Bird-friendly Native Landscapes for Coastal Georgia

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Marine Extension and Georgia Sea Grant
UNIVERSITY OF GEORGIA
Sea Grant

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UGA EcoScapes Sustainable Land Use Program

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UGA EcoScapes Resources

ruby-throated hummingbird feeding on coral honeysuckle (*Lonicera sempervirens*)

- Points to Live by When Shopping and Gardening with Native Plants
- Purchasing Native Plants: Considerations and Nursery Sources
- Creating Native Habitat Guidance Series for wildlife and pollinators
- Checklist to Reduce and/or Eliminate Chemical Use in Landscapes

- EcoScapes Native Plant Search Engine
- EcoScapes Native Plant Search Engine Guidance Document

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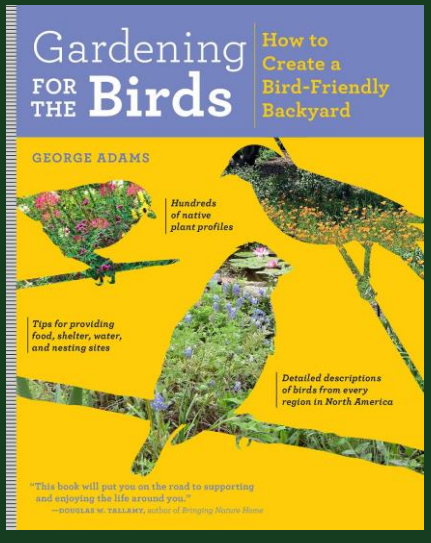
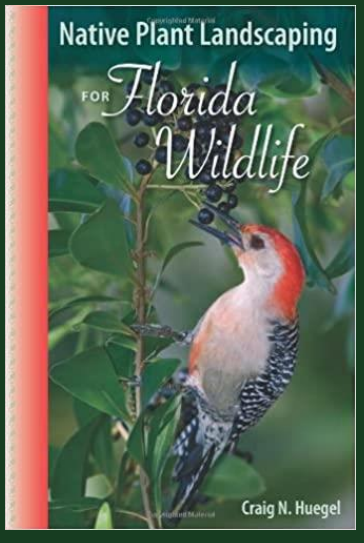
Gardening for Bird Books





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Presentation Outline

Part I. The role of birds, insects and native plants in maintaining healthy ecosystems
Challenges and a call for action

Part II. How to assess your site to create a bird-friendly landscape
How to select the right native plants for the right site conditions
Other benefits of enhancing biodiversity: natural pest control

Part III. Examples of native bird-friendly plants for the coastal Georgia

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Healthy Ecosystems

A healthy ecosystem consists of native plant and animal populations interacting in balance with each other and nonliving things. Coastal Georgia is made up of a vast array of beaches, dunes, wetlands, rivers, creeks, forests, meadows, bogs, and other habitats that support rich and diverse communities of plants and animals.

6

Importance of Healthy Ecosystems

The UN Millennium Ecosystem Assessment established that *"ecosystems are critical to human well-being* – to our health, our prosperity, our security, and to our social and cultural identity."

7

Healthy Ecosystems Provide Us Ecosystem Services

8

Biodiversity = Ecosystem Services

Biodiversity is the key indicator of the health of an ecosystem. People obtain the benefits of ecosystem services from the diversity of life around them. The more diverse an ecosystem is, the more services it will provide for us.

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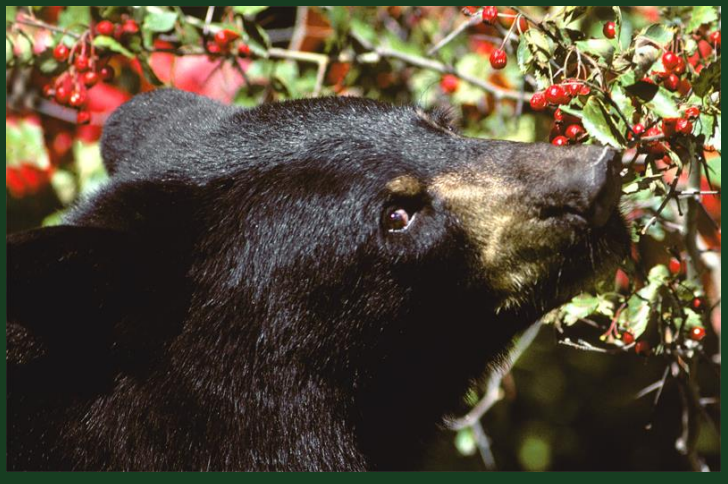
Plant Diversity: Key Ecological Role



All energy is captured by plants and all animals get their food from plants. Therefore, the amount of vegetation in any given area determines the amount of life that can be supported in that area.

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Insect Diversity: Key Ecological Role

Insects are the most important group of animals that transfer energy captured by plants to other animals.

For example, insects are a critical food source for the survival of 96% of all terrestrial birds' young who are reared on insects.

Embracing insect diversity in landscapes creates balance and plays a key ecological role

350-570 caterpillars/day (6,000-9,000 to raise clutch of 16-18 days)

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Insects and Native Plants

90% of all insects that eat plants require native plants to complete their development.

