

Ecological Communities of Great Island: *A Field Guide*



Hermit Thrush



Striped Killifish



Whitefooted Mouse



Sea Star



Flying Squirrel

Great Island

Last year our team created the identity for the Great Island Vision Plan, the design phase for a new public park in Darien, CT. This branding was used across materials for community workshops for both children and adults.



Some of the workshop materials created as part of the Vision Plan

My Great Island

What kind of things would you like to do on Great Island?
Draw or write your ideas on the map.

IT'S ALWAYS A GREAT DAY TO BE OUTSIDE

GREAT ISLAND EXPLORE DARIEN, CONN.

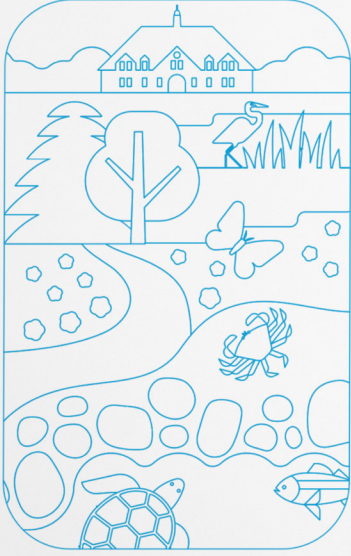
GREAT ADVENTURES AWAIT

06820 GREAT ISLAND DARIEN

EXPLORE THE GREAT OUTDOORS

GREAT ISLAND DISCOVER DARIEN, CONN.

Color Great Island!



Where do they live?

Meadow & forest

Long Island Sound

Tidal marsh

What other creatures and plants can you find?

Ecological Communities of Great Island



A Field Guide



A New Chapter for Great Island

For over 100 years, Great Island was owned by the Ziegler family, who cherished its natural beauty and added structures that reflect their legacy on the island. The Estate House, overlooking the Sound, is the central Stables and Riding Ring celebrate the family's equestrian legacy. Other notable features include a quaint beach cottage nestled in the woods. The historic architecture and scenic roads remain a testament to the estate's history, offering a foundation as we plan for the island's future while honoring its past.

Join us in imagining the possibilities for Great Island! There will be four community workshops throughout the 12-month vision plan. Sign up for the events on [www.greatisland.org](#).

Discovery Tour

Explore Great Island through the lens of architecture, water, and ecology.

My Field Chart

Many animals and plants live on Great Island. Use the different posters to find out which habitats they live in. Can you find them all? Put a sticker in each circle if you find the plant or animal on the poster.

Chart Key

Put a sticker from each habitat station next to its name here.

☐ Coastal Forest





















☐ Tidal Marsh

☐ Mudflat

☐ Meadow

☐ Rocky Shore

Date: _____

| | | | |
|---|--|---|---|
|  Sea Star |  Whitefooted Mouse |  Smooth Cordgrass |  Barnacles |
|  Mummichog |  Mud Snail |  Soft-Shell Clam |  Tern |
|  Downy Woodpecker |  Rockweed |  Grasshopper |  Bald Eagle |
|  White Oak |  Kingfisher |  Blue Crab |  Milkweed |
|  Turkey |  Fiddler Crab |  Great Egret |  Great Horned Owl |

Scavenger Hunt

How many things can you find on Great Island?

☐ Hawk

☐ Shell

☐ Squirrel

☐ Oak tree

☐ Bee

☐ Mushroom

☐ Moss

☐ Acorn

☐ Log

☐ Fern

☐ Butterfly

☐ Maple tree

☐ Dragonfly

☐ Ivy

☐ Boat

☐ Seagull

☐ Pinecone

☐ Crab

☐ Pine tree

☐ Seaweed

☐ Heron or Egret

☐ House


☐ Duck

What would you add to this scavenger hunt?

☐ _____ ☐ _____ ☐ _____

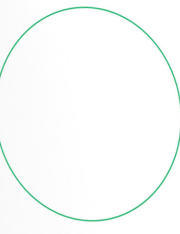
Soundscape Map

Sit down and close your eyes. Listen to the sounds around you. Map out everything you hear! Use lines, arrows, and words to describe the sounds you hear.



