



VISIONS OF THE  
**EVERGLADES**

**HISTORY ECOLOGY PRESERVATION**

**TOMMY RODRIGUEZ**



## FLORIDA CORMORANT

*The smallest of the five subspecies, it is found from southern and central Texas to the Atlantic and from North Carolina to Florida.*

*Records indicate that this subspecies was abundant throughout its range before the 20th century, but now is only abundant in Florida.*

*(University of Michigan Museum of Zoology)*



*Photograph by: Tommy Rodriguez  
Everglades National Park*



AuthorHouse™  
1663 Liberty Drive  
Bloomington, IN 47403  
www.authorhouse.com  
Phone: 1-800-839-8640

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*Published by AuthorHouse 06/18/2013*

ISBN: 978-1-4685-0748-5 (sc)  
978-1-4817-6560-2 (e)

*Library of Congress Control Number: 2011961870*

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# **SOUTH FLORIDA & THE EVERGLADES**

*courtesy: NASA*

## Foreword

A wise man named Gaius Plinius Secundus once said, “Home is where the heart is.” Well, South Florida is my home, and my heart lies in its rich, vast wilderness. I am a nature enthusiast with a background in computational biology. My passion for science and nature is self-evident; indeed, it is a passion for such things that inspired me to write this book. Spending countless hours exploring uninhabited areas of South Florida has made me develop a special admiration for its unique ecological diversity. When one grows up in a major metropolitan like Miami, one often seems to forget about this region’s natural wonders, especially the one sitting next door—the Florida Everglades.

This book contains general information on topics related to South Florida history and ecology, but it is also a visual journey through Florida’s Everglades—what I’ve seen, experienced, and encountered in the wilderness. Curiosity has driven me deep into the marshlands, forests, and swamps of sunny South Florida; this book chronicles those experiences. A sense of adventure compelled me to take on the task of exploring and documenting its habitats in search of something new. What I found was an experience like no other.

Apart from sharing those experiences, this book is meant to broaden Everglades awareness. Because of recent environmental challenges, I have taken it upon myself to educate the public about preservation and conservation efforts to restore Florida’s Everglades. My hope is that this book will serve as a launching board of interest in matters of ecosystem preservation and that it will inspire individuals to get involved. I believe we all can and should do our part.

Thank you for your interest. I hope you enjoy.

A handwritten signature in black ink, featuring a large, stylized 'P' and 'S' that are interconnected, followed by a long, sweeping horizontal line that ends in a small hook.



*To my most special little girl, Isabelle M. Rodriguez*





*The love for all living creatures is the most noble attribute of man.*  
—Charles Darwin





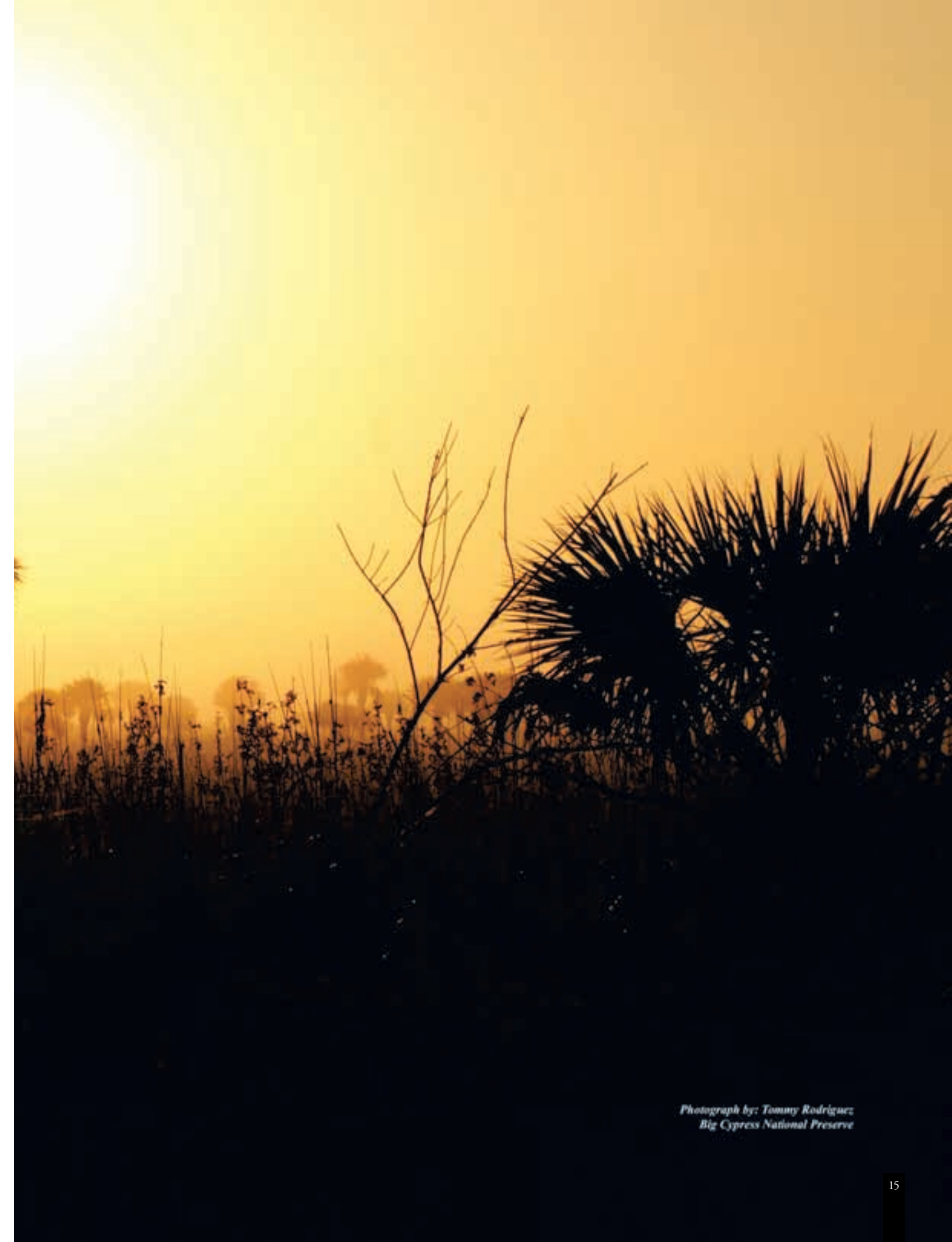


# VISIONS OF THE EVERGLADES

TOMMY RODRIGUEZ

*Photograph by: Ernesto D. Diaz  
Big Cypress National Preserve*





*Photograph by: Tommy Rodriguez  
Big Cypress National Preserve*



*Photograph by: Tommy Rodriguez  
Big Cypress National Preserve*

# HISTORY



Until very recently, large portions of South Florida were still covered in vast wilderness. Much of it was home to a flourishing network of tropical wetlands that stretched several thousand square miles, ranging north from the Kissimmee River in Central Florida and down to portions of the northern Keys at Florida Bay. As such, these fertile lands were practically untouched and undisturbed. Of course, that was before the arrival of modern civilization. Today, it is only a shadow of what it once was. Human development has altered its natural course, reduced its natural borders, and changed its landscape.

I often try to envision what this region might have looked like thousands of years back, before the high-rise buildings and shopping mall plazas. Occasionally, I am reminded. Remnants of primitive South Florida are scattered throughout Miami. Some street corners and residential neighborhoods bear the mark of South Florida's past; this can take the form of a wandering alligator patrolling the South Florida canals, a great blue heron groping for fish at a nearby pond, a flock of white ibis skipping about in the front yard of a neighbor's house, or even a lone cypress tree sitting in the middle of a public parking lot and looking like it has no place being there. For me, these are constant reminders of something special that once was.

To a lesser extent, the global iconic image of South Florida's sandy white beaches and coconut-giving palm trees are somewhat deceiving, or at the very least, that image doesn't tell the whole story. Granted that our coastlines, beaches, and cities are world-renowned; the cities themselves are grand works of human innovation of which I am very proud. But the real mystique lies within the peninsula's interior, beyond the city lights and highways. Many remote areas of South Florida remain unexplored. Experts still consider these lush environments to be the most extensive network of interdependent ecosystems in the entirety of North America, and perhaps beyond. However, only when you cross Krome Avenue at the far west edge of town does this become apparent. Before then, the constant hustle and bustle of the daily commute of a major metropolitan cannot be so easily overlooked. You would never suspect that such a place lay just beyond the city limits, but there it is, and it has a name: we call it the Everglades.

South Florida's history is one marked by change. Florida's Everglades is the epitome of that change. Over the years these lands have been witness to a wide variety of living organisms that have adapted well to its subtropical climates and wetland habitats. Many groups of plants and animals come and go with the ever-changing landscape, including its human inhabitants. South Florida and the Everglades have been the recipient of many human cultures, peoples, and explorers of all kinds. This is the story of these lands—its beginnings, its identity, and the inhabitants who called it home.

# Chronological History: A Brief Overview

For most of its history, Florida laid submerged in seawater. Approximately 180 million years ago, at a time when Florida was physically connected to the African continent, Florida had experienced prolonged periods above sea level.<sup>1</sup> Later, shifting landmasses and climatic changes caused Florida to become a shallow, tropical sea floor.<sup>1</sup> It remained much this way through the Jurassic period, Eocene epoch, and onward. Naturally, this history would explain the rich sedimentary rock deposits and the abundance of marine fossils found just beneath the South Florida surface.

The Florida Platform began its transition into an emergent landmass some 28 million years ago.<sup>2</sup> Geological surveys reveal that a portion of Florida (the Ocala Platform) was an island prior to it becoming a peninsula; also known as Orange Island, in the early Oligocene epoch. A series of fluctuating climatic changes and receding shorelines would later cause Florida to become much larger, drier, and cooler, bringing with it a mass migration of continental plants and animals. Florida's Everglades, located in the southern-most region of the peninsula, is much younger by comparison. Several thousand years after the late Wisconsin glaciations, Florida's Everglades began shaping and molding itself into a true wetland environment.<sup>3</sup> Because of its geological makeup, wetland environments, and geographical location at subtropical latitudes, the Everglades became prime real estate for many semi-aquatic species of plants and animals.

Many of the first land animals that made their way into Florida did not survive the wet transition; the exact cause remains unclear, but some indications point to severe flooding coupled with the arrival of the first human inhabitants. Paleo-Indians hunted large land animals like giant sloth, mammoth, saber-tooth cat, and spectacled bear.<sup>3</sup> Several species of animals were eventually driven into extinction. By the time humans arrived in Florida, the environment already felt their impact.

## *First Human Settlements and the Glades People*

The first humans appeared in South Florida roughly 14,000 years ago.<sup>3</sup> At the time of their arrival, South Florida was slightly different from how it is today: the terrain was significantly drier, and the climate was much cooler. Much of it probably resembled open savannah prairie and pine rockland. Around 6,500 years ago, the Everglades drastically shifted from semi-arid to semi-aquatic.<sup>3</sup> As the climate changed, runoff overflows of water from Lake Okeechobee poured its way south into what is now the Everglades. The natives adapted very well, forming settlements all along stretches of the Florida Keys and other coastal regions. Native Indians developed complex communities and trade systems with neighboring tribes. From these new settlements emerged three main groups that share similar cultures and origins: Okeechobee (named after the lake), Glades, and Caloosahatchee. We will draw our focus mainly on the Glades people, who eventually gave way to the Tequesta and Calusa tribes, the main two Indian cultures of South Florida prior to the arrival of European explorers and conquistadors.

By 3,000 BCE South Florida Indian populations had seen a significant spike.<sup>3</sup> The largest concentrated communities were located on the west coast of South Florida. Smaller, scattered bands and groups settled around Lake Okeechobee, the Atlantic coast, the Florida Keys, and the mouth of the Miami River. Trade between neighboring parties was commonplace, which meant that crossing through the Everglades was probably unavoidable.

Tequesta and Calusa were already the two most recognizable tribes at the time that the Spaniards settled Cuba. Spanish explorer Ponce de Leon first made contact with the Calusa tribe in 1513, and he was later mortally wounded by Calusa tribesmen on his second voyage to Florida.<sup>4</sup> Calusa territory was located on the southwestern regions of South Florida. The Calusa tribe was greater in size and had political influence over their rivals, the Tequesta, but it is the Tequesta tribe that is historically revered for their hostility toward foreigners, unusual cruelty, and tribal rituals that included sacrificing infant children.<sup>5</sup> The Tequesta did not have cultivated agriculture like the Calusa, but they were banded hunter-gatherer types who relied on large game like deer, alligator, fish, turtle, and the occasional manatee. Their diet also included bread made of different types of roots. They wore little or no clothing, as described by Bishop Diaz Vara Calderon in the 1600s; they preferred clothing consisting of breechcloth made of Palmetto brush for men and skirts made of Spanish moss for women.<sup>6</sup>

The Tequesta village was said to be located at the mouth of the Miami River. Much in the way of archeology has been recovered from a site in downtown Miami. The archeological remains of the Calusa are widely scattered along the southwestern coast of Florida, including portions of the Ten Thousand Islands. Today, many travelers still come across pieces of pottery left by the Calusa.





*Photograph by: Tommy Rodriguez  
Teyesta Indian Statue, Downtown Miami*

# He Lived Among Them

The next insert follows the accounts of Spanish shipwreck survivor Hernando de Escalante Fontaneda. In 1549 Fontaneda and fellow crewmembers on board a ship bound for Salamanca, Spain, became shipwrecked off the South Floridian coast. Subsequently, a native Calusa rescued the stranded crew, including Hernando de Escalante Fontaneda. Fontaneda, who was thirteen years of age at the time of this event, survived the doom that later followed. As per Fontaneda's accounts, at the mercy of Calusa tribesmen, the shipwreck survivors were enslaved, tortured, and sacrificed one by one; he was the lone exception. It was his ability to learn the native customs and language that made him useful to the Calusa tribesmen.

According to historical records, Fontaneda lived among the Calusa for approximately seventeen years before being rescued by Pedro Menéndez de Avilés in 1565.<sup>7</sup> Fontaneda later wrote of his accounts. I felt it important to include his memoirs in this book, because his depiction of early native life prior to colonization is one of the most important surviving historical chronicles of its kind. South Florida's pre-Colombian history could be summarized as such. The document itself remains the most detailed description of native Floridian cultures and the natural state of South Florida's ecosystem prior to modern civilization.

*Buckingham Smith Translation, 1854*<sup>8</sup>

Very Powerful Lord:

Memoir of the things, the shore, and the Indians of Florida, to describe which, none of the many persons who have coasted that country know how to describe it.

The Islands of Yucayo and of Ahite fall on one side of the Channel of the Bahama. There are no Indians on them, and they lie between Havana and Florida.

There are yet other islands, nearer to the mainland, stretching between the west and east, called the Martires; for the reason that many men have suffered on them, and also because certain rocks rise there from beneath the sea, which, at a distance, look like men in distress. Indians are on these islands, who are of a large size: the women are well proportioned, and have good countenances. On these islands there are two Indian towns; in one of them the one town is called Guarugunbe, which in Spanish is pueblo de Llanto, the town of weeping; the name of the other little town, Cuchiyaga, means the place where there has been suffering.

These Indians have no gold, less silver, and less clothing. They go naked, except only some breech-cloths woven of palm, with which the men cover themselves; the women do the like with certain grass that grows on trees. This grass looks like wool, although it is different

from it. The common food is fish, turtle, and snails (all of which are alike fish), and tunny and whale; which is according to what I saw while I was among these Indians. Some eat sea-wolves; not all of them, for there is a distinction between the higher and the lower classes, but the principal persons eat them. There is another fish which we here call langosta (lobster), and one like unto a chapin (trunkfish), of which they consume not less than of the former.

On these islands are many deer, and a certain animal that looks like a fox, yet is not, but a different thing from it. It is fat and good to eat probably raccoon. On other islands are very large bears; and, as the islands run from west to east, and the land of Florida passes eastwardly towards these islands, that must be the reason of bears being on them; for the mainland is near, and they can cross from island to island. But what was a great wonder to the captives who were there, and to those of us in other places, was the existence of deer on the Islands of Cuchiyaga, the town of which I have spoken. Much more would I relate of each thing, but that I have other objects which concern me more, and I leave it.

On these islands is likewise a wood we call here *el palo para muchas cosas* (the wood for many uses), well known to physicians; also much fruit of many sorts, which I will not enumerate, as, were I to attempt to do so, I should never finish.