In many cases, an insect's adaptation focuses on a limited range of closely related native plants that occur within that insect's native range.

Insects that evolved to feed on specific native plant species cannot survive if those plants are not available.

Gulf fritillary (*Agraulis vanillae*) on purple passionflower (*Passiflora incarnata*)

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A diversity of native plants = animal diversity = supports a functioning ecosystem

Insect diversity increases with locally native plant diversity which further supports birds and other wildlife. By using a diversity of local native plants, we help preserve the balance and beauty of natural ecosystems.

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Human Actions are Taking Their Toll on Biodiversity

With ever growing human populations, we need more ecosystem services. However, as we reduce biodiversity, we are getting fewer and fewer services from our ecosystems.

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Invasive Species

Estimates of environmental and ecological costs of invasive species in the U.S. alone approach $120 billion/year (Pimental et al. 2005) with more than 100 million acres affected (about the size of California).

heavenly bamboo (*Nandina domestica*) Category 2 invasive species in Georgia

cedar waxwing feeding on Nandina berries

Eighty-five percent of invasive woody plants have escaped from ornamental industry plantings.

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Pesticides: Case Study - Native Bee Poisonings

Up to 50,000 bumble bee deaths in 2013 after neonicotinoid dinotefuran (Safari) was sprayed on linden trees in Wilsonville, Oregon.

"The bumble bees were literally falling out of the trees. To our knowledge, this is one of the largest documented bumble bee deaths in the western U.S. It was heartbreaking to watch."

- Rich Hatfield, Conservation Biologist, Xerces Society

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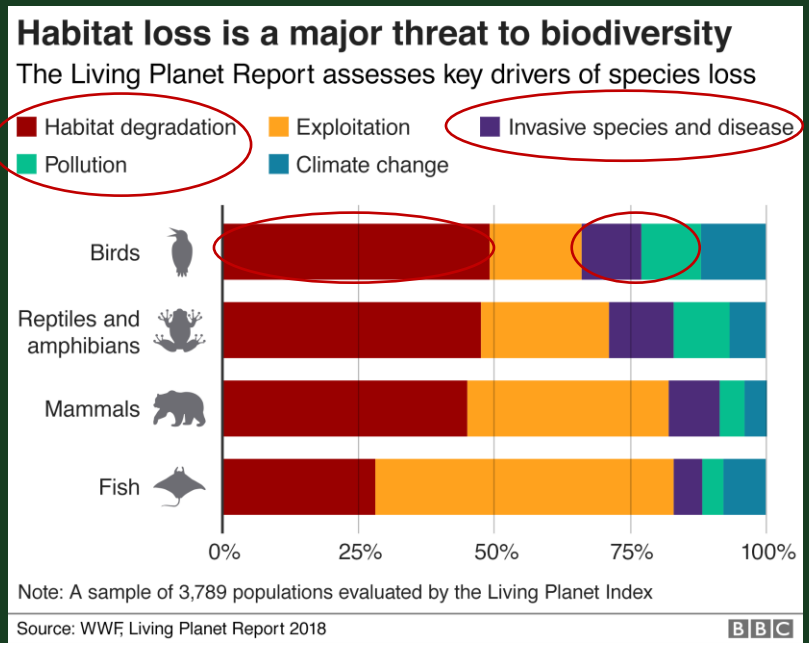
Study 1: Global Threats to Biodiversity



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Study 2: Decline of wild bird populations in North America

Wild bird populations in the continental U.S. and Canada have declined by almost 30% since 1970. More than 1 in 4 birds have disappeared in the last 50 years (Rosenberg et al., 2019).

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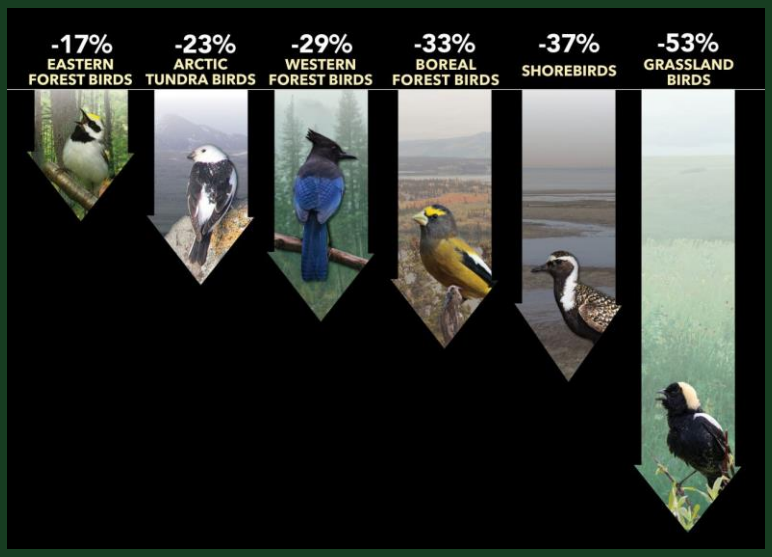
Losses in Every Biome



The massive loss of birdlife reaches into every biome in the U.S. and Canada (Rosenberg et al., 2019)