Zoom In, Zoom Out

Find an object outside (example: acorn, plant, shell, tree, pinecone). Draw it up close to zoom in on interesting details, and then draw it from far away to get the big-picture view.



Zoom in

Zoom out

My Great Island Passport

Name _____

Date _____

Age _____

Field Guide

The Great Island Vision Plan identity is based on the five major ecological habitats found on the island. We created a brochure “field guide” to highlight each habitat and emphasize the incredible biodiversity of this landscape.



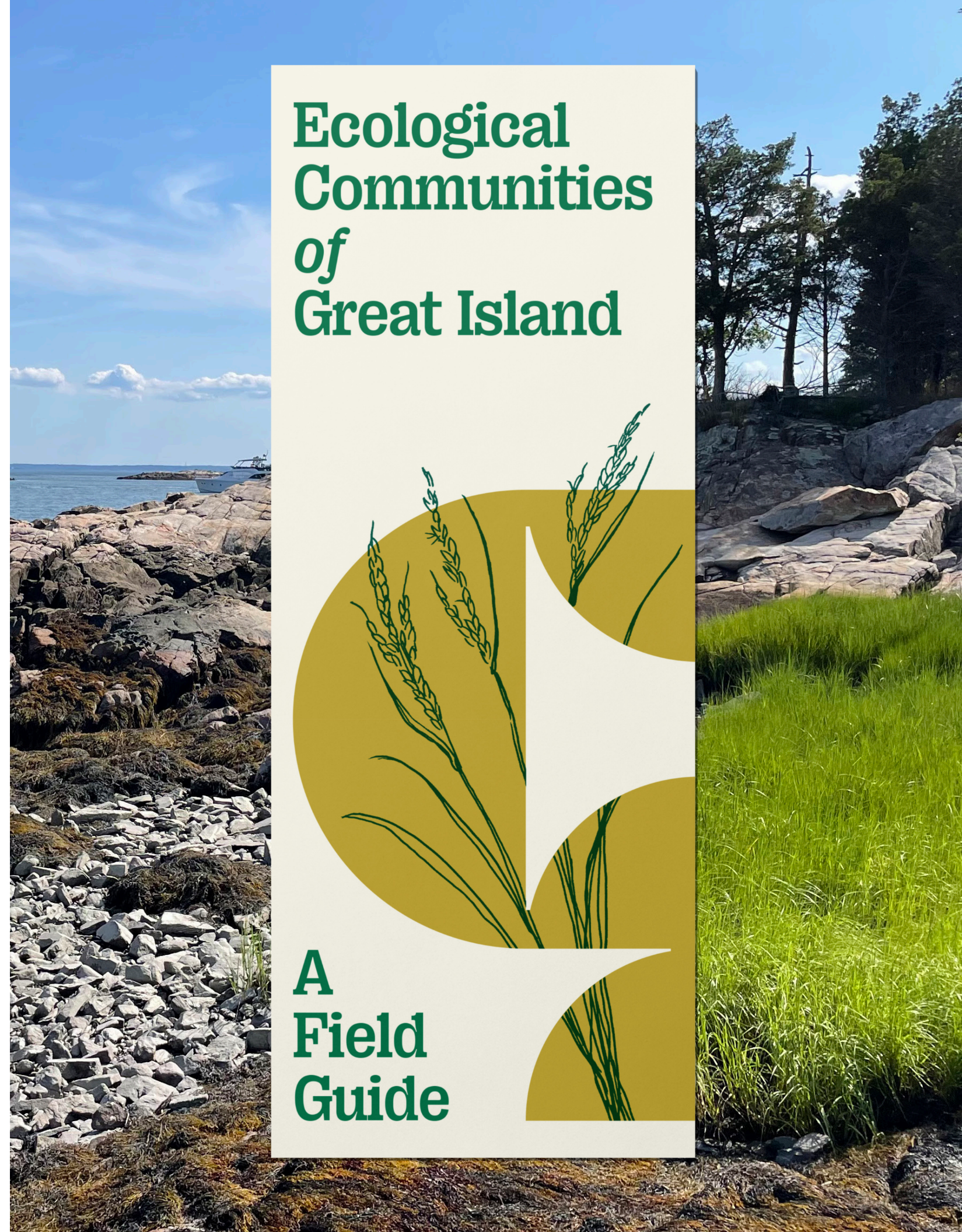
The resulting mark, a distinctive “G”, is composed of five forms, each representing a major ecological zone.

