Video	Audio
	>>Male Narrator: Georgia's coast has a magnificent natural history. Join us as we follow the sun from its rise over the Atlantic coast to its decent behind the golden marshes of Glynn.
	>>Narrator: The stunning display of the sun rising to give light to a new day on the Atlantic coast is one of the very reasons that so many people choose to live near, and visit often, our Georgia coast.
	As the sun peaks out from the sparkling water, it crosses the sky, illuminating the gentle waves of the Atlantic. It glows over the dunes and sends rays of light through the branches of the live oaks to the floor of the maritime forest. And finally it drops behind the salt marshes, coloring them golden with slanted beams of light. This cycle creates a feeling as though this natural magnificence has been here since the beginning of time. But the Georgia coast was formed recently in geological time. The older barrier islands of Georgia's coast were formed 60 to 80 thousand years ago, but our more eastern lying islands are just 4 to 5 thousand years old. That's very young when compared to the age of our North Georgia landscape, which is over 200 million years old. But the coast is not done forming. In a state of dynamic equilibrium, the Georgia coastline is constantly shifting ruled by the unyielding forces of nature. **Below the sunlit shimmering water lies the ocean floor. Most of it composed of loose sediments of sand, silt and mud. Few organisms can live on such shifting bottoms, which comprise nearly 97% of Georgia's ocean floor. Large communities of bottom-dwelling species congregate only where there are protrudences of hard bottom. These areas are the oases of a watery desert.** **Home to many species of marine fishes and plants, the live-bottom reefs off the coast of Georgia are unique because they are home to both temperate and tropical species. Live-bottom**

	reefs only represent about 2% to 3% of Georgia's ocean floor, but they support entire food chains. From the minuscule invertebrates that live on the rock outcroppings to the mighty sport fish that egg Georgia's anglers on to the endangered loggerhead sea turtle who consider this a good place to find both food and refuge. **Sea turtles are ideally suited for life in the ocean. They have flippers instead of legs and large, hard shells for protection against most predators. While sea turtles spend most of their lives in the ocean, female sea turtles use the beach for nesting. Every summer, female sea turtles to drag their huge bodies onto the very beach on which they themselves were hatched, completing a remarkable circle of life. A sea turtle is not ready to nest until she's 20 to 25 years old. The beach that she hatched on may well be a very different place when she returns.** **Humans have developed a great deal of the Georgia coast. We have quite literally built our dream houses and luxury hotels on shifting sands. Dynamic changes in the shape and size of barrier islands occur constantly, especially along the sides of the islands adjacent to inlets or narrow bodies of water between islands. Generally the southern ends of the islands tend to accrete or build up with deposited sand, while the northern ends are often interspersed with erosion.** **The intertidal beach is wet, and its size is subject to the tidal range and slope of the beach. Georgia's beaches have a very high tidal range, the highest on the Atlantic seaboard, and a gradual slope. So the intertidal beaches of Georgia can extend seaward as much as a quarter of a mile. This strip of ecosystem, subject to much movement by wind and water currents, is highly unstable and therefore a hostile environment for plants and seashore life. The majority of residents are found either in burrows or interspersed among the wet sand grains. The amount of the visiting life, however, can be quite**

	numerous. Visiting shorebirds like the aptly named sandpiper can be seen crowding the beach, feasting on the countless crustaceans and small worms found in and around the sand. **Horseshoe crabs arrive on the beach to spawn during the new or full moon high tide. Males patrol the intertidal beach at the water's edge waiting for a female to emerge from the surf. Arriving females are usually pursued by a number of males all smaller than she is, but eventually one male will win out over the other. The couple will remain together as the female climbs up the beach to the high tide line where she will dig a shallow nest and deposit her eggs. The horseshoe crab has inhabited the earth since before the age of dinosaurs. The name "crab," however, is misleading as the horseshoe crab is actually more closely related to the spider.** **Rows of marsh wrack are often left along the high tide line washed there by waves. Ghost crab burrows can often be seen above the high tide line, but ghost crabs themselves are most easily seen at night while foraging in the marsh wrack. Ghost crabs are omnivorous and will eat other crabs, clams, insects, vegetation and detritus.** **The marsh wrack also becomes a mesh into which windblown sand and seeds are trapped. In this way the marsh wrack plays a vital role in forming the next community of the coastal ecosystem: the dunes.** **It's here that the loggerhead sea turtle digs her nest. In two months, dozens of baby sea turtles will scurry to the ocean only to return a quarter century later. Dunes are a crucial part of the coastal ecosystem, providing protection to the inland communities against the major forces of wind, waves and tidal currents. In the past, humans have had a bad habit of building on the dunes, a practice that has exposed the island to damage from erosion and storms. Dunes are now protected and attempts to restore their prevalence are underway up and down the coast.**