To the west of these islands is a great channel, which no pilot dares go through with a large vessel; because, as I have said, of some islands that are on the opposite side towards the west, which are without trees, and formed of sand. At some time they have been the foundations of cays Keys, and must have been eaten away by the currents of the sea, which have left them thus bare, plain sand.

They are seven leagues in circumference, and are called the Islands of the Tortugas; for turtle are there, and many come at night to lay their eggs in the sand. The animal is of the size of a shield, and has as much flesh as a cow; it is like all kinds of meat, and yet is fish.

Running from south to north between Habana and Florida, the distance to the Tortugas and the Martires is forty leagues; twenty leagues to the Martires, and thence other twenty to Florida to the territory of Carlos, a province of Indians, which in their language signifies a fierce people, they are so-called for being brave and skillful, as in truth they are. They are masters of a large district of country, as far as a town they call Guacata, on the Lake of Mayaimi, which is called Mayaimi because it is very large. Around it are many little villages, which I will speak about hereafter. The distance in going from Habana to the farthest islands, which are beyond the Cape of the Martires and almost adjoin Florida, is sixty leagues; because those islands are near seventy leagues in extent, and run from west to east.

This channel has many passages, and many different outlets and little channels. The principal channel is very wide; across it are the Islands of Vermuda, of which I have some recollection of what the Indians said; but not wishing to extend this account in that direction, I return to what I was talking about, the termination of the islands of the Martires.

Toward the north the Martires end near a place of the Indians called Tequesta, situated on the bank of a river which extends into the country the distance of fifteen leagues, and issues from another lake of fresh water, which is said by some Indians who have traversed it more than I, to be an arm of the Lake of Mayaimi. On this lake, which lies in the midst of the country, are many towns, of thirty or forty inhabitants each; and as many more places there are in which people are not so numerous. They have bread of roots, which is their common food the greater part of the time; and because of the lake, which rises in some seasons so high that the roots cannot be reached in consequence of the water, they are for some time without eating this bread. Fish is plenty and very good. There is another root, like the truffle over here, which is sweet;” and there are other different roots of many kinds; but when there is hunting, either deer or birds, they prefer to eat meat or fowl. I will also mention, that in the rivers of fresh water are infinite quantities of eels, very savory, and enormous trout. The eels are nearly the size of a man, thick as the thigh, and some of them are smaller. The Indians also eat lagartos (alligators),” and snakes, and animals like rats, which live in the lake, fresh-water tortoises, and many more disgusting reptiles which, if we were to continue enumerating, we should never be through.

These Indians occupy a very rocky and a very marshy country. They have no product of mines, or thing that we have in this part of the world. The men go naked, and the women in a shawl made of a kind of palm-leaf, split and woven. They are subject’s of Carlos, and pay him tribute of all the things I have before mentioned, food and roots, the skins of deer, and other articles.”

The Auditor Lucas Vasquez, a resident of Santo Domingo, and six others, townsmen of his, I think, left there with vessels, (of which some Indians of the Island of Yeaga, at the end of the Lucayo Islands, give account,) to see the river and land of Santa Elena. Seven leagues to the north of these is a town, which, instead of pronouncing it Orizta, they who went there called it Chicora; and as to the other town, for Guale, they said Gualdape. The Spaniards saw no more towns; for they explored no farther, and did not enter nor examine the coast in earnest, for fear of grounding their vessels and getting them lost. Thus they accomplished no more; although it is true that neither gold nor silver is to be got there, as they are to be found only at places remote. It is said, that sixty leagues inland towards the north there are mines of gold and copper. At the mouth of a river, and by lakes, are towns, Otapali, Olagatano, and many others. The inhabitants are neither Chichimecas nor the people of the Jordan. The king is called wayor y Bran Senor (chief and great lord) in our language; and in that of the Indians of Carlos, it is Certepe. The cacique is the greatest of the kings, having the renown of Montesuma.

The natives are poor at the place to which Lucas Basquez and other Spaniards went, although some seed pearls are found there in certain conchs. The cat fish, oysters (roasted or raw), deer, roebuck, and other animals. While they kill these, the women bring wood to cook or broil on grates. If the Spaniards found any gold, it must have come a long way, from the mountains, and from that king of whom I just spoke.

The Jordan that is talked of, is a superstition of the Indians of Cuba, which they hold to because it is their creed, not because there is such a river. Juan Ponz de Leon, giving heed to the tale of the Indians of Cuba and Santo Domingo, went to Florida in search of the River Jordan, that he might have some enterprise on foot, or that he might earn greater fame than he already possessed and close his life, which is the most probable supposition; or, if not for these objects, then that he might become young from bathing in such a stream. This thought was of itself proof that all must have been fiction that was told by the Indians of Cuba and its whole neighborhood, who, to satisfy their tradition, said that the Jordan was in Florida; to which at least I can say, that while I was a captive there, I bathed in many streams, but to my misfortune I never came upon the river. Anciently, many Indians from Cuba entered the ports of the Province of Carlos in search of it; and the father of King Carlos, whose name was Senquene, stopped those persons, and made a settlement of them, the descendants of whom remain to this day. And the same objects that they who left their country came in quest of in the River Jordan, the kings and caciques of Florida, although savages, took information of and sought after, as though they had been a more polite people, that they might see what river that could be which did such good work, even to the turning of aged men and women back to their youth. So earnestly did they engage in the pursuit, that there remained not a river nor a brook in all Florida, not even lakes and ponds, in which they did not bathe; and to this day they persist in seeking that water, and never are satisfied. In the attainment of the promises of their faith, those of Cuba determined, for such was their vow, to venture their lives on that sea; and it ended in all that numerous people who went over to Carlos forming a settlement: but to this day youth and age find alike that they are mocked, and many have destroyed themselves. It is cause for merriment, that Juan Ponz de Leon went to Florida to find the River Jordan.

We will speak of the country of Abalachi, which is in the direction of Panuco, where resounds the fame of its abundance of pearls; and it is certain that they do exist. Between Abalachi and Olagale is a river the Indians call Guasaca-esgui, which means in our language, Rio de Canas (river of canes). On this river, arm of the sea, and coast, are the pearls, which are got in certain oysters and conchs. They are carried to all the provinces and villages of Florida, but principally to Tocobaga, the nearest town; because in it resides the king, who is chief cacique of the region lying on the right-hand side coming to Habana. He is called Tocobaga chile, has many vassals, and is an independent king. He lives inland on the last cape of the river. There are more than forty leagues of distance, following up the stream, to where Hernando de Soto thought to colonize; but he did not do so, in consequence of his death. When that took place, the intention was abandoned, and the soldiers marched on. The Spaniards, on their way, hung the cacique of Abalachi, because he would not give them provision of maize for the journey; or, as the Indians of the town of Abalachi say, because their cacique had around his neck some large pearls, and in the middle of them a very big one, about the size of an egg of the turtledove, which there are in that country, and have nests in their season on trees; and this is what the Indians state. There are no mines of either silver or gold, at least the natives do not know of any. Their food is maize and fish; and there is a very great deal of both. They kill a great many deer, antelopes, and other animals, that they eat; but their

usual food is fish. They make bread from a certain root, such as I have described before as growing in swamps; and they have much fruit of many different kinds, which to mention would be endless.

These Indians do not wear clothing, not even the women. They go naked, except some dressed deer-skins made into breech-cloths, with which they only conceal their shame. The females cover themselves about the waist with the straw that grows on trees. This plant is like tow, or wool, but is brown, instead of white.

We will now leave Tocabaga, Abalachi, Olagale, and Mogoso, which are separate kingdoms; and I will name over the villages and towns of the deceased cacique Carlos, who was put to death by sentence of the Captain Reynoso. First, a place called Tampa, a large town, and another town, which is called Tomo; another, and other twenty towns there are, of which I do not remember the names. There are also two towns more, which are on the Islands of the Yucayos, subject to Carlos, the Indian before mentioned; the one is called Guarungunve, and the other, Cuchiyaga. Carlos, after his father, was lord of these fifty towns, until the time of his execution, as I have said; and now Don Pedro reigns, the son of Sebastian. These two were brought to Havana by Pedro Melendez, that he might gratify them, and he directed that they should be so named; but they became worse than they were before he made them gifts, and still worse would matters have stood had they been christened; but, as I did not wish that they should be, they were not; for, by their conversation, I discovered that baptism was not lawful for them, they were heretics; and since then it appears they have returned to their old ways, and are more wicked than they were formerly.

That people understand the greater part of our strategy, and are archers and men of strength. No one knows that country so well as I know it, who write this; for I was a captive among its inhabitants, from a child the age of thirteen years until I was thirty years old. I speak four languages, but not the language of Ais and Jeaga, which is a country I never traveled into. I wish only to say this more of Carlos, it is a large country, is rich in pearls, and possesses little gold, because it is far from the mines of Onagatano, which are distant on the snowy mountains of Onagatano, who is the farthest vassal of Abalachi and Olagatano, and is far from Olagale, Mogoso, and the people of Cafiegacola. These last, the Indians say, are numerous, and are great warriors; they go naked, although some of them are clothed in skins; and they are great painters, and whatever they see, they paint. They are called Canogacola, which means a people without respect, skillful with the bow. But the good arms of the Spaniards will overcome them - good crossbows, firelocks, and shields, swords broad and sharp, good horses and escopetas shotguns, with one or two persons who understand their ways, the interpreters being true and trustworthy, not like the Biscayan, who would have betrayed Pedro Melendez to the Indians had it not been for me and a mulatto, who discovered the treason, otherwise every one must have been slain, and I among the rest. Pedro Melendez would not then have died in Santander, but in Florida, in the province of Carlos. There is no river nor bay there that can be hidden from me; and had I received the consideration I merit, the Indians at this day would be the vassals of our powerful king Don Felipe, whom God preserve many years! I

have already said that the cacique is lord of the River of Canes, where the pearls and lands of lapis lazuli are, and that the gold is afar off in the last dependency and town of Olagale.

One Don Pedro Vizcaino, whom His Majesty made Keeper of the Swans, was a captive in this province. If he on whom this gift was graciously conferred had been more of a man, the Indians of Ais, Guacata, Jeaga, and their vassals, would already have been subjugated, and even many of them made Christians; but he was a man of little intelligence and capacity, so there is nothing more to be said. He understands well the language of Ais, and the languages of the other places mentioned, which are spoken as far as Mayaca and Mayajuaca, places toward the north; but I think that because of the order of Pedro Melendez to hang him, in consequence of a falsehood that he raised against Domingo Ruiz, his companion, he was frightened, and came to Spain with the news about Florida, and would not go back again. If he did go back, it must have been to bring with him a son he had among the Indians, as he brought him here and never went there more. And because of the unjust treatment to the interpreters, he desired not to go back, as others of us have not, remaining as we are without pay to this time; for, as we came destitute, it gave us little wish of returning to Florida to serve without any recompense.

The King of Ais and the King of Jeaga are poor Indians, as respects the land; for there are no mines of silver or of gold where they are; and, in short, they are rich only by the sea, from the many vessels that have been lost well laden with these metals, as was the case with the transport in which Farfan and the mulatto owner were; with the vessel of the Vizcaino, in which came Anton Granado, who was a passenger, and was captured; and with the vessel of which Juan Christoval was master and captain, lost in the year '51, when the Indians murdered Don Martin de Guzman, the Captain Hernando de Andino, Procurador of the Province of Popayan, and Juan Ortiz de Zarate, Distributor of Santa Martha; and there came in her also two sons of Alonzo de Mena, with an uncle, all of them rich. He that brought least was I, but with all I brought twenty-five thousand dollars in pure gold; for my father and mother remained in Carthagena, where they were comenderos, and served His Majesty in those parts of Peru, and afterwards in the city of Carthagena, where they settled, and I and a brother were born. Thence they sent us to Spain to be educated; when we were wrecked on Florida, as I have stated.

Other vessels have been lost, among them the armada of New Spain, of which it was said the son of Pedro Melendez was General for the Indians took a Spaniard that reached the shore whom they found starving. And I saw him alive and talked with him and one Juan Rodriguez, a native of Nicaragua. He told us that they came from New Spain, and were going to Castile; that the General was a son of Pedro Melendez, the Asturian; that he came as a sailor in another vessel; and that the people of neither knew anything of what had befallen the other, until the Indians armed themselves to go to the coast of Ais, when he saw them go and return with great wealth, in bars of silver and gold, and bags of reals, and much clothing. As he was newly captured, or found, and understood not the Indians, I and Juan Rodriguez were the interpreters for this man, and others, as we already knew the language. It was a

consolation, though a sad one, for those who were lost after us to find on shore Christian companions who could share their hardships and help them to understand those brutes. Many Spaniards have saved their lives by finding themselves with Christian companions already there. For the natives who took them would order them to dance and sing; and as they did not understand, and the Indians themselves are very mean, (for the most so of any are the people of Florida,) they thought the Christians were rebellious, and unwilling to do so. And so they would kill them, and report to their cacique that for their meanness and rebelliousness they had been slain, because they would not do as they were told; which was the answer, as I have said, made to the cacique when he would ask why they had killed them. One day, I, a negro, and two others, Spaniards recently made captives, being present, the cacique, in conversation with his vassals and the great chiefs of his train about what I have just mentioned, asked me, I being *mas ladino* (better acquainted with the language than any one), saying: 'Escalante, tell us the truth, for you well know that I like you much: When we tell these, your companions, to dance and sing, and do other things, why are they so mean and rebellious that they will not? or is it that they do not fear death, or will not yield to a people unlike them in their religion- Answer me; and if you do not know the reason, ask it of those newly seized, who for their own fault are captives now, a people whom once we held to be gods come down from the sky.' And the cacique, laughingly, said: 'Se-le-tie-ga,' to the new comers; and they asked what it was he said to them. The negro, who was near to them, laughed, and said to the cacique: 'Master, I will tell you the truth; they have not understood, and they ask Escalante what it is you say, and he does not wish to tell them until you command him.' Then the cacique believed the truth, and said to me: 'Declare it to them, Escalante; for now do I really believe you.' I made known to them the meaning of Se-le-tega, which is, 'Run to the look out, see if there be any people coming;' they of Florida abbreviate their words more than we. The cacique, discovering the truth, said to his vassals, that when they should find Christians thus cast away, and seize them, they must require them to do nothing without giving notice, that one might go to them who should understand their language. And so it happened, that the man just spoken of, who was called Pijiguini, was the first found after that. In our tongue his name was Martinez, a sailor, as before stated, who came from Mexico in the flota that was lost.

Leaving this matter aside, I desire to speak of the riches found by the Indians of Ais, which perhaps were as much as a million dollars, or over, in bars of silver, in gold, and in articles of jewelry made by the hands of Mexican Indians, which the passengers were bringing with them. These things Carlos divided with the caciques of Ais, Jeaga, Guacata, Mayajuaco, and Mayaca, and he took what pleased him, or the best part. These vessels, and the wreck of the others mentioned, and of caravels, with the substance of the Indians of Cuba and Honduras who were lost while in search of the River Jordan, and who came well off, were taken by Carlos, and by the chiefs of Ais and Jeaga. The Indians of the Islands of Guaragunbe are rich; but, in the way that I have stated, from the sea, not from the land. From Tocobaga to Santa Elena, which may comprise a shore of six hundred leagues, there is neither gold nor silver native to the country, and only that of which I have spoken as coming by the sea. The land is abundant in pasturage; but I do not want to say for certain whether there is any fit for

settlement or not, since the Indians can live on it; nor yet for the planting of sugar-cane, as I do not know it positively, although some stalks were set out which grew; but as I was not afterwards present, I did not see the result.

In all these provinces which I have named, from Tocobaga-chile to Santa Elena, the people are great anglers, and at no time lack fresh fish. They are great bowmen, and very faithless. I hold it certain they never will be at peace, and less will they become Christians. I will sign this assertion with my name as a very sure thing, for I know what I say. If my counsel be not heeded, there will be trouble, and matters be worse than they were before time. Let the Indians be taken in hand gently, inviting them to peace; then putting them under deck, husbands and wives together, sell them among the Islands, and even upon Terra Firma for money, as some old nobles of Spain buy vassals of the king. In this way, there could be management of them, and their number become diminished. This I say would be proper policy; and the Spaniards might then make some stock farms for the breeding of cattle, and be there to safeguard the many vessels that are wrecked all the way along from Carlos to the Province of Sotoriva, in which is the port of San Agustin, and river of San Mateo. There the Lutherans of France had made a fort, and found a nook whence to plunder as many ships as should come from Terra Firma, whether from Mexico, or Peru, or from other parts; which they did, and retired to that river of San Mateo, where resides the perfidious cacique of Sotoriba, Alimacani, and of other places, his dependencies. Midway up the river San Mateo, sixty leagues inland, is another cacique, having an independent sovereignty, and being Lord of his land, whose name is Utina; and Saravai, and Moloa, and many others are his vassals, until coming to Mayaguaca, in the land of Ais, which lies towards Cafiaberal, so called by our pilots who sail thither. With these two caciques Pedro Melendez made treaties of friendship. They have no gold, silver, or pearls; their people are poor, very treacherous and wicked, and great archers. They go naked, like the rest of whom I have spoken before.