The brochure was used as a resource at community workshops throughout the year, and made available for download online.

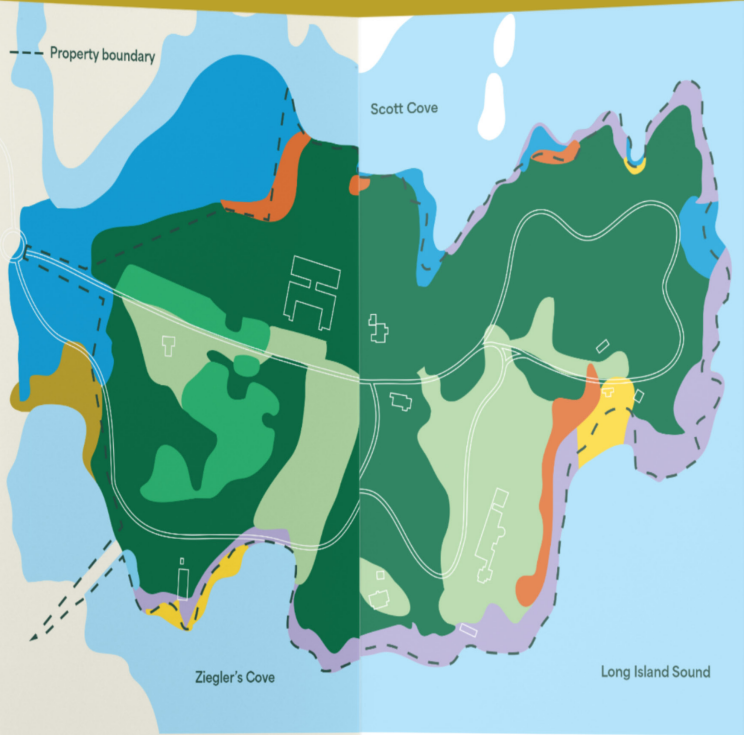
We worked with ecologists to develop the text and created dozens of custom, hand-drawn illustrations.

Ecological Communities *of* Great Island

**A
Field
Guide**



Ecological Communities of Great Island



- ECOLOGICAL COMMUNITIES
- Maritime Woodland
 - Coastal Shrubland
 - Intertidal Mudflat
 - Tidal Wetland
 - Pasture or Hayfield
 - Managed Open Space & Garden
 - Beach
 - Rocky Intertidal Shore

Cover: Smooth Cordgrass (*Spartina alterniflora*).

INTRODUCTION

Great Island is a unique ecological microcosm of southwest coastal Connecticut. The limited development and naturalization of the land over the last 100 years affords habitats of great local, regional, and global ecological importance. A commitment to protecting and enhancing these habitats is critical to ensuring a vibrant and living landscape for years to come.

This guide was developed as part of the Great Island Vision Plan. To learn more, visit www.greatisland.darienct.gov.

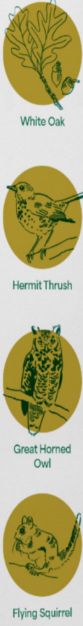
Maritime Woodland ●



The Maritime Woodland community occupies the largest total area across Great Island. This community is characterized by a predominantly closed tree canopy, moderate shrub and groundcover, and undisturbed leaf litter.

