumer surplus of \$200 reflects the real value of the overall experience, including the pleasure she gets from taking pictures in a beautiful natural landscape. A positive consumer surplus represents satisfaction and is a good indicator that the con-



sumer will return.

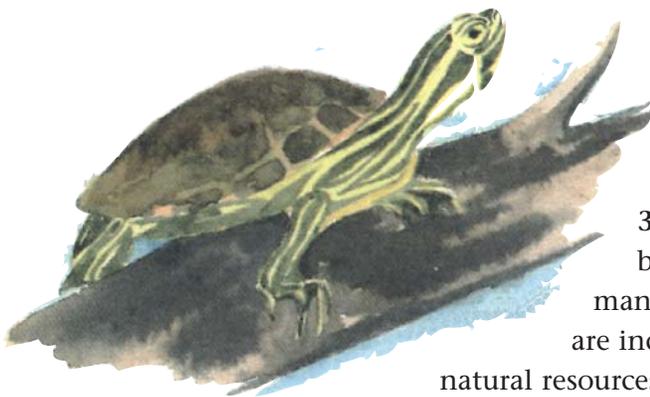
In another extrapolation of the 1996 FWS data to 2000, the researchers estimated that the same wildlife-based recreational activities generated a consumer surplus of **\$313 million**. Combined with actual expenditures of \$390 million, the total economic value of this wildlife-related recreation in 2000 comes to **\$703 million**.

Agriculture and Natural Resources

The natural resources of Northeast Florida provide a very important direct benefit to the local industries that rely on them. Forestry needs healthy forests to produce trees for harvest; agriculture requires fertile soil, pollinators and protection from sprawling development. These industries, along with others such as ranching and sport and commercial fishing, are major economic forces in Northeast Florida. Their success is linked to the health and abundance of natural resources.

It is important to remember that not all agriculture and natural resources jobs are on a farm, in a forest or on a boat. Many are in the city in related jobs, such as restaurants, food processing, agricultural machinery manufacturing, paper mills, construction, etc. Think about the things purchased and used in every day life: groceries, paper, water, etc. They all come from some part of the natural environment, often from the local community, and make their way into homes, creating jobs and income along the way.

In 1999, the total economic output of agriculture and direct use of natural resources in the four northeast counties amounted to **\$3.5 billion**, with a value-added impact of \$1.3 billion, equivalent to **4.6 percent of the gross regional product** and accounting for **38,000 jobs**. However, these numbers are underestimated because many more industries and businesses are indirectly dependent on the region's natural resources.



Natural Amenities and Quality of Life

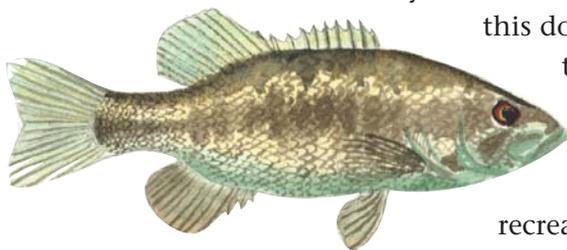
Research shows that people are willing to pay for a better quality of life and for access to natural amenities. A 1997 study designed to determine the value residents place on living near the rolling pastures of Kentucky horse country asked participants if they would be willing to give up income to preserve more farmland. The study determined a willingness to pay of \$1,200 per household per year to preserve the horse farms in the Lexington area. This amount, expanded to include all 108,000 households, showed horse-country pasturelands have an amenity value of **\$130.4 million** to the people living in the Lexington area alone. This is in addition to the value of the horse farms as businesses and shows the value residents place on the farms purely as an attractive landscape amenity.

A similar study was done in the Peconic Estuary area of Long Island, New York, in 2001. The results there showed residents were willing to pay \$0.16 per acre per year to preserve farmland. A total of 8,387 households were considered, giving farmland an annual economic value of \$1,355 per acre per year. Again, that value is in addition to the value of the farms as operating businesses.

These studies did not consider the economic value that tourists and other nonresidents would place on the same lands. If they had, the economic value of the agricultural lands would likely have been considerably higher.

What would similar studies show in Northeast Florida, a region with 434,000 households and some 1.5 million acres of open space and natural lands? Using an extremely conservative value of just 10 percent of what the Kentucky study found, the amenity value of natural lands in the four-county area would be **\$1.5 billion per year**. Although

this does not represent an actual expenditure of money by people in the region, it is a value that reflects where people choose to live, what they want for the community, where they work, recreate and vacation.



After the outfitter drops them back at their rental car, Joe and Kim find a nice spot along the river to go for a quick swim before heading back to Jacksonville. The light breeze kicks up enough to stir the leaves in the trees.

“There’s something else you can listen to,” Joe tells Kim. “The sound of the leaves cleaning and creating air.”

“Now you’re just fooling me.”

“I am not. Just imagine. All those leaves soak up carbon dioxide and release oxygen. You can hear it in the rustling of the leaves. You can smell it in the fresh, gentle breeze. Fortunately, you can even breathe it.”

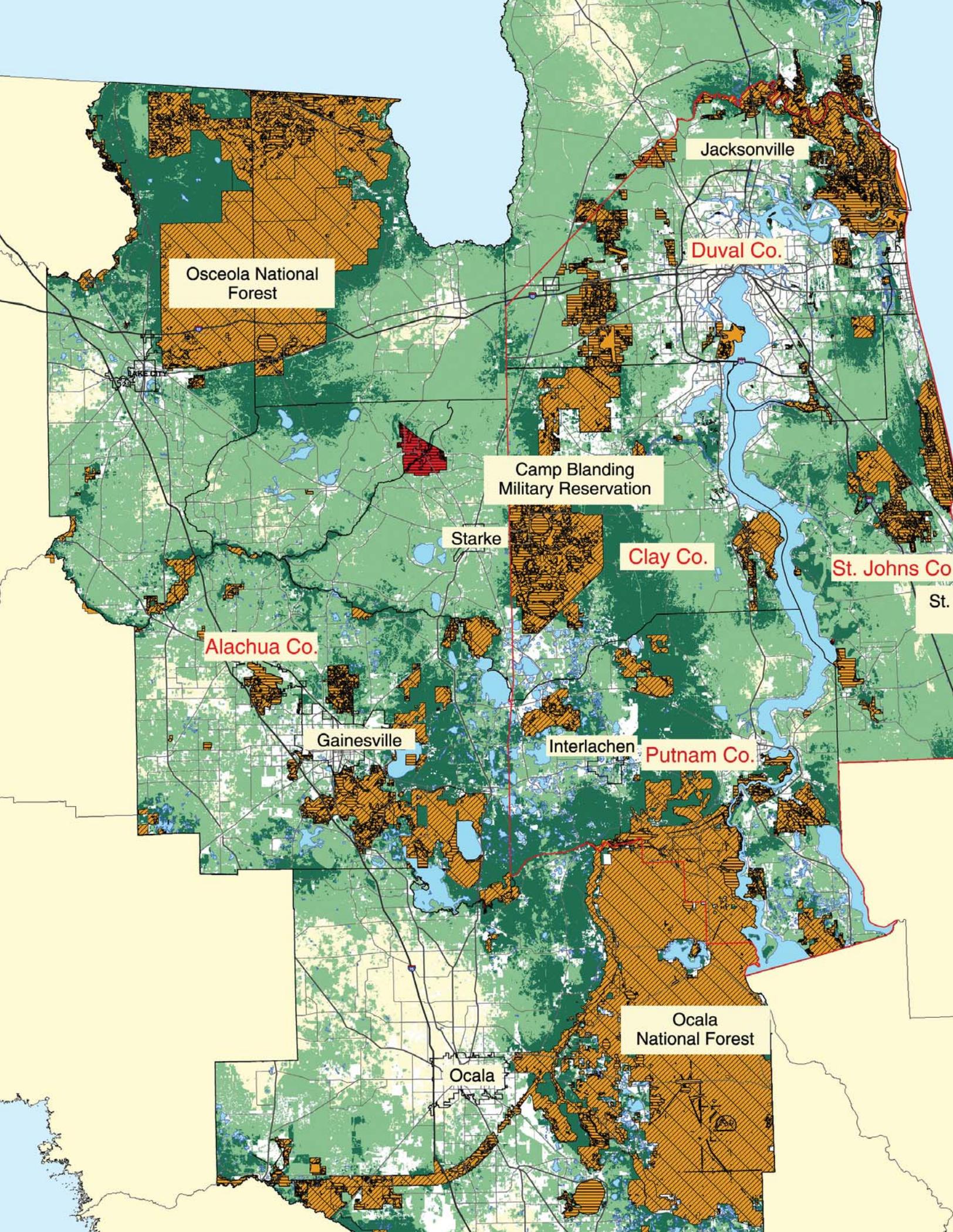
Ecosystem Services

Joe’s observation about the oxygen-releasing leaves touches on another value of healthy natural lands. In addition to providing habitat for plants and animals and direct-use benefits in the form of agriculture and recreation, natural lands also furnish what biologists and economists refer to as “ecosystem services.”

Ecosystem services are those natural processes that indirectly benefit all species, including humans, by providing products such as breathable air and drinkable water. Some of the most important ecosystem services rendered by natural lands include maintenance of biological diversity, groundwater recharge, mitigation of global warming through carbon sequestration (long-term storage of carbon dioxide in vegetation, earth and oceans), nutrient recycling by wetland areas, flood prevention through water retention, pollination of crops and natural vegetation, control of sedimentation in rivers and lakes and detoxification of wastes.

In contrast to costly water-purification centers and other man-made, single-service facilities, healthy ecosystems provide many of their services simultaneously. As Geoffrey Heal, a professor of business at Columbia University, explains it, an ecosystem itself is a “capital service” that “provides a flow of services” worth **trillions of dollars per year globally.**





Osceola National Forest

Jacksonville

Duval Co.

Camp Blanding Military Reservation

Starke

Clay Co.

St. Johns Co.
St.

Alachua Co.

Gainesville

Interlachen

Putnam Co.

Ocala National Forest

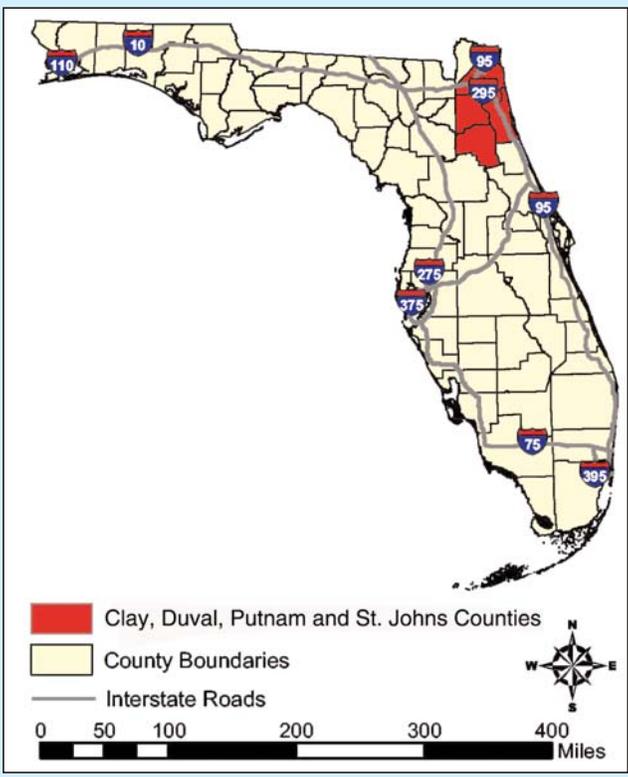
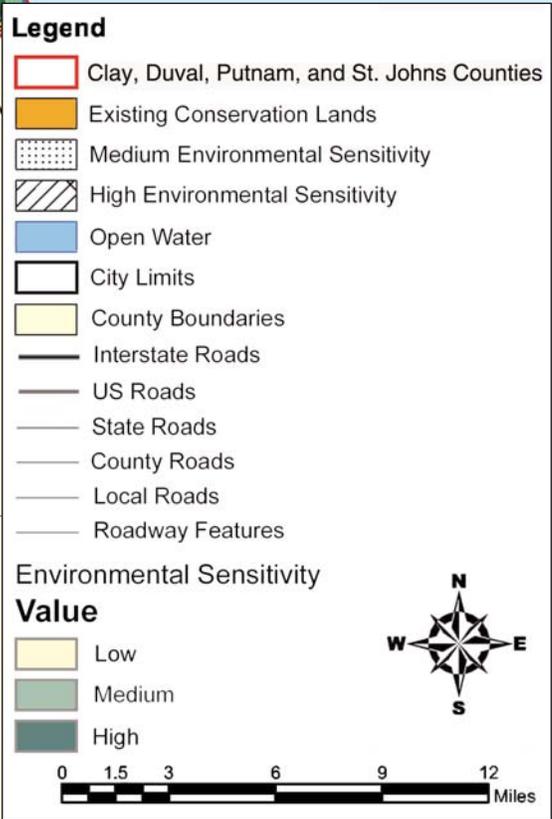
Ocala

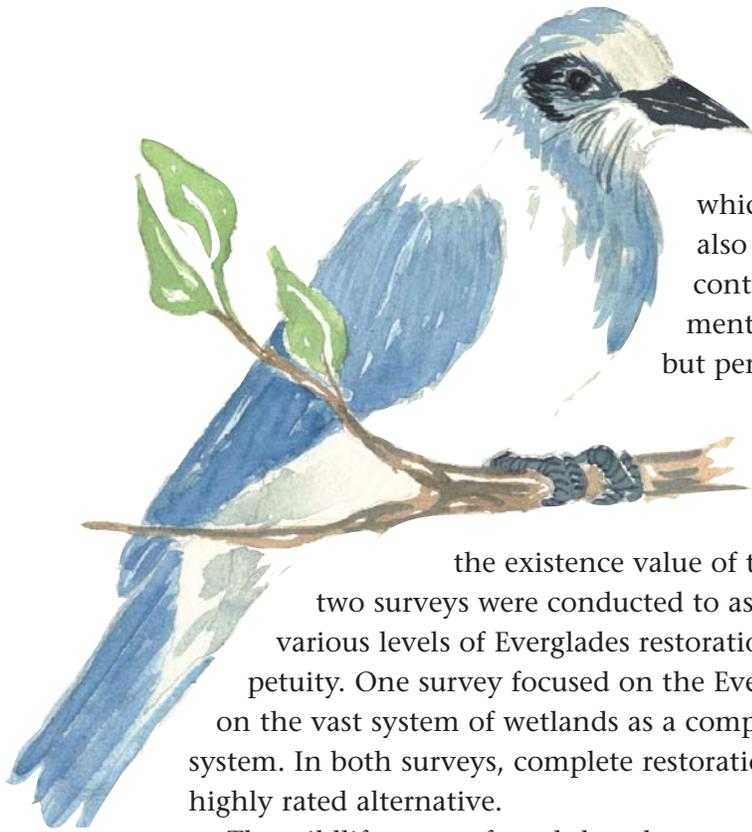
Mapping Nature-Investment Priorities in Northeast Florida

To help identify nature investment priorities in Northeast Florida, Defenders of Wildlife commissioned the University of Florida to select and rank the value of environmentally sensitive lands in the four-county area and throughout the region. The resulting map shown here identifies lands of high, medium and low value. Outright acquisition of the high-value lands (dark green on map) — particularly those in proximity to existing public lands (brown) — combined with creative, cooperative approaches to the sustainable management and protection of high, medium (light green) and low value (light yellow) lands would help meet several conservation goals in Northeast Florida:

- Increase protection of biodiversity at species, community and landscape levels.
- Complete a linked regional network of designated conservation lands.
- Protect, restore, and maintain ecosystems and natural processes.
- Preserve water quality for current and future needs of people and natural systems.
- Increase areas for timber production compatible with natural resource protection.

Augustine Beach





Existence Value

In addition to being willing to pay for natural amenities from which they draw a direct benefit, people also express a willingness to pay for the continued existence of natural environments they may never use or even see, but perceive as having value simply because they are there. These places have what economists refer to as existence value.

For a 1999 study to determine the existence value of the Everglades to Florida residents, two surveys were conducted to assess people's willingness to pay for various levels of Everglades restoration over a 10-year period and in perpetuity. One survey focused on the Everglades as wildlife habitat, the other on the vast system of wetlands as a component of the state's hydrological system. In both surveys, complete restoration of the Everglades was the most highly rated alternative.

The wildlife survey found that the average Florida household would be willing to pay \$70 per year (a total of \$400 million per year) for Everglades wildlife. The hydrological functions survey found that each household would be willing to pay \$59 per year (a total of \$340 million per year) to protect water resources.

The overall conclusion of the study was that the existence value of the Everglades to Floridians alone would be at least **\$7 billion** over a 10-year period and **\$12 billion** to protect it the system in perpetuity. Given the worldwide recognition of the Everglades as a unique ecosystem, the existence value to the global community would probably be much higher.

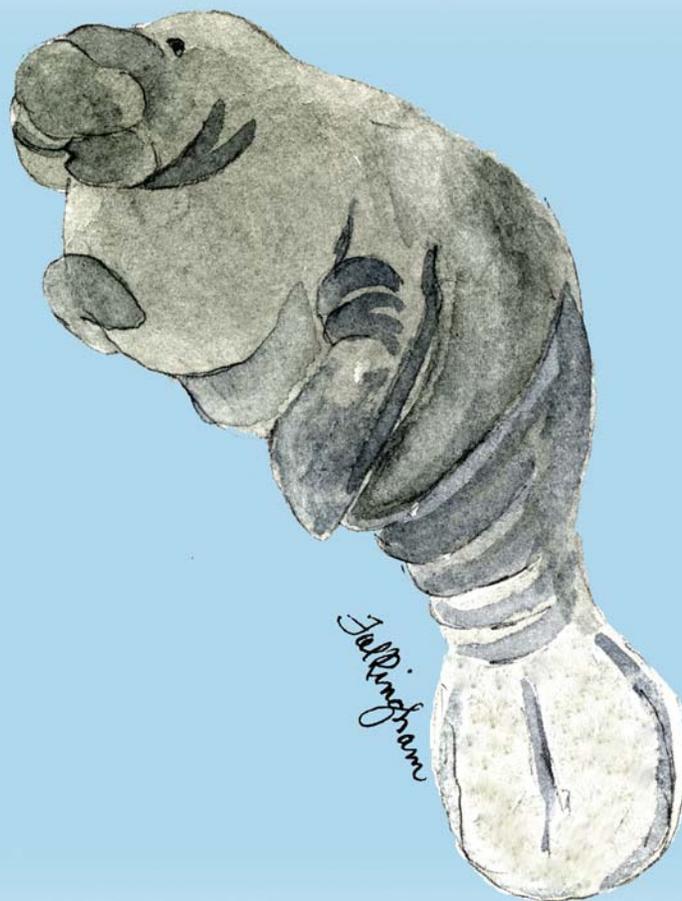
It's hot for a late afternoon, but the spot where Joe and Kim are dangling their feet in the water is on a stretch of river shaded by a canopy of trees. Kim raises her binoculars hoping to see otters playing or turtles basking along the riverbank. The occasional boat passes by, but it's mostly quiet. Joe gets to thinking, 'if my office was in Jacksonville, I could get to this beautiful river in just 20 or 30 minutes, and I'd feel like I was a thousand miles away.'

It is not entirely an idle thought. Joe and his partner specialize in creating business plans for small companies. Recreational opportunities, fresh air, clean water, a beautiful spot to take his daughter — these are valuable things, and Joe wonders if he can work them into his own business expansion plan. Maybe he can place a dollar value on this river, figure out how much it would be worth to him to live nearby.

Are there compelling reasons to stay in Atlanta? Are there good reasons to move?

Joe has been to Northeast Florida for a number of vacations and he likes it here and more important, so does Kim. His partner has come down on business trips and has been favorably impressed. Does it make sense to choose a location based on such things as recreation and quality of life?

Not only does Joe's question make sense, it increasingly occurs in the real world. More than 70 million visitors per year are drawn to Florida's wildlife, beaches, rivers, lakes, forests and parks. Another 300,000-plus people come to Florida every year to make their homes. Indeed, many of the newcomers to Florida's northeastern region are attracted by the quality of life to which climate and natural lands are the major contributors. "The environment is an important part of quality of life, which is a major factor that people take into consideration when locating their businesses in our area," says Jerry Mallot, executive vice president of the Jacksonville Regional Chamber of Commerce's Cornerstone Regional Development Partnership.





Threats to Natural Areas: Population Growth and Sprawl

Florida's Booming Northeast

According to the University of Florida's Bureau of Economic and Business Research, Northeast Florida's population will grow to 1.38 million people by 2015, 23 percent above its 2000 level of 1.12 million. In real terms that is 260,000 additional people, enough to create a medium-sized new city. Duval County leads the region in population growth and is projected to continue to do so in terms of absolute numbers. Clay and St. Johns counties are growing faster in percentage terms, followed by Putnam County, which is expected to grow moderately during the next 10 years. Overall, the region is booming.

Increasing even faster than the population of Northeast Florida is the number of households. With the average number of people in each household declining, the University of Florida projects the number of households in the region to reach 557,000 by 2015, an increase of more than 28 percent from 434,000 in 2000. Pressure for development of natural lands will be even greater with this increasing demand for more housing than might be expected from population growth alone.

In 1995, 19 percent of the region's land area was urbanized and 77 percent was in agriculture, forestry or in its natural state. Projections for 2015 show a reduction in natural and agricultural lands of nine percent. However, that number varies considerably from county to county. Clay County is forecast to see its natural and agricultural land area reduced by 14.7 percent, St. Johns County by 13.8 percent, Duval County by 11.8 percent and Putnam County by 2.5 percent.

The Development Dilemma

In much of the nation, the nature of economic growth has changed radically during the past several decades. Historically, people followed jobs. In northern Florida, the economy once revolved around timber, paper production, transportation, the military and agriculture. When those sectors prospered, jobs were created and workers came to the area to take them. As the nation has grown considerably wealthier and technologies have changed, especially since World War II, people often move not for jobs, but for the community attributes that they find attractive.



New people and new businesses bring new development, which can bring new opportunities and wealth to an area and add to the quality of life. While this is all good and positive, it is important to recognize that natural lands are a major contributor to the natural amenities and quality of life that attracts many newcomers to Northeast Florida in the first place. To maintain the natural attributes that people and businesses desire, we must protect these lands and carefully plan for growth and development.

How then do policy-makers and planners maintain a balance? How do they decide what land should be preserved and what land should be used for development? How do business leaders decide what type of development is truly in the best interest of both individuals and the region?

CONSERVING LAND: A TOP PRIORITY FOR NORTHEAST FLORIDA

One of the ways to combat piecemeal development is to set aside conservation lands. Northeast Florida is fortunate to still have an abundance of natural lands worth conserving. However, with the exception of the Jacksonville Preservation Project, an acquisition program with enthusiastic public support, area efforts to conserve natural lands lag behind the rest of the state.

According to a 1997 report published by the Northeast Regional Planning Council, conservation lands comprised 11.9 percent of the total land in the region, compared with the statewide figure of 19.6 percent. Meanwhile the area continues to grow and habitat is being eliminated, natural connections severed and environmental investment opportunities lost.

On the drive back to Jacksonville after their swim, Joe pulls off to the side of the road near the construction site for a new suburban office park. He gets out of the car and for a time watches the construction activity. He has also noticed some new residential construction nearby. Most of his drive, though, has been through relatively undeveloped countryside.

Joe decides that he will, in fact, approach his partner with the idea of relocating the business to Northeast Florida. Of course, there will be work involved in making a final decision. He will have to find out the cost of renting office space somewhere, look into the cost of housing, determine any tax consequences and so forth. He's done this same kind of work for some of his clients, but it seems a bit different when the decision is about his own business and his own life.

Maybe tomorrow before heading outdoors he'll set up an appointment with some economic development officials. If he can get a quick appointment, he's willing to spend another day here before returning to Atlanta. If necessary, he'll come back at a later date.

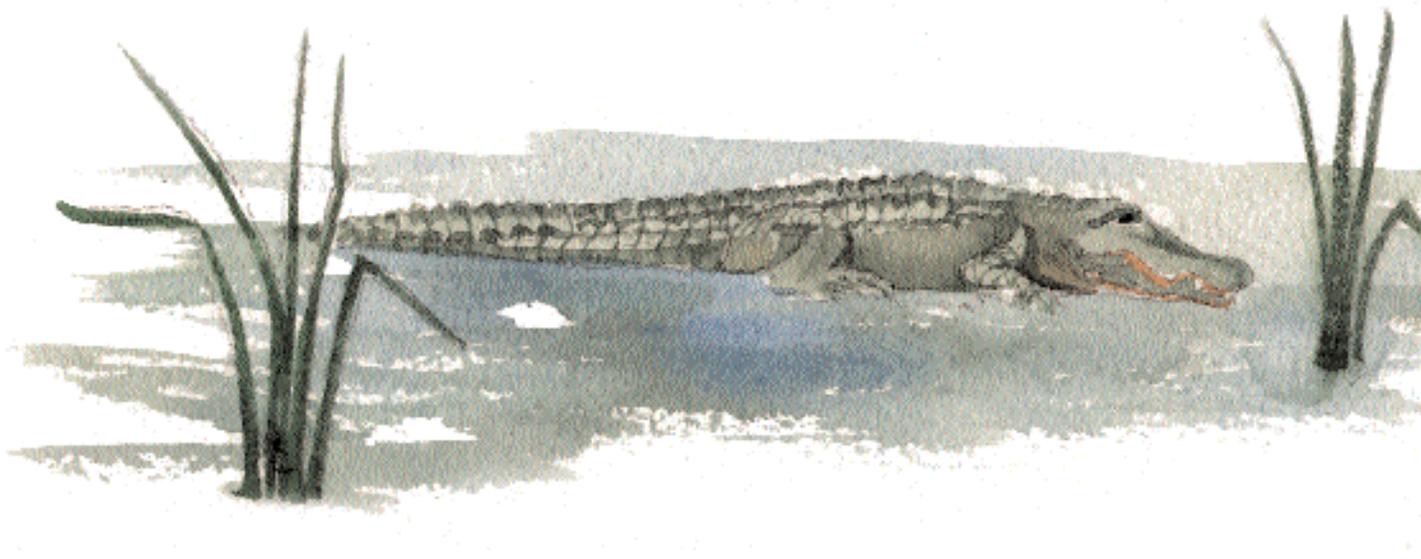
"What do you think of this spot?" Joe asks his daughter buckled in the backseat of the car.

Kim shrugs. "I'd rather listen to the trees than listen to a bulldozer knocking them down."

"You're right. But if new businesses are moving in, they have to have a place to go. And people have to have a place to live."

"But it doesn't have to be right here!"

Kim has put her finger on something. Would it be better to relocate to a city office or to a new strip-development office park? Joe knows that there are advantages to both and that a final decision depends a lot on personal preferences. Thinking back to his morning on the river, he hopes that the area where he was fishing is never overtaken by development. If he thought that was a real possibility, then the idea of moving the business here





wouldn't be nearly as enticing. He wants to go back to his favorite spots on the river, not just next year or the year after that, but 15 or 20 years from now. And, he'd like to think Kim and her children might do the same 40 or 50 years from now.

What's it worth to me to keep an area pristine for my own use, and what's it worth to keep it for my heirs? Joe realizes that maybe this is something that really needs to be factored in when he makes a business decision, as if such a decision wasn't already complicated enough! No doubt many other people feel the same way about their own favorite fishing holes, photography and painting sites, birdwatching areas, hiking trails or even about places they don't necessarily go to but like knowing are out there.

And while Joe knows people love the lakes and rivers for boating, fishing, swimming and just plain scenery, he read that more than 90 percent of Floridians rely on groundwater — water they can't even see — for their drinking water supply. So, he thinks, let's make it truly complicated and try to calculate the total value to all these people of preserving these favorite places and ecosystem services, like water purification, too.

Joe makes a mental note that when he talks to the economic development people, he will be sure to tell them that pleasing scenery, outdoor recreational opportunities and a healthy environment are some of the reasons he considers this region a desirable place to live.



Protecting Natural Areas: Comprehensive Economic Analysis and Land-Use Planning

Putting a Price on the Priceless

Although it is important for people like Joe to consider the impacts they have on the natural environment and to hold decision-makers accountable for environmental protection, they shouldn't have to bear the burden of putting a number value on the places they love. Policymakers, planners and economists should be gathering that kind of information, sharing it with the public and using it to make decisions. The good news is they're beginning to do so.

Economic and statistical methods have been developed to estimate a dollar value for such things as a good fishing spot. The University of Florida economic study of Northeast Florida cites numerous research efforts in Florida and

other states to place dollar values on natural amenities and suggests a number of distinct ways in which natural and agricultural lands bolster the region's economy. The study also concludes that maintaining the quality of resources — including sizable, intact areas of natural lands, watersheds and low-intensity agricultural areas — is essential to the health, function and appeal of these amenities.

As we have seen, it is important to compute such benefit values to refute the notion that natural landscapes and open spaces have little or no economic value. In a market-based economy, placing economic values on natural landscapes helps differentiate one tract of land from another and can help in setting priorities for land conservation and preservation. For example, two tracts of forest might have equal value in terms of timber harvest, but one might harbor a greater diversity of wildlife than the other. If an economic benefit can be assigned to wildlife diversity, then more intelligent choices can be made about timber harvest versus preservation and about forestry practice options.

The map in the centerfold of this booklet illustrates how the identification and ranking of the biological diversity and hydrological and ecological functions of lands in a given area can be an invaluable tool for land-use planning. These maps can help decision-makers and planners make more informed choices about which lands to protect and where to direct urban growth. They paint an accurate picture of which lands are truly valuable to the region, economically and ecologically.

Recognizing the High Cost of Growth

In making land-use planning decisions, it is important not only to include the benefits of natural lands, but also to consider the costs of urbanizing these lands. When the population of an area grows, governments receive additional tax revenue from new residents and businesses, but they also must spend money for new roads, schools, sewers, police



CREATIVE CONSERVATION

The University of Florida economic study of Northeast Florida notes that public funds are not likely to be sufficient to purchase the conservation lands necessary to maintain the high quality of life that attracts people to live in Northeast Florida. While endangered species habitat, headwater springs, the last natural connection between preserved tracts of land and other irreplaceable areas can best be protected with outright acquisition, management agreements, conservation easements and other creative public/private arrangements can be negotiated to preserve the value of less critical natural areas. For example, an agreement can be negotiated with a logging company to keep the timber harvest in a forested area to a sustainable level that allows the area to remain viable wildlife habitat and to retain its hydrological functions.

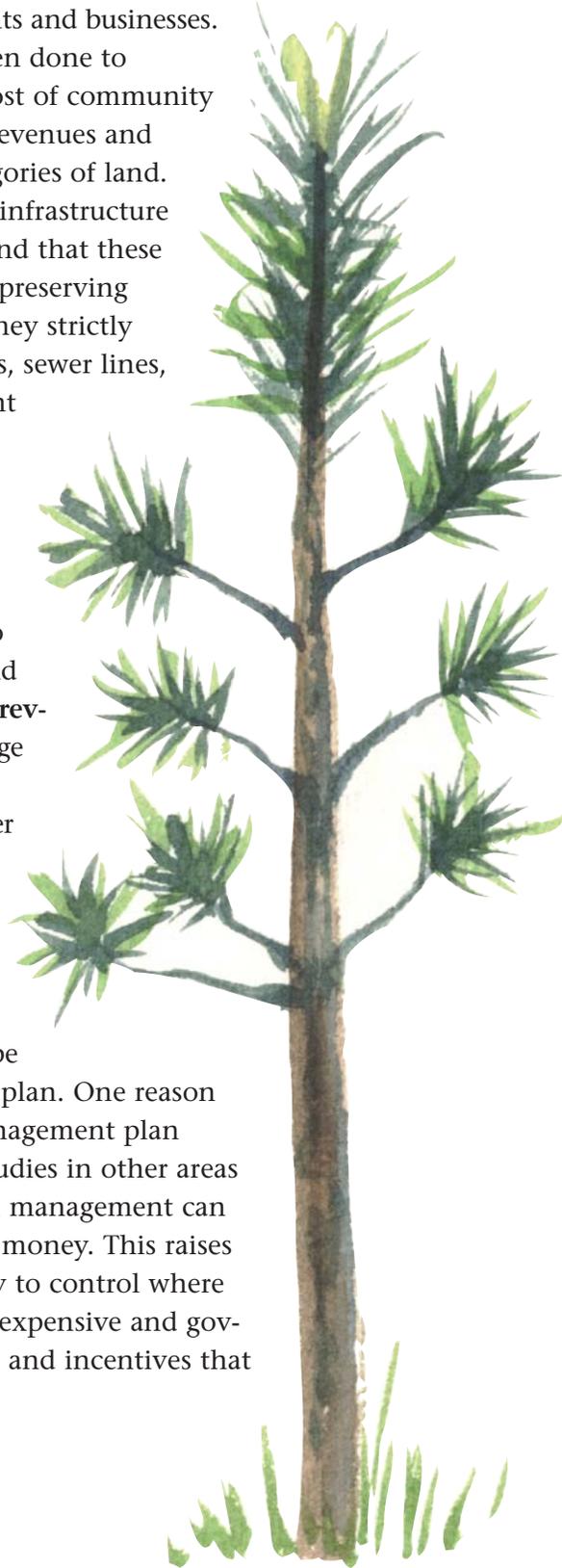
Land Conservation and Acquisition Programs in South Florida for Endangered Species, a brochure listing federal, state and non-governmental programs that fund land protection and conservation incentive programs is a useful statewide reference and is available from the University of Florida-Fort Lauderdale Research and Education Center. To obtain a copy, call (954) 577-6304.

and other services. Governments must determine if the growth will pay for itself or place a higher burden on existing residents and businesses.

Numerous reliable economic studies have been done to address this issue. A common approach is the cost of community services study, which examines a community's revenues and expenditures and assigns them to different categories of land. These studies consistently show that residential infrastructure costs more money than it generates. Keep in mind that these studies do not take into account the benefits of preserving natural lands or the costs of destroying them. They strictly describe the costs of infrastructure, such as roads, sewer lines, etc., and the benefits of tax revenues for different land uses.

A summary of 84 cost-of-community-services analyses of rapid growth shows that residential development in new areas costs between \$1.05 and \$1.50 for every dollar of revenue raised. Business and commercial uses cost only \$0.30 to \$0.60 for every dollar of revenue. Agricultural and natural lands cost the least — **\$0.10 to \$0.15 per revenue dollar**. According to a 1990 study of 248 large counties across the country, faster-growing (i.e., sprawling) communities tend to have much higher expenses and taxes than slower-growing communities.

A New Jersey study comparing the cost of allowing unregulated growth to allowing the same amount of growth under a growth-management plan showed the cost to the public to be \$1.3 billion less under the growth-management plan. One reason given for the projected savings was that the management plan would allow for more efficient infrastructure. Studies in other areas of the country have similarly found that growth management can conserve natural resources and save the public's money. This raises the question of whether governments should try to control where growth takes place. The answer is that sprawl is expensive and governments should establish and implement plans and incentives that direct growth wisely.



Joe Smith enjoys the outdoors, but he also enjoys restaurants, theaters and the other entertainment venues that are found in the city. Back in Jacksonville after their day on the river, Joe and his daughter have dinner at a local seafood restaurant. They both order grilled catfish, salad, a side of potatoes and vegetables and a mix of blueberries and strawberries with cream for dessert, all locally grown and raised.

Kim is smiling. "Dad, can you imagine osprey and otters sitting down for a fish dinner?"

"Sure. But you know, in a lot of places it's unhealthy to eat the fish because the water is too polluted. It's a shame. The fish are there, but you can't eat them. Either that or they've been fished out and there aren't any left."

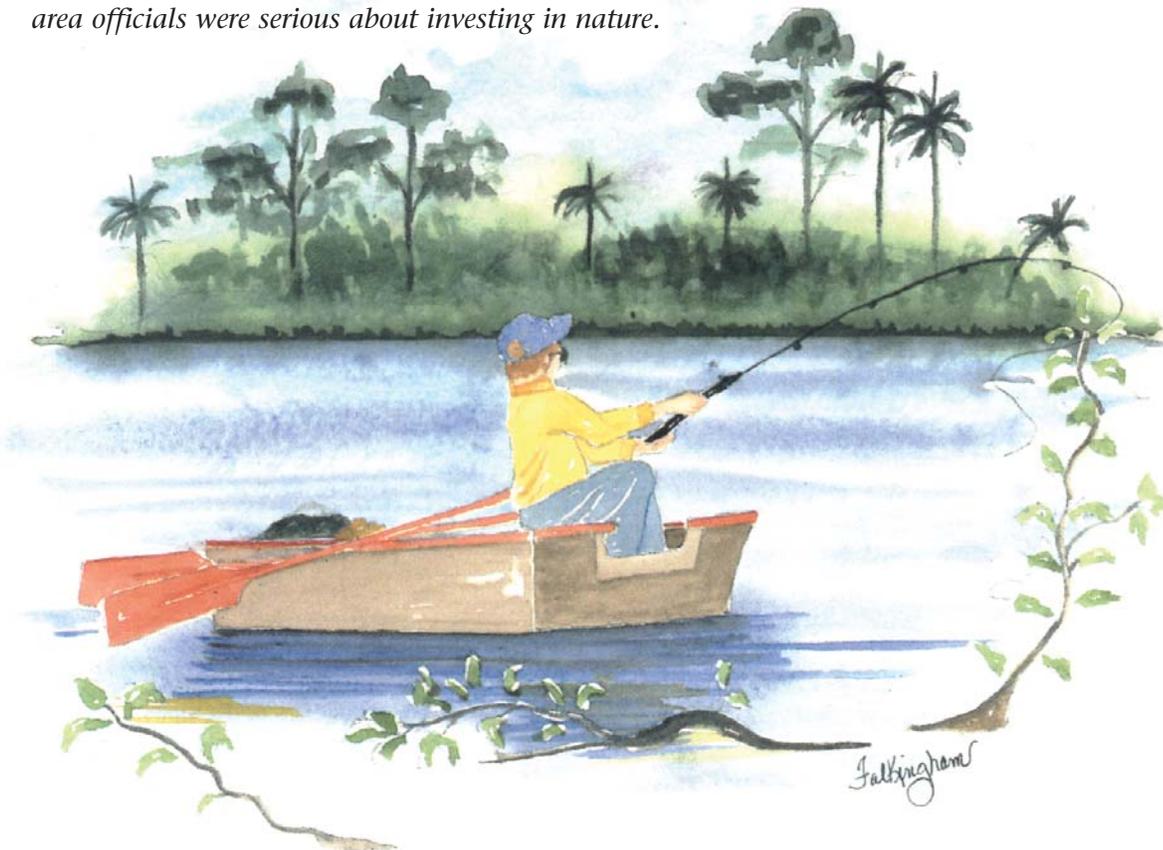
"But the osprey and the otter need fish," says Kim. "It's pretty sad and kinda scary."

Joe nodded in agreement. "It isn't it? But what happens is, people say, 'oh, we need a new mall here or a new neighborhood there', and they think that this one project won't change things very much. And maybe they're right, that one project won't mess up everything. But what happens when everyone thinks that, and these projects keep coming one right after the other?"

"No more fish?"

"Exactly. I want you to be able to come here a long time from now. And if we want to keep the fish swimming, the ducks nesting and the bobcats prowling, we can't just sit around and hope for the best, we better do something about it."

Back in the hotel room later that night Kim slept soundly while Joe sat up thinking about the meeting he'd like to set up with area economic development officials. He was serious about investing in Northeast Florida, but first he had to make sure that area officials were serious about investing in nature.





Investing in the Future

Investing in nature begins with civic leaders, policy makers and citizens recognizing the myriad values associated with natural lands and making a commitment to wise community planning. Estimating the dollar value of a new housing subdivision to a town or city is relatively easy. Future taxes can be calculated, and standard measures can be used to forecast such impacts as how many new jobs will be created. Evaluating the economic benefits of natural and agricultural landscapes or the value that is lost to a region when natural areas are urbanized requires a much more comprehensive economic analysis. Consequently, these values are often overlooked or underestimated, and land-use and acquisition decisions are made without an accurate assessment of choices and trade-offs.

With knowledgeable leadership and good planning, development can be managed to occur in appropriate locations. Important resource areas can be properly designated for preservation, conservation, recreation, sustainable and compatible forestry and agriculture or other low-intensity uses.

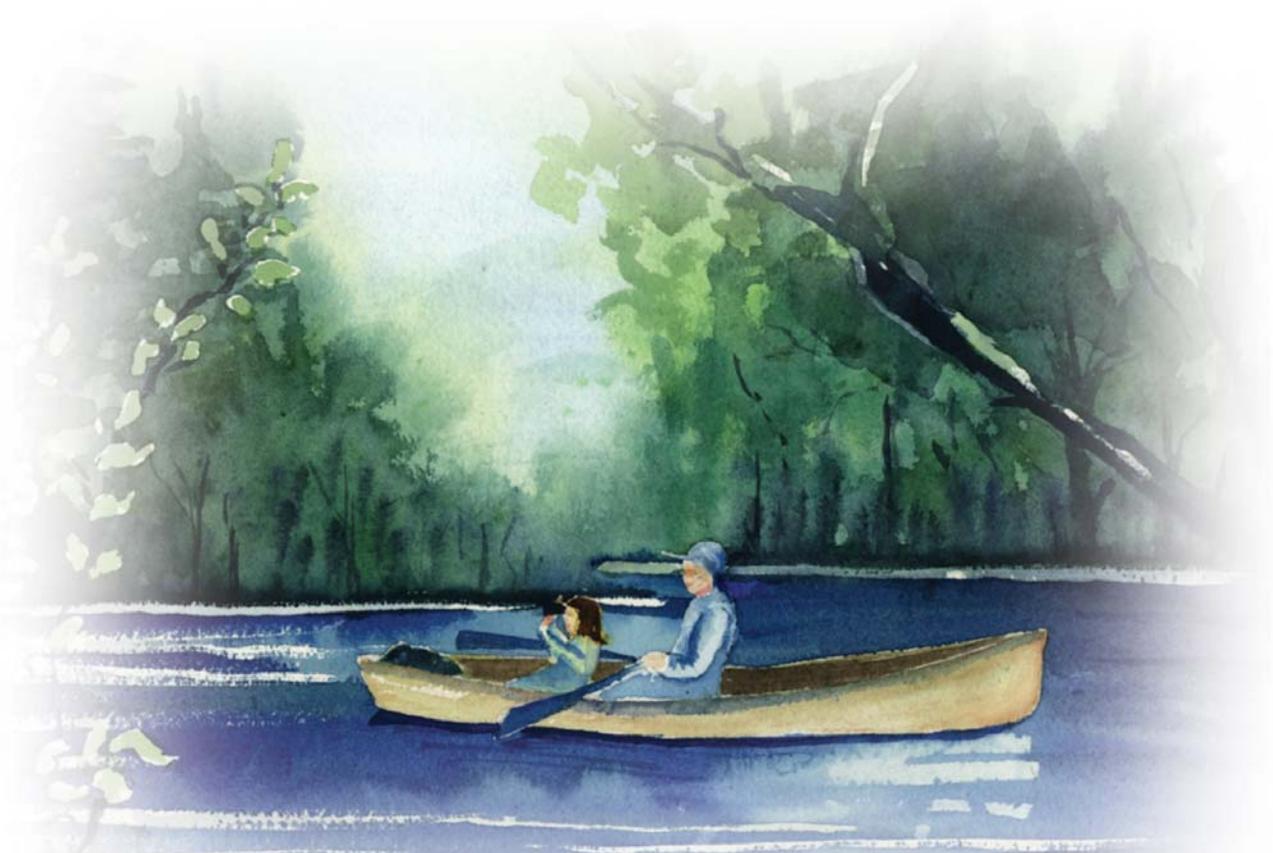
Once investment goals are identified, strategies for meeting them can be devised. Communities can take advantage of state and federal matching programs, such as the Florida Forever Act and the federal Land and Water

Conservation Fund, to acquire new public conservation lands. Growing areas can also employ conservation easements, funding and regulatory mechanisms, incentives, private and nonprofit land trusts, estate planning options and other creative collaborations with private landowners to meet their goals.

We hope the information in this booklet inspires the four Northeast Florida counties to plan carefully, explore existing state and federal land acquisition and incentive programs and establish innovative land conservation programs. As economists Clyde Kiker and Alan Hodges, the principal investigators for the economic analysis study that is the foundation for this booklet, conclude, “If the Northeast Florida region is to continue to prosper, the citizens and leaders of the region must evolve means of maintaining the ecological viability of its lands while structuring their 21st century economy.” Investing in nature is a primary means to this end.

“Some of the major reasons people choose to live, work or bring up a family here are based on the environment. We’re seen as a healthy place to live, we have access to nature and great outdoor recreation. By investing in nature we are investing in our future.”

— Pat Hamilton, President, Southern Realty, St. Augustine, Florida





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