With this I will end, and say no more; for, if the conquest of that country were about to be undertaken, I would give no further account of it than I have rendered. Its subjugation is befitting His Majesty, for the security of his armadas that go to Peru, New Spain, and other parts of the Indies, which pass, of necessity, along that shore and channel of the Bahama, where many vessels are wrecked, and many persons die; for the Indians are powerful archers, and oppose them: and because of this, I say, it is well to have a small fort for the protection of that channel, with some income for its repair, and the maintenance of soldiers as a garrison in it, which income might be drawn from Mexico, Peru, the Island of Cuba, and all the rest of the Indies. Thus much should be done; and another thing also to go in search of pearls, for there is no other wealth in that country. So, I conclude, and as this account may become important; I sign it.

*Hernando D'escalante Fontaneda*

The first documented case of contact between Europeans and native Floridians occurred sometime in the year 1513.<sup>9</sup> However, because Ponce de Leon and his crew encountered indigenous tribesmen that already spoke Spanish, it is often argued that contact may have occurred earlier; perhaps resulting from trade relations with the remaining Indians of Spanish-occupied Cuba.<sup>10</sup> Nevertheless, De Leon's historical voyage in 1513 is still widely accepted as the first European arrival to the continental United States.<sup>9</sup>

De Leon's discovery of Florida soon after brought a slew of Spanish and French expeditions, which led to the establishment of several European settlements in and around the Floridian peninsula—most notably St. Augustine, the first incorporated colony in the North American continent. Some later attempts at establishing colonies were unsuccessful and abandoned, especially to the south where native tribes were more proactive in rejecting the European newcomers.<sup>9</sup>

By the early 1700s, Spain had complete control over the peninsula, including its native inhabitants. Like in other places of Central and South America, the Spanish incorporated a Christian policy of mass conversion on the native tribes, and they almost succeeded in doing so. But their efforts were fuddle or little to none, as English colonies to the north began arming rebellious Creek tribesmen against Spain.<sup>10</sup> The English were also responsible for dealing several attacks to St. Augustine. Later, Great Britain went on to obtain Florida from Spain, only to lose it back to the Spanish after the American War of Independence.

Two hundred years after the first arrival of the Spanish in Florida, the original South Floridian tribes had been greatly reduced in numbers. Much of it was the direct cause of disease, famine, and relocation. It was also around this time period when many African slaves were making their way south into Florida, escaping the tyrannical clutches of the American South. The Spanish accommodated many of these refugees, granting them freedom but converting them to Roman Catholicism. Some former slaves settled alongside Indian communities in Florida, even joining tribes in some cases. By this time, the tension between the Spanish of Florida (who now sided with the Seminole and Creek tribes) and the newly founded American establishment to the north reached an all-time high. The early part of the 1800s saw Seminole tribesmen cross over into Georgia from Florida, raiding settlements at will; these attacks were likely encouraged and supported by their Spanish allies.<sup>11</sup>

This led American Colonel Andrew Jackson to arm a campaign against the Seminole Indians of Florida. In 1817 Jackson led his army into Florida in pursuit of the Creek and Seminole culprits, and it resulted in the destruction of Tallahassee and Miccosukee, the two largest Indian towns of northern Florida at the time.<sup>11</sup> Even by now, the British were still pestering the Americans. On the west coast of Florida, British rebels began arming Creek and Seminole warriors for their defense against the invading American troops, but this also fell in vein. In April 1818, Jackson's armies overwhelmed the Seminole-Spanish resistance at the Spanish fort of St. Marks; this decisive victory marked the end of the First Seminole War. The United States now controlled most of north and eastern Florida.

Shortly after the first war, Spain sold the rights to Florida. The longtime Spanish-owned colony became property of the United States. The following decade brought several attempts at treaties meant for the relocation of Indian tribes in Florida, but this discourse was met with intense revolt. Many surviving Creek and Seminole tribesmen made their way into south and central Florida. Between 1830 and 1850, the Second and Third Seminole Wars were fought on Florida soil, but this time the battle was fought on much different ground—the Florida swamps.

It was during the Third Seminole War that Seminole warriors retreated into the Everglades. Here, they found refuge among the tropical hardwood hammocks, swamps, and prairies of today's Big Cypress National Preserve. The Seminoles proved to be resilient throughout the war, outlasting the American armies in the harsh South Florida climate. The war came to an end on May 8, 1858, when Colonel declared victory on the Seminoles. At the time, it was thought that only one hundred Seminoles remained in hiding,<sup>11</sup> but the Americans miscalculated their numbers. Even to this day, the Seminole tribes of Florida and related Miccosukee factions still reside in communities within the Everglades.







*Photograph by: Tommy Rodriguez  
Big Cypress National Preserve*



*Photograph by: Tommy Rodriguez  
Everglades National Park*

# ECOLOGY





*Photograph by: Tommy Rodriguez  
Fakahatchee Strand Preserve State Park*

Florida's Everglades sustains an extraordinary variation of habitats and wildlife. Many experts consider it to be the most biologically diverse ecosystem in North America. A combination of subtropical climates, seasonal fires, and permeable geological features provides the Everglades just the right recipe to sustain its unique biological identity. It also features an unusual mix of plants and animals that are rarely found anywhere else.

The Everglades is the only place where alligators and crocodiles exist side by side; it is also home to the world's only semi-aquatic pit viper. Its complex mosaic of interdependent ecosystems are unparalleled—nine distinct habitats have been identified to date. Deep within the confines of the local swamps resides some of the world's most rare orchids. The Everglades is home to the only species of bear found wandering subtropical climates. It is also the last refuge of the endangered Florida panther.

The greater Everglades ecosystem is the largest of several wetlands in the entirety of North America. Its natural evolution is attributed to water, but unlike other wetlands, atmospheric rain is the biggest contributor to the abundance of water in the Everglades. To the local wildlife, this is the key ingredient to all aspects of life—mating, breeding, feeding, and hunting. From the very tiny to the moderately large, many species of plants and animals depend exclusively on this fragile hydration system of water for reproduction and survival.

Throughout the wet season, many aquatic animal populations boom due to an abundant supply of food and water. During the dry season, these commodities become scarce and life is rather difficult. As water levels drop, both predator and prey are forced to congregate around remnant water holes. This is most critical for aquatic creatures, because they become easy targets for wading birds and alligators.

Despite its ecological abundance, Florida's Everglades are home to 67 threatened and endangered species of plants and animals.<sup>12</sup> The Everglades also serve as a stop-off point for many migratory species, including two hundred species of migratory birds.<sup>23</sup> The South Florida climate plays a major role in allowing suitable conditions for some of the world's most beautiful species of flora to thrive and prosper. The region is an absolute haven of spectacular orchids that find the humid, subtropical climate most fitting. Long have travelers come to these parts to get a glimpse of these rare, highly prized orchids—but not without a price to be paid. The quest can be rather difficult. Anyone in search of these natural treasures must be prepared for long, intense hikes through very difficult terrain.

# HABITATS & PLANT LIFE

*Photograph by: Tommy Rodriguez  
Big Cypress National Preserve*



## Simply One of a Kind

Whenever I mention my experiences in the Everglades backcountry, people are generally amazed at some of the stories I tell; this is probably because my description of the Everglades doesn't fit into their preconceived notions. My stories of dense subtropical hammocks, cypress domes, and semi-arid pineland forests are not exactly reminiscent of what they had in mind. Instead, people mostly seem to envision a place exclusively made up of water and marsh, airboat rides and sawgrass, long-legged birds and ferocious alligators. To some extent that is an accurate depiction, but it does not paint the entire picture.

The region embodying the Everglades is much more intricate than a mere open oasis of water and marsh. Florida's Everglades truly is one of a kind; it is the place where the continent meets the tropics. Besides its marshy grasslands and rich sawgrass prairies, the Everglades territory engulfs a variety of complex interdependent ecosystems. In total, nine unique habitats have been identified, including sawgrass marshes, coastal prairies, freshwater sloughs, pine rockland, tropical hardwood hammocks, mangrove forests, cypress swamps, and more. The River of Grass, as it is widely known, primarily revolves around a hydration system of water and fire. The frequent flooding of the wet season, followed by the drought of the dry season, shapes and molds these landscapes. Even though Florida's Everglades accommodates a multiplicity of diverse environments, no actual boundaries exist between one habitat and another.<sup>1</sup>

Geological factors play the biggest role in habitat variation. Elevation levels determine particular classifications. Higher elevated regions encompass drier, less quaggy terrains, such as what you might expect to find in pinelands and tropical hardwood hammocks. Lower levels of elevation make up the damp, marshy ranges. What's more, the underlying limestone affects the period in which these areas stay flooded throughout the year.<sup>14</sup> This is no more evident than in areas where sawgrass grows in high concentrations.

### *Sawgrass Marshes, Wetland Prairies, and the River of Grass*

Imagine a seemingly endless plain of long, narrowly sharp grass stretching as far as the eye can see. The warm tropical breeze makes the tall grass wave and bustle. Picture within these terrains a magnificent variety of beautiful wading birds, colorful and graceful, cautiously creeping through the marsh, groping into the shallow waters and hoping to catch a midmorning snack. Alongside them, ferocious gators bask under the South Floridian sun. All the surrounding wildlife stays weary of their presence—if they're not careful, they could end up in the belly one of these prehistoric reptiles.

The marshes and prairies of the Everglades are its primary features and also make up for most of the territory. There are more than 1.8 million acres of this vast environment within the Everglades territory.<sup>15</sup> Marjory Stoneman Douglas, who wrote the influential non-fiction book, *The Everglades:*

*River of Grass*, best described this vast environment as the River of Grass.<sup>16</sup> Her work drew national attention to the Everglades for the first time in 1947. Since then, the inseparable combination of water and grass has become an iconic symbol of the local ecosystem.

The marshes, prairies, and sloughs that makeup these extraordinary wetlands run in a north–south direction from Lake Okeechobee down to Florida Bay. During the wet season, Lake Okeechobee overflows, and the resulting overflow of water runs in a southerly direction due to a slight vertical slope that stretches southward. The rate of flowing water is very slow and gradual, estimated to flow at speeds of two inches per mile.<sup>17</sup> These wetlands terrains inhabit a large population of wading birds that find suitable conditions among the marshes and prairies for feeding and nesting. Alligators also chose sawgrass marshes as primary nesting grounds.

### *Tropical Hardwood Hammock*

A diverse, closed canopy of thick bread-loaf trees, barrier shrubs, and vines best illustrates a typical tropical hardwood hammock setting.<sup>18</sup> The vegetation in these environments can grow rather thick; hammocks usually occur in areas that sit on elevated outcrops of limestone sediment and thick soil.<sup>18</sup> Tropical hardwood hammocks once occurred in many parts of Florida, ranging from Key Largo and all the way north to Cape Canaveral, but they now exclusively exist in areas of South Florida.

Of the many species of plants one can expect to find in a tropical hardwood hammock, the most commonly known includes the strangler fig, gumbo limbo, poisonwood, wild tamarind, Florida royal palm, live oak, mahogany, wild dilly, green thatch palm, and other plant species of West Indian origin.<sup>18</sup> Tropical hardwood hammocks also provide important habitat for many species of animals, including nine federally listed species.<sup>18</sup>

### *Pinelands*

Like tropical hardwood hammocks, pineland habitats also sit on higher ground. Because of its geological positioning, pinelands habitats experience little or no hydroperiods.<sup>19</sup> Moreover, dry conditions make pineland habitats vulnerable to seasonal fires usually brought on by lightning strikes, but this has its advantage: seasonal fires help keep invasive species of plants and thick vegetation from overgrowing onto pineland habitat. Many plants that naturally grow in pineland have become remarkably resistant to fire. For example, slash pine evolved natural insulation, and saw palmetto developed mechanisms that allow it to sprout quickly after being charred.<sup>1</sup>


Pinelands are home to a variety of animals that prefer drier environments. Many birds, including land birds and birds of prey, make the pinelands a year-round destination. It is estimated that prior to urban development, South Florida was covered with more than 186,000 acres of pine rockland.<sup>19</sup> Today, less than a quarter of that estimate actually exists. Fortunately, efforts are underway to restore much of our precious pinelands.

## *Cypress Swamps*

Cypress swamps are common to many parts of the southeastern United States. In particular, South Florida's network of cypress swamps is quite extensive, scattered all along the Atlantic Coastal Ridge and between Lake Okeechobee and the eastern flatwoods.<sup>69</sup> The largest concentration of cypress domes is located in Big Cypress National Preserve.

The iconic symbol of this native habitat is the bald cypress tree. In fact, the dominate canopy vegetation in cypress swamps include cypress trees and water tupelo trees.<sup>71</sup> A bald cypress can reach lengths of up to 44 meters tall with trunk diameters reaching 5 meters in circumference.<sup>21</sup> Bald cypress trees occur in environments that are subject to periodic flooding. The ground underneath south Floridian cypress swamps are made of a thin layer of limestone containing essential minerals that provide the right nutrients for water-resistant vegetations to flourish.<sup>20</sup> Animals like the American alligator, white-tailed deer, river otter, anhinga, herons, American wood stork, and cottonmouth are often found lurking in cypress swamps.





*Photograph by: Tommy Rodriguez  
Big Cypress National Preserve*

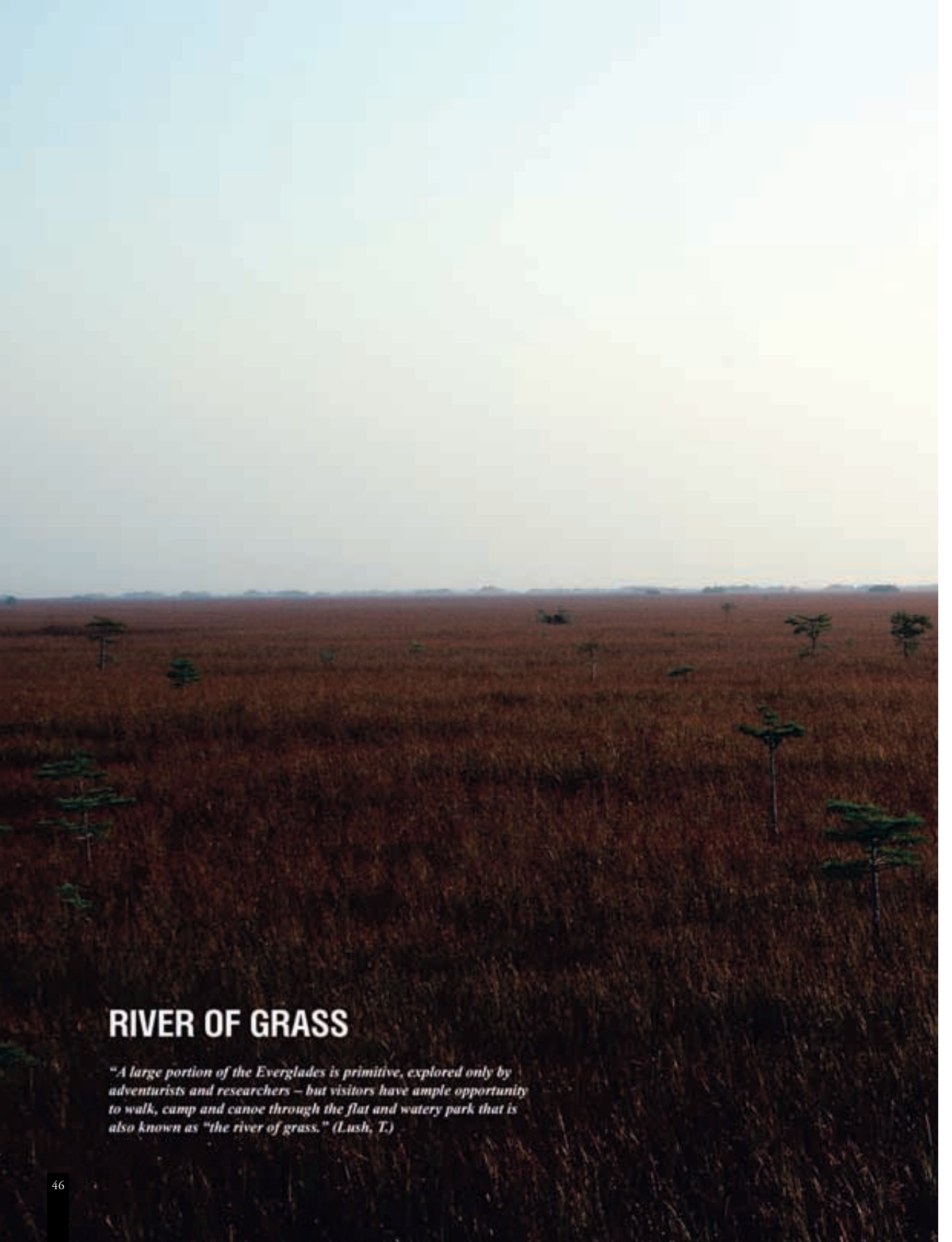
## **BALD CYPRESS**

*The Cypress tree is a deciduous conifer that can survive in standing water. In the Florida Everglades these trees are often found growing in one of three distinct formations.  
(U.S. Department of Interior)*