Common tree species in the **Maritime Woodland** community include **oaks** (*Quercus* spp.), hickories (*Carya* spp.), and maples (*Acer* spp.). The understory is populated by both native and nonnative species. Native species include blueberry and huckleberry (*Vaccinium* spp. *Gaylussacia* spp.), catbrier (*Smilax rotundifolia*), mountain laurel (*Kalmia latifolia*), grasses (*Poa* spp.) and sedges (*Carex* spp.). Non-native invasive species include Japanese barberry (*Berberis thunbergii*), European swallow-wort (*Cynanchum rossicum*), and Japanese stiltgrass (*Microstigium vimineum*).

The variability of type and density of species across Great Island provides a wide range of habitats for a diverse assemblage of animal species. The minimally disturbed leaf litter and ground cover allows for healthy soil development and nutrient cycling as well as nesting and forage for species such as white-tail deer (*Odocoileus virginianus*) and turkey (*Meleagris gallopavo*). Consolidated tracts of unfragmented woodland offer improved nesting opportunities for interior forest species, notably birds like bald eagle (*Haliaeetus leucocephalus*), **hermit thrush** (*Catharus guttatus*) and scarlet tanager (*Piranga olivacea*). Tree cavities provide nesting and refuge opportunities for species including **great horned owl** (*Bubo virginianus*), downy woodpecker (*Dryobates pubescens*), and **flying squirrel** (*Glaucomys volans*).



Tidal Wetlands ●



Along sheltered areas of the coastline are several Tidal Wetlands. These communities have developed in areas of naturally-accumulated sediment and organic matter, and face a twice-daily tidal regime of brackish water.

Tidal Low Marsh is characterized by diurnal inundation and occurs between daily mean low water and mean high water. Tidal Low Marsh is vegetated with **smooth cordgrass** (*Spartina alterniflora*) and peat mat, embedded with ribbed mussels (*Geukensia demissa*), and supporting crustaceans such as fiddler crabs (*Uca* spp.).

Tidal High Marsh is characterized by diurnal saturation and less frequent inundation. These higher elevation marsh areas are vegetated by shorter forms of smooth cordgrass, saltmarsh hay (*Spartina patens*), blackgrass (*Juncus gerardi*), and **sea lavender** (*Limonium carolinianum*).

Phragmites-dominant Tidal Wetlands form monocultural communities of common reed (*Phragmites australis*). Their monoculture nature significantly reduces plant and animal diversity.

Tidal Wetland-dependent species such as salt marsh sparrow (*Ammodramus caudacutus*) and clapper rail (*Rallus crepitans*) rely on the native grasses and sedges and are suited to this community. Tidal Wetlands are important nursery habitat for small fish such as **killifish** (*Fundulus* spp.) and sheepshead minnow (*Cyprinodon variegatus*) which feed on algae and invertebrates. They also provide important foraging habitats for birds such as snowy egret (*Egretta thula*) and **black-crowned night heron** (*Nycticorax nycticorax*).



Intertidal Mudflat ●



Although only a small area of Intertidal Mudflat is mapped immediately on the site, there are extensive areas of this community to the north and west of Great Island.

Intertidal Mudflats, and the organisms they support, are exposed to intense heat and the drying effects of the sun and air during low tide and covered with water during high tide. The fine sediments settle out in the low-energy, low-oxygen conditions of this environment. Bacteria are plentiful in the mud, helping to break down plant material and contaminants from runoff.

Formed in the protected coves and at deltas of coastal rivers, Intertidal Mudflats are an important habitat for a variety of small invertebrates including arthropods (*Orchestia* spp., *Littorophiloscia* spp.), mollusks like soft-shell clams (*Mya arenaria*), and worms (*Glycera* spp.). Invertebrates filter and feed on the microorganisms and are a vital part of the local food chain.

Many species of larger crustaceans like **blue crab** (*Callinectes sapidus*), fish like **alewife** (*Alosa pseudoharengus*) and blueback herring (*Alosa aestivalis*) and waterfowl like **great egret** (*Ardea alba*), great blue heron (*Ardea herodias*) and **belted kingfisher** (*Megasceryle alcyon*) rely on fish and invertebrate species or their predators for food.



