04

natural resourcesnext

Preserve Kiawah's greatest natural assets and habitat.

Natural Resources

Considers coastal resources, slope characteristics, prime agricultural and forest land, plant and animal habitats, parks and recreation areas, scenic views and sites, wetlands, and soil types.

Big Ideas

Live With Nature

Objectives

Champion the Live with Nature approach

Develop tools to encourage environmental stewardship

Maintain and expand public environmental education and outreach programs

Overview

Kiawah Island, spanning over 4,500 acres of vibrant tidal salt marsh, 10 miles of pristine beachfront, 365 acres of tranquil water surfaces, lush shrub thickets, and expansive maritime forests, stands as a testament to the community's dedication to preserving this extraordinary environment. With 345 acres of conserved barrier island habitat, the island underscores a steadfast commitment to sustainability.

The guiding principle, Live with Nature, embodies a vision where human presence harmonizes seamlessly with Kiawah's dynamic ecosystems. This philosophy ensures that the island landscapes remain resilient and thriving, even in the face of pressure from development and rising sea levels.

Live With Nature

Kiawah Island has always embraced the balance between development and preserving natural landscapes, a commitment dating back to the community's inception in 1974. As the island approaches full development, the focus has naturally evolved from designing with nature to living harmoniously within the established natural environment. This philosophy recognizes that residents are stewards of a unique ecosystem that includes maritime forests, beach, dunes, wetlands, and diverse wildlife habitats.

The island's commitment to environmental stewardship manifests in several key ways. The commitment to wildlife corridors that allow native species, from bobcats to loggerhead turtles, to thrive alongside human residents. These corridors are protected and maintained through collaborative efforts between the Town and the Kiawah Conservancy.

Water management plays a crucial role in live with nature on Kiawah. The island's sophisticated drainage systems and pond network are designed to work with natural water flow patterns, helping to prevent erosion while providing essential habitat for wildlife. Monitoring of water quality ensures these systems continue to support both human needs and environmental health.

The Town's comprehensive landscape and tree ordinance represents another vital component of this philosophy. These standards aim to consistently preserve and enhance Kiawah's natural environment and protect significant trees and forests for present and future generations. The ordinance introduces regulations for tree removal, protection, and mitigation, with special emphasis on specimen trees and grand trees. A dedicated Landscape and Tree Preservation Board reviews and approves tree preservation plans and handles special circumstances regarding tree removal.

Educational initiatives and community programs help residents understand and participate in environmental stewardship. These programs include wildlife education, native plant workshops, and citizen science projects that monitor local species populations. Such engagement helps create a community-wide understanding of how daily decisions impact the island's ecosystem.

During sea turtle nesting season, regulated beachfront lighting prevents hatchling disorientation. The use of amber LED lights and specialized fixtures shows how simple adaptations can protect wildlife.

Using native species in landscaping is strongly encouraged, not just for aesthetic purposes but to support local biodiversity and maintain the island's ecological balance. Native plants require less irrigation and maintenance while providing essential habitat and food sources for local wildlife.

Environmental adaptability is integrated into the island's living with nature approach. Natural systems like maritime forests and dunes serve as critical infrastructure that helps protect the island from storms and changing coastal conditions. This recognition influences decisions about infrastructure maintenance and development.

By implementing these comprehensive measures, Kiawah Island continues to ensure that its human community coexists harmoniously with the island's wildlife and natural beauty. This approach recognizes that successful stewardship requires ongoing adaptation and commitment from all community members to maintain the island's unique character and ecological integrity for future generations.

Environmental Stewardship: Conservation Initiatives and Community Participation

Kiawah Island implements targeted programs to preserve natural resources and protect wildlife across its diverse ecosystems:

- **Marsh Management:** Monitoring and preserving our expansive salt marshes is critical in protecting against storm surges and providing habitat for diverse species.
- **Beach and Dune System Protection:** Implementing sophisticated erosion control and dune restoration projects to safeguard 10 miles of beachfront, ensuring it remains a natural barrier against rising sea levels and extreme weather.
- **Natural Environment Preservation:** Maintaining comprehensive landscape and tree protection ordinances to preserve and enhance Kiawah's natural character, with special emphasis on specimen trees and grand trees.
- **Wildlife Tracking and Research:** GPS technology and banding programs monitor the health and movement of local species, including bobcats, alligators and sea turtles, to better understand and protect their habitats.
- **Eco-Friendly Practices:** Encourage native plants in landscaping to reduce water consumption and support local wildlife, and promote sustainable building practices that minimize environmental impact.
- **Grow Native Initiative:** Supporting biodiversity through promoting and preserving native plant species throughout the island, creating sustainable habitats for local wildlife.
- **Wildlife Protection Programs:** Implementing specialized programs like Turtle Patrol, Shorebird Stewardship, Dolphin Strandfeeding and the Bobcat Guardian Program to safeguard the island's diverse wildlife populations
- **Flood Mitigation and Sea Level Rise Adaptation:** Comprehensive studies are conducted to address the challenges posed by rising sea levels and increased flooding. These studies inform our proactive measures to protect the island's infrastructure and natural habitats.