*Photograph by Tommy Rodriguez  
Big Cypress National Preserve*



## RIVER OF GRASS

*"A large portion of the Everglades is primitive, explored only by adventurers and researchers – but visitors have ample opportunity to walk, camp and canoe through the flat and watery park that is also known as "the river of grass." (Lush, T.)*



*Photograph by: Tommy Rodriguez  
Everglades National Park*



## THE PINELANDS

*Otherwise known as pine rocklands, these forests often take root in the exposed limestone substrate of South Florida. (U.S. National Park Service)*



*Photograph by: Ernesto D. Diaz  
Everglades National Park*



*Photograph by Tommy Rodriguez,  
Everglades National Park*



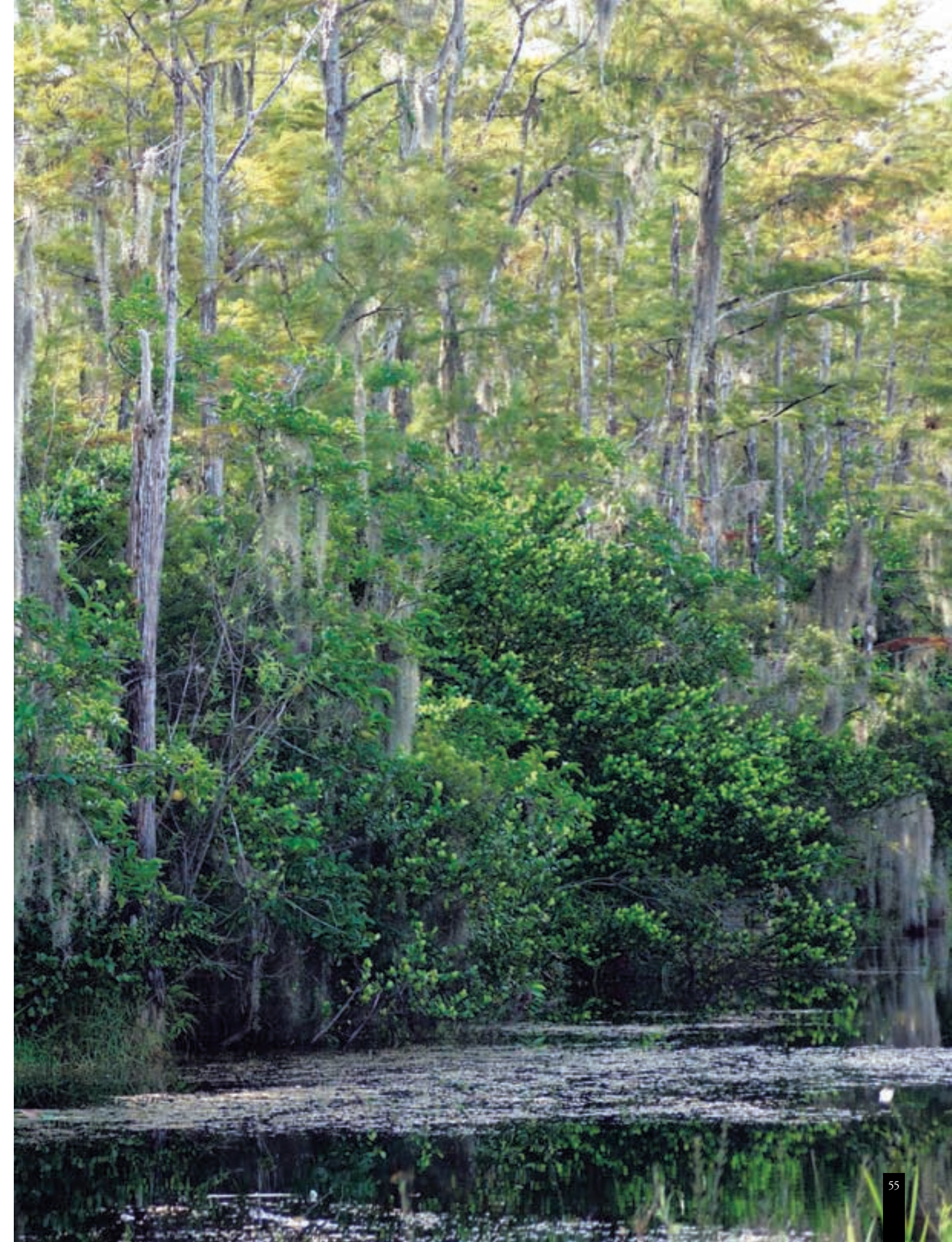


*Photograph by Jonathan Rodriguez  
Everglades National Park*





*Photograph by: Tommy Rodriguez  
Big Cypress National Preserve*





*Photograph by: Tommy Rodriguez  
Big Cypress National Preserve*



*Photograph by: Tommy Rodriguez  
Big Cypress National Preserve*



*Photograph by: Tommy Rodríguez  
Big Cypress National Preserve*



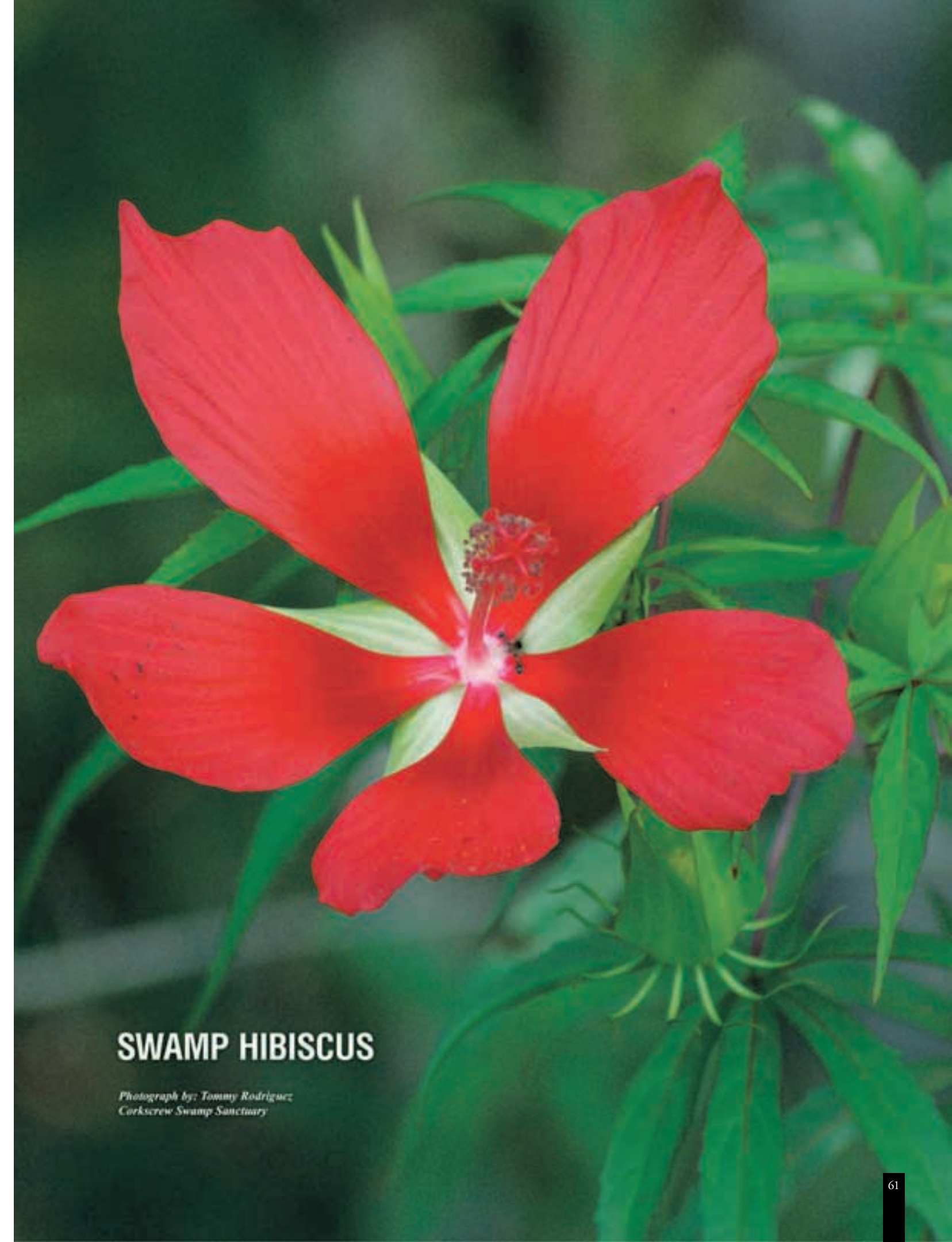
## And They Called It Florida ...

It is often said that when Ponce de Leon first sighted the south Floridian coast in the year 1513, he called it La Florida (meaning flowery), because of the delightful assortment of colorful vegetation that he encountered.<sup>70</sup> This historic discovery also coincided with the traditional Feast of Flowers.<sup>4</sup> Surely the timing was excellent, the choice of name most appropriate. Florida's tropical foliage and beautiful flowers make it unlike anything else in North America.

Florida's Everglades has about 1,000 different kinds of seed-bearing plants and 120 species of trees, making up a diverse complex of flora.<sup>22</sup> The warm, humid climate is ideal for native plant populations, and although many beautiful indigenous plants can be seen by taking a drive through the national parks, others are more difficult to view. The rare plant varieties, especially orchids, are situated deep within the wilderness. Hiking trails and backcountry paths make these rare orchids accessible. However, the difficult terrain may detour even the most adventurous of explorers from making the journey.

Of the many species of orchids one can expect to find in South Florida, the most commonly known include the butterfly orchid, vanilla orchid, cigar orchid, lawn orchid, leafless beaked lady orchid, clamshell orchid, cyclopogon elatus, and ghost orchid, among many more. Other plant life worth mentioning belongs to the group of bromeliads, such as Spanish moss and giant air plant. Various groups of lichens and tropical ferns are also interesting specimens, and they are commonly found throughout the Everglades.





## SWAMP HIBISCUS

*Photograph by: Tommy Rodriguez  
Corkscrew Swamp Sanctuary*

# GHOST ORCHID

*Photograph by: Mario Cisneros  
Big Cypress National Preserve*



A close-up photograph of a Clamshell Orchid (Cyclopogon) flower. The flower has long, slender, pale yellow-green petals and a dark, almost black, velvety center with a pattern of fine, radiating lines. It is positioned next to a thick, textured tree trunk covered in moss. The background is a soft, out-of-focus green, suggesting a forest setting.

## CLAMSHELL ORCHID

*Photograph by: Tommy Rodriguez  
Fakahatchee Strand Preserve*

# BUTTERFLY ORCHID

*Native to Florida and nearby islands including Cuba and the Bahamas, the Butterfly orchid is an epiphyte commonly found on mangroves, pop ash, palms and pine trees. They are a protected species and collection from the wild is prohibited.*

*(Botanical Journal of the Linnean Society)*



*Photograph by: Tommy Rodriguez  
Fakahatchee Strand Preserve State Park*

# PICKEREL WEED

*Photograph by: Tommy Rodriguez  
Fakahatchee Strand Preserve State Park*



# PRIMEROSE WILLOW

*Primrose willow, an attractive member of the evening primrose family (Onagraceae) is a coarse, woody shrub, with herbaceous upper stems. The plants may bear conspicuous, bright yellow flowers year-round and are often seen in shallow, wet ditches, or along drainage canals, primarily in central and south Florida, but extending into north Florida as well. (University of Florida)*

*Photograph by: Tommy Rodriguez  
Fakahatchee Strand Preserve State Park*



# PURPLE THISTLE

*Photograph by: Tommy Rodriguez  
Everglades National Park*



# SPANISH NEEDLES

*Photograph by: Tommy Rodriguez  
Fakahatchee Strand Preserve State Park*

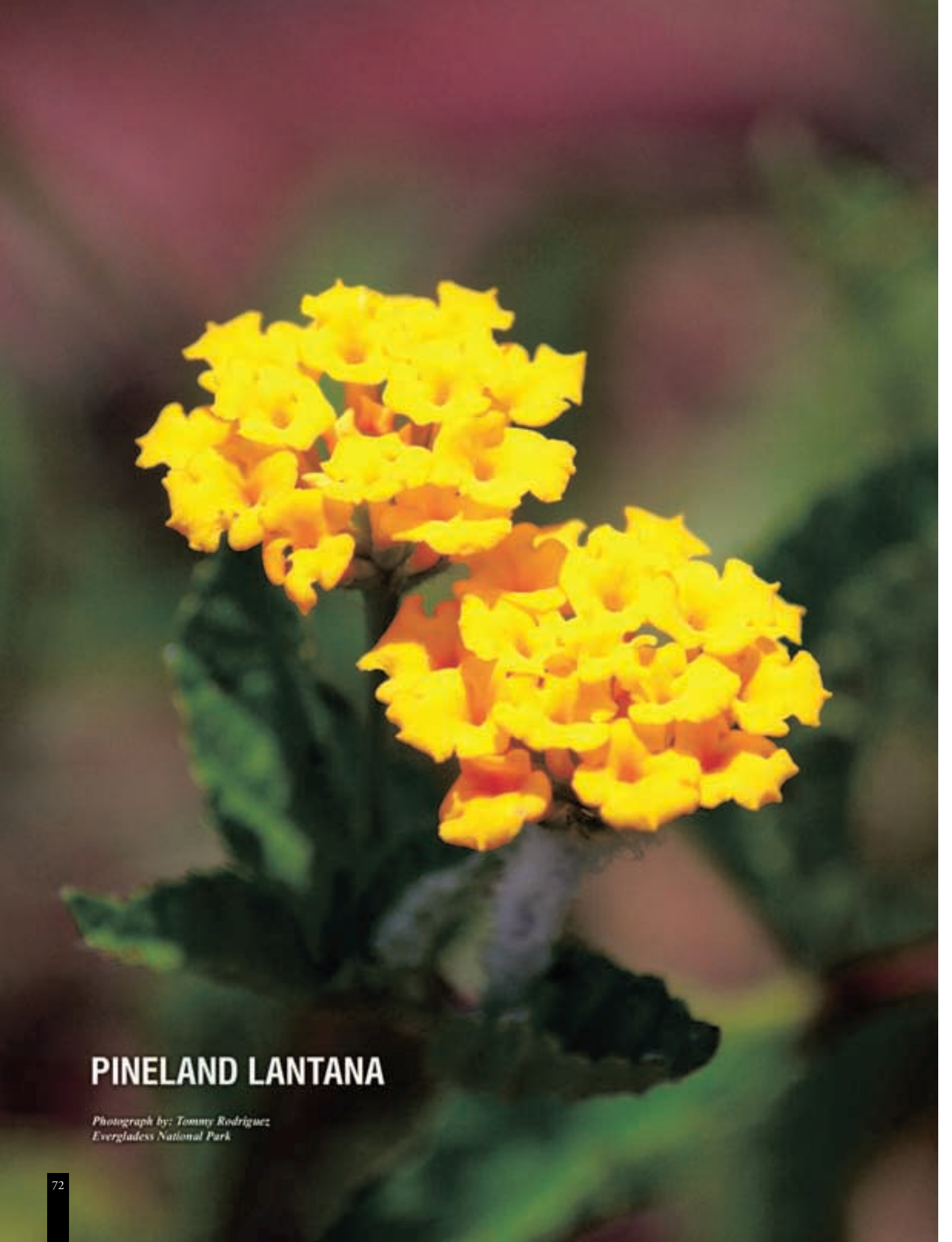


# GIANT AIRPLANT

*Giant airplant is a flowering bromeliad. It is a perennial, epiphytic plant that is rarely found growing in cypress swamps and hammocks in Miami-Dade, Brevard, and Monroe Counties (University of Florida)*

