



Wildlife & Natural Resource
Stewardship in Planning



What is the Green Growth Toolbox?

Over the next 20 years, 3 million people will move to North Carolina. How will your community grow?

The Green Growth Toolbox can help North Carolina's counties, towns and cities grow in ways that conserve important habitats while continuing to build new homes, businesses and shopping centers.

The toolbox can help your community design land-use planning methods to conserve your most valuable natural assets, including streams, forests, fields, wetlands, fish and wildlife.

Methods include:

- Using Conservation Data
- Using Habitat Conservation Recommendations
- Green Planning
- Greening Incentives & Ordinances
- Greening Development Location, Review & Design

With the Green Growth Toolbox, your community can:

- Better secure your natural resources and wildlife heritage
- Attract new businesses and home buyers looking for healthy communities with healthy environments
- Enhance recreation and tourism opportunities
- Enrich quality of life

HOW IT WORKS

The Green Growth Toolbox is a technical assistance tool, handbook, GIS dataset and Web site. Training workshops and follow-up technical guidance are also available.

This project is a cooperative, non-regulatory effort led by the Wildlife Diversity program of the North Carolina Wildlife Resources Commission.

For more information, e-mail greengrowth@ncwildlife.org, or visit www.ncwildlife.org/greengrowth





**PLANNING AND ZONING BOARD
REGULAR MEETING
THURSDAY, DECEMBER 5, 2019
ASSEMBLY HALL
395 MAGNOLIA RD.
PINEHURST, NORTH CAROLINA
4:00 PM**

Board Members Present:

Leo Santowasso, Chair
Joel Shriberg
Julia Latham
Jeramy Hooper
Sonja Rothstein
Cyndie Burnett
Phillip Shumaker

Board Members Absent:

David Kelley, Vice-Chair
Paul Roberts

Staff Present:

Darryn Burich, Planning and
Inspections Director
Alex Cameron, Senior Planner
Kelly Brown, Administrative Assistant

In addition, there were seven attendees.

I. Call to Order

Mr. Santowasso confirmed that a quorum was present and called the meeting to order at 4:02 pm.

Mayor John Strickland briefly spoke to the Board thanking them for their work.

II. Approval of Minutes

A. November 7, 2019 Regular Meeting Minutes

Motion: Ms. Burnett moved to approve the November 7, 2019 regular meeting minutes. Seconded by Ms. Rothstein.

Action: Motion carried by a vote of 7-0.

III. New Business

A. Adoption of the P&Z Board 2020 Meeting Schedule

Motion: Ms. Rothstein moved to adopt the Planning & Zoning Board 2020 meeting schedule. Seconded by Mr. Shumaker

Action: Motion carried by a vote of 7-0.

IV. General Business

Mr. Burich discussed the following items:

- Staff is drafting a tree conservation ordinance to be discussed at a January 2020 work session; date and time TBD.
- Proposed having formal work sessions to discuss upcoming work and proposals.
- Tri-Cities Group is finishing up work on corridor standards. Proposed development ordinances on the corridor standards will be brought before the Board for review at a work session in February 2020.

- Moore County is working on a Local Wellhead Protection Program Plan for Pinehurst. Staff will look for feedback from the Board on what can and should be in land use standards for wellhead protection.

Mr. Cameron discussed the following items:

- Mr. Santowasso, Ms. Burnett, Ms. Rothstein and Mr. Cameron sat down with applicants of a previous public hearing to provide informal feedback on multi-family development and proposals in the Village.
- Kacy Cook of the NC Wildlife Commission will present the Green Growth Toolbox workshop to the Board during the January 2nd, 2020 meeting.

V. Next Meeting Date

Regular Meeting on January 2, 2019 at 4:00 pm.

VI. Motion to Adjourn

Motion: Mr. Hooper moved to adjourn the regular meeting. Seconded by Ms. Burnett.

Action: Motion carried by a vote of 7-0 at 4:17 pm.