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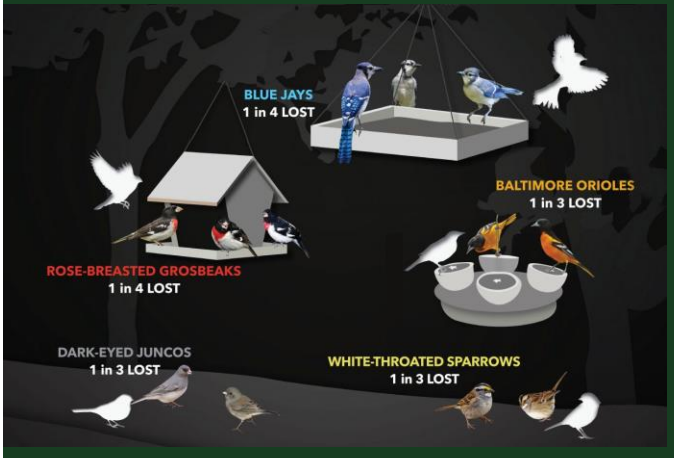
Steep Losses Among Major Bird Families

"We want to keep common birds common, and we're not even doing that."
(Pete Marra, study coauthor)



The species that many people see every day represent the greatest losses of birdlife.

Declines are not restricted to rare ad threatened species. More than 90% of the losses come from once considered common and widespread - just 12 families including sparrows, blackbirds, warblers, and finches (Rosenberg et al., 2019).

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Call to Action

"These results have major implications for ecosystem integrity, the conservation of wildlife more broadly, and … the protection of birds and native ecosystems upon which they depend."

"Our results signal an urgent need to address the ongoing threats of habitat loss…to advert continued biodiversity loss and potential collapse of the continental avifauna."

(Rosenberg et al., 2019)

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Global Insect Declines in Diversity and Abundance

According to the first global scientific review (April 2019), dramatic rates of decline in diversity and abundance that may lead to the extinction of 40% of the world's insect species over the next few decades. The rate of extinction is 8x faster than that of mammals, birds and reptiles.

(Source: Sanchez-Bayo and Wychhuys. Biological Conservation 232 (2019) 8-27)

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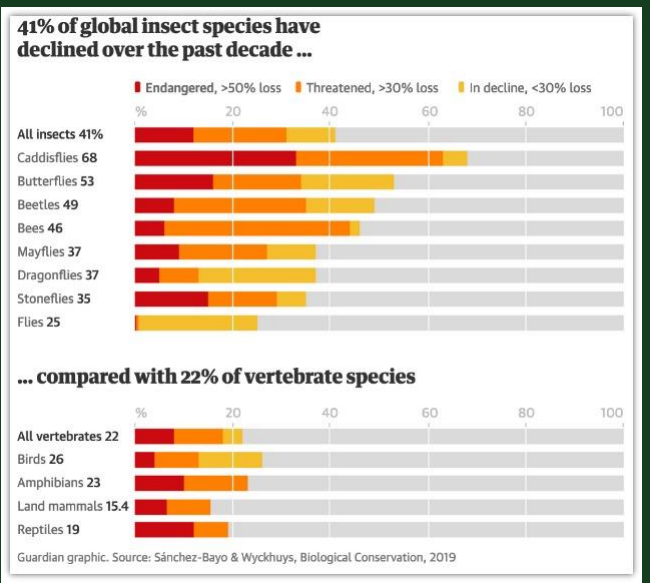
Insects are essential for the proper functioning of healthy ecosystems



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Causes of insect decline

1. Habitat loss and degradation conversion to urbanization and intense agriculture;
2. Exposure to pesticides (insecticides, herbicides and fungicides, fertilizers);
3. Climate change and extreme weather;
4. Biological factors (disease, invasive/introduced species, pathogens)
5. Nonnative ornamental plants

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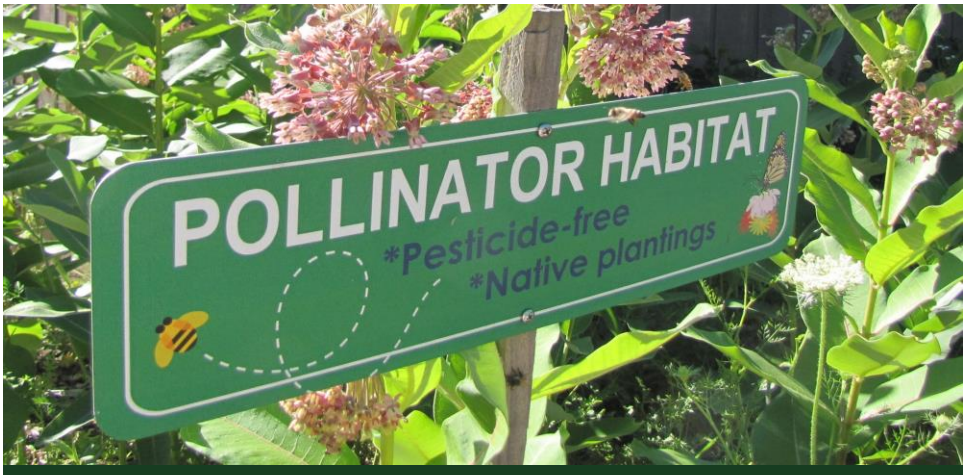

"A rethinking of current practices, in particular a serious reduction in pesticide usage and its substation with more sustainable, ecologically-based practices, is urgently needed to slow or reverse current trends, allow the recovery of declining insect populations and safeguard the vital ecosystem services they provide."