Grasslands ●



Great Island's past as a horse farm is most apparent from the Pasture and Hayfield communities, which are actively maintained either as fenced paddocks (Pastures) or semi-annually mowed fields (Hayfields).

Pastures consist of well-drained soils vegetated with forage grasses including fescues (*Festuca* spp.), perennial **rye grasses** (*Lolium* spp.), bluegrasses (*Poa* spp.), and timothy (*Phleum pratense*), as well as forbes such as alfalfa (*Medicago* spp.), and clover (*Trifolium* spp.). Many of these species are native cultivars or non-native, naturalized species.

Hayfield are similar to Pastures but are typically mowed semi-annually to promote and maintain herbaceous cover and discourage woody growth. On Great Island the largest area of Hayfield appears to have transitioned from forage grasses (e.g., fescues, rye grass and timothy) to a wildflower meadow including black-eyed Susan (*Rudbeckia hirta*), **milkweed** (*Asclepias* spp.), mullein (*Verbascum thapsus*) and thistle (*Cirsium* spp.).

The diversity and density of plant species in Hayfield communities is important in supporting wildlife species including **whitefooted mouse** (*Peromyscus leucopus*), eastern garter snake (*Thamnophis sirtalis sirtalis*), turkey (*Meleagris gallopavo*), and American woodcock (*Scolopax minor*).



Shoreline ●



Most of Great Island's coastline is comprised of Rocky Intertidal Shore, shaped by glaciation and maintained by high-energy coastal processes. This area is a hostile yet highly productive and ecologically-rich environment.

The **Rocky Intertidal Shore** supports a wide variety of species adapted to survive in harsh, variable conditions. Species such as barnacles (*Semibalanus balanoides*), mussels (*Mytilus edulis*), snails (*Littorina* spp.), **sea stars** (*Asterias forbesi*), seaweeds (*Ulva lactuca*), and rockweeds (*Fucus disticus*) are common. The diversity of microhabitats (tide pools, crevices, and overhangs) supports various life forms, from small invertebrates to algae. These areas serve as refuge for many species, providing shelter and food resources.

Sheltered within the rocky shoreline, sand, gravel and shell **Beaches** dot the perimeter of Great Island. The main and largest Beach area consists of a sand beach protected by a manmade jetty. This protected embayment allows for finer grained sand to remain despite the high energy from Long Island Sound. By contrast, the other beach areas consist of coarser sand, gravel, stone and/or shell, sorted by the degree to which the areas are subjected to coastal erosive forces.

Beach areas provide habitat for intertidal bivalves such as **soft-shell clams** (*Mya arenaria*), gastropods such as periwinkle snails (*Littorina littorea*), arthropods like **Atlantic horseshoe crabs** (*Limulus polyphemus*), and crustaceans such as Atlantic sand crab (*Emerita talpoida*). Assemblages of species such as these provide forage for various shorebirds, gulls, **terns** and larger crabs and snails.