Respectfully Submitted,

Kelly Brown
Administrative Specialist
Village of Pinehurst

A videotape of this meeting is located on the Village website: www.vopnc.org.

The Village of Pinehurst is a charming, vibrant community which reflects our rich history and traditions. Mission: Promote, enhance, and sustain the quality of life for residents, businesses, and visitors. Values: Service, Initiative, Teamwork, and Improvement.

Benefits of Green Growth

www.ncwildlife.org/greengrowth



What is Green Growth? Conserving wildlife, habitat and other valuable natural resources as communities continue to grow and develop. It also means encouraging growth in towns and cities.

Why Green Growth? Over one third of our 1,000 wildlife species in North Carolina are declining, largely due to habitat fragmentation and loss. To 'keep common species common' and off of endangered species lists, the N.C. Wildlife Resources Commission developed the Green Growth Toolbox.

- ✓ The University of Colorado studied 205 residential developments in five Colorado counties. They found that on average homes in conservation developments sold for 25 percent more. Conserving 2/3 of the land doubled the premium on sale price.ⁱ
- ✓ Homes in conservation subdivisions can sell up to 5 months faster than homes in conventional developments.ⁱⁱ
- ✓ Developers save from \$7,500 to \$10,000 per lot in conservation subdivisions.^{iii,iv}
- ✓ Ten conservation subdivision case studies in South Carolina showed average costs savings of 36% over conventional development.^v
- ✓ Homes within walking distance of natural park land can sell for 20 to 33 percent more. Larger parks increase premiums on sale price.^{vi, vii}

Up to \$10,000
cheaper per lot to
build

More than a 25%
premium on home
values

36% cheaper to
build than conventional
development

“An environmental assessment at the beginning of the development review process has reduced time to development approval from two months to 21 days.” Jason Sullivan, Chatham

ⁱ Hannum et al. 2012. Comparative Analysis of Housing in Conservation Developments: Colorado Case Studies. *Journal of Sustainable Real Estate*. Vol. 4, No. 1, pp. 149-176.

ⁱⁱ Ibid.

ⁱⁱⁱ Mohamed, R. 2006. The economics of conservation

subdivisions: Price premiums, improvement costs and absorption rates. *Urban Affairs Review*. Vol. 41, No. 3, pp. 376 – 399.

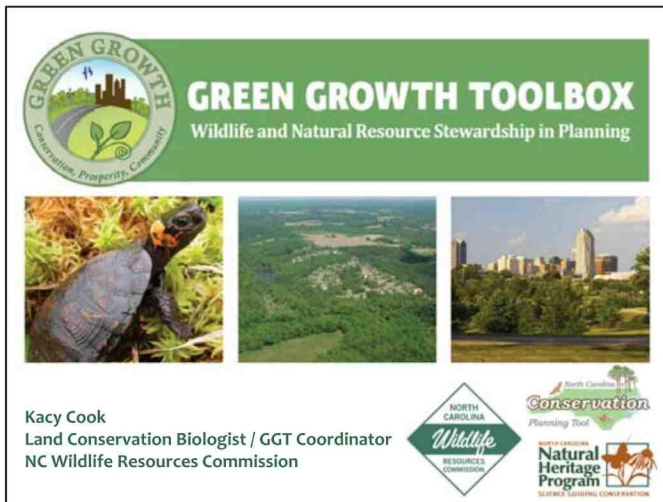
^{iv} Conservation Research Institute (CRI), 2005. Changing cost perceptions: an analysis of conservation development. Report for Illinois Conservation Foundation and Chicago Wilderness.

^v Ibid.

^{vi} John L. Crompton & Sarah Nicholls (2006). An Assessment of Tax Revenues Generated by Homes Proximate to a Greenway. *Journal of Park and Recreation Administration* 24(3), 103-108.

^{vii} Economic Research Associates. 2005. Real Estate Impact Review of Parks and Recreation [Internet]. Report to Illinois Association of Park Districts.





Contacts for GG Toolbox assistance with the NC Wildlife Resources Commission Habitat Conservation Program

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The GGT aims to bridge the information gap between biologists and land use planners and decision makers.