Public engagement is at the heart of our conservation mission. The Town of Kiawah Island offers numerous ways to connect deeply with our natural heritage. Visit the Nature Center at Night Heron Park to learn about our local wildlife. Participate in our Turtle Patrol to help protect sea turtle nests, join the Shorebird Stewardship program to safeguard critical bird habitats, and become part of the Bobcat Guardian Program to monitor and support our bobcat population. Additionally, witness the unique dolphin strand feeding phenomenon.

Our virtual resources and interactive initiatives ensure everyone stays informed and involved, fostering a profound connection with Kiawah Island's unique ecosystem.

Grow Native Plant Database

Kiawah Island is dedicated to educating property owners about the island's natural resources. The Grow Native Plant Database is an invaluable tool for residents and property owners, offering detailed information on native plant species that foster a healthy and sustainable habitat unique to Kiawah Island. This resource provides guidelines on selecting native plants that enhance biodiversity and support local wildlife.

Additionally, the Kiawah Conservancy contributes to the database by offering practical advice on sustainable landscaping practices. They provide resources for creating rain gardens designed to capture and filter stormwater runoff, promote water conservation, and reduce erosion. These gardens help maintain the island's natural beauty and ecological balance.

For more information, visit kiawahisland.org, where you can explore the wealth of knowledge about Kiawah Island's wildlife, including where to observe specific species, their traits, and feeding habits. This comprehensive resource helps residents and visitors connect deeply with the island's natural beauty.

Wildlife Research and Monitoring

The wildlife of Kiawah Island plays a critical role in the health of the fragile ecosystems cherished by residents and visitors alike. To protect these habitats, Town Biologists must consistently understand and monitor the species on the island.

Bird Research
Kiawah's Bird Research program is a comprehensive initiative to understand and protect the island's diverse avian population.

Town Biologists conduct various projects, with bird banding as a primary research tool. This technique involves capturing birds and attaching unique identifiers, providing crucial insights into different species' health, demographics, and movements.

Key components of the program include:

1. Fall Migration Monitoring: Daily banding from August 15 to November 30 at two locations to study songbirds during migration.
2. Winter Banding: Conducted from December through March, focusing on wintering songbird populations, especially Yellow-rumped Warblers.
3. Painted Bunting Banding: A summer project studying these colorful birds' movements, distribution, and population trends.
4. Marsh Sparrow Banding: This winter project focuses on three species of coastal sparrows and addresses conservation concerns related to habitat loss and sea-level rise.
5. Wilson's Plover Banding: Tracks movements and nesting success of this beach-nesting species.
6. MOTUS Bird Tracking: Two stations on Kiawah Island are part of a larger network that uses radio telemetry to track tagged birds, providing data on migratory routes and movements.

These research efforts contribute valuable data to local and national bird conservation initiatives, helping to protect Kiawah's avian biodiversity.

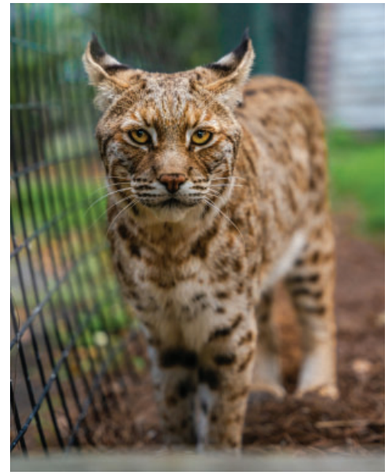
White-tailed Deer

Surveys of white-tailed deer population density on Kiawah Island have been conducted twice yearly since 1997. With the decline of natural predators like bobcats, maintaining the deer population at a target level of 60-80 deer per square mile has become crucial. To address this, a deer harvest program was initiated in 2021. This measure is essential for preventing the disruption of Kiawah Island's vital habitats, which can occur when deer populations exceed sustainable levels.