(Sanchez-Bayo and Wychhuys. Biological Conservation 232 (2019) 8-27)

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OUR Call for Action

We must raise the bar for what we ask our landscapes to do.

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We can make a difference!

"Gardeners have become important players in the management of our nation's wildlife. It is now within the power of individual gardeners to do something that we all dream of doing; to make a difference. In this case, the 'difference' will be to the future of biodiversity, to the native plants and animals of North America and the ecosystems that sustain them."

– Dr. Doug Tallamy, *Bringing Nature Home*

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Native Landscapes Can Change the World

"Our world is asking for landscapes to be more, to light the way to a new relationship with nature."
(Benjamin Vogt, A New Garden Ethic, 2017)

Our challenge is to design and enhance our landscapes so that they become healthy, functioning and resilient parts of our local ecosystems.

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Our landscapes can mimic the complexity of disappearing habitats and provide food, nesting and shelter for pollinators, other beneficial insects, songbirds, and other wildlife, while improving water quality, conserving water and enhancing our community's sense of place, beauty, and vitality.

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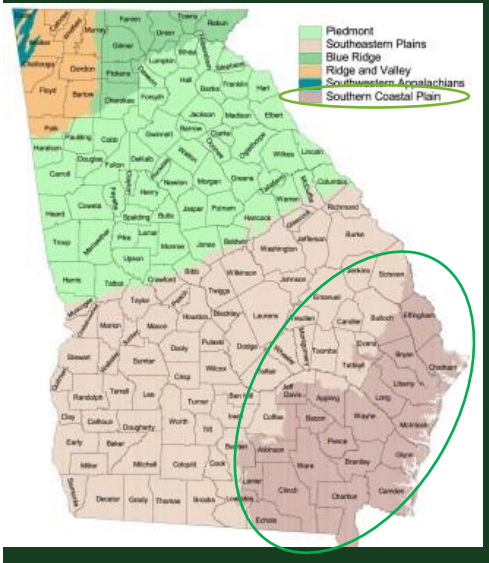
Step 1. Identify your ecoregion



Knowing your ecoregion provides the baseline that will help you key in on the kinds of plants and plant communities that are indigenous to the site and offers basic information about its climate and precipitation, soils, types of landforms, and complex biological relationships.

On the other hand, the USDA Hardiness Zone Map is based on how well plants survive low temperatures in winter. It is defined by average annual minimum winter temperatures which is best suited for ornamental/exotic plants.

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Step 2. Identify any native plant communities adjacent to or near your site

If possible, select native plants that complement the nearby natural areas by using similar species composition.

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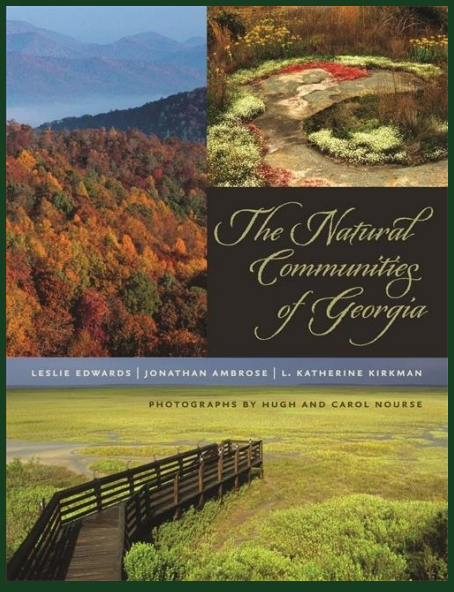

The book *The Natural Communities of Georgia* (Ambrose, Kirkman and Edwards 1999) provides descriptions of individual natural communities and the characteristic native plants that make up each community.

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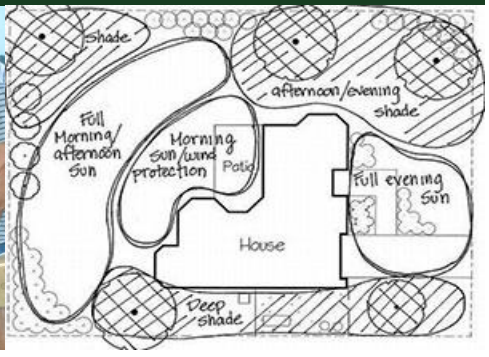
Step 3. "Read the landscape": Identify plants and site conditions that exist on your site

- Determine your site conditions (sunlight, moisture, soil type, salt exposure, wind and any microhabitat conditions)
- Inventory the existing vegetation (native and non-native, invasive). This may assist in determining what plant communities may do best at the site.
- Remove any invasive plants that exist



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Native plants reduce invasive species impacts

Invasive

Chinese tallowtree/Florida aspen
(*Triadica sebifera*)
Category 1 Invasive

Native Options

Eastern redbud
(*Cercis canadensis*)

swamp titi
(*Cyrilla racemiflora*)

Planting invasive plants severely reduces the carrying capacity for that environment. By using native plants, we help limit the chances that potentially invasive, exotic plant species will be introduced into natural environments.