Access to wildlife habitat data and conservation measures that can be used in planning, policy making, and development design and review have been missing.

Using habitat maps and information ahead of plan and ordinance updates, and major development design, not only will prevent our wildlife from becoming endangered but can help developers get ahead of the environmental permitting process, making permitting and approval faster and will lead to higher quality developments.

References:

Azerrad, J.M. & Nilon, C.H. (2006). An evaluation of agency conservation guidelines to better address planning efforts by local governments. *Landscape and Urban Planning*, 77, 255-262.



Overview

- Introduction to the Toolbox & priority wildlife
- What are the benefits of Green Growth?
- Case studies & outcomes
- What you can do




Tri-colored heron

Andrea Westmoreland

A non-regulatory guide and technical assistance program



Wildlife & Natural Resource Stewardship in Planning

for integrating priority wildlife habitat conservation in

local government land use & transportation planning.



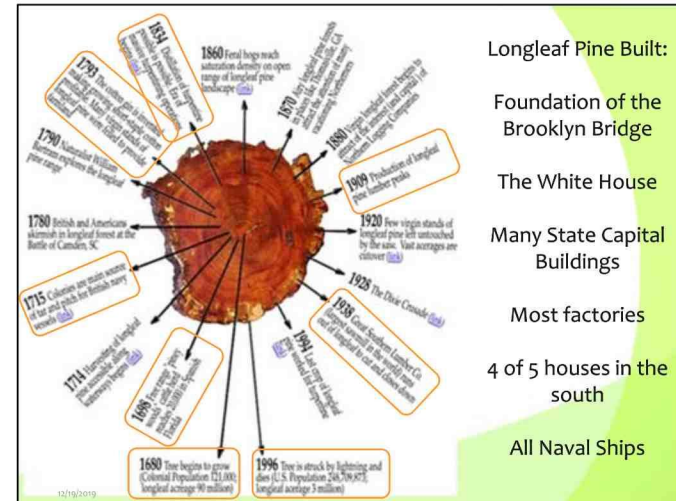
Here are some images of the priority wildlife species and habitat in the region just to highlight the natural world we live in.





The Land of the Longleaf Pine built cultures & America.

Many different types of habitats make up this ecosystem. There is only 5% remaining in existence today and many efforts are underway to restore 'the land of the longleaf pine.'





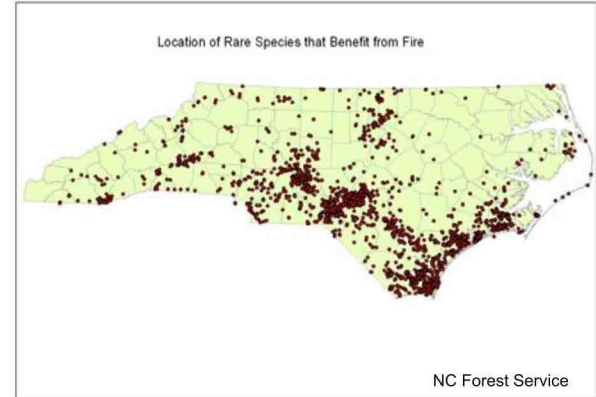
Fire is a natural process in certain ecosystems such as the longleaf pine forest. The wildlife and plants of the 'land of the longleaf pine' are adapted to and actually need fire.

See page 4 of the Green Growth Toolbox Handbook.





What is Green Growth? Maintaining Habitat QUALITY



Smokey the Bear AND Burner Bob!



12/19/2019



Red-Cockaded Woodpecker

Require fire or low understory and older trees
We would have lost the longleaf pine forest without the
Endangered Species Act

12/19/2019

Just a Few of Our Amazing Wildlife: Species of
Greatest Conservation Need



Red-cockaded woodpecker (tremhepines.org)



Tiger salamander



Chicken turtle



Northern bobwhite quail

12/1/2017

The Sandhills are mostly naturally upland and wet pine savannas of very open forest, which make the region perfect habitat for these species.