	There are several species of birds for whom the dune system is a critical habitat. Oystercatchers, least terns and royal terns all nest in the dunes of Georgia's barrier islands. All of these species have documented significant declines in the last 20 years. This is attributed to the degradation of our beaches. It's no wonder that humans once disregarded the importance of the primary dune system. Often considered the desert of the beach, the primary dunes offer harsh living conditions because of the salt spray, shifting sand and incessant sun exposure. The plants that have made this community home have developed adaptations similar to desert plants. Many have thick, succulent leaves that store water and a reduced leaf surface to lessen water evaporation. Some plants have deep tap roots, which extend to the water table while other species have interconnected underground stems attempting to secure a future in this unstable environment. The star of the dune community is the well-known and the legislatively protected sea oats. Sea oats are the most important and widely spread grass on the southern coastal dunes. This perennial can grow to a height of 6 feet. Its roots can extend nearly 40 feet below the surface, reaching the upper parts of the water table. The sand that collects around sea oats actually stimulates its growth while helping to build up the dune system. **As in the desert, a number of dune animals are active at night…and live in burrows during the day to avoid the intense heat and light. One that many humans fear is the eastern diamondback rattlesnake. We found this diamondback making its way from the dunes to the ocean. Diamondbacks are good swimmers and can travel from island to island. The eastern diamondback is one of the largest North American snakes with a record length of 8 feet. This snake is beneficial to humans because it preys on rats, mice, rabbits and other warm-blooded prey many of which are considered pests. Nevertheless, the general public often**

	feels so threatened by the diamondback rattlesnake that most are killed on sight. This indiscriminate killing combined with the widespread loss of rattlesnake habitat to development has caused a decline in most diamondback rattlesnake populations. **Another intensely interesting creature of the dune system is the ant lion. The ant lion gets its name because it's a veracious predator of ants and other insects that accidentally fall into their circular pits. This dramatic insect is a relative of the dragonfly and was the inspiration for the famous sandpit sequence in Star Wars: Return of the Jedi.** **Beyond the primary dune system lies the interdune meadow. Here grows a variety of grasses, weeds and woody plants. Depending on the age of the meadows and the content of the soil, the types of plants vary greatly from beach to beach. In the older dunes, woody perennials begin to appear among the dune grasses and herbs. Many interdune plants cannot tolerate the shade of the larger, woody shrubs and are eventually replaced by common "shrub zone" plants, creating a transitional community between the dunes and the maritime forest. Many birds, reptiles and mammals inhabit this shrub zone because of the excellent cover and broad range of foraging and breeding environments offered by the abutting forest and nearby beach.** **A critical freshwater community will sometimes form in the lower tracts and depressed areas of the interdune and shrub zones. Called a freshwater slue or back dune swale, this area adds greatly to the diversity of the coastal species by providing a home for many freshwater dependent organisms such as amphibians, water snakes, birds, insects and aquatic plants. Because of the abundance of life surrounding slues, snakes, raccoons and other predators are also attracted. A slue also accumulates nutrients for the soil and for vegetation with the death of**

	its many plants and animals during seasonal fluctuations of the water level. On a summer evening, a raucous cacophony of innumerable frogs, toads and peepers can be heard, and let's not forget mosquitoes. The freshwater slue is also home to a rookery, or breeding ground, for many species of wading birds including wood storks, egrets, anhingas and ibis. This mixed species environment is a spectacular place to visit, especially for the birdwatcher and, of course, the alligator. **It is estimated that there are only 10,000 breeding pairs of wood storks left in North America earning the wood stork a place on the federal endangered species list. Tall and gangly with stilt-like legs and a bald, darkly colored head, the wood stork can be easily identified while nesting and foraging in the freshwater slue. When the wood stork snaps its powerful bill on a prey item, it's one of the fastest reflexes in the animal world. Food items include fish, amphibians, aquatic invertebrates and crustaceans. The wood stork is easily distinguished in flight from other white egrets and herons by their black flight feathers.** **Behind the interdune meadow, the shrub zone and the occasional freshwater slue lies the abundant maritime forest. The maritime forest is the most predominant community of the coastal barrier island ecosystem. The maritime forest is made up of live oaks, southern magnolias, wax myrtle and saw palmetto. Unlike the beach communities discussed so far, this area is fairly stable. Disruptive events like fires, hurricanes, blights or human influence may temporarily cause new and different communities to form, but over time, these eventually succeed back to its most stable, mature condition.** **King of the maritime forest is the live oak. It is also the Georgia state tree. Live oaks are medium-sized broad trees with a short trunk. It is one of the widest dome trees in existence. The live oak will often grow to be twice as wide as it**