List of non-native invasive plant list from GA Exotic Pest Plant Council: https://www.gaeppc.org/list/
Coastal Georgia Cooperative Invasive Species Management Area (CoGACISMA): coastalgeorgiacisma.org

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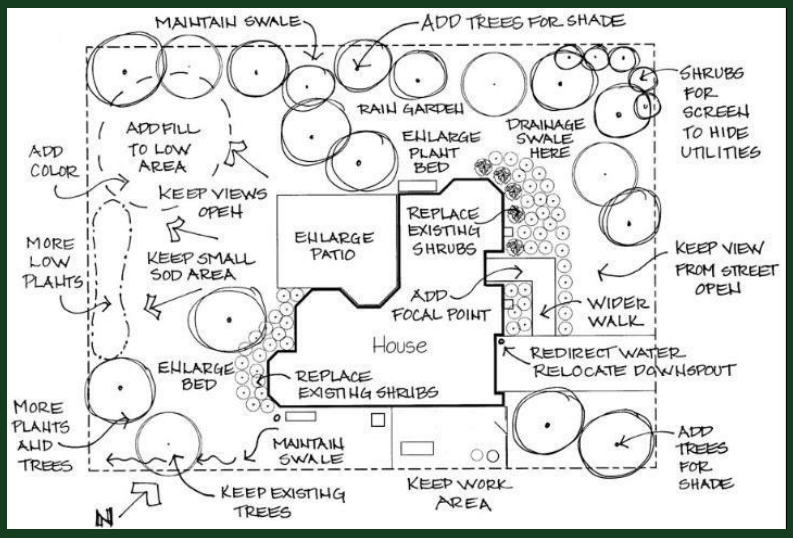
Step 4. ID the site's existing aesthetic attributes, liabilities, and limitations (what keep, what change)



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Step 5. Assess the presence of wildlife

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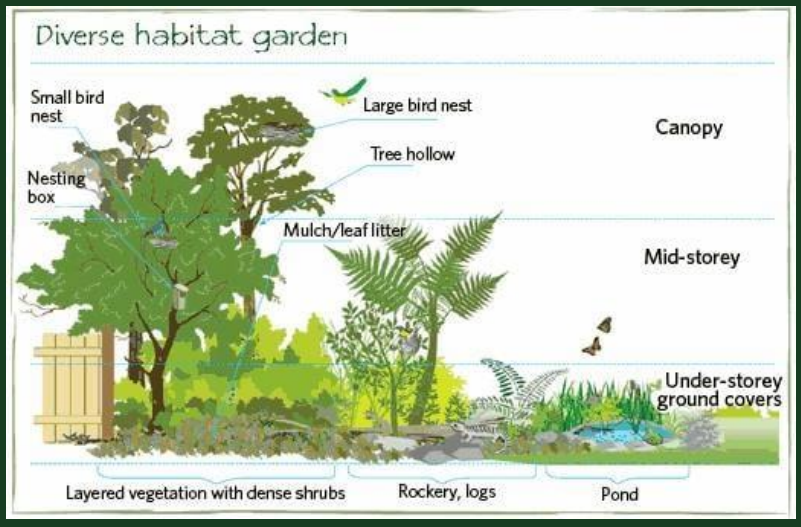
Think like a bird! Analyze your site for structural diversity ("habitat layers") including large canopy trees, shrubs and small trees, herbaceous plants, decaying leaves, wood, detritus and soil.



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Diverse vertical structure

Vertical layering emanates natural landscapes.

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Reduce turf to increase habitat



Larger patches of native habitat will create a rich wildlife habitat and lovely effect in your landscape. The addition of native ground covers, herbaceous grasses and flowering perennials with some woody shrubs and small trees is a quick and easy way to reduce lawn area, chemical and water use, and provide for the birds.

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Are there places for birds to hide?

Keep pet cats indoors! The largest human-caused mortality to birds: domestic and feral cats kill some 2.4 billion birds annually in the U.S.

40

Are there places for the birds to nest?

Where safety is not an issue (danger to people, power lines or structures), dead and dying trees have an afterlife as a place for wildlife to nest, den, perch, and search for food. Work with an arborist to help stabilize and transition them to wildlife trees or snags.

More than 40 bird species in North America depend on woodpecker carpentry for their nest and roost cavities. These secondary nesters cannot create cavities, but quickly adopt abandoned holes. Sap wells also provide other bird species to ensure early food sources.

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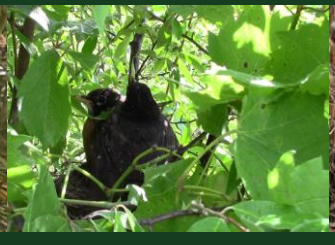
Are there sheltered areas where birds can protect themselves from the elements (cold, wind, rain)?



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Is there food?


Carolina chickadee collecting caterpillar to feed young


gray catbird feeding on American beautyberry berries


blue jay collecting acorn


house finches feeding on seaside goldenrod seeds


ruby-throated hummingbird feeding on coral honeysuckle nectar


native trees support the greatest diversity of butterflies and moths than herbaceous plants.