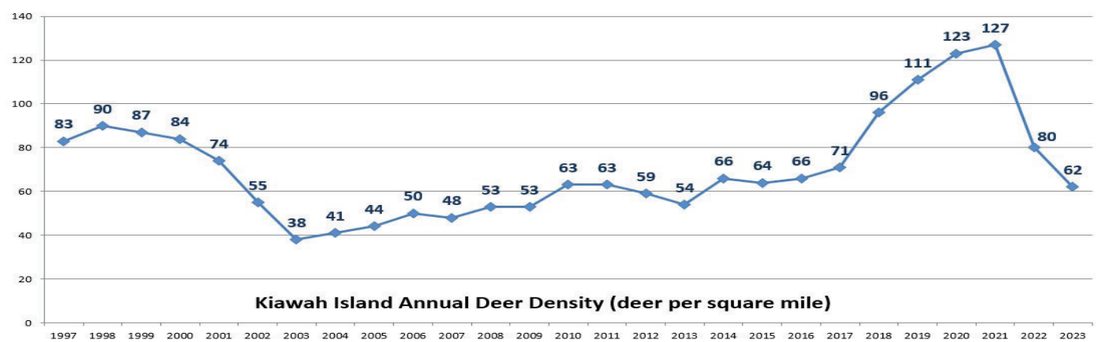
Source: *Town of Kiawah Island*

Bobcats

The Kiawah Bobcat GPS Project is a continuous tracking effort started in 2007 by the Town of Kiawah Island and Kiawah Conservancy. Five juvenile bobcats have GPS collars on them for the 2024 trapping season. This information is used to protect key habitat areas that bobcats are pinpointed in, which specifically include Captain Sam's Spit and the eastern portion of Cougar Island, as well as generally scrub-shrub, forest, and developed areas for hunting and scrub-shrub and dunes



Source: Town of Kiawah Island



Source: "Wildlife Surveys and Monitoring", *Town of Kiawah Island*

for resting. There has been a recent decline of bobcats since 2017 due to second-generation anticoagulant rodenticide poisoning. Public awareness efforts have been made to stop the use of this deadly rodenticide.

American Alligators

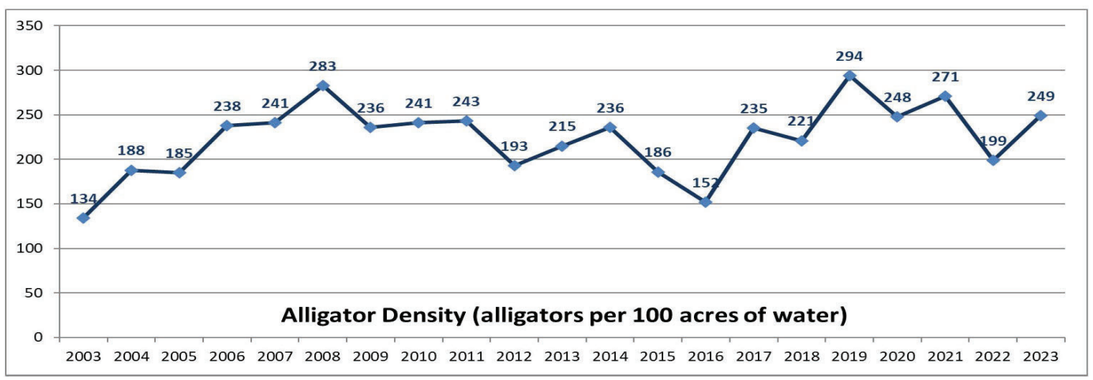
Kiawah Island is home to a thriving population of American Alligators, with estimates suggesting nearly 700 animals inhabiting the island. This significant alligator presence coexists with the island's 2,066 permanent residents and over 20,000 annual visitors, creating a unique environment where human-alligator interactions are commonplace.

Recognizing the importance of maintaining safe coexistence, the Town and the KICA have implemented a comprehensive research program. This initiative aims to better understand alligator behavior and movements, enhancing awareness and safety across the island.

A key component of this program is the annual survey of alligators across most of the island's ponds. These surveys provide crucial population density and distribution data, helping officials make informed decisions about alligator management.

The research not only contributes to local safety measures but also adds valuable information to the broader understanding of alligator ecology in human-populated areas. By closely monitoring the alligator population and studying their patterns, Kiawah Island continues to set an example for responsible wildlife management in residential communities.

Through these efforts, TOKI and KICA strive to ensure that the interaction between people and alligators remains as safe as possible, preserving the island's unique ecological balance while protecting residents and visitors.



Source: "Wildlife Surveys and Monitoring", *Town of Kiawah Island*

Turtle Patrol Program

Kiawah Island is home to an extensive Loggerhead habitat. With over 10 miles of beachfront, it is a vital nesting ground for endangered turtles. The nesting process is especially vulnerable for them; turtles emerge from the Atlantic Ocean each spring to nest.

Kiawah's Turtle Patrol, one of the largest turtle patrol volunteer programs in the United States, has monitored these nests since 1973. The Town of Kiawah Island has supported the group of residents and non-resident volunteers since 1990.

Historically, Kiawah's beaches have been home to 20 to 25 nests per mile, which is among the highest in the state for developed beaches. The highest recorded total for nests was in 2019, when 574 were identified.