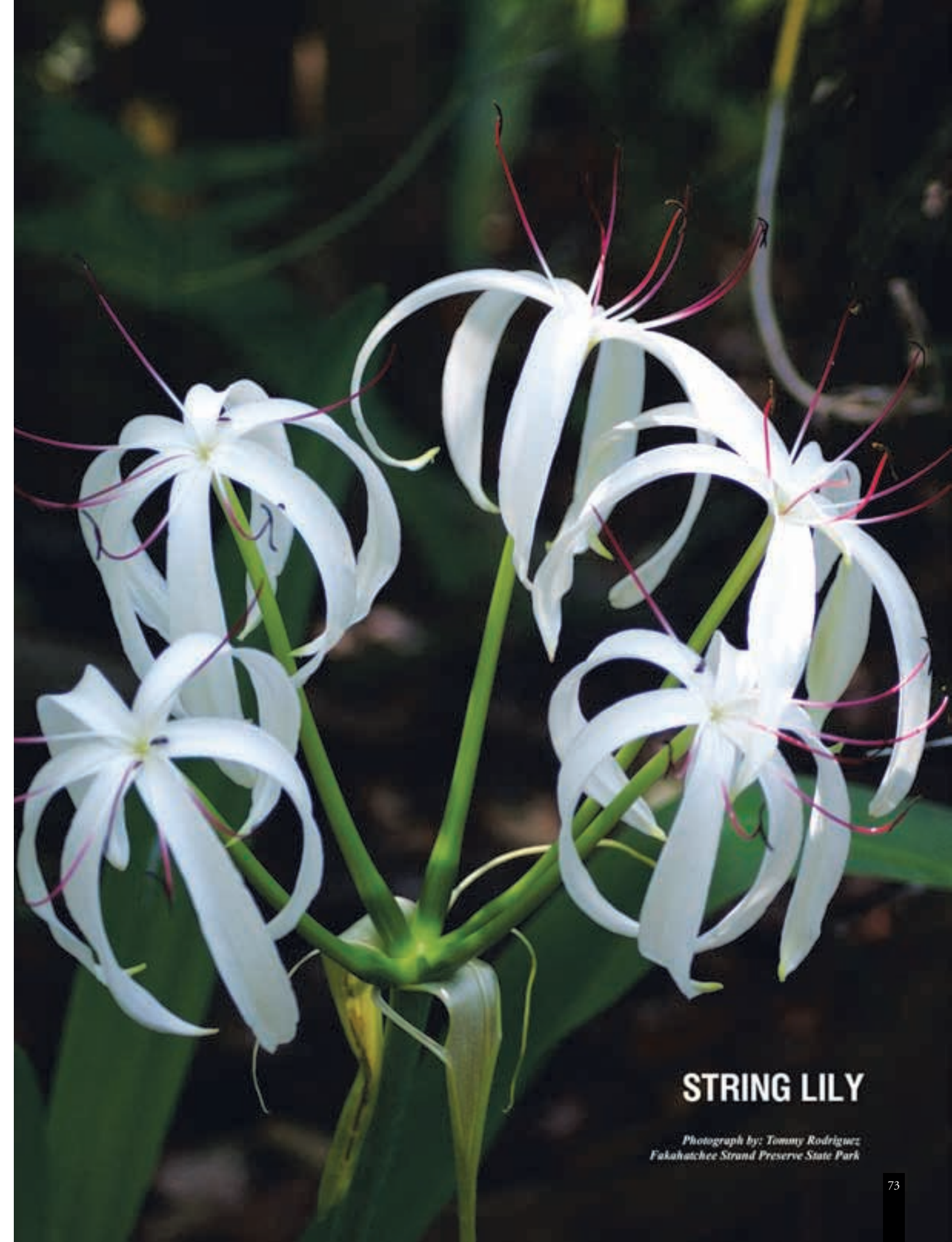
*Photograph by: Tommy Rodriguez  
Fakahatchee Strand Preserve State Park*





## PINELAND LANTANA

*Photograph by: Tommy Rodriguez  
Everglades National Park*



## STRING LILY

*Photograph by: Tommy Rodriguez  
Fakahatchee Strand Preserve State Park*

# CORAL BEAN

*Photograph by: Tommy Rodriguez  
Everglades National Park*



# BUTTONBUSH

*Photograph by: Tommy Rodriguez  
Everglades National Park*

# SCRATCH DAISY

*Photograph by: Tommy Rodriguez  
Everglades National Park*



# SPATTERDOCK

*Photograph by: Tommy Rodriguez  
Big Cypress National Preserve*








*Photograph by: Tommy Rodriguez  
Big Cypress National Preserve*



A photograph of a tree trunk in a swampy area. A ghost orchid is growing from the tree trunk. The background is a dense forest with green foliage. The text is in the upper right corner.

*The diversity of Everglades' habitats means there's also a great diversity of plants. There are wetland plants from sawgrass and bladderwort to cypress and mangrove trees. There are pine trees, hardwoods, tropical fern, and even beautiful orchids.  
(National Wildlife Federation)*

*Photograph by: Tommy Rodriguez  
Fakahatchee Strand Preserve State Park*



# BIRDS OF THE EVERGLADES

*Photograph by: Tommy Rodriguez  
Everglades National Park*



# Fly Pelican, Fly

*We observed great flocks of wading birds flying overhead toward their evening roosts in the Everglades ... They appeared in such numbers to actually block out the light from the sun for some time. —John James Audubon*

People have always associated the Everglades with long-legged birds. Storks, egrets, pelicans, and herons generally symbolize the essence of this unique ecosystem. Indeed, the wet, warm environment has long since attracted thousands of birds from all over the tropics and the North American continent.<sup>23</sup> Although many species of birds once inhabited the coastlines, marshes, and swamps of South Florida, their numbers have been greatly reduced. Today, over 350 different species of birds reside within the Everglades territory, and about 200 are migratory birds.<sup>23</sup>

Though there are many different ways to identify one group of birds from another, the birds of the Everglades can be generally categorized by three distinct types: wading birds, land birds, and birds of prey.<sup>81</sup> Each type has unique food preferences, mating rituals, and so on. They range in size from considerably large—like the great blue heron that can get as long as 55 inches from head to tail and as heavy as 8 pounds—to the very tiny, as in the case of the Everglades sparrow, which is not much bigger than a small mouse.<sup>24</sup> Bird migrations are directly tied to water levels; low water levels attract a large variety of wading birds, as well as their predators.<sup>73</sup>

## Wading Birds

Wading birds are the most commonly seen birds in the Everglades. They are usually found near abundant water sources, and they are stealthy hunters that mostly live on aquatic prey. Wading birds are categorized by their long and lanky legs, which they use to wade into the water to catch their food—hence the term “wading birds.” Birds belonging to this group include several different species of herons, storks, and egrets. Others such as the glossy ibis, white ibis, least bittern, and Roseate spoonbill also belong to this group.

The seasons play a major role in mating, nesting, and feeding. Nesting typically coincides with the dry season. The dry season is also a particularly good time of the year for hunting, because fish and aquatic prey are more exposed in lower levels of water. Wading birds are also known to travel long distances; the longest recorded flight is said to be 7,100 miles in nine days.<sup>24</sup>

Wading birds such as the American wood stork have experienced population drop-offs in recent times, with loss of habitat being the main cause. Thanks to modern restoration efforts, wading birds are making significant recoveries. In December 2012, the US Fish and Wildlife Service announced it planned to upgrade the wood stork's status, moving it from endangered to threatened.<sup>72</sup>



*Photograph by: Tammy Rodriguez  
Big Cypress National Preserve*

### *Great Blue Heron*

The great blue heron is the largest heron of North America. It has a wingspan measuring up to 79 inches and a stride measuring up to 22 centimeters.<sup>24</sup> Great blue herons are mostly known for their long, rusty-grey necks and beautiful arrangement of feathers, which attracted many commercial hunters to the Everglades during the 1800s. The great blue herons' natural range extends from Canada to Mexico and has been seen in many far-off places such as Central America, South America, and Africa.

Great blue herons primarily feed on fish, but they are also known to snack on small mammals, reptiles, amphibians, and birds. They are opportunistic hunters that typically swallow their food whole. Great blue herons often breed in colonies alongside other species of herons. These colonies can get quite large, sometimes ranging up to 5,000 nests per colony.<sup>24</sup> After eggs incubate and hatch, both parents feed their young at the nest by regurgitating food. Parent birds have been shown to consume up to four times as much food when they are feeding young chicks than when laying or incubating eggs.<sup>24</sup>

Commercial hunters relied on annual migratory nesting cycles.<sup>27</sup> Adults birds were slain for their plume, while young nesting birds were left to die in their nests. When the Migratory Bird Treaty Act of 1918 was passed, the interstate shipment of migratory birds became prohibited.

### *American White Ibis*

The American white ibis is a regular to South Florida. Besides inhabiting the wetlands, the white ibis also makes a happy living alongside people in many populated areas of South Florida. They are often spotted around town walking through a puddle after a heavy rainstorm. White ibis are regular visitors to shopping plazas, parking lots, and residential neighborhoods alike.

Its bright red beak and white-feathered body makes it distinguishable from other birds. They are not very large: an adult bird may grow up to 26 inches and weigh 2 pounds.<sup>27</sup> This particular species of wading bird belongs to the family of ibis, Threskiornithidae. Like other wading birds, their diet consists of aquatic organisms such as insects and small fish. Their breeding range spans along the Gulf Coast, Atlantic Coast, and the eastern coast of Mexico and Central America.<sup>24</sup> The American white ibis has been known to interbreed with scarlet ibis, however this only occurs in areas where the two species overlap.

To increase reproductive success, a male white ibis will engage in multiple extra-pair copulations, whereas the female remains monogamous. Male birds have also been known to pirate food away from females and young juveniles during breeding season.<sup>28</sup> Studies show that pollution affects hormone levels in males and females, causing a disruption in mating behavior and resulting in lower reproduction rates among white ibis colonies.

### **Land Birds and Birds of Prey**

In contrast to wading birds, land birds and birds of prey do fairly well in dry habitats. Several types of birds of prey are also regular visitors to wet areas, such as coastlines, cypress swamps, and mangrove islands. Climatic variables also dictate the migratory patterns of land birds and birds of prey. Many species of land birds migrate to the Everglades on a seasonal basis, especially during the winter months. One of the most well-known groups of migratory land birds is the warblers, who were given this name

because of their beautiful signing. Land birds such as cardinals, blue jays, meadowlarks, crows, and woodpeckers make the Everglades a permanent residence.

The term “birds of prey” is often used to describe birds that use a hooked beak or claw to catch their food.<sup>30</sup> Birds of prey such as hawks, eagles, owls, falcons, and kites reside in many parts of South Florida. The southern bald eagle and snail kite have reached critically low numbers. It is estimated that 1,100 pairs of nesting southern bald eagles exist within the Everglades territory.<sup>31</sup> Like various wading bird populations, the snail kite’s natural feeding conditions have been disturbed by humans. The snail kite does not have a varied diet and feeds exclusively on apple snail. Due to improper flooding, the apple snail population has decreased, thus limiting the food source of this extraordinary bird.

### *Red-Shouldered Hawk*

Red-shouldered hawks are at the top of their food web; they don’t have many predators. Red-shouldered hawks can be found sporadically throughout North America, but they make a comfortable home in the highlands of the Everglades. The red-shouldered hawk is a medium-sized hawk, and size is its only disadvantage over larger birds of prey. Female red-shouldered hawks are slightly larger than males; adults are usually between 10 and 24 inches in length and weigh about 25 ounces.<sup>24</sup> Their long tails are marked with narrow bright lines, and the red shoulders that give them the name are only visible when the bird is in a perched position.<sup>32</sup>

Red-shouldered hawks will prey on small mammals, reptiles, amphibians, and large insects, and they have been known to devour small birds. During the breeding season, the female bird will lay between 3 to 4 eggs. Pairing red-shouldered hawks tend to be on full alert at this time, because their incubating eggs are always in danger of predators. Even adolescent red-shouldered hawks remain aware of their immediate surroundings, because they too can make a nice meal for the occasional barred owl in the area.

### *American Black Vulture*

Whenever there is a foul, dead smell in the air, you can be sure a black vulture isn’t too far away. This bird of prey is fairly unpleasant to look at because it is covered in black colorless feathers and a grayish featherless head, and it is revered for its distasteful association with terrible odors. However, it is a vital piece to the native ecosystem. The black vulture’s important ecological role is the disposal of carcasses.

The black vulture is a scavenger that makes a living in the prairies, wetlands, and swamps of South Florida, but their extended range is widespread. They are found all over the southern United States, and down to the southern tip of the Andes Mountains. Black vultures are relatively large for a bird of prey. They have wingspans of 5 feet, measure between 22 to 27 inches in length, and they weigh between 4 and 6 pounds.<sup>24</sup>

Black vultures typically stay put; very seldom will a flock migrate. The black vultures of South Florida make the Everglades a permanent home. Their breeding season starts in January and will last until the early fall season. Both parents incubate the eggs, which hatch after 21 to 48 days.<sup>24</sup> Chicks are fed in very much the same as other birds, by regurgitating food at the nest site.

# GREAT BLUE HERON

*Photograph by: Tommy Rodriguez  
Everglades National Park*



# AMERICAN WHITE IBIS

*Photograph by: Tommy Rodriguez  
West Palm Beach Zoo*



# AMERICAN FLAMINGO

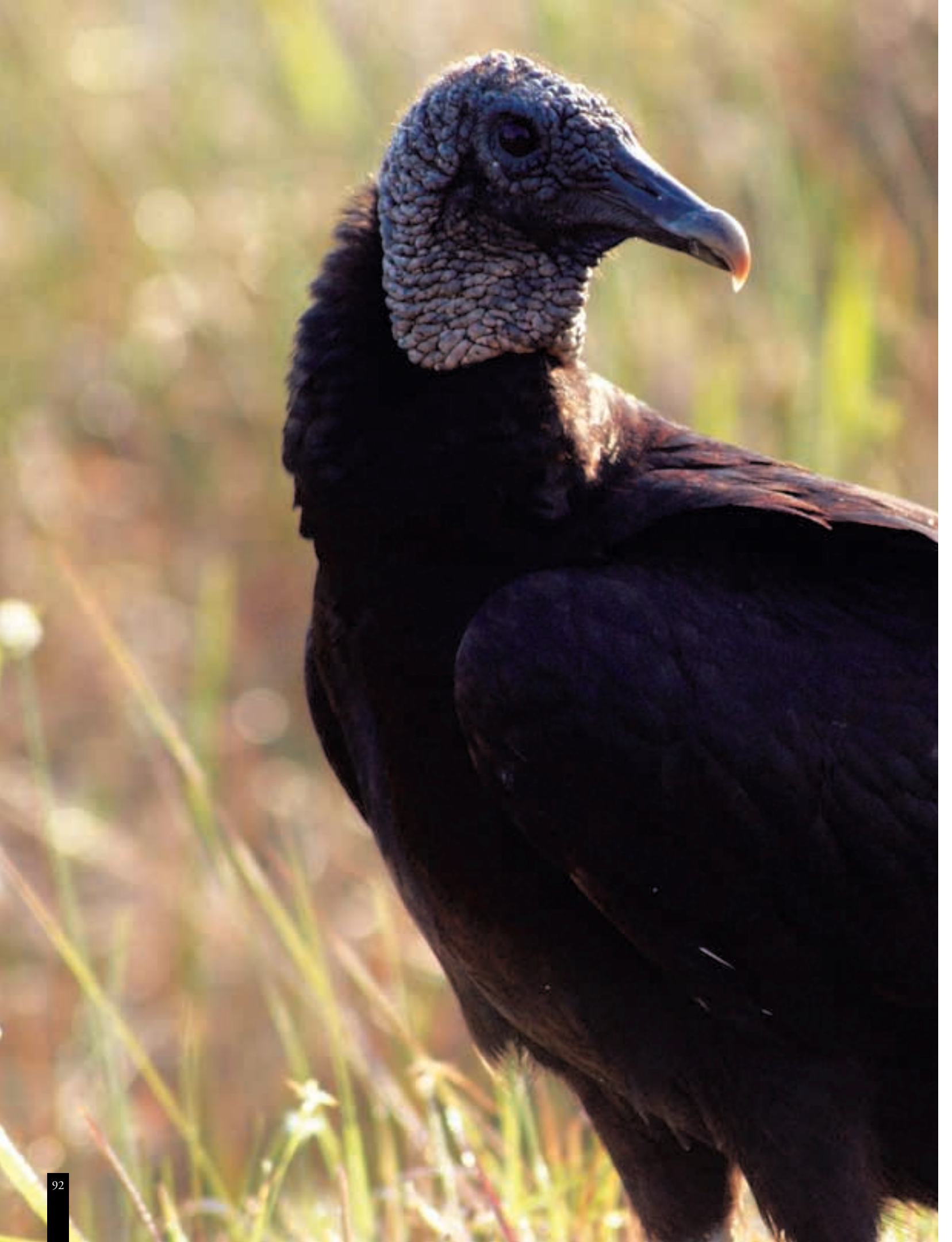
*Photograph by: Tommy Rodriguez  
West Palm Beach Zoo*



# GREEN HERON

*Photograph by: Tommy Rodriguez  
Big Cypress National Preserve*





# AMERICAN BLACK VULTURE

*The American black vulture searches for food from a high perch in the Florida Everglades. American black vultures are found throughout the southeastern United States and are scavengers. They hunt purely by sight and will follow other vultures to food.*  
(Living Wilderness)

*Photograph by: Tommy Rodriguez  
Everglades National Park*



*Photograph by: Ernesto D. Diaz  
West Palm Beach Zoo*





## BALD EAGLE

*Our national symbol and the only eagle unique to North America, the American bald eagle ranges over most of the continent, from northern Alaska and Canada down to Florida's Everglades. First declared endangered in 1967, its recovery and removal from the endangered species list in 1999 are in large part a testament to the success of the Endangered Species Act. (Everglades National Park)*





Photograph by: Tommy Rodriguez  
Fakahia State Park

# AMERICAN CROW

*Photograph by Tommy Rodriguez  
Everglades National Park*



# NORTHERN CARDINAL

*Photograph by: Tommy Rodriguez  
Corkscrew Swamp Sanctuary*



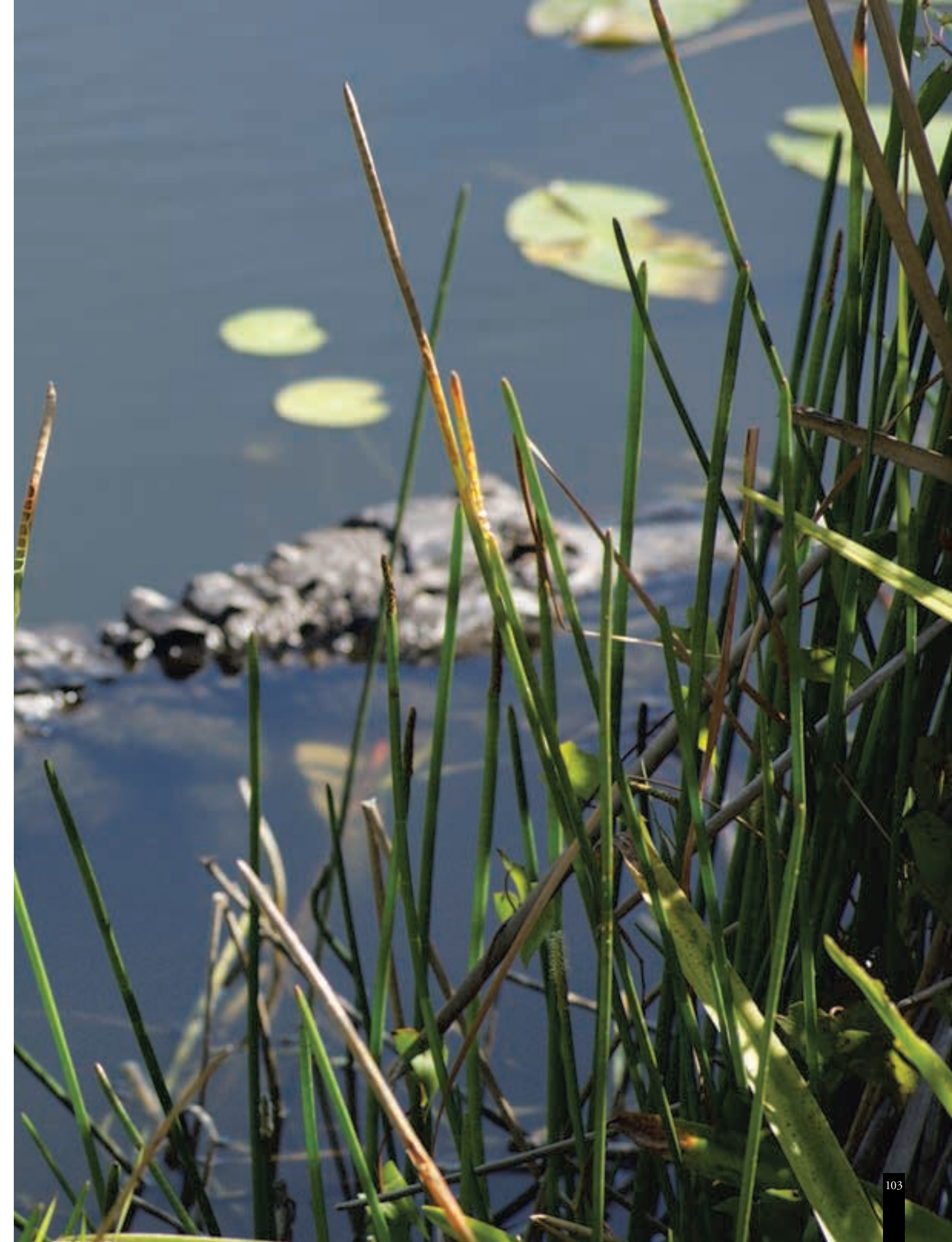




*Photograph by Timmy Rodriguez  
Everglades National Park*

# MAMMALS, REPTILES & MORE

*Photograph by: Tommy Rodriguez  
Big Cypress National Reserve*



# King of the Everglades

Charles Darwin once wrote, “In the struggle for survival, the fittest win out at the expense of their rivals because they succeed in adapting themselves best to their environment.”<sup>33</sup> American alligators have developed many adaptations that make them very well suited for the wetland environments of South Florida, making them the dominant predator in the entire region.<sup>74</sup> Their populations have reached approximately 1 million in Florida.<sup>34</sup>

In the Everglades, the American alligator plays a central role because it affects the existence of other organisms in key ways.<sup>38</sup> The alligator has been given the label of apex predator, defined by the top predator in an ecosystem. Known as the king of the Everglades, the American alligator is the biggest, most ferocious gator on the planet, having the strongest laboratory measured bite of any living creature in the animal kingdom.<sup>39</sup> Gators can grow up to 11 feet in length and weigh up to 800 pounds; the largest ever-recorded alligator was reported to be a whopping 19 feet and 2,200 pounds.<sup>40</sup> Once an alligator reaches adulthood, it will consume just about anything. Any animal is a potential target to the American alligator. One should always remain vigilant around water sources when visiting the Everglades.

American alligators spread further north than their crocodilian cousin, the American crocodile. The alligator is more equipped to deal with colder temperatures than crocodiles. This particular variety of alligator will sometimes venture into brackish waters.<sup>41</sup> Like their 150-million-year-old reptile ancestors, modern alligators have predominantly large tails used for aquatic propulsion and self-defense; the tail itself accounts for half its body length. For the American alligator, breeding begins in the spring. A female alligator will lay between twenty and fifty eggs. Half of those will survive the first year, if she is lucky.

## *American Crocodile*

The anatomy of an American crocodile is not much different from the American alligator. The most obvious difference between a crocodile and an alligator lies in the lining of teeth and snout. The crocodile has a longer, narrower snout. Crocodiles also have lighter pigmentation, which plays to their advantage because they too rely on camouflage to surprise their prey.

American crocodiles are tolerant of saltwater. They make a home around the mangrove islands of South Florida. Like the alligator, the American crocodile will prey on just about any animal; birds, mammals, amphibians, reptiles, and fish being the preferred items on the American crocodile diet. The crocodile is also very important to the ecosystem; its waste provides vital nutrients for smaller animals in the food chain.<sup>42</sup> Although the alligator got the name king of the Everglades, the American crocodile is capable of growing much larger. On average, mature males can grow up to 16 feet in length.<sup>77</sup> Water pollution and loss of habitat have caused their populations to drop to a little more than 2,000.<sup>43</sup> Restoration efforts are currently underway to revive their dwindled numbers.

# COTTONMOUTH

*Cottonmouths are the world's only semi-aquatic viper. Adults are large and capable of delivering a painful and potentially fatal bite. When antagonized they will stand their ground by coiling their bodies and displaying their fangs.*  
(U.S. Environmental Protection Agency)

*Photograph by: Tommy Rodriguez  
Fakahatchee Strand Preserve State Park*

# AMERICAN ALLIGATOR

*Photograph by: Tommy Rodriguez  
Everglades National Park*

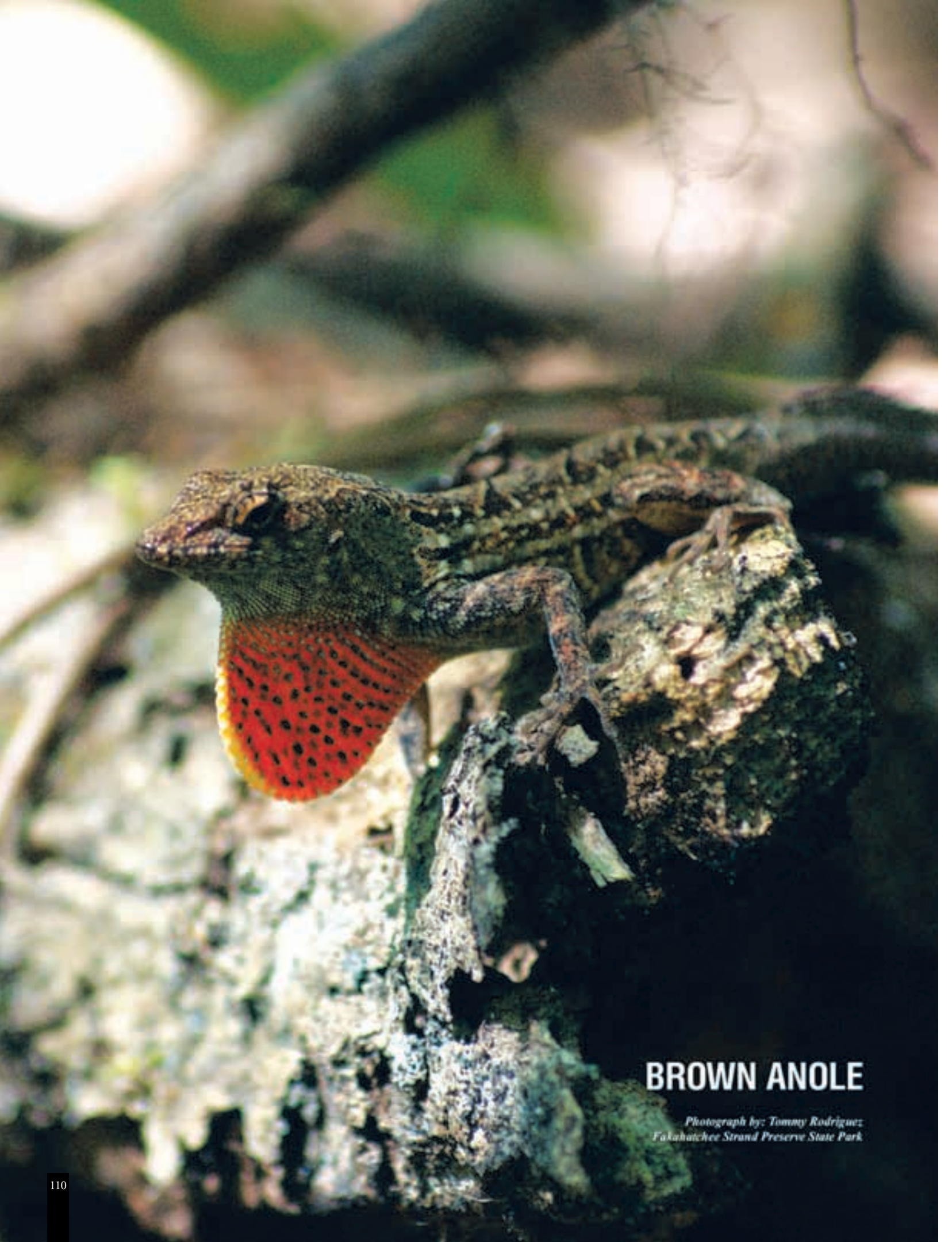








Photograph by: Ernesto D. Diaz  
Big Cypress National Preserve



## BROWN ANOLE

*Photograph by: Tommy Rodriguez  
Fakahatchee Strand Preserve State Park*



## GREEN ANOLE

*Photograph by: Tommy Rodriguez  
Corkscrew Swamp Sanctuary*

## *Snakes, Snakes, and More Snakes*

Snakes are a very important piece to any ecosystem. In South Florida, they help keep the rodent populations under control. In addition, because many Florida snakes will feed on other snakes, they also help balance the number of out-of-control snake populations. Due to loss of habitat, many native snakes have been driven out of their natural settings and into residential areas in search of food and shelter. Many snake bites occur right in our own backyards. Of the 24 different species of snakes in the Everglades, 4 are regarded as venomous; including the coral snake, Florida cottonmouth, pigmy rattlesnake, and eastern diamond rattlesnake.<sup>44</sup> In the event a person should come into contact with one of these venomous serpents, extreme precaution should be taken.

The coral snake prefers wooded areas, particularly tropical hardwood hammocks. They are known for their red, yellow, white, and black colored banding, and they are often mistaken for kingsnakes. The cottonmouth is of the semi-aquatic variety, but it may be found in dry habitats as well. Adult cottonmouths can exceed 31 inches in length. The pigmy rattlesnake is much smaller by comparison, having an average length of 54 centimeters. Although pigmy rattlesnakes do not produce enough venom to inflict serious harm to humans, they have been known to hold their ground when confronted; according to the Florida Reptile Institute, 28 people were bitten by this species in Florida between 1935 and 1937, with no deaths reported.<sup>76</sup> The eastern diamond rattlesnake is the most toxic snake of them all. It is also the largest rattlesnake ever known, capable of growing up to 8 feet in length. Eastern diamond rattlesnakes usually feast on rodents, marsh rabbit, and quail. If you stumble upon a diamondback, keep a good distance—they can strike at twice their body length. Plus, the mortality rate for untreated bites is greater than 75 percent.<sup>75</sup>

## **Mammals**

Mammals are generally categorized by live births, a skin producing hair or fur, and the ability to nourish younglings with milk. Approximately 40 different species of mammals inhabit the South Florida wilderness, including rodents, rabbit, fox, felines, and bear.<sup>46</sup> Many native mammals have adapted characteristics that favor semi-aquatic environments. Marsh rabbits, river otters, and Everglades minks are examples of mammals that do very well in marshes and swamps. Marine mammals like dolphins and manatee occur frequently along the coast. Raccoons and opossums are common creatures to most habitats in South Florida.<sup>46</sup>

### *Florida Black Bear*

The Florida black bear is the largest land mammal in all of Florida. They can weigh up to 500 pounds and get as large as 6 feet in length.<sup>49</sup> Females are generally smaller than males. Florida black bears are solitary creatures that flee at the first sign of confrontation, but females will attack an intruder if she feels a threat to her cubs. They can smell a human from many miles away. Prior to modern development, the Florida black bear occupied much of the peninsula; early accounts had the black bear residing as far south as Key Largo.

Florida black bears usually wander areas of forested wetlands. These large omnivores will generally feed on seeds, shoots, and other native vegetation, but they will also eat meat when the opportunity presents itself. The biggest threat to the Florida black bear is road kills. It is important to note that the Florida black bear is the only known species of bear to occur in subtropical regions. This is yet another example of what makes Florida's Everglades such a unique place.

*Photograph by: Tommy Rodriguez  
Fakahatchee Strand Preserve State Park*



### *White-Tailed Deer*

There are dozens of white-tailed deer variations throughout the Americas. The two native subspecies are best identified by their scientific names, *Odocoileus virginianus seminolus* and *Odocoileus virginianus clavium*. *Odocoileus virginianus seminolus* are found in forested wetlands and open marsh prairies. *Odocoileus virginianus seminolus* is an essential staple to the diet of one important Florida predator: the Florida panther. Bobcats will occasionally attack adult white-tailed deer, as recent studies have shown, but this is somewhat rare. Bobcats usually attack fawn rather than an adult deer.

White-tailed deer eat large varieties of plant food, including fruits, grass, and shoots. Male white-tailed deer, also known as bucks, will spar other males for dominance and the right to breed. Their breeding season occurs between May and June, typically giving birth to a litter of 1 to 3 fawns.<sup>50</sup>

### *Elusive Cats*

The Florida panther once roamed much of the southeastern United States. They are now exclusive to South Florida and the Everglades—a single wild population of 100 to 160 adult panthers is all that remains.<sup>55</sup> That's a significant improvement in comparison to their numbers prior to 1995, when their population fell between 20 to 30 panthers.<sup>55</sup> Low genetic variability had unfavorable results: interbreeding, poor health, and a decline in reproductive rates contributed to population drop-offs. Recently, a genetic restoration program that involved introducing several female Texas cougars was successful in tripling their numbers in only ten years' time.<sup>55</sup> Road kills continues to be a problem for Florida panthers.

Florida panthers are secretive animals and are rarely ever seen in the wild. Male Florida panthers average 130 pounds and measure 6 to 8 feet from head to tail; they have a shoulder height of 2 feet and a front pad width greater than 2 inches. Males fiercely defend their territory, which ranges up to 200 square miles that overlap ranges of several females. The average lifespan of a Florida panther is ten years, once they reach adulthood.<sup>78</sup> The Florida panther will prey on squirrel, deer, hog, small gator, and more. To date, there are no recorded incidents of an attack of a Florida panther on a human.

### *Smaller Mammals*

Raccoons and opossums are common creatures to most habitats in South Florida.<sup>46</sup> These night-dwelling omnivores will eat turtle eggs, fish, fruit, baby gators, and small birds. Raccoons usually live near water. They are exceptional swimmers that hunt alongside the water's edge, and they will occasionally get taken in by a gator. The opossum is the lone marsupial of the Everglades. As a typical marsupial does, the opossum carries its infants in a pouch.<sup>51</sup> Opossums are shy, solitary creatures, and they are known for their involuntary "play dead" response to a threat. During this act, the opossum will draw back its lips and foam around the mouth while rolling back its eyes.<sup>52</sup> A foul smell from its anal glands also confuses predators.

Here are some other mammals worth mentioning.

*Grey Fox*—A great climber. They usually occur in tropical hardwood hammocks.

*Marsh Rabbit*—This rabbit has adapted the ability to swim. It makes a home in fresh water marshes and coastal prairies.

*River Otter*—This semi-aquatic mammal is found throughout the waterways of South Florida. They are especially susceptible to environmental pollutions.<sup>53</sup>

*Fox Squirrel*—The largest species of tree squirrel in North America. Fox squirrels are impressive jumpers, being able to leap up to 15 feet at a time.<sup>54</sup>

## **Other Groups**

Both fish and amphibians are very important pieces to the native ecosystem. Nearly 300 different species of fish occur in the freshwater marshes and marine coastline of South Florida.<sup>56</sup> Freshwater fish populations depend heavily on fluctuating water levels brought on by seasonal variables. The recent introduction of exotic fish to South Florida water supplies has put a strain on native fish populations. Exotic species of fish are fierce competitors.

The Everglades serve as the perfect habitat for a number of amphibious species, including southern toads, pig frogs, Florida cricket frogs, and green treefrogs.<sup>79</sup> Amphibians routinely serenade the landscape with a loud and unusual chorus.<sup>79</sup> They can be found on trees, hallow tree barks, ponds, marshes—anywhere and everywhere, it seems.

The smallest critters of all, namely insects, dominate South Florida by sheer numbers. The Everglades are home to a large variety of fascinating aquatic, semi-aquatic, and terrestrial insects that are capable of flying, swimming, or burrowing; including butterflies, dragonflies, moths, arachnids, grasshoppers, ants, mosquitoes, and many more. Butterflies are the most diverse among native insects; over 90 species of butterfly have been identified in South Florida.<sup>57</sup> Admittedly so, I have a special admiration for these tiny creatures. Many of our native butterflies are covered in beautifully decorative patterns that blend well to their immediate environments.

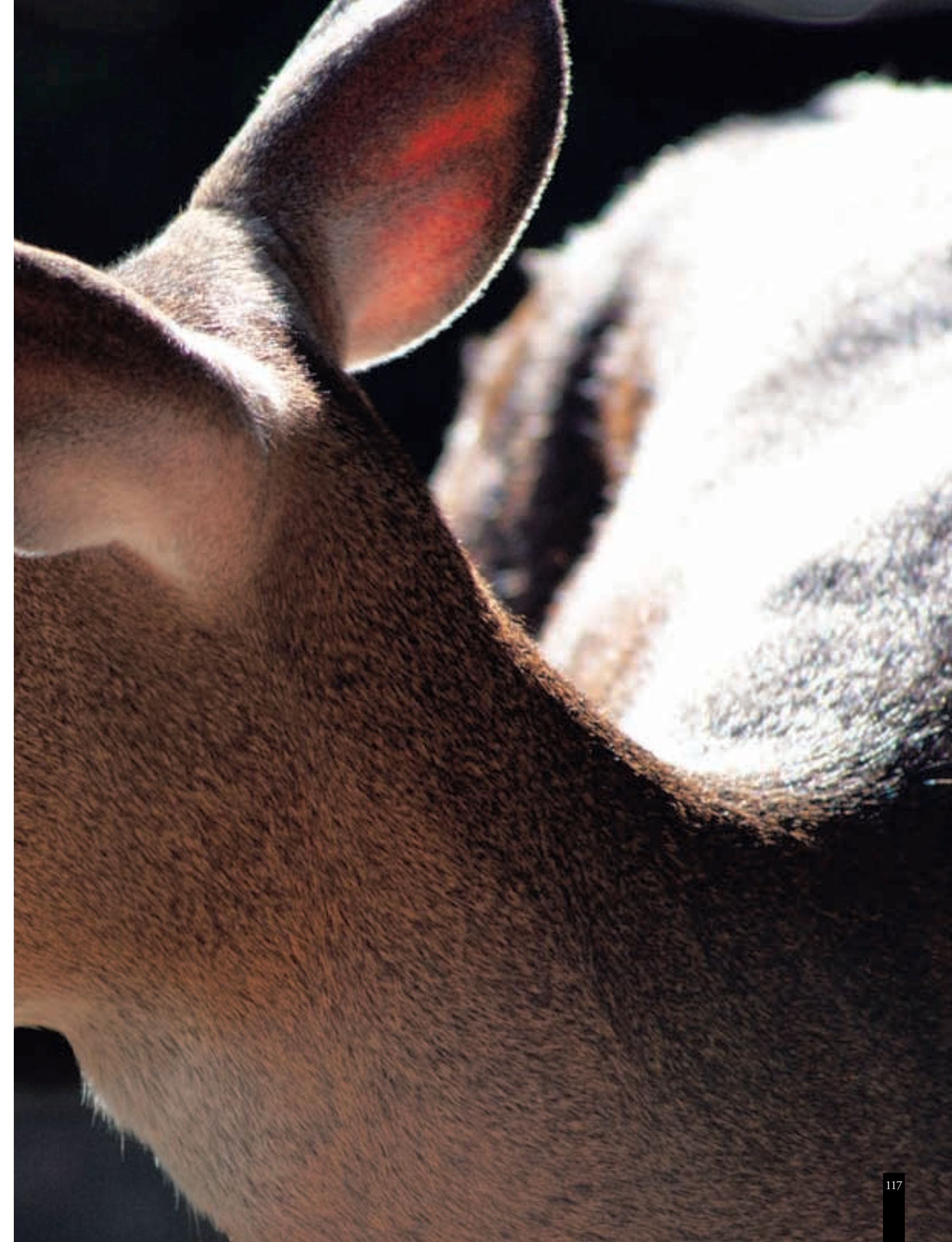


# WHITE-TAILED DEER

*Adult Florida deer are about 90cm (36in) tall. Deer raised in the south tend to be smallest of all; the Florida Key deer is one of the smallest of all 30 subspecies of white-tailed deer.  
(University of Florida)*

*Photograph by: Tommy Rodriguez  
West Palm Beach Zoo*









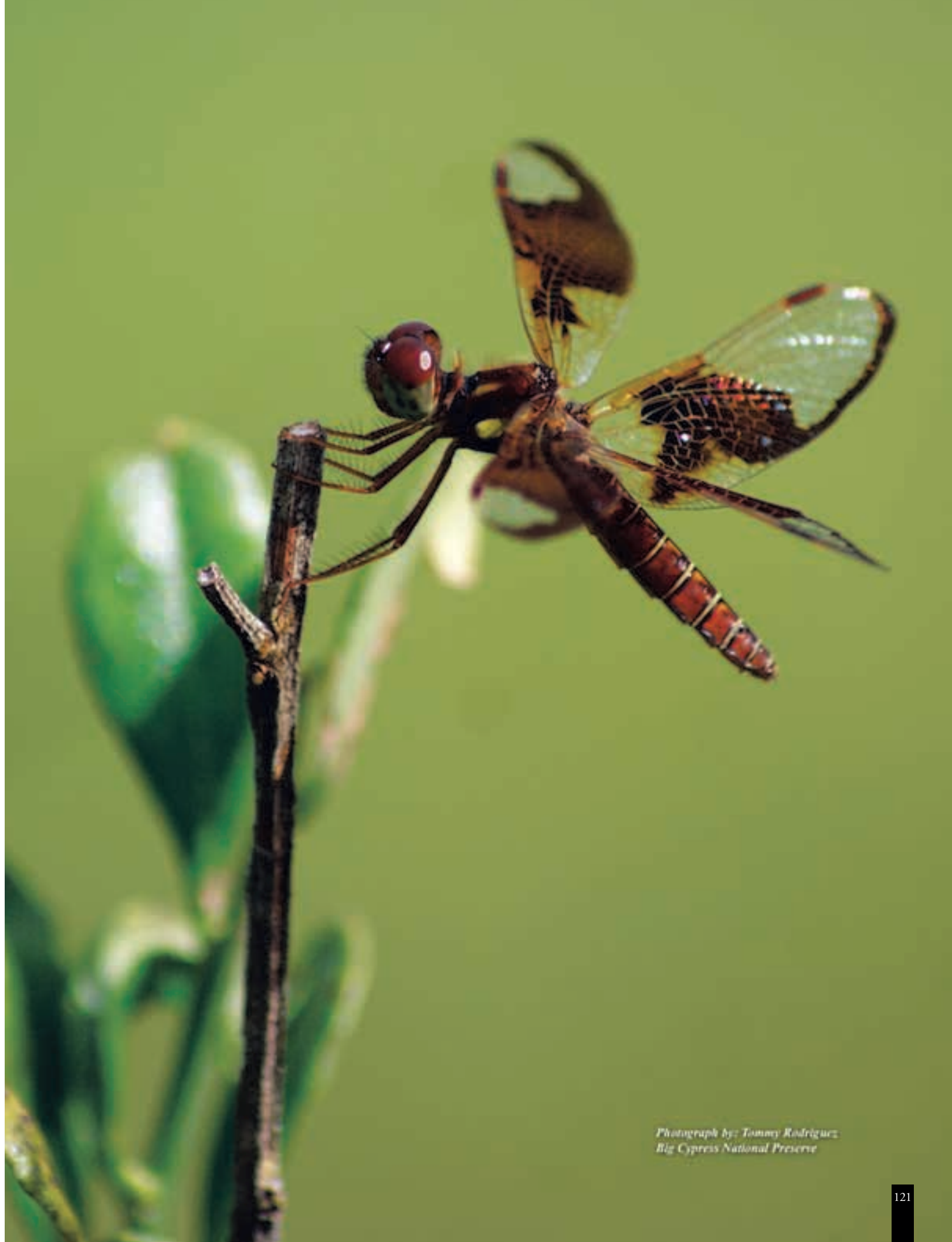
## FLORIDA PANTHER

*The Florida Panther is considered a wilderness species, yet it is an extremely shy animal and is rarely seen in the wild. Its ability to hide and seek habitat in very dense cover makes for difficult sightings.*

*Photograph by: Tommy Rodriguez  
West Palm Beach Zoo*



*Photograph by: Tommy Rodriguez  
Fakahatchee Strand Preserve State Park*



*Photograph by: Tommy Rodríguez  
Big Cypress National Preserve*



*Photograph by: Tommy Rodriguez  
Fakahatchee Strand Preserve State Park*

*Photograph by: Tommy Rodriguez  
Big Cypress National Preserve*





*Photograph by: Tommy Rodriguez  
West Miami-Dade County*

# PRESERVATION





# Florida Panther

NATIONAL  
WILDLIFE  
REFUGE



*U.S. Fish and Wildlife Service  
Department of the Interior*

*Photograph by: Tommy Rodriguez  
Florida Panther National Wildlife Refuge*

The greater Everglades ecosystem has long been home to many species of all types. It once encompassed the entire landmass of the south Floridian peninsula, however the natural treasure that it once was is slowly diminishing right before our very eyes. Disrupted water flows and polluted water, habitat reduction, and exotic plant and animal populations have all contributed in tarnishing this natural wonder. The steady degeneration of its ecosystem is reflected in the dwindling animal populations living within. Today, the Everglades are home to more than 67 threatened and endangered species; its natural borders have been reduced by 50 percent.<sup>58</sup> In its place now stand urban communities and agricultural districts.

Recently, federal agencies and conservation groups have partnered up in the biggest and most expensive, ongoing restoration effort in history, with the hopes of restoring this beautiful American landscape. The days that big-money developers were able to exploit South Florida's rich, untapped resources appear to be a thing of the past—for the time being. Beginning in the 1970s, federal agencies approved a series of projects to reestablish protective zones, preservations, and sanctuaries around many areas of South Florida. Federal regulations now prohibit the development and exploitation of South Florida's protected preservations and natural resources, including the poaching of native wildlife for commercial gain.

But safe havens and wildlife refuge sanctuaries are not the end-all remedies to the problem; they are only a piece of the puzzle. The physical boundaries of a national park do not guarantee a species' survival.<sup>59</sup> During the 1990s, serious environmental rehabilitation took the form of a more direct and focused approach. As a result of contaminated water and declining animal populations, agencies were forced to implement more practical scientific solutions toward the Everglades' restoration. The areas severely devastated by development would now receive more efficient water flows than ever before. Several endangered species made significant recoveries thanks to innovations in modern science. Biologists are now working closely with park rangers to control invasive and exotic populations of plants and animals. Future plans also call for natural alternatives to treating water, which may reduce mercury and phosphorus toxicity levels by up to 76 percent.<sup>58</sup> The impact on the environment could be immediate.

Things are looking up, but we should remain cautious as we move forward. Human population expectancies will bring a whole new set of challenges in the coming decades. Resources will be stretched thin. Demand for real estate is expected to increase; this is a mathematical certainty that cannot be avoided. How will we reconcile and still preserve the environment? That will be a question at the forefront of many discussions in near the future. For now, I remain cautiously optimistic.

## Reasons for Concern

Throughout the early twentieth century, men dug up canals to diverge water supplies to cities and populated areas all over South Florida. Coastlines were converted into urban communities and wetlands into agricultural districts, and consequently, many areas of the Everglades began to experience unusually prolonged draughts. The water supply quickly became contaminated with toxic metals due to polluted runoffs from agricultural operations, which had devastating effects on the native wildlife.