Look for presence of bugs, fruit, nuts and seeds, nectar

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Is there water?


Jack Rogers

Water is an often overlooked resource that birds need year round. Consider including hollowed rocks that catch rainwater or a man-made bird bath for birds to drink and bathe in.

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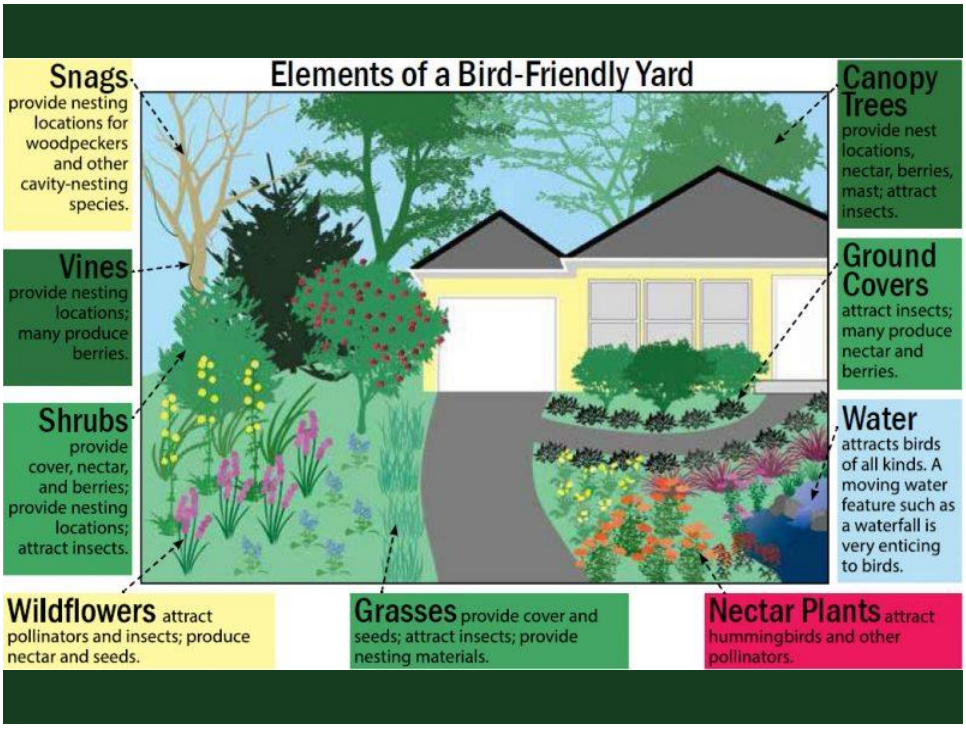

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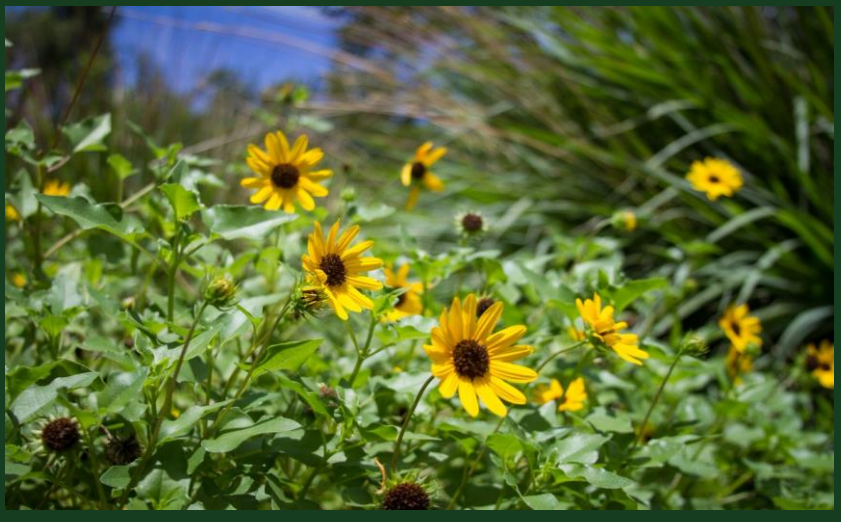
Step 6. Determine desired native plants from your ecoregion that are appropriate for your site conditions.



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Choose the right plant for the right site conditions

This is KEY to ensuring the survival and remaining healthy in your landscape. Plants must be selected to suit existing soil, moisture, sunlight and other site conditions.