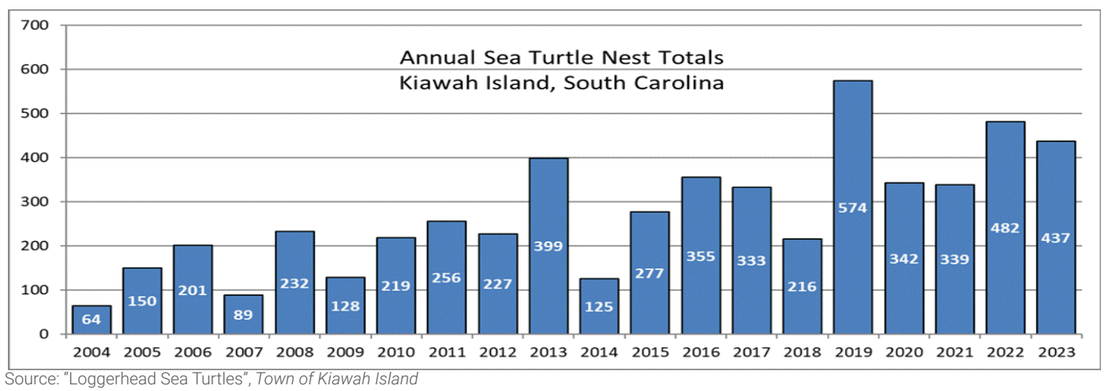
Low-lying nests are relocated to protect against tidal wash over. Volunteers patrol the beach daily during hatching season, monitoring hatchling emergence. Post-hatching, nests are excavated and inventoried. Detailed records of all activities are reported annually to the South Carolina Department of Natural Resources.

Shorebird Stewardship Program

Kiawah Island's beaches serve as critical habitat for thousands of shorebirds throughout the year, providing essential areas for foraging, nesting, and resting during long migrations. To protect these vital species, the Town established the Shorebird Stewardship Program in 2017, addressing the need to minimize disturbance during these critical life activities.

The program operates year-round with targeted seasonal initiatives. During spring (March-May), efforts focus on protecting Red Knots as they make their migration stops. Nesting shorebird protection is from April through July when species raise their young on Kiawah's beaches. Fall and winter (September-February) see increased attention on migrant populations using the island's beaches as stopover points.

Shorebird populations have declined 70% nationally since the 1970s. The program engages beachgoers about habitat needs through trained volunteer stewards, conducts beach patrols, monitors critical areas, and promotes wildlife-friendly practices like leashing dogs and avoiding dunes.



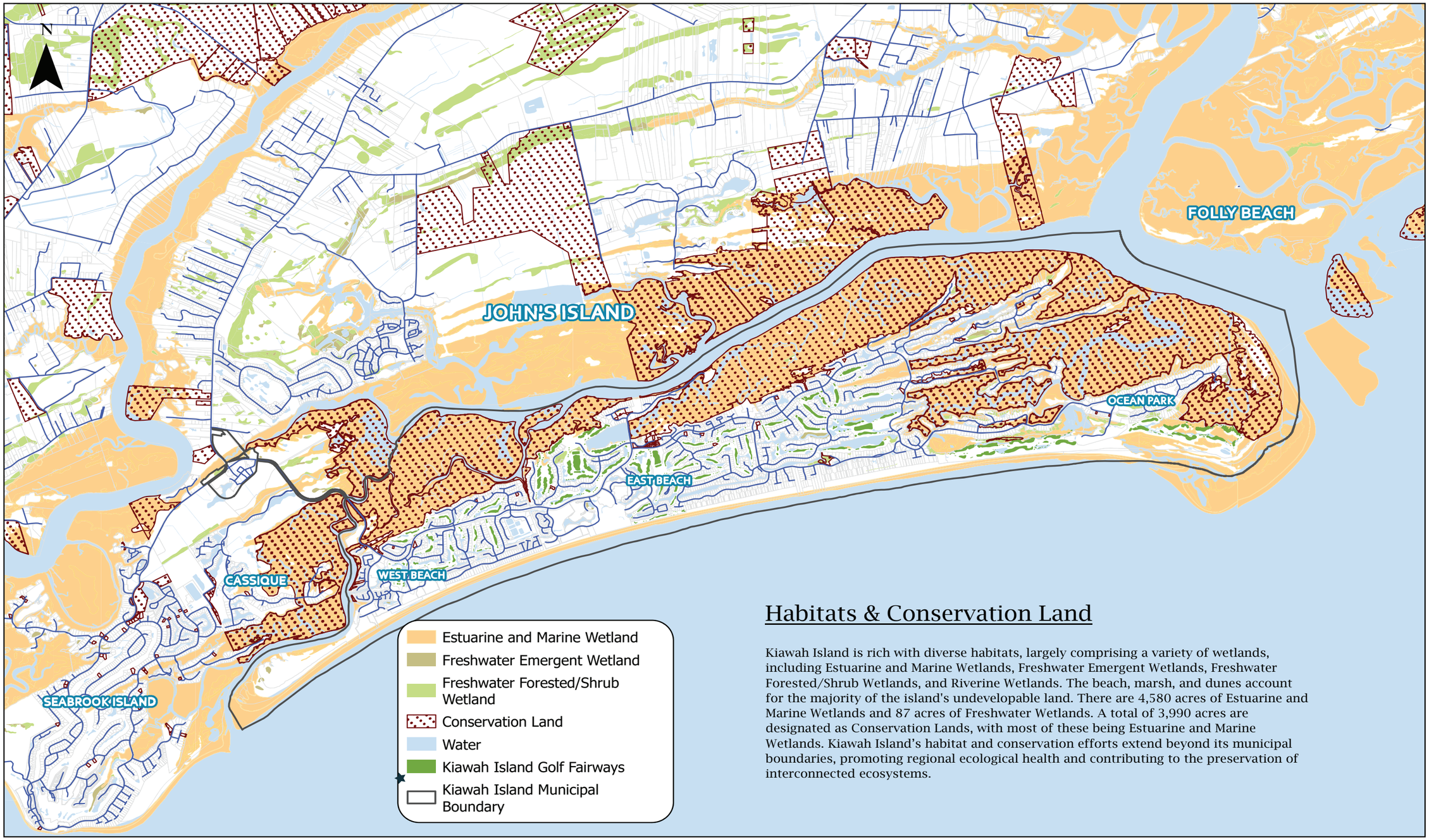
Source: "Loggerhead Sea Turtles", *Town of Kiawah Island*

