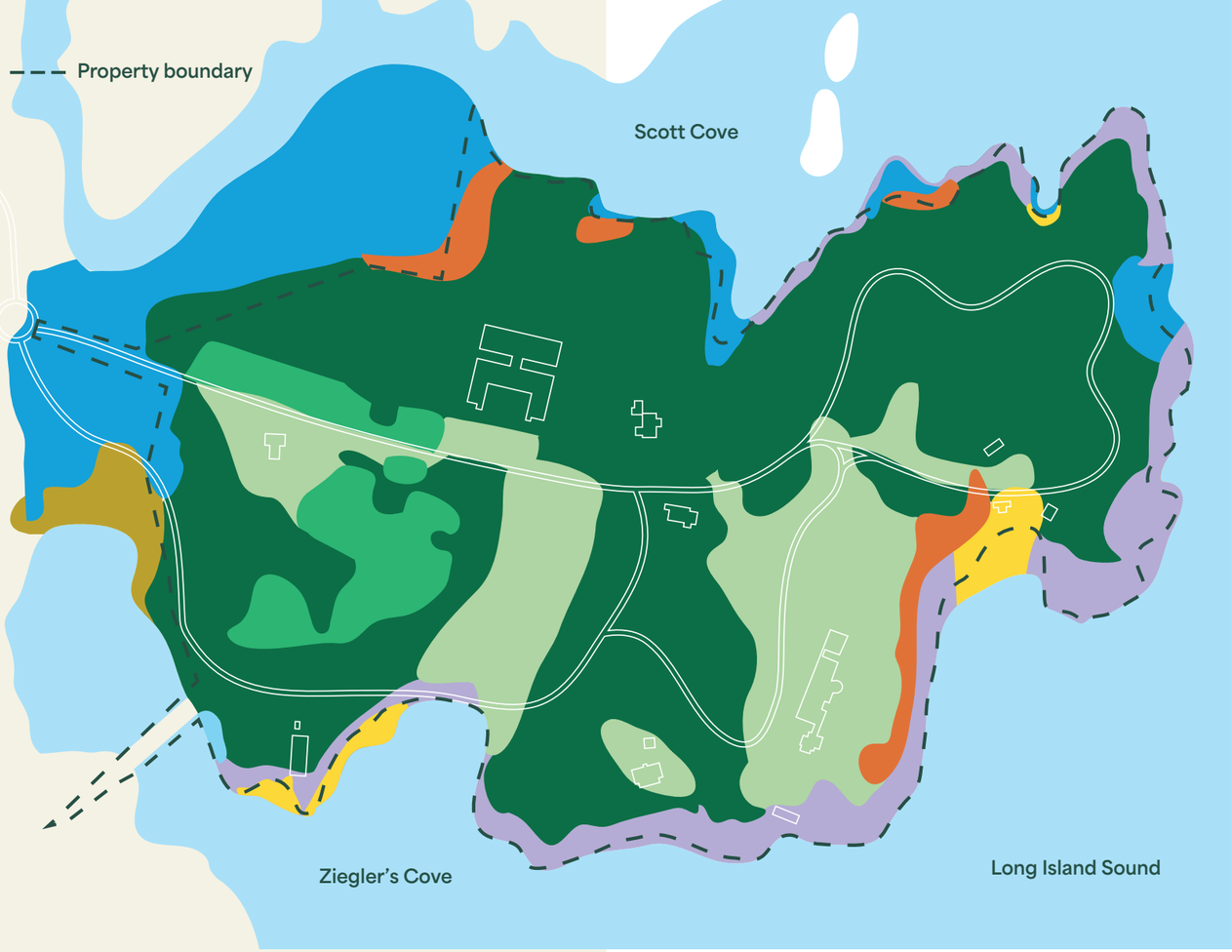
Ecological Communities *of* Great Island

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** (*Megaceryle alcyon*) rely on fish and invertebrate species or their predators for food.

Alewife

Blue Crab

Great Egret

Belted Kingfisher

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 (*Trifolim* 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 (*Circium* 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

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 (*Mytilis 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 lottorea*), 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

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.