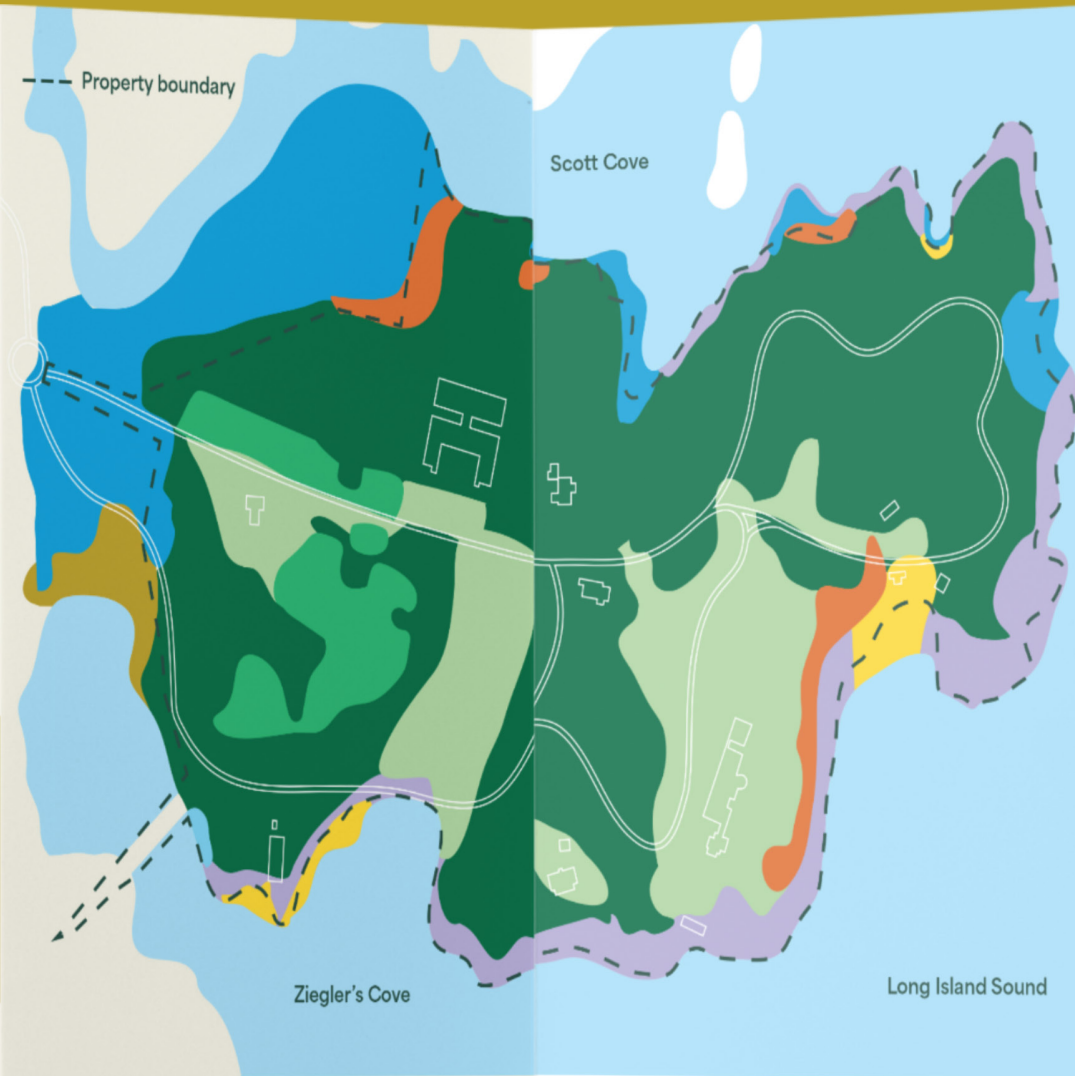
LEARN MORE Historically, Great Island was cleared for pasture and farmland. Over the last 100 years some of these areas were left to return to their natural state. Field studies conducted in Spring and Fall 2024 characterized the ecological communities present on

Great Island today. To learn more about all of the ecologies identified, please visit www.greatisland.darienct.gov/field-guides or scan the QR code at right.



Ecological Communities of Great Island

A Field Guide



ECOLOGICAL COMMUNITIES

- Maritime Woodland
- Coastal Shrubland
- Intertidal Mudflat
- Tidal Wetland
- Pasture or Hayfield
- Managed Open Space & Garden
- Beach
- Rocky Intertidal Shore

Cover: Smooth Cordgrass (*Spartina alterniflora*).

INTRODUCTION

Great Island is a unique ecological microcosm of southwest coastal Connecticut. The limited development and naturalization of the land over the last 100 years affords habitats of great local, regional, and global ecological importance. A commitment to protecting and enhancing these habitats is critical to ensuring a vibrant and living landscape for years to come.

This guide was developed as part of the Great Island Vision Plan. To learn more, visit www.greatisland.darienct.gov.

Maritime Woodland ●



The Maritime Woodland community occupies the largest total area across Great Island. This community is characterized by a predominantly closed tree canopy, moderate shrub and groundcover, and undisturbed leaf litter.