Dolphin Education Program

Kiawah Island is one of a few locations in the United States where bottlenose dolphins exhibit “strand feeding,” a unique hunting behavior where dolphins work together to herd fish onto shore. The Town partners with the Lowcountry Marine Mammal Network to study and protect this rare behavior through a monitoring and education program.

Through this research initiative, twelve individual dolphins have been identified as regular strand feeders in Kiawah’s waters, with some having sighting histories spanning over 20 years. The program has documented critical behaviors, including mothers teaching their young to strand feed and demonstrating the importance of the inlet as an essential habitat for the Charleston dolphin population.

The program combines scientific monitoring with public education to prevent harassment and maintain appropriate viewing distances, as mandated by the Marine Mammal Protection Act. Trained educators conduct beach monitoring during peak feeding times, engage with visitors, and collect behavioral data. This approach has successfully reduced human interference while advancing our understanding of this specialized feeding strategy and its conservation needs.



Habitats & Conservation Land

Kiawah Island is rich with diverse habitats, largely comprising a variety of wetlands, including Estuarine and Marine Wetlands, Freshwater Emergent Wetlands, Freshwater Forested/Shrub Wetlands, and Riverine Wetlands. The beach, marsh, and dunes account for the majority of the island's undevelopable land. There are 4,580 acres of Estuarine and Marine Wetlands and 87 acres of Freshwater Wetlands. A total of 3,990 acres are designated as Conservation Lands, with most of these being Estuarine and Marine Wetlands. Kiawah Island's habitat and conservation efforts extend beyond its municipal boundaries, promoting regional ecological health and contributing to the preservation of interconnected ecosystems.

Beach Management

Kiawah Island's beach system represents a unique coastal environment along the South Carolina shore, distinguished by its natural accretion pattern rather than erosion. This accretional characteristic is particularly noteworthy as it contrasts with many neighboring coastal areas that struggle with erosion challenges. The beach's growth is facilitated by the Stono Inlet shoals, which function as natural barriers, creating conditions that promote sand accumulation and shoreline expansion. These shoals effectively shelter the eastern end of Kiawah Island from northeast winds and waves, establishing a zone where sand naturally settles and accumulates.

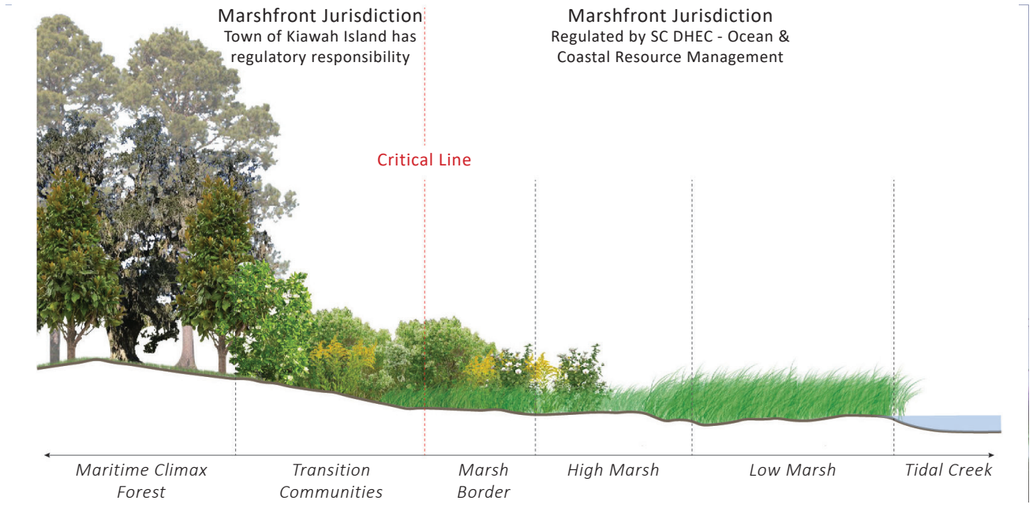
The oceanfront beach and dune system serve multiple vital functions for Kiawah Island. As a critical habitat, they support a diverse ecosystem of plant and animal species, many of which are unique to coastal environments. The dune system protects inland areas against storm surges and extreme weather events, acting as a natural barrier that helps safeguard the island's infrastructure and properties. Additionally, the beach provides recreational opportunities and contributes to the quality of life for residents and visitors alike.