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Audubon Society Native Plants Database

https://www.audubon.org/native-plants

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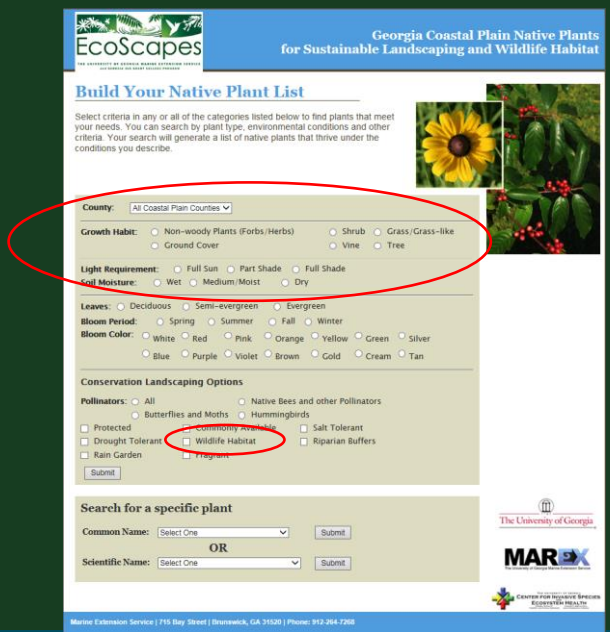
UGA EcoScapes Georgia Native Plant Search Engine

"Pick the right plant for the right location"



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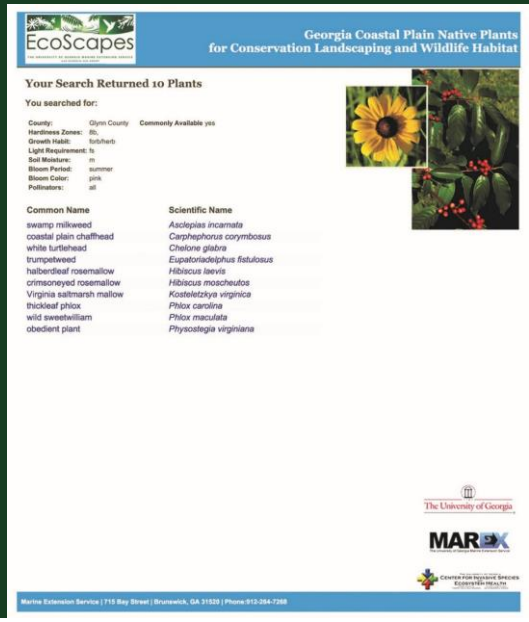
UGA EcoScapes Georgia Native Plant Search Engine

"Pick the Right Plant for the Right Location"



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UGA EcoScapes Georgia Native Plant Search Engine

"Pick the Right Plant for the Right Location"

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Step 7. Eliminate or reduce chemical use on your landscape

By reducing or not using pesticides, we protect pollinators, other beneficial insects, birds and other wildlife. These insects are a necessary protein source for nesting songbirds, which also provide great insect pest control. Not using pesticides are also beneficial to humans, pets and our environment.

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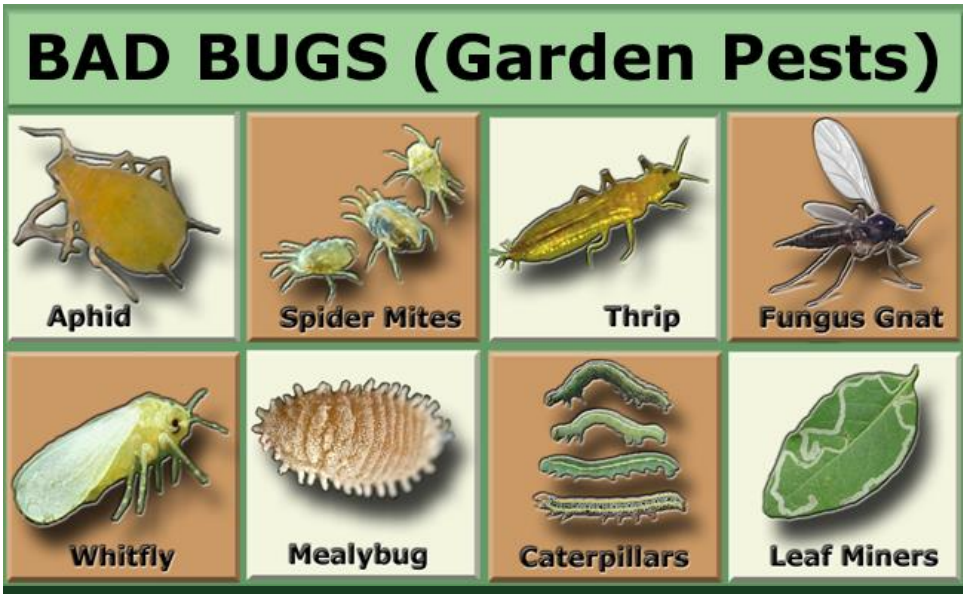

A mere 1% of the insects we come across in our lives are actually harmful. These are the creatures that consume our plants, introduce disease, bite our flesh, feed on our pets, and cause economic, aesthetic, or medical damage.

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- The remaining 99% of insects are either beneficial or benign. These insects provide pest control, pollination and food for wildlife.
- Many beneficial insects provide natural pest control which minimizes or eliminates chemical use.

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Know your beneficial insects!

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Support beneficials insects who provide natural pest control and keep our landscapes healthy

We can focus on preventive rather than reactive approaches to pest management. By increasing biodiversity in our landscapes and creating habitat for natural enemies, we can boost natural pest control services and reduce our reliance on pesticides.

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Natural Pest Control Mantra

When nature is in balance, you will find a mixture of good AND bad insects in your garden.

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Step 8: Bird-friendly Maintenance Considerations

Leave the leaves!! Leaf litter, long grass and brush piles are vital for the insects they harbor, which are so critical for bird survival.