Common tree species in the **Maritime Woodland** community include **oaks** (*Quercus* spp.), hickories (*Carya* spp.), and maples (*Acer* spp.). The understory is populated by both native and nonnative species. Native species include blueberry and huckleberry (*Vaccinium* spp. *Gaylussacia* spp.), catbrier (*Smilax rotundifolia*), mountain laurel (*Kalmia latifolia*), grasses (*Poa* spp.) and sedges (*Carex* spp.). Non-native invasive species include Japanese barberry (*Berberis thunbergii*), European swallow-wort (*Cynanchum rossicum*), and Japanese stiltgrass (*Microstigium vimineum*).

The variability of type and density of species across Great Island provides a wide range of habitats for a diverse assemblage of animal species. The minimally disturbed leaf litter and ground cover allows for healthy soil development and nutrient cycling as well as nesting and forage for species such as white-tail deer (*Odocoileus virginianus*) and turkey (*Meleagris gallopavo*). Consolidated tracts of unfragmented woodland offer improved nesting opportunities for interior forest species, notably birds like bald eagle (*Haliaeetus leucocephalus*), **hermit thrush** (*Catharus guttatus*) and scarlet tanager (*Piranga olivacea*). Tree cavities provide nesting and refuge opportunities for species including **great horned owl** (*Bubo virginianus*), downy woodpecker (*Dryobates pubescens*), and **flying squirrel** (*Glaucomys volans*).



White Oak



Hermit Thrush



Great Horned Owl



Flying Squirrel

Tidal Wetlands



Along sheltered areas of the coastline are several Tidal Wetlands. These communities have developed in areas of naturally-accumulated sediment and organic matter, and face a twice-daily tidal regime of brackish water.

Tidal Low Marsh is characterized by diurnal inundation and occurs between daily mean low water and mean high water. Tidal Low Marsh is vegetated with **smooth cordgrass** (*Spartina alterniflora*) and peat mat, embedded with ribbed mussels (*Geukensia demissa*), and supporting crustaceans such as fiddler crabs (*Uca* spp.).



Smooth Cordgrass

Tidal High Marsh is characterized by diurnal saturation and less frequent inundation. These higher elevation marsh areas are vegetated by shorter forms of smooth cordgrass, saltmarsh hay (*Spartina patens*), blackgrass (*Juncus gerardii*), and **sea lavender** (*Limonium carolinianum*).



Sea Lavender

Phragmites-dominant Tidal Wetlands form monocultural communities of common reed (*Phragmites australis*). Their monoculture nature significantly reduces plant and animal diversity.

Tidal Wetland-dependent species such as salt marsh sparrow (*Ammodramus caudacutus*) and clapper rail (*Rallus crepitans*) rely on the native grasses and sedges and are suited to this community. Tidal Wetlands are important nursery habitat for small fish such as **killifish** (*Fundulus* spp.) and sheepshead minnow (*Cyprinodon variegatus*) which feed on algae and invertebrates. They also provide important foraging habitats for birds such as snowy egret (*Egretta thula*) and **black-crowned night heron** (*Nycticorax nycticorax*).



Striped Killifish



Black-Crowned Night Heron

Intertidal Mudflat



Although only a small area of Intertidal Mudflat is mapped immediately on the site, there are extensive areas of this community to the north and west of Great Island.

Intertidal Mudflats, and the organisms they support, are exposed to intense heat and the drying effects of the sun and air during low tide and covered with water during high tide. The fine sediments settle out in the low-energy, low-oxygen conditions of this environment. Bacteria are plentiful in the mud, helping to break down plant material and contaminants from runoff.

Formed in the protected coves and at deltas of coastal rivers, Intertidal Mudflats are an important habitat for a variety of small invertebrates including arthropods (*Orchestia* spp., *Littorophiloscia* spp.), mollusks like soft-shell clams (*Mya arenaria*), and worms (*Glycera* spp.). Invertebrates filter and feed on the microorganisms and are a vital part of the local food chain.

