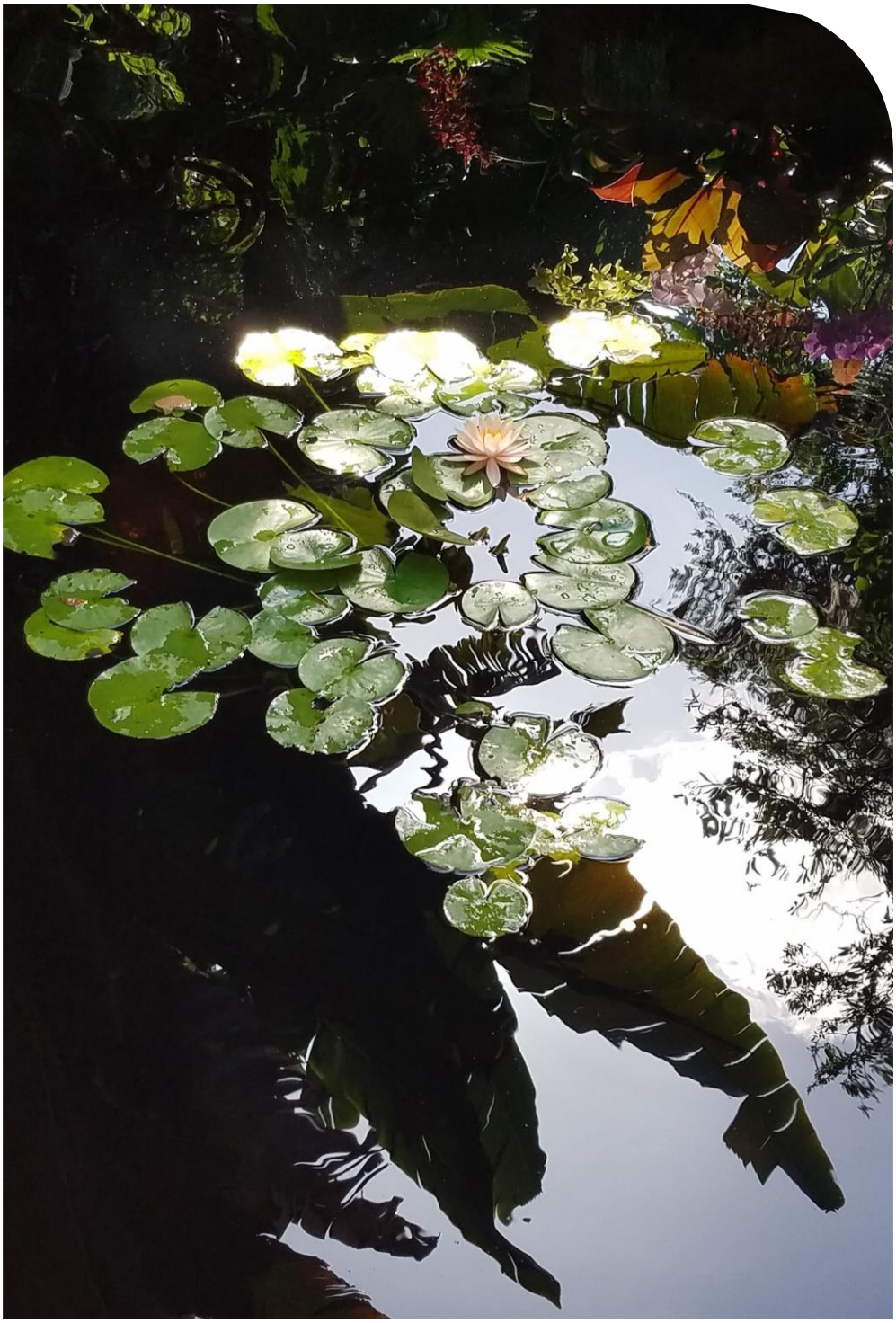
Marie Selby
BOTANICAL GARDENS

SCHOOL PROGRAMS GUIDE



"If you have a **garden** and a library, you have everything you need." --Cicero

WELCOME TO SELBY GARDENS!