Note: Chicken turtles only use ephemeral isolated wetlands maintained by fire.



Loggerhead Shrike



Bachman's Sparrow

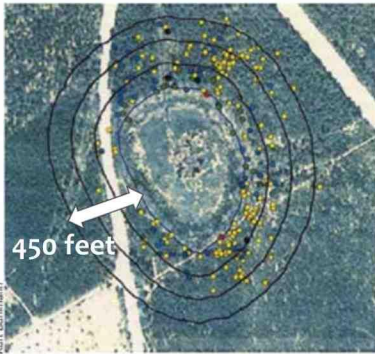


Nest in wiregrass forest understory. Need some shrubs for perching and feeding. State Threatened. Populations are disappearing due to lack of fire. Wiregrass only regenerates in the first year after a fire.

Longleaf ecosystem: Small wetlands



Amphibians & reptiles live in uplands around wetlands



12/19/2019



Colored dots =
turtle locations



Move up to
1.5 miles!

Spread-out development patterns are the top threat.



Graphic design by Echo 3, Star NC

See pages 84 – 85 of the GGT handbook for an explanation of this graphic.



References

Section 1 of the GGT handbook

<https://www.strongtowns.org/journal/2017/1/9/the-real-reason-your-city-has-no-money-taxes-2-times-higher>.



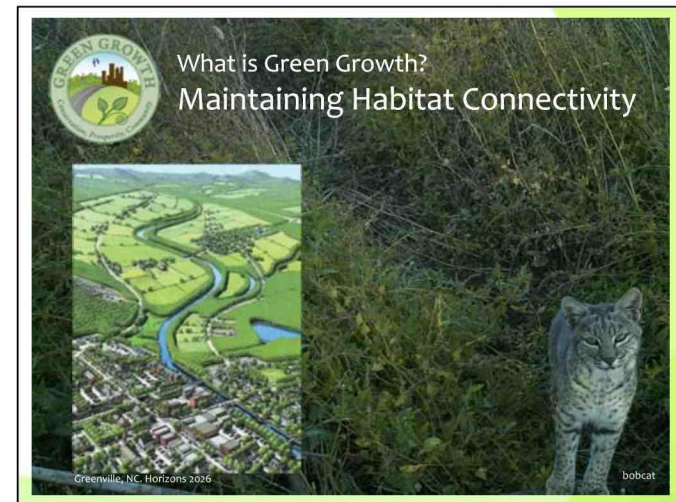
See pages 84 – 85 of the GGT handbook for an explanation of this graphic.



The GGT helps to conserve valuable natural assets and services proactively and prevents missed opportunities.

This development conserved a stream buffer which can be used for recreation trails by residents, or could feed into a greenway, not to mention the water quality benefits to the public.

The bottom images have the same number of homes. Development can be designed in a way that minimizes impacts without compromising on financial return.

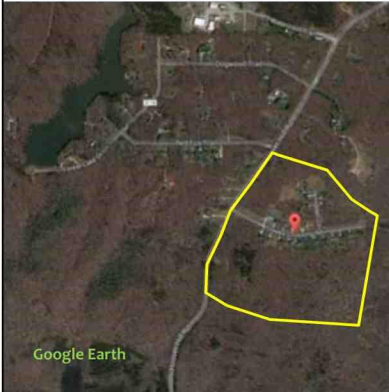


Wildlife need natural landscapes to travel from one core habitat to another. They need different food types at different times of year found in separate, different core habitats. Wildlife need to travel to specific breeding sites, while living the remainder of the year sometime miles away.



'Wildlife underpasses' under roads, often over streams reduce traffic collisions and woody debris build up under roads that can damage or destroy road crossings. Wildlife underpasses along streams include some upland adjacent to streams for wildlife who are reluctant to swim.

NC communities have implemented conservation planning: Randolph Co. since 1990s



- 50% of developers chose
- 50% required conservation area
- 1 extra lot for each 5% above 50% conserved
- 3 acre min. lot size base density

Cluster Development Option adopted in the 1990s in response to complaints by farmers of land clearing for large subdivisions in rural areas.