The Town of Kiawah Island's Local Comprehensive Beach Management Plan is a crucial planning and decision-making tool, fulfilling requirements established by the South Carolina Department of Environmental Services - Office of Coastal Resource Management (OCRM) for beachfront municipalities. Since its incorporation in 1988, the Town has maintained an active commitment to beach management planning, beginning with its first plan in 1992. Following a 2006 update, the Town conducted a complete revision in 2012, and the current 2020 plan. The next update will occur in 2030.

Through this management plan, the Town maintains a proactive approach through regular monitoring and strategic restoration projects, primarily executed in partnership with Coastal Science and Engineering. Notable interventions include two major restoration projects on the East End Beach: the 2006 project, which involved the placement of 550,000 cubic yards of sand, and the 2015 project, which utilized 100,000 cubic yards of sand. Both projects addressed erosion concerns near residential areas and the Ocean Course. Following Hurricane Irma's impact, the Town implemented a sand scraping project from 2017 to 2018, successfully rebuilding damaged dunes along the beachfront.

Kiawah Island falls within Phase II of South Carolina's beachfront jurisdictional lines review process, beginning in Spring/Summer 2026. This process is part of the state's ongoing coastal management strategy. The South Carolina Department of Environmental Control's Bureau of Coastal Management (SCDES BCM) establishes and reviews two critical jurisdictional lines - the baseline and the setback line - every seven to ten years, as required by South Carolina Code of Laws §48-39-280. These lines delineate the state's direct permitting authority for activities within the beach/dune system critical area, with the baseline being the more seaward line and the setback line being the landward line.

The jurisdictional lines create a state regulatory framework in which activities such as the construction of habitable structures, pools, erosion control structures, beach renourishment, landscaping, and other developments require review and authorization through SCDES BCM's permitting processes.



Source: *The Comprehensive Marsh Management Plan*

Marsh Ecosystem and Management Plan

Approximately 55 percent of Kiawah Island consists of marshland and water. These ecosystems serve critical functions:

1. Filtering water
2. Absorbing rainwater to slow the flooding effects
3. Providing habitat for diverse species
4. Acting as a protective barrier against storms and flooding

In April 2022, the Town of Kiawah Planning Department initiated the development of a Comprehensive Marsh Management Plan (CMMP), the first document focused solely on marsh management for the Town. Biohabitats and Elko Coastal Consulting assisted in developing the plan, which the Town Council adopted on February 7, 2023.

Several studies on water quality and wetland health have been conducted to monitor the natural environment of Kiawah Island:

- The Kiawah Conservancy completed a watershed and groundwater table study in 2022
- KICA's Lake Management Department tests 26 of the 122 stormwater ponds weekly

Marsh Management Goals

The CMMP establishes four key goals:

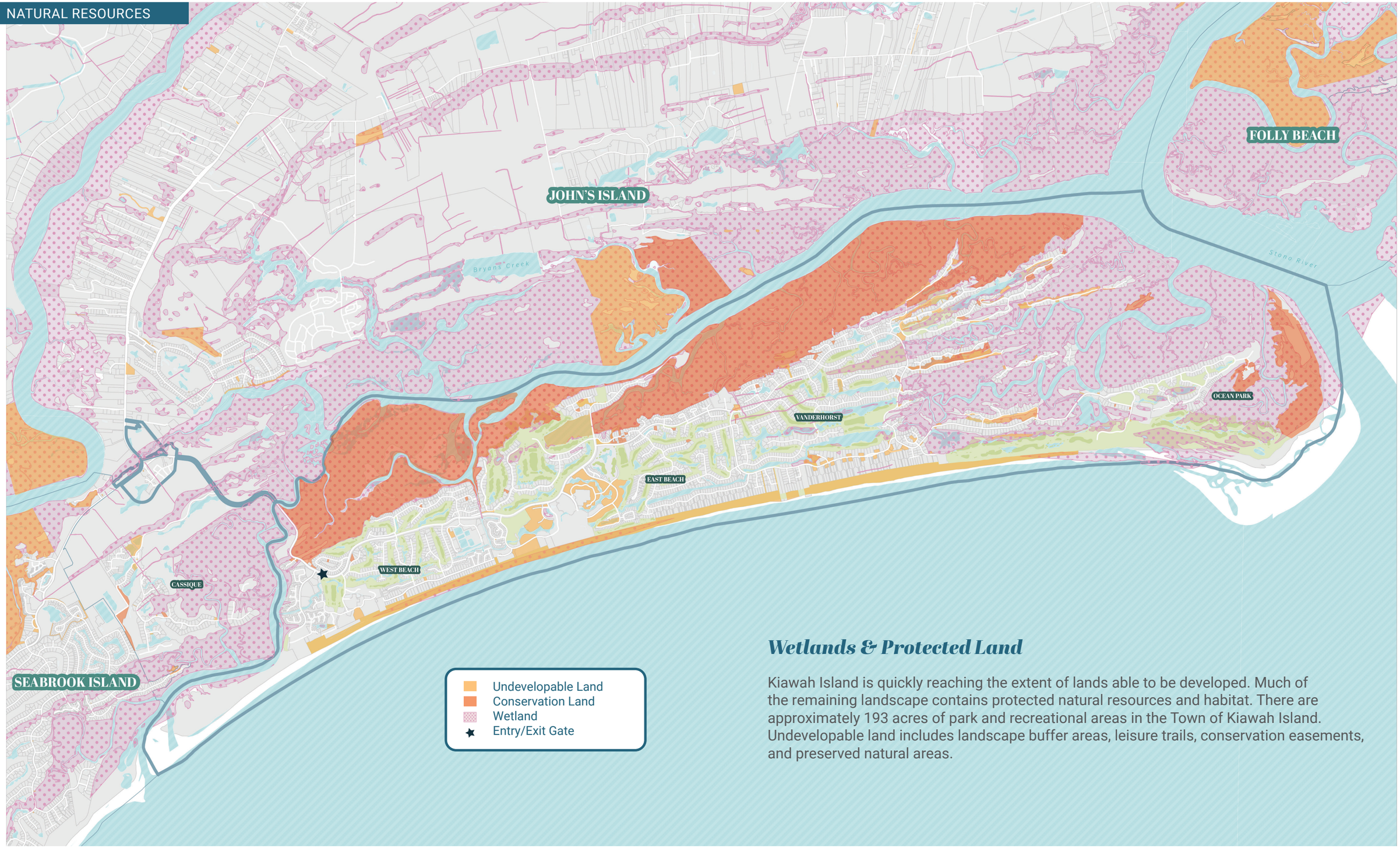
1. MONITOR: Detect changes in wetland vegetation species composition and structure over time
2. PROTECT: Prevent or correct impairments to the marsh through regulations
3. ENGAGE: Educate stakeholders about undesirable marsh changes
4. RESTORE: Manage vulnerable areas and mitigate future issues

Implementation will involve collaboration between the Town, KICA, and the Kiawah Island Conservancy. Potential restoration methods include thin layer placement, prescribed burning, resiliency terracing, and oyster reestablishment.

Community engagement is crucial for the success of these efforts, and informed stewards, through awareness and active participation, play a vital role in marsh preservation.

Key Indicators: UVVR & Shoreline Change

UVVR & SHORELINE EROSION This figure shows two important indicators that are recommended elements of the monitoring plan, the unvegetated to vegetated ratio (UVVR), and current patterns of erosion and accretion. UVVR can be informative about the current trajectory of a marsh. A stable tidal marsh, with intact marsh plains and little deterioration tends to a UVVR of about 0.1. Higher values indicate degradation, usually a result of open water conversion. The other dataset on this figure shows eroding areas in red and newly formed land in yellow.



Wetlands & Protected Land

Kiawah Island is quickly reaching the extent of lands able to be developed. Much of the remaining landscape contains protected natural resources and habitat. There are approximately 193 acres of park and recreational areas in the Town of Kiawah Island. Undevelopable land includes landscape buffer areas, leisure trails, conservation easements, and preserved natural areas.

Captain Sams Spit

Captain Sams Spit, located at the western end of Kiawah Island, is an environmentally sensitive and dynamically changing area that plays a crucial role in the island's coastal ecosystem—Captain Sams Inlet bounds this spit, which is a critical transition zone between Kiawah and Seabrook Islands.

The spit has historically been an area of accretion, acting as a collection site for sand transported by longshore currents from upcoast areas.

The spit's dynamics are heavily influenced by the migration of Captain Sams Inlet. As wave action transports sand westward, it feeds the spit, causing growth into the inlet and forcing it to migrate toward Seabrook Island. This natural process is part of a cyclical pattern that has led to previous inlet relocation projects.

The spit area is of particular environmental importance due to its role as a habitat for various coastal species, including shorebirds, dolphins and sea turtles. The spit's dynamic nature, with its changing shorelines and sandbar formations, provides essential feeding and nesting grounds for these species.

Looking forward, the Coastal Science and Engineering report suggests that another inlet relocation project may be considered within the next five to seven years, highlighting the ongoing management needs of this dynamic area. Continuous monitoring of the spit's evolution is crucial for understanding its changes and planning any necessary interventions.

In conclusion, Captain Sams Spit remains a critical and sensitive environmental area. Its dynamic nature, ecological importance, and role in the broader coastal system of Kiawah and Seabrook Islands underscore the need for ongoing careful management and conservation efforts to maintain its environmental integrity and natural processes.