Leave plants standing. Both migrants and winter resident birds rely on the seeds of native perennials.

American goldfinch feeding on monarda (bergamot) seeds.

Avoid extensive pruning. Pruning shrubs and hedgerows, other than to increase fruiting, is not needed for bird habitat It should be especially avoided in spring and early summer when birds are likely to be nesting there.

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Bird-friendly Native Plants for Coastal Georgia Landscapes: Plant It and They Will Come!

common yellowthroat feeding on goldenrod

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Bird-friendly Native Shrubs and Trees

American beautyberry (*Callicarpa americana*)

Florida swamp privet (*Forestiera segregate*)

Devil's walking stick (*Aralia spinosa*)

American black elderberry (*Sambucus nigra ssp. canadensis*)

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Bird-friendly Native Shrubs and Trees

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Bird-friendly Native Shrubs and Trees

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Bird-friendly Native Palms, Shrubs and Trees

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Bird-friendly Native Shrubs and Trees

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Bird-friendly Native Shrubs and Trees

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Bird-friendly Native Shrubs and Trees: Oaks

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Bird-friendly Native Shrubs and Trees: Holly

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Bird-friendly Native Shrubs and Trees

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Bird-friendly Native Grasses


little bluestem (*Schizachyrium scoparium*)


purpletop (*Tridens flavus*)


wiregrass (*Aristida beyrichiana*)


switchgrass (*Panicum virgatum*)

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Bird-friendly Native Grasses


Indiangrass (*Sorghastrum nutans*)


broomsedge bluestem (*Andropogon virginicus*)


sand cordgrass (*Spartina baker*)


purple lovegrass (*Eragrostis spectabilis*)

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Bird-friendly Native Vines

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Bird-friendly Native Vines

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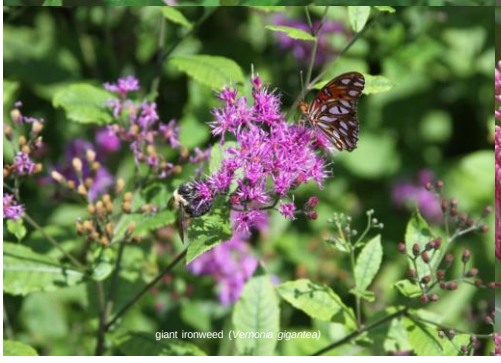
Bird-friendly Native Forbs/Herbs


swamp milkweed (*Asclepias incarnata*)


scoliid wasp on spotted beebalm (*Monarda punctata*)


giant ironweed (*Vernonia gigantea*)


Joe-pye weed (Eupatoriadelphus fistulosus)
formerly *Eutrochium fistulosum* or
Eupatorium fistulosum

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Bird-friendly Native Forbs/Herbs


Appalachian mountainmint (*Pycnanthemum flexuosum*)


hairy white oldfield aster (Symphyotrichum pilosum)


common sneezeweed (*Helenium autumnale*)


Spanish needles/beggarticks/romerillo (*Bidens alba*)

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Bird-friendly Native Forbs/Herbs

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Bird-friendly Native Forbs/Herbs

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Bird-friendly Native Forbs/Herbs

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Bird-friendly Native Forbs/Herbs

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Bird-friendly Native Forbs/Herbs

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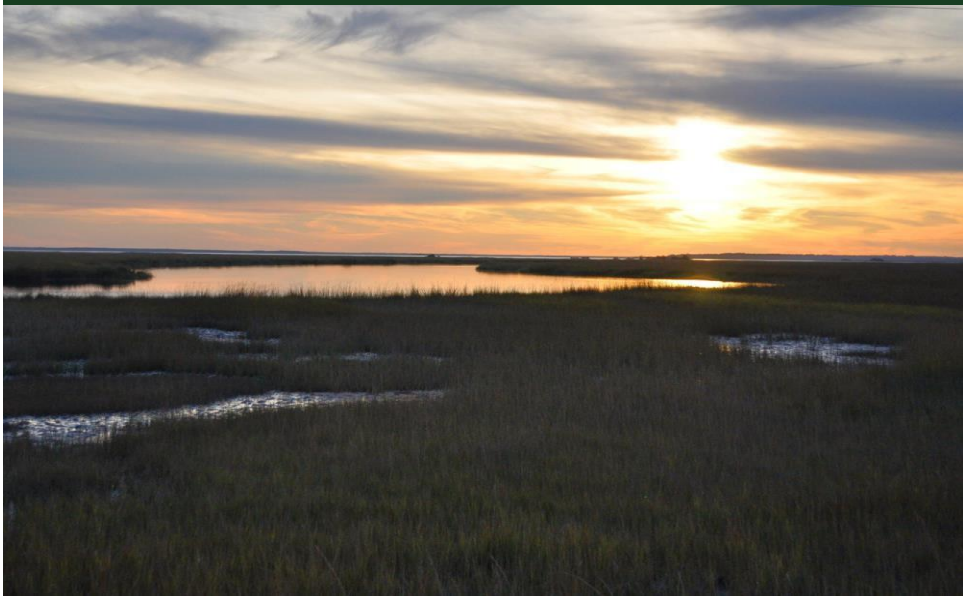
Questions?



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