Many species of larger crustaceans like **blue crab** (*Callinectes sapidus*), fish like **alewife** (*Alosa pseudoharengus*) and blueback herring (*Alosa aestivalis*) and waterfowl like **great egret** (*Ardea alba*), great blue heron (*Ardea herodias*) and **belted kingfisher** (*Megasceryle alcyon*) rely on fish and invertebrate species or their predators for food.



Alewife



Blue Crab



Great Egret



Belted Kingfisher

LEARN MORE Historically, Great Island was cleared for pasture and farmland. Over the last 100 years some of these areas were left to return to their natural state. Field studies conducted in Spring and Fall 2024 characterized the ecological communities present on

Grasslands



Great Island's past as a horse farm is most apparent from the Pasture and Hayfield communities, which are actively maintained either as fenced paddocks (Pastures) or semi-annually mowed fields (Hayfields).

Pastures consist of well-drained soils vegetated with forage grasses including fescues (*Festuca* spp.), perennial **rye grasses** (*Lolium* spp.), bluegrasses (*Poa* spp.), and timothy (*Phleum pratense*), as well as forbes such as alfalfa (*Medicago* spp.), and clover (*Trifolium* spp.). Many of these species are native cultivars or non-native, naturalized species.



English Ryegrass

Hayfield are similar to Pastures but are typically mowed semi-annually to promote and maintain herbaceous cover and discourage woody growth. On Great Island the largest area of Hayfield appears to have transitioned from forage grasses (e.g. fescues, rye grass and timothy) to a wildflower meadow including black-eyed Susan (*Rudbeckia hirta*), **milkweed** (*Asclepias* spp.), mullein (*Verbascum thapsus*) and thistle (*Cirsium* spp.).



Milkweed

The diversity and density of plant species in Hayfield communities is important in supporting wildlife species including **whitefooted mouse** (*Peromyscus leucopus*), eastern garter snake (*Thamnophis sirtalis sirtalis*), turkey (*Meleagris gallopavo*), and American woodcock (*Scolopax minor*).



Whitefooted Mouse

Great Island today. To learn more about all of the ecologies identified, please visit www.greatisland.darienct.gov/field-guides or scan the QR code at right.



Shoreline



Most of Great Island's coastline is comprised of Rocky Intertidal Shore, shaped by glaciation and maintained by high-energy coastal processes. This area is a hostile yet highly productive and ecologically-rich environment.

The **Rocky Intertidal Shore** supports a wide variety of species adapted to survive in harsh, variable conditions. Species such as barnacles (*Semibalanus balanoides*), mussels (*Mytilus edulis*), snails (*Littorina* spp.), **sea stars** (*Asterias forbesi*), seaweeds (*Ulva lactuca*), and rockweeds (*Fucus disticus*) are common. The diversity of microhabitats (tide pools, crevices, and overhangs) supports various life forms, from small invertebrates to algae. These areas serve as refuge for many species, providing shelter and food resources.



Sea Star

Sheltered within the rocky shoreline, sand, gravel and shell **Beaches** dot the perimeter of Great Island. The main and largest Beach area consists of a sand beach protected by a manmade jetty. This protected embayment allows for finer grained sand to remain despite the high energy from Long Island Sound. By contrast, the other beach areas consist of coarser sand, gravel, stone and/or shell, sorted by the degree to which the areas are subjected to coastal erosive forces.



Soft-Shell Clam

Beach areas provide habitat for intertidal bivalves such as **soft-shell clams** (*Mya arenaria*), gastropods such as periwinkle snails (*Littorina littorea*), arthropods like **Atlantic horseshoe crabs** (*Limulus polyphemus*), and crustaceans such as Atlantic sand crab (*Emerita talpoida*). Assemblages of species such as these provide forage for various shorebirds, gulls, **terns** and larger crabs and snails.



Horseshoe Crab



Common Tern

Thank you!



Hermit Thrush



Striped Killifish



Whitefooted Mouse