East Beach

The East End of Kiawah Island represents a critically important and environmentally sensitive area, characterized by its dynamic coastal processes and diverse habitats. This region, encompassing the Lagoon Reach and Stono Inlet Reach, is significantly influenced by shoal bypassing events from Stono Inlet, which play a crucial role in the area's geomorphological evolution and ecological health.

Between November 2022 and October 2023, the Lagoon Reach gained approximately 99,300 cubic yards of sand, while the Stono Inlet Reach experienced a loss of about 42,100 cubic yards. These changes are part of an ongoing large shoal bypassing event that began in 2019, with a shoal containing over 1 million cubic yards of sand currently attaching to the island. This natural process is vital for replenishing beach volumes and maintaining the overall health of the coastal ecosystem.

The East End's environmental significance is further underscored by its marsh habitats and drainage systems. Two flushing channels that opened after Hurricanes Matthew (2016) and Irma (2017) remain active, providing crucial drainage for the east-end marshes. These marshes serve as important habitats for various species and play a key role in the island's ecological balance.

Of particular note is the area's importance for wildlife, especially threatened species like the piping plover. The dynamic nature of the East End, with its changing shorelines and varied habitats, provides essential feeding and nesting grounds for these and other coastal bird species.

The ongoing shoal bypass event is expected to provide sufficient sand volumes to outpace background erosion over the next decade. This natural process is critical for maintaining the beach-dune system, which not only provides storm protection but also supports a diverse ecosystem.

Continuous monitoring and adaptive management of this area are essential. Experts recommend ongoing observation of the 2015 channel location, closure dike, and shoal attachment area. The natural flushing channel between the shoal and outer beach also requires attention, as it may need minor remedial action to ensure proper marsh drainage.

In conclusion, the East End of Kiawah Island is an environmentally sensitive area of paramount importance. Its dynamic coastal processes, diverse habitats, and role in supporting wildlife make it a critical focus for conservation efforts and careful management to ensure its long-term ecological health and resilience.

Source: Coastal Science Engineering, Kiawah Monitoring Report, 2023

natural resources
objectives and strategies

GOAL NR:

Preserve Kiawah's greatest natural assets and habitat.

Objective NR1
Champion the Live with Nature approach.

Strategy NR1.1
Consider ideas to protect natural habitats and corridors essential to the health and integrity of native plant and wildlife populations.

Strategy NR1.2
Consider appropriate strategies to protect the environmental character of sensitive properties.

- Captain Sams Spit and East Beach areas.
- Areas affected by recent significant flooding events.

Objective NR2
Develop tools to encourage environmental stewardship.

Strategy NR2.1
Determine what tools, if any, can be used by the Town to encourage environmental stewardship that aligns with Kiawah's focus on natural resource preservation.

- Engage property owners, and other regimes within Kiawah.

Strategy NR2.2
Define and Promote Environmental Initiatives.

- Become a leader in the implementation of projects and measures to protect, preserve, and improve the Island's natural landscape.
- Identify conservation goals and consider annexation of properties.
- Where appropriate, create regulations to enhance and protect natural resources.
- Increase awareness and utilization of the Town's Grow Native Initiative and database.

Strategy NR2.3
Align goals that represent all of Kiawah's environmental interests.

- Consider implementing relevant portions of the Kiawah Go Green Initiative.
- The Comprehensive Marsh Management Plan
- The Local Comprehensive Beach Management Plan
- Ensure ongoing compliance with the adopted Landscape and Tree Preservation Ordinance, which embodies the "Live with Nature" philosophy.

Strategy NR2.4
Coordinate with Island partners and the Community on issues relating to Natural Resources.

- Collaborate to consistently maintain and enhance all natural resources, of all forms, across Kiawah Island.
- Recognize environmental issues across ecosystems, irrespective of man-made boundaries, and member organizations.
- Consider where, if anywhere, increased protections serve Kiawah's landscape.

Objective NR3
Develop a comprehensive Wildlife Corridor Plan that identifies, protects, and enhances habitat connectivity across Kiawah Island.

Strategy NR3.1
Conduct a detailed analysis of existing wildlife movement patterns and critical habitat areas to identify priority corridors and connectivity gaps. Map key ecological connections and pinch points that require protection or enhancement.

Strategy NR3.2
Create specific guidelines and standards for maintaining and improving wildlife corridors through development requirements, habitat restoration, and strategic land conservation. Include recommendations for corridor width, native vegetation, crossing structures, and buffer zones.

Objective NR4
Protect and enhance Kiawah Island's water resources and critical conservation areas through comprehensive watershed management and strategic land protection initiatives.

Strategy NR4.1
Develop and implement a comprehensive water quality monitoring and protection program for Kiawah Island's water bodies, including the ocean, river, wetlands, and ponds.

Strategy NR4.2
Create and execute a Kiawah River Watershed Management Plan that addresses water quality, habitat protection, and sustainable development practices.

Strategy NR4.3
Identify and prioritize environmentally sensitive lands for potential conservation through purchase or conservation easements, working collaboratively with conservation partners and willing landowners.