Extend your classroom with a journey through our unique, tropical botanical gardens! We offer guided programs for K-12 school groups from September-May, with self-guided explorations available throughout the year. Our signature programs are standards-aligned and offer something for every grade level. For more information, please visit our website, or email schools@selby.org

Programs for Students

SIGNATURE GUIDED PROGRAMS FOR K-12

Selby Gardens' Guided School Tours consist of a docent-led general Gardens tour along with one of the following hands-on field study options. We are happy to tailor any of the programs in support of unique student needs and interests, or for a different grade level than those suggested. Have a special class project in mind? Contact us to discuss the possibilities! *Please note: Our Guided School Tour program relies on a cadre of trained volunteers, so we are unable to guarantee Guide availability for every date and time requested - please book as far in advance as possible.*

Butterfly & Caterpillar Exploration (recommended K-2)

Inspired by Eric Carle's story of the Very Hungry Caterpillar, children are led in the "dance of the butterfly" on the grassy mansion lawn adjacent to the butterfly garden. Using a kaleidoscope lens to simulate butterflies' vision, students investigate caterpillar and butterfly host plants. Learning that caterpillars eat and butterflies drink from certain plants demonstrates the balance required both when designing a butterfly garden and supporting butterfly life cycles.

Look at Those Leaves! (recommended K-3)

In this interactive hands-on study, students will observe both the intricacy and diversity of leaves found amongst Selby's unique plant communities. Using the senses of sight, touch, and smell students will explore and describe the exterior features of the leaves, and create a colorful nature craft featuring their special leaf. Inquiry-driven discussions throughout the lab include: the function of leaf veins, simple vs. compound leaf structure, vascular vs. nonvascular plants, and the purpose of varying leaf shapes.

Fantastic Florida: Native Plant Discovery (recommended 3-8)

Florida is home to unique and intricate ecosystems, including the mangrove forests and estuaries which line much of our coastlines. In this field study, students will identify plants such as mangroves, sea grapes, sea grasses and other Florida

natives living along our coast and learn the benefits of estuaries and adjoining mangrove forests. Leaf sorting and bark rubbing activities will help students identify the three types of mangroves native to Florida.

Bromeliad Surprise! (recommended 2-12)

Using simple tools, students will work in pairs extracting water and micro-organisms from bromeliad tanks. As students transfer the water into a transparent collection cup, they reveal a world of biodiversity living within the bromeliad. Using both Magiscopes and hand lenses to magnify the "mini-beasts," young scientists will discover the many creatures that depend on the micro-habitat of a bromeliad tank. Saving a bromeliad today may save a frog tomorrow!

Perfectly Positioned Petals: Flower Dissection (recommended 4-8)

Who doesn't like to take things apart to see how they work? In this engaging hands-on lab, students will participate in a flower dissection activity to discover its anatomy and learn how each part functions and contributes to its reproduction, and gain a greater understanding of the process and importance of pollination.

Where Land Meets Sea: Mangrove and Estuary Exploration (recommended 6-12)

Created especially for middle and high school students to extend a field trip on the Carefree Learner. This field study focusing on mangroves and estuaries will broaden students' understanding of the coastal wetlands of Florida and our societal interconnectedness with these precious ecosystems. Students will discover the unique traits that allow mangroves to survive in a coastal environment, and explore how they contribute to coastal ecosystems and human wellbeing. The tour concludes at our dock on Hudson Bayou, where students will board the Carefree Learner. *For student groups not booked on the Carefree Learner, please see our similar "Fantastic Florida" exploration.*

Botany by the Bay (recommended 7-10)

Populations. Relationships. Classification. Adaptations. Pollination. Botany by the Bay is an extended hands-on outdoor lab combining some of our signature explorations with investigations of organismal relationships, pollination, plant classification, populations and communities, and survival adaptations.

Numbers in Nature (recommended 4-12)

Fibonacci numbers and the expression of math in nature take center stage in this unique field study which encourages students to investigate patterns within petals, leaves and more through completion of a garden-inspired scavenger hunt.