Successful because the base density for their rural agricultural district is a 3 acre minimum lot size. This allows for clustering on lands that are served by septic.

50% of the site must be set aside in natural open space, natural heritage areas must be protected

Density bonus then kicks in as an additional lot is allowed for every 5% of additional open space protected above the 50%.



What is in the Green Growth Toolbox?



- ⦿ Handbook
- ⦿ Conservation Data
- ⦿ www.ncwildlife.org/greengrowth
- ⦿ Training workshops
- ⦿ Technical assistance

Technical assistance includes help with:

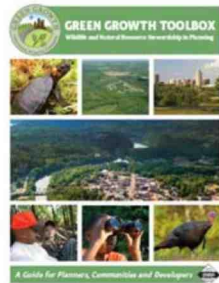
- Integrating the Conservation Data for Green Growth GIS dataset with your community's GIS database
- Creating habitat conservation maps for local planning
- Writing a local conservation plan
- Incorporating habitat conservation into:
 - land use plans
 - incentives & ordinances
 - development review and site design standards
- Developing habitat management plans for parks and open space

Partners for Green Growth



Modest funding to assist local governments with conservation-based comprehensive plans & ordinance review.

GGT handbook & the components of Green Growth



1. Justification & Benefits
2. Interpreting Conservation Data
3.  Habitat Conservation Recommendations
4. Green Planning
5. Greening Incentives in Ordinances
6. Greening Development Review & Site Design

The GGT is a guide to achieving Green Growth.

The Handbook is divided into the following sections to provide guidance on the benefits of GG...

The GGT aims to provide the information necessary for interested communities. The Handbook available on our website is divided into the following 5 sections aimed at facilitating community achievement of green growth.

The GGT also provides official science-based recommendations of the NC Wildlife Commission that detail how much habitat is needed to conserve wildlife in developing areas.

Economic & Societal Benefits



GREEN GROWTH TOOLBOX HANDBOOK: SECTION 1

Summary of over 60 peer reviewed articles



References

[http://ascelibrary.org/doi/abs/10.1061/\(ASCE\)0733-9372\(2008\)134:5\(403\)](http://ascelibrary.org/doi/abs/10.1061/(ASCE)0733-9372(2008)134:5(403)) – Charlotte NC

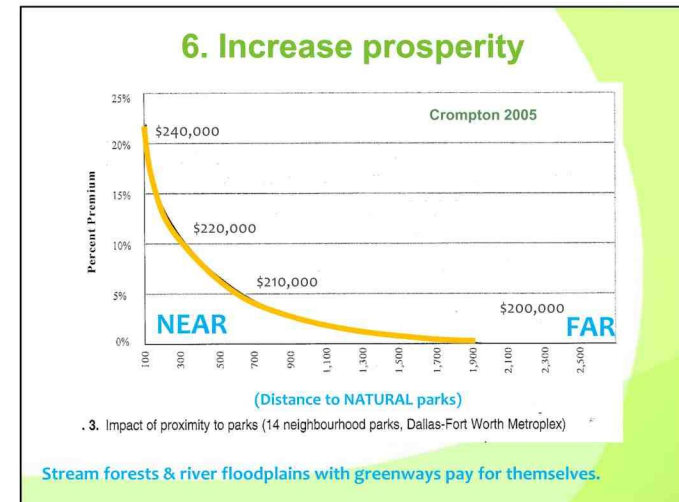
3 NC sites - [http://ascelibrary.org/doi/abs/10.1061/\(ASCE\)0733-9437\(2006\)132:6\(600\)](http://ascelibrary.org/doi/abs/10.1061/(ASCE)0733-9437(2006)132:6(600))

Reduced cost – if planned correctly

of water treatment to tax payers

Reduced cost to developers of stream buffers – ~ 20% premium on homes near natural areas

Of LID – more lots able to be developed because of reduced stormwater pond size.