	is tall, and unlike most oaks, it keeps its leaves year round. Live oaks contribute to the diversity of maritime forest in myriad ways. Its limbs are often home to epiphytic plants like resurrection fern and Spanish moss. These plants get all the nourishment they need from the air and require nothing of the live oak. Dropped live oak acorns also provide mast, or food, for animals such as whitetail deer and fox squirrels. Many species of songbirds also make the maritime forest home. **One species of particular beauty is the painted bunting. The male bird is brightly colored with a blue head, a green back and a red throat, underbelly and rump. The female, like most female birds, is less colorful than her partner with a yellow-green body and dark wings and tail. Throughout the summer, this species will ornament the maritime forest as it flits about, foraging for seeds and insects.** **Inland from the maritime forest lies the expansive salt marsh. The 100-mile Georgia coastline contains approximately 500 million acres of marsh land. Once again, the large tidal range and the gentle slope of the land contributes to the extensiveness of the salt marsh. The rapid change of temperature and changing tides limits the abundance of species that inhabit the marsh full time, but many land and aquatic species visit the marsh to feed and seek shelter. The marsh can be divided into several ecological zones according to the relative time and depth of tidal inundation. The levee marsh describes the habitat on the banks of tidal creeks. Here the soil is washed twice daily with sea water, which keeps changes in salinity and temperature to a minimum, and continually supplies nutrients to the plants on the creek banks. The smooth cord grass on the levees usually grows to its full height of 6 feet. The levee and low marshes are well populated with mud fiddler crabs, oysters, mussels and snails. Marsh wrens can often be heard, but are rarely seen in the salt marsh. They create globular nests attached to cord grass, 1 to 3 feet above the high**

	tide line. They may also build several nests, but only use one. The others are decoys for predators. Another shy inhabitant of the marsh is the clapper rail, also known as the marsh hen. Weak of wing, this relatively large bird usually ventures on foot, searching for food like small crabs and snails. And despite their lack of webbed feet, these birds can dive underwater for sustained periods. **Behind the levees is the low marsh, which makes up most of the southern marsh lands. Incoming tidal water overflows the banks of the numerous small creeks and floods the low marsh for several hours a day. These intermittent conditions make the low marsh a less optimal living environment than the levee marsh. Here, the cord grass only grows 1 to 3 feet high.** **Another zone of the salt marsh is the high marsh. Without the daily wash of sea water from tides, this area supports a different plant community than the low marsh. Here, we found the diamondback terrapin turtle, the only turtle known to inhabit saltwater marshes. The name "terrapin" is actually derived from a French word meaning "turtle soup," revealing the turtle's reputation as a delicacy in the 1800s, but the stovetop is not the only threat to the diamondback terrapin. A growing human population, and the development that comes with that growth, also endangers these one-of-a-kind turtles.** **The system of tidal creeks that crisscross the salt marsh is a vital community for the many marine species. The shallow water provides a nursery where the young of many marine species feed and grow before returning to the ocean, thus completing the cycle of the coastal ecosystem.** **As the sun sets over the marsh, a chorus of amphibians, birds, insects and even the occasional cymbal crash of a jumping fish fills the air. We hope that our travels from below the ocean's surface and back again has created a**

	sensation and admiration for our coastal ecosystem. **>>Female Narrator: No matter where you live, everything you put down the drain ends up in our streams, rivers, marshes and eventually our seas. Some of the cleaning products we use at home and often pour down our drains are toxic to ourselves and to those downstream from us. Sewage treatment cannot and does not remove all harmful chemicals before releasing them into the environment. We do our part at home by using basic, non-toxic cleaning products found right in our own cupboards. These are products that our grandparents learned about from their parents. A good rule to remember is that just about everything in your kitchen and bathroom can be cleaned with five products: liquid castile soap, borax, baking soda, vinegar and lemons. Try these websites for cleaner recipes.**