Rainforest Masks of Costa Rica (all ages, K-12)

Don't miss bringing your class to see our gallery of hand-carved and painted Rainforest masks exclusively on display in Selby's Museum of Botany & the Arts. These original works depict the vibrant and authentic Borucan culture of the central Costa Rican rainforest and provide a breathtaking glimpse into the flora and fauna of the rainforest. This show lends itself especially well to interdisciplinary studies including art, life science, social studies, Spanish, and economics. *Available annually in January. Contact us or see www.selby.org for dates.*

SELF-GUIDED (TEACHER-LED) TOURS

All subjects can be taught in a garden! Self-guided school groups can reach curricular goals, deepen understanding of classroom lessons, and support unique student needs and interests with a visit to explore our Gardens. Enhance or build your visit around one of the seasonal offerings below, or choose the date that works best for you to explore and find inspiration in Selby's plants, wildlife, and remarkable views of Sarasota Bay. Supplemental self-guiding activities and talking points about the Gardens are available for download at https://selby.org/programs/school-programs/. *Please note: All homeschool groups and youth groups with mixed age levels are self-guided, as are all summertime visits.*

The Orchid Show (All ages, seasonal feature)

Celebrate orchids in their many forms during the Orchid Show! Running for 6 weeks in October and November, and reimagined in a new theme each year, the Orchid Show will amaze visitors with never-before-seen displays of hundreds of living orchids that feature the plant family's dramatic diversity of colors, shapes and even scents, artfully composed in our Tropical Conservatory. This show will also give visitors to our Museum of Botany & the Arts a rare glimpse of treasures from the preserved and bibliographic research collections. *Available Oct.-Nov. Contact us or see www.selby.org for dates.*

Jean and Alfred Goldstein Exhibition Series (all ages, seasonal feature)

This spectacular annual Gardens-wide art-meets-horticulture exhibition series displays the work of major fine artists and relates them to nature and to the botanical collections in the Gardens. Featuring a different artist each year, the exhibition examines their work through the lens of flowers and nature, and showcases dynamic horticultural interpretations of themes found in the artwork. *Available February-June. Contact us or see www.selby.org for dates and artists.*

Embracing Our Differences "Make a Day of It"

Extend your field trip to the annual Embracing Our Differences exhibit held at Sarasota's Island Park with a short stroll along the Bayfront to Selby Gardens! Embrace biological uniqueness and ecological bio-differences as your students enjoy the peaceful beauty of Selby's diverse gardens. *See EOD website for dates. For Title One schools, to "Make a Day of It" at Selby in conjunction with EOD, admission to the Gardens is provided free of charge by the Patricia Rederer Memorial Fund.*

PREPARE FOR YOR VISIT!

All group visits must be scheduled in advance. Please contact us at least a few weeks ahead of time to ensure the best chances of securing your preferred dates as well as a sufficient number of docents for guided groups.

Guided school tours are available during the school year, September-May, M-F, dependent on docent availability. Self-guided explorations are available any time of the year. Field trip times are 10 AM-11:30 AM.

For guided tours, the price is $10.00 per student. For self-guiding, the price is $7.00 per student. Teachers are free, as is 1 chaperone per 10 students. Additional chaperones (maximum 3 per 10 students) are $10.00 each. All members of the group must be included in one single payment.

FUNDING IS AVAILABLE! Grants are available via the Community Foundation of Sarasota County, Education Foundation of Sarasota County and Southwest Florida Water Management District. Thanks to generous donors, Selby Gardens may also be able to provide full or partial scholarships to cover the price of admission. Contact us for more information!

Field Trip FAQs

How many chaperones do we need?
We require at least 1 adult (teacher or other adult chaperone) per 10 students, to a maximum of 3 per 10 students

Can a student/parent use their Selby membership for free admission?
Guided tours are special programs, and not included in Selby membership. All members of a guided group must pay for a guided experience, regardless of membership status. For a self-guiding group, Selby memberships may be used.

Where do we go when we arrive at Selby Gardens?
Buses should drop students off front of our Welcome Center, where you will be met by Selby staff or volunteers. The Welcome Center is the building with the green awning on the West (right-hand) side of Palm Avenue.

Where do buses park?
There are 2 bus parking spots in the lot at the South end of Palm Ave. across the street from the Welcome Center. If the bus will stay on-site during your visit, bus drivers are welcome to enjoy The Gardens free of charge.

For guided tours, will my class stay together?
Small groups of 10-15 get the most out of a guided experience, and are best able to stick together while walking through the grounds. Please have students divided into groups of no more than 15.

What are our lunch options?
School groups are welcome to bring bagged lunches to enjoy picnic-style on the lawn. Please bring blankets or sheets to sit on. There are also 7 picnic tables overlooking Hudson Bayou, adjacent to the parking area. We have air-conditioned storage space if needed, but no