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Welcome to Florida

Florida is flat, really flat—with the highest altitudes reaching to only a bit more than three hundred feet above sea level in two areas of the state. One of these is in the center of peninsular Florida near Lake Wales and the other is in the Panhandle region northeast of Pensacola at the Florida-Alabama state line. But just because Florida is flat, that doesn't mean that we have a boring landscape. Florida has some amazing and unique features and a wide variety of ecosystems.

There are 1,350 miles of coastline in Florida, and 75 percent of our population lives in Florida's coastal zones. If you drove the 832 miles from Pensacola to Key West, it would take about fourteen hours with no stops. But you *would* want to stop, because there are so many wonderful attractions and assets in our state. For instance, not too far south of Florida's highest spot in the Panhandle is Falling Waters State Park, where our tallest waterfall is located. The water falls seventy-three feet—not because it falls from a high spot in the landscape, but because it falls into a deep sinkhole in the limestone rock. If you visit, go during the wet season when the water volume is greater. You would also want to stop at the Crystal River Preserve State Park on the Gulf Coast, where warm freshwater springs attract the iconic manatees in the winter. Also, you would want to stop at the Anhinga Trail in Everglades National Park, where you're sure to spot alligators basking on the shore and a wide variety of amazing birds that are so close that

photographers with their huge telephoto lenses have to back up to take their pictures.

Florida has set aside many wonderfully diverse natural areas, including 3 national parks, 3 national forests, 20 national wildlife refuges, 2 national seashores, 114 state parks, 5 state forests, 3 state reserves, and 19 state preserves. The Florida Park Service is one of the largest in the country, with nearly 800,000 acres and 100 miles of beaches set aside for public access, and Florida has won the National Recreation and Park Association's Gold Medal honoring the nation's best state park system four times. From swimming and diving in Florida's rivers, springs, and coral reefs, to paddling, birding, fishing, and hiking or riding on natural scenic trails, Florida's parks and preserves offer year-round outdoor activities for all ages. Visiting Florida's natural areas will help you discover the Real Florida away from the hustle and bustle of your daily life. Setting aside time to appreciate Florida's wonderful assets could take years filled with interesting field trips.

As gardeners, knowing about Florida's local plant communities helps inform our planting choices for our yards, even if they're remote from wild spaces. So I start this introduction to Florida with short descriptions of some of Florida's wide variety of hydrological features, and then I'll cover a few examples of Florida's natural plant communities.

Florida's Natural Water Sources

With some variation through the state, the average annual rainfall is about fifty inches. As a result, Florida has a wide variety of natural water sources, which influence and interconnect local ecosystems and plant communities. Aquifers feed springs when they rise to the surface. Rivers can come from springs and flow to and through wetlands and lakes. Rivers, in turn, nourish the food webs of coastal estuaries. In the past, water has been treated like an infinite resource, but now we are finding that our bodies of water and waterways need more protections and conservation as we move into the future, if we want to leave a livable Florida for future generations.

AQUIFERS

Aquifers are underground networks of porous rocks that hold water and allow water to move through the holes within the rock. When aquifers intersect with the surface of the soil, they are the source for springs. The Floridan aquifer is found beneath all of Florida and portions of Alabama, Georgia, and South Carolina, plus it extends into the Gulf of Mexico and the Atlantic Ocean. This aquifer system has been divided into upper and lower aquifers separated by layers of rock or clay. There are several smaller aquifers nearer to the surface in various parts of the state. The vast majority of our drinking water comes from wells drilled into these aquifers.

Aquifers are replenished by rainwater that percolates through the soil. If more water has been siphoned from the aquifer than the replenishment rate, there may be saltwater incursions or sinkhole formations. Sinkholes can form where the rock below the land surface is limestone or other material that can be dissolved by groundwater. As the rock dissolves, spaces and caverns develop underground. The resulting terrain, called karst, is honeycombed with cavities. When a cavity becomes too big to support its ceiling, it suddenly gives way, collapsing the clay and sand above to leave a sinkhole at the surface. Sinkhole formation can be gradual or sudden, and the holes can be large or small. The western areas in North and Central Florida are more prone to sinkholes than the rest of the state, but these areas also have more springs.

To reduce the stress on the intricate system of Florida's aquifers, there will likely be more irrigation restrictions in the future as droughts increase and as our population continues to grow. As gardeners, we can help protect our aquifers by reducing our landscape irrigation rates and by not applying landscape-wide pesticides or fertilizers that could also percolate into the local aquifer. In addition, we can help by sequestering more rainwater on our properties with rain barrels and rain gardens, which reduces pollution of nearby waterways and allows the water to soak into the soil to replenish the water in the aquifers. I'll cover these topics later in the book.

SPRINGS

There are more than seven hundred springs in Florida, which is the largest collection on the planet! Thirty-three are first-magnitude springs with more than one hundred cubic feet per second (one cubic foot = 7.5 gallons). Eight billion gallons of mostly 72°F water flow from Florida's springs each day. Most of the springs are located in the western areas of the central and northern parts of the state. Fortunately for us, many of the springs are protected and accessible because they're located within local, state, or national parks.

Some of the more notable springs are Ichetucknee Springs, Juniper Springs, Rainbow Springs, Silver Springs, Spring Creek, Three Sisters Springs, Wacissa Spring Group, Wakulla Springs, and Weeki Wachee Springs. Springs are often the sources of water for lakes and rivers.

While it's wonderful that we have access to so many springs, we need to be good citizens as we enjoy them for recreation. We need to be respectful of wildlife, particularly the native West Indian manatees or sea cows (*Trichechus manatus*) that gather at the springs' headwaters to keep warm in the winter. Of course, we don't litter along our waterways, but it's also good to be prepared to pick up any litter or garbage floating in the water or collected along the shorelines. It's up to all of us to keep our springs in the best-possible shape.

One of our favorite adventures is to paddle a mile up the Rainbow River toward its spring, which is located within the Rainbow River State Park. At the boundary of the park, we jump in the water and drift snorkel back downriver towing our kayaks behind us.

Many Florida landscapes include access to bodies of water, and again, we need to be good stewards of the waterways. Our own property backs up to a dammed, spring-fed lake, and there are a series of lakes and ponds in the neighborhood, including a pond in our front yard that we share with a neighbor. It's about a tenth of an acre. Our pond probably does not contain a strong spring, because in years when the dry season is particularly dry, it becomes a mudflat around the edges. During the wet season when it fills up, there is an overflow pipe that empties water into a shallow ravine that runs down to the lake. Living near the water is always interesting.



Swimming with Anhingas in the spring-fed Rainbow River. The Anhinga or snake bird (*Anhinga anhinga*) is a common diving bird in our rivers and lakes.

LAKES

There are thousands of lakes and ponds throughout Florida. Lakes provide important ecosystem services for a wide variety of wildlife, and of course, they also provide recreational opportunities for us. Many of our state parks include lakes of various types so that we may all have access to them. Some of the larger lakes are Dead Lake, Lake Apopka, Lake George, Lake Harney, Lake Istokpoga, Lake Kissimmee, Lake Okeechobee, and Lake Seminole.

Lakes can have low nutrients due to either alkaline or acidic conditions; these typically have crystal clear waters and usually are filled by some of Florida's clear springs. Lakes can also be tea-colored, if they are fed by rivers flowing through acidic, tannin-rich soils, and some lakes are nutrient-rich, filled with lots of vegetation—both floating and emergent.

For many decades, lakes have been focal points for development, which often leads to pollution in the water from lawn-care treatments