Green growth also enhances prosperity

- Houses that are closer to natural parks (not ball fields or golf courses) provide home owners with increased value and provide the county with increase tax revenue.

- If you look at the graphic, the home that was close to the natural park had \$40,000 of its value attributed to its proximity to the park. On the other hand, the same houses that were either located far away from the park, or outside the park's influence, were worth less.

- This equates to an increase in property tax revenue.

- Fredrick Law Olmstead created central park and 3000 parks in first half of 19 century. Found that the parks added more property value to the area than if they had been developed.

- Zone A – within 600 ft. of the park, zone B, 600-1,200 ft., zone C 1,200 – 1,800 ft.

- Think about the increased value of properties that are adjacent to accessible or visible natural areas in your community and how many people are willing to pay more for homes close to natural areas like this one.

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8. Reduce Costs

- ◎ Concentrating growth in city and town centers – annual savings:
 - \$110 billion - road construction
 - \$12 billion - water and sewer infrastructure
 - \$4 billion - other public services



Benefits of Green Growth

Reference:

Burchell et al. 2002. The costs of sprawl. TCRP Report 74. Washington DC, National Academy Press.

2/3 of our **crop pollination** comes from
native bees and insects

~ 500 bee species in NC



Native pollinators are declining along with our natural
habitats & are also susceptible to colony collapse.

Source: Laurence Paker. 2014. Keeping the Bees: Why Bees are at Risk and What We Can Do to Save Them. Harper Collins.

Benefits of Green Growth

8. Reduce Costs



Lower water
treatment
costs

- Every 10% increase in forests and properly managed grassland
= a 20% reduction in water treatment costs.
- New York City has saved over 6 Billion by conserving land in the Catskills.

Suggested Narrative:

- Green growth including conservation developments will help you to conserve your communities forests
- Watersheds and communities with more forests have lower water treatment costs

Data source

Trust for Public Land. The Economic Benefits of Land Conservation.

http://www.tpl.org/tier3_cd.cfm?content_item_id=21251&folder_id=188

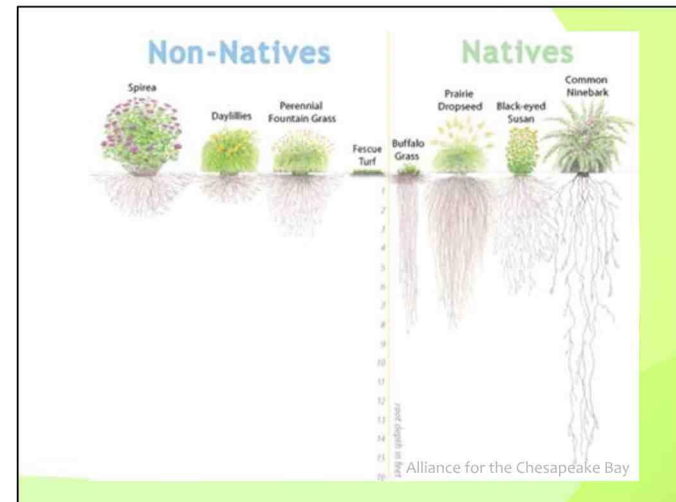
Low Impact Development



- Treat stormwater onsite
- With land & plants
- No extensive grading, curb & gutter
- Peak shopping day parking on grass has saved companies millions.
- 15 – 85% cost savings

- * Minimize impervious surface.
- * Minimal crossing of elevation lines with roads.
- * Bioswales, rain gardens.
- * Less storm water pond area = more development area.

LID can much cheaper, because of less hard engineering (pipes etc) land is not taken up in large stormwater ponds and additional lots can be developed.



Native plants are much cheaper to use in landscaping and LID. They are adapted to the local climate, including drought characteristics. Their deep tap roots allow them to access water and nutrients and so they do not need fertilizing or watering. They are naturally more resistant to insects and disease.