Over the years, the gradual reduction of wading bird populations dropped almost 90 percent since the 1930s.<sup>61</sup> More than 60 species of plants and animals have become either threatened or endangered as a result of habitat destruction. Now, we're also starting to see the effects of climate change on coastlines and low-elevation levels. Many tropical orchids and herbs are in danger due to sea level rise, which causes the salinization of groundwater and in the soils above.<sup>80</sup> Additionally, exotic plants and animals are wreaking havoc on the environment; approximately 26 percent of all local plants and animals belong to non-native groups.<sup>62</sup>

### *Foreign Invaders*

Controlling invasive and exotic plant and animal populations has been a real challenge for scientists. South Florida has the highest percentage of exotic animals in North America, many of which were brought here as part of the exotic pet trade.<sup>62</sup> The control of invasive and exotic species costs American taxpayers 500 million dollars every year.<sup>63</sup>

The South Florida climate is ideal for many of exotic creatures. Also, many exotic creatures do not have natural predators to control their numbers, which can have devastating consequences on the ecosystem. Exotic wildlife will compete for food with native predators and can alter the natural order. In this regard, the Burmese python has been particularly harmful. The Burmese python now sits atop the list of apex predator, next to the American alligator. Pythons will prey on birds and mammals of all kinds, including threatened and endangered animals. Since 2000, over 1,000 Burmese pythons have been removed from the wild.<sup>64</sup>

Every year dozens of exotic pets are picked up roaming the Everglades. Of these, the most common include the African rock python, amethystine python, Nile monitors, and green anaconda. Others like the cane toad were brought to the United States for the biological control of agricultural pests. The cane toad, which has toxic glands capable of killing a predator upon consumption, grows to adulthood very quickly and reproduces at alarming rates. Their numbers are widespread throughout Florida and the southern United States.

Wild boars and black rats were brought onboard ships sailing from Europe during colonization. The wild boar is notoriously territorial. The native Florida panther will prey on wild boar, but at hefty a price. Boars are known to carry 45 different types of infectious diseases, including trichinosis. Trichinosis disease has spread to the critically endangered Florida panther population.<sup>47</sup> This disease is easily transmitted from one mammal to another.

*Photograph by: Tommy Rodriguez  
Bear Cut Preserve*



# BRAZILIAN PEPPER

*Photograph by: Tommy Rodriguez  
Big Cypress National Preserve*



## CANE TOAD

*Photograph by: Tommy Rodriguez  
West Miami-Dade County*





*In some places, such as Florida where it is considered a noxious weed, it is an invasive species because of its quick-growing, large-leaved vine that spreads tenaciously and shades out any plants growing beneath it.*  
*(The Nature Conservancy)*

*Photograph by: Tommy Rodriguez  
Big Cypress National Preserve*

Exotic varieties of plants are equally bad, if not worse. Out-of-control vegetation has displaced many native floras. The Australian melaleuca has caused particular damage in the coastal regions. The melaleuca tree was brought to South Florida for the purpose of draining the wet South Florida soil, but this tree is highly flammable, and populations have quadrupled since it was first introduced. The Australian melaleuca can produce millions of seeds at a time and are known to outcompete native vegetation.<sup>65</sup> Today, Miami-Dade County and federal agencies are working together in order to eradicate large concentrations of melaleuca in West Miami-Dade. The Brazilian pepper plant and air potato also grow rapidly out of control. The air potato wraps its vine tenaciously around native plants and shades out the plant growing beneath it. Air potato plants can grow up to 8 inches a day.<sup>66</sup>

*List of Most Commonly Known Exotic Plants and Animals in South Florida* <sup>63</sup>

- Australian melaleuca: Australia
- Old world climbing fern: Africa
- Brazilian pepper: South America
- Australian pine: Australia
- Latherleaf: Asia
- Water orchid: Amazon
- Water cabbage: South America
- Burma reed: Asia
- Air potato: Asia
- Carrotwood: Australia
- Bromeliad beetle: Central America
- Island apple snail: South America
- African snail: Africa
- Cane toad: Asia
- Asiatic clam: Asia
- Sailfin: South America
- Walking catfish: Thailand
- Mayan cichlid: Central America
- Blue tilapia: Africa
- Burmese python: Asia
- Green iguana: Central America
- Nile monitor: Africa
- Monk parakeet: South America
- Common myna: Asia
- Purple swamphen: Africa
- Wild boar: Europe
- Black rat: Europe

### *A Few Words about the Future of Endangered Species*

When humans fiddle with nature, the results are often unfavorable. The impact of hunting, pollution, and urbanization has brought many species to the brink of extinction. The Everglades are home to 14 federally listed endangered species.<sup>58</sup>

Here is the endangered species list of South Florida, with population estimated in 2011.<sup>58</sup>

- Florida panther: *120–175*
- American crocodile: *2,000*
- Hawksbill turtle: *unknown*
- Green turtle: *unknown*
- Wood stork: *500 pairs*
- Snail kite: *200–400 pairs*
- Key Largo cotton mouse: *unknown*
- Key Largo woodrat: *6,500*
- West Indian manatee: *2,500*
- Schaus swallowtail butterfly: *1,200*
- Atlantic ridley turtle: *unknown*
- Leatherback turtle: *unknown*
- Red-cockaded woodpecker: *unknown*
- Cape sable seaside sparrow: *3,000–4,000*

We humans have a questionable track record in our dealings with the environment. Fortunately, sometimes we manage to get it right. Recent studies show that complete restoration of Florida's Everglades could take approximately 30 years and 7.8 billion dollars.<sup>60</sup> There's a lot of work to be done—but the damage is not irreversible. Together, through conservation and public awareness, we may be able to correct many of these unfortunate trends. Today, it is not enough to just appreciate nature—we have to actively work to protect it.

### *Endangered Species Act of 1973 (US Fish and Wildlife)*<sup>67</sup>

Endangered Species Act of 1973 (16 U.S.C. 1531-1544, 87 Stat. 884), as amended—Public Law 93-205, approved December 28, 1973, repealed the Endangered Species Conservation Act of December 5, 1969 (P.L. 91-135, 83 Stat. 275). The 1969 Act had amended the Endangered Species Preservation Act of October 15, 1966 (P.L. 89-669, 80 Stat. 926).

The 1973 Act implemented the Convention on International Trade in Endangered Species of Wild Fauna and Flora (T.I.A.S. 8249), signed by the United States on March 3, 1973, and the Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere (50 Stat. 1354), signed by the United States on October 12, 1940.

Through federal action and by encouraging the establishment of state programs, the 1973 Endangered Species Act provided for the conservation of ecosystems upon which threatened and endangered species of fish, wildlife, and plants depend. The Act:

- authorizes the determination and listing of species as endangered and threatened;
- prohibits unauthorized taking, possession, sale, and transport of endangered species;
- provides authority to acquire land for the conservation of listed species, using land and water conservation funds;
- authorizes establishment of cooperative agreements and grants-in-aid to States that establish and maintain active and adequate programs for endangered and threatened wildlife and plants;
- authorizes the assessment of civil and criminal penalties for violating the Act or regulations; and
- authorizes the payment of rewards to anyone furnishing information leading to arrest and conviction for any violation of the Act or any regulation issued thereunder.

Section 7 of the Endangered Species Act requires Federal agencies to insure that any action authorized, funded or carried out by them is not likely to jeopardize the continued existence of listed species or modify their critical habitat.

Public Law 94-325, approved June 30, 1976, (90 Stat. 724) extended and increased the authorization of appropriations in section 15 of the 1973 Act.

Public Law 94-359, approved July 12, 1976, (90 Stat. 911), exempted from the prohibitions in the Act and under certain conditions, whale parts and products lawfully held prior to December 28, 1973. It also provided other amendments to facilitate administrative processes in emergency situations, clarified enforcement procedures, allowed disposal of forfeited and abandoned property, and clarified the definition of “commercial activity.”

The authorization of appropriations for Federal grants-in-aid to States was extended by P.L. 95-212, December 19, 1977 (91 Stat. 1493).

Public Law 95-632, signed by the President on November 10, 1978, (92 Stat. 375) extended through March 31, 1980, the appropriations authority under section 15 and made extensive revisions to the 1973 law. A Cabinet-level Endangered Species Committee was established as part of a two-tiered process whereby Federal agencies may obtain exemptions from the requirements of section 7. The Tellico Dam project in Tennessee and the Grayrocks project in Wyoming were to receive expedited consideration by the Committee.

The Secretary of Defense is authorized to specify exemptions from the Act for reasons of national security. The consultation process under section 7 was formalized and strengthened, and now includes the requirement that Federal agencies prepare biological assessments in cases where the Secretary of the Interior has advised that a listed species may be present.

The 1978 amendments also oblige the Secretary to consider the economic impact of designating critical habitat, and to review the list of endangered and threatened species every five years. Public notification and hearing requirements, prior to the listing of a species or its habitat, are specified.

Other changes made by the 1978 statute include: a provision for cooperative agreements with States for the conservation of endangered and threatened species of plants, exemptions from the Act's requirements for the progeny of legally held captive raptors and antique articles made before 1830, revision of the penalty provisions of the Act, and a change in the definition of "species" to limit the application of the term "population" to include vertebrates only.

Public Law 96-69 (40 U.S.C. 174(b)-I and 43 U.S.C. 377a), the Energy and Water Development Appropriations Act for fiscal year 1980, approved September 25, 1979, (93 Stat. 437) exempted Tellico Dam in Tennessee from the Endangered Species Act and authorized completion of the project despite the threat to the endangered snail darter. Additional amendments were enacted in P.L. 96-246, May 23, 1980 (94 Stat. 348) and P.L. 97-79, November 16, 1981 (96 Stat. 1079).

Public Law 96-159 (16 U.S.C. 1533, 93 Stat. 1255-1230), approved December 28, 1979, extended and increased the authorization of appropriations through September 30, 1982. It designated the Secretary of the Interior, acting through the Fish and Wildlife Service, as the Endangered Scientific Authority for implementation of CITES. It also created an International Convention Advisory Commission, and extended the scrimshaw amendments for three years.

Public Law 97-304, approved October 13, 1982, (96 Stat. 1411-1417, 1421, 1422, 1425) extended the annual authorizations under the Act through FY 1985 at the following levels: section 15 (general)—\$27 million; section 6 (grants-in-aid)—\$6 million; section 7 (Exemption Committee)—\$600,000. It also extended the Secretary's authority and overturned the "bobcat" decision of the U.S. Court of Appeals for the District of Columbia.

Public Law 98-327, approved June 25, 1984, (98 Stat. 270) authorizes the Secretary to use money from fines and forfeitures collected under the Lacey Act and the Endangered Species Act to pay for the temporary care of animals and plants seized by our law enforcement agents.

Public Law 98-364, July 17, 1984, (98 Stat. 442), as amended, clarified provisions concerning marine mammals (see Marine Mammal Protection Act of 1972) and provided for the translocation of California sea otters.

Public Law 99-625, approved November 7, 1986, (100 Stat. 3502) authorized the Secretary of the Interior to develop and implement a sea otter translocation plan, to be administered by the Fish and Wildlife Service, specifying statistics of sea otters to be translocated, manner of capture, relocation zone, and measures to contain the population. The 1986 amendments declared that a member of an experimental population shall be treated as "threatened" and provided that section 7 of the Endangered Species Act applies. The amendments also provided for non-defense agency actions in the translocation zone, and for incidental take in the management zone.

Although the funding authority for the Act lapsed for Fiscal Years 1986 through 1988, the Senate Appropriations Committee reports (S. Rept. 99-397 and S. Rept. 100-165) included language indicating that funding was to be provided and the provisions of the Act were to continue to be carried out.

Public Law 100-478, enacted October 7, 1988, (102 Stat 2306) included the following provisions:

Redefines the definition of “person” to clarify law applies to municipal corporations.

- Provides equal authority to Departments of Interior and Agriculture for enforcing restrictions on import/export of listed plants.
- Requires the Secretary of the Interior to monitor all petitioned species that are candidates for listing and specifies emergency listing authority.
- Directs the Secretary of Interior to develop and review recovery plans for listed species without showing preference for any taxonomic group.
- Establishes recovery plan criteria for listed species.
- Requires a status report to Congress on recovery plans, every two years.
- Provides for public review of new or revised recovery plans prior to final approval.
- Requires five-year monitoring for species that have recovered and been delisted.
- Clarifies the use of funds allocated to the States and establishes criteria for allocations.
- Directs that deposits from the General Fund amounting to 5 percent of Pittman-Robertson/Wallop-Breaux Federal Aid accounts be made each year into a special cooperative Endangered Species Conservation Fund.
- Prohibits damage or destruction of endangered plants on Federal lands and on private lands when knowingly in violation of State law.
- Increased by a factor of two-and-one-half the civil and criminal penalties provided under section 11.
- Required the Secretary of Commerce to contract for a National Academy of Sciences study for conservation and status of sea turtles to be completed and reported to Congress by April 1, 1989; and delayed implementation of Turtle Excluder Device regulations until May 1, 1990, inshore and May 1, 1989, offshore. Provided for establishment of a Sea Turtle Coordinator. Authorized \$1.5 million through FY89 to carry out the sea turtle provisions.
- Requires Administrator of the Environmental Protection Agency in cooperation with Secretaries of Interior and Agriculture, to conduct a study for identifying reasonable and prudent means to implement endangered species pesticide labeling program, and to report to Congress one year after enactment of this Act.

- Allows further renewal up to five years for certificates of exemption of pre-Act scrimshaw.
- Requires annual accounting to Congress, starting January 15, 1990, of reasonably identifiable expenditures, species-by-species, made for conserving Endangered or Threatened species; and also requests an accounting by those States receiving section 6 grants.

Reauthorizes appropriations for Fiscal Years 1988 through 1992, as follows:

Department of Interior—\$35,000,000 for FY88; \$35,500,000 for FY89; \$38,000,000 for FY90; \$39,500,000 for FY91; \$41,500,000 for FY92.

Department of Commerce—\$5,750,000 for FY88; \$6,250,000 for each of FY89 and FY90; and \$6,750,000 for each of FY91 and FY92.

Department of Agriculture—\$2,200,000 for FY88; \$2,400,000 for each of FY89 and FY90; and \$2,600,000 for each of FY91 and FY92.

To the Secretary to carry out functions under sections 7(e),(g),and (h)—Not to exceed \$600,000 for each Fiscal Year through 1992.

Western Hemisphere Convention implementation, not to exceed \$400,000 for each of FY88, 89, and 90 and \$500,000 for each of FY91 and 92.

In addition to amending the Endangered Species Act, P.L. 100-478 also included the African Elephant Conservation Act.

Public Law 102-251, Title III, 305, March 9, 1992 (106 Stat. 66) as amended by Public Law 104-208, div. A, Title I, 101 (a), September 30, 1996 (110 Stat. 3009) provided that “the special areas defined in 3(24) of the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1802 (24)) shall be considered places that are subject to the jurisdiction of the United States for the purposes of the Endangered Species Act of 1973.” There is also a provision that requires all Federal agencies to minimize conflicts with recreational fisheries and listed species.

Public Law 105-18, Title II, 3003, June 12, 1997 (111 Stat. 176) provides guidance for consultation under Section 7 for emergency situations.

The National Defense Authorization Act of Fiscal Year 2004, Public Law 108-136, amended Section 4 of the Act by exempting military lands from critical habitat designation that are subject to an Integrated Natural Resources Management Plan, if the Secretary determines in writing that such plan provides a benefit to the species for which critical habitat is proposed for designation. In addition, this law amended Section 4(b)(2) by requiring the Secretary to consider the impact to national security when designating critical habitat.



*Photograph by: Tommy Rodriguez  
Everglades National Park*





*Photograph by: Tommy Rodriguez;  
Big Cypress National Preserve*

## Acknowledgments

Special thanks to Ernie Diaz, Mario Cisneros, and Tomas Rodriguez Sr.

Everglades National Park  
Big Cypress National Preserve  
Fakahatchee Strand State Preserve  
Florida Panther Wildlife Refuge  
United States Department of Interior  
United States Department of Agriculture Soil Conservation  
University of Florida  
Florida International University  
National Park Service  
Florida Fish and Wildlife  
West Palm Beach Zoo  
Corkscrew Swamp Sanctuary.

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## About the Author

Wildlife enthusiast, computational biologist, and amateur photographer Tommy Rodriguez set out on a year-long quest to document the South Florida wilderness. The project, entitled *Visions of the Everglades*, involves independent research and field study in relation to Florida's Everglades—its history, ecology, and preservation. The book features stunning photographs, personal insights, and general information meant to broaden Everglades awareness and preservation.



## About the Book

Curiosity has driven Tommy Rodriguez deep into the marshlands and swamps of sunny South Florida. *Visions of the Everglades* chronicles his experiences in the Florida Everglades. A sense of adventure compelled Rodriguez to take on the task of exploring and documenting its habitats in search of something new. What he found was an experience like no other.

Apart from narrating those experiences, this illustrated book is meant to broaden Everglades awareness. Because of the recent environmental challenges facing this ecosystem, Rodriguez has taken it upon himself to educate the public about preservation and conservation efforts to restore Florida's Everglades. His hope is that this book will serve as a launching board of interest in matters of ecosystem preservation and inspire individuals to get involved.