OUTCOMES

- Since late 2009
- Over 600 trained
- From:
 - Over 125 local governments
 - 13 Regional Councils of Government
 - 37 Consulting Firms
 - 34 Conservation Organizations
- Toolbox used in 53 local plans & ordinances

Since 2010.

Green Planning

GGT Section 4, pg. 57



Enable wildlife & habitat conservation in vision, goals, & strategies.

Six step process

- Create a brief wildlife habitat conservation plan
- Green existing plans

Menu of conservation strategies

[Case studies: Links to existing plans in NC & US.](#)

The 1st level of planning we talk about in the GGT is visioning and plan-making. We are calling the process of applying Green Growth principles to this process “Green Planning,” which means (read definition on slide). Green planning is discussed in section 3, starting on page 27.

Pg. 29 – A central component to this is to create some type of habitat conservation plan. When this is not possible incorporating wildlife habitat conservation measures into existing plans can work nicely.

6 Step Conservation Planning Process

- 
- 1 ID Status of wildlife species & habitats – map & understand
 - 2 Conservation vision & goals (includes public & interest groups)
 - 3 Ways to implement strategies (Objectives)
 - 4 Conservation strategies / recommendations
 - 5 Write a conservation plan and / or integrate in existing plans.
 - 6 Adopt, implement & monitor – ACTION plan

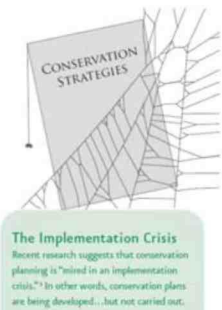
5. Integrate conservation strategies & objectives into all plans

- Community visioning documents
- Conservation plans
- Land use and comprehensive plans
- Transportation plans
- Park, greenway, and open space plans
- Small area plans
- Farmland protection plans
- Watershed management plans
- Risk assessment and hazard mitigation plans
- Strategic and economic development plans
- Green building & energy efficiency plans
- Budget planning

It is important to integrate habitat conservation into all plans so that plans that have an impact on wildlife and habitat do not conflict with the goal of habitat conservation in your community.

6. Action Plan

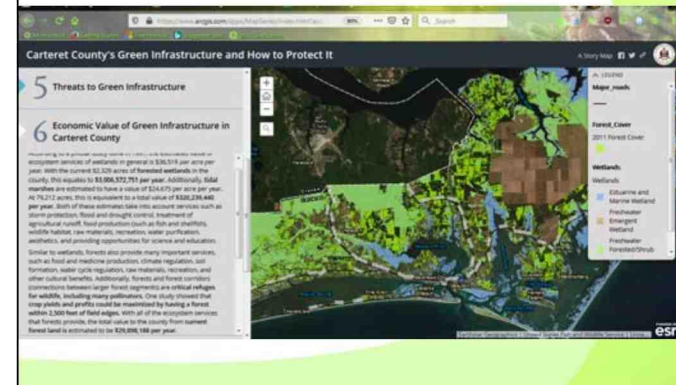
Page 62

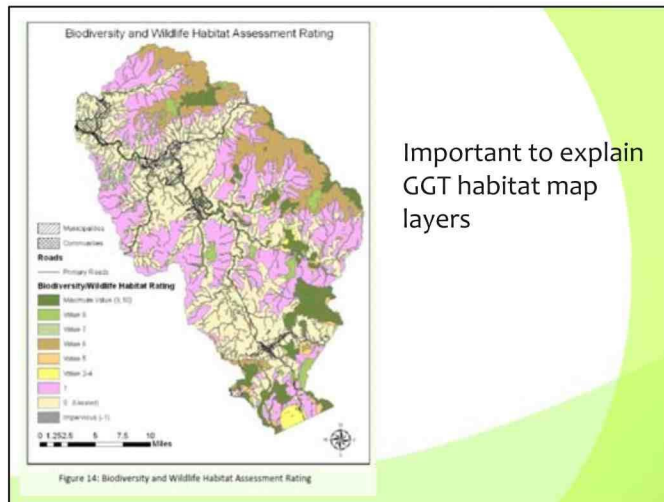


- ✓ Set objectives for conservation strategies by year
- ✓ Report out to committee or board every year
- ✓ Who, what, when, where?
- ✓ Is the public being educated?
- ✓ Are conservation development incentives working?
- ✓ What ordinances are being drafted or updated?
- ✓ Climate Change Hazard Reduction progress
- ✓ Coordinate with all departments especially public utilities
- ✓ When will new sewer be planned?
- ✓ Associated conservation objectives.

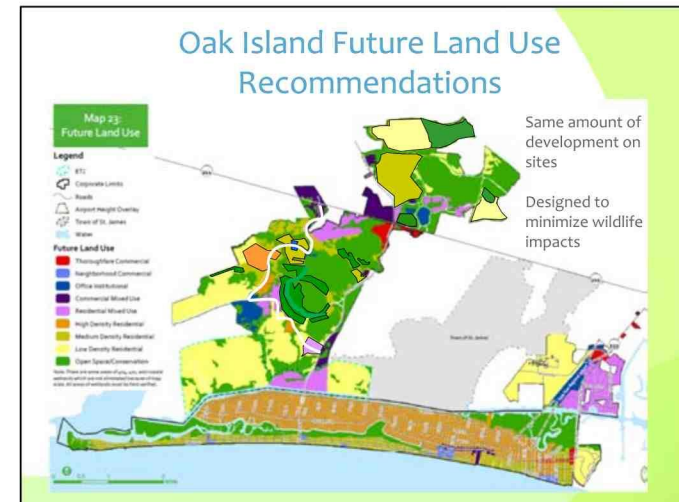
Whether or not you can create a full wildlife or biodiversity conservation plan, it is important to ...

Habitat maps should be displayed in plans & available to the public





Important to explain
GGT habitat map
layers



Oak Island incorporated most of these recommended changes to their future land use map. Areas outlined in black are recommended changes in future land use districts (see the legend).

Grocery store on the corner. Non flooded forest conservation increases carbon sequestration over flooded soils.

Analysis of vacant lots showed enough lots to develop for all the growth in the next 10 – 20 years.

Chatham County Watershed Ordinance

Waterways & wetland delineation & buffers = those recommended by Wildlife Commission

All development

Full environmental review for >50 lots

Results experienced by the county:

Development approval was 2 months and is now in 21 days.

Much reduced staff time.

No complaints from developers.

The public wanted better stream protection measures.

Riparian forest sequesters 3 times the amount of carbon as a lawn.

Chatham County Conservation Subdivision Standards



Less development is better for air and water quality, less grey infrastructure creation. Good transition zone from suburban to agriculture districts.

Optional conservation design in exchange for density bonus. ~ 40% required unfragmented natural area set-aside in areas with priority habitats.



Moore County

1. Land use plan
2. Ordinance updates
 - a) Major subdivisions not automatically permitted
 - b) Not permitted in rural districts
 - c) Sketch plan required
 - d) 5 or more lots & must be on public water or sewer
 - e) Cell phone towers = US Fish & Wildlife standards
 - f) Exotic invasive plants prohibited, native plants encouraged

Moore County has some of the last strongholds of longleaf pine forest, which is a fire-adapted ecosystem where low intensity fire would naturally pass through forests every 2 years. The Sandhills Conservation Partnership uses the GGT to coordinate land use planning between the Army and Fort Bragg and the county.

What you can do

- Consider:
 - Reading / skimming the Green Growth Toolbox Handbook and the factsheets and information on our website.
 - Host a full or half-day workshop
 - Supporting a Resolution of Support for use of the Toolbox by the Planning Department.
 - Use the GGT & Consider NC Wildlife recommendations for plan and ordinance updates.
 - Make a standard practice to include the NC Wildlife Commission in development sketch plan review, and relevant committees or meetings.



www.ncwildlife.org/greengrowth

THANK YOU! Questions?

Funding provided by:

State Wildlife Grants &
NC Tax Check-off



Donate on line #31
to conserve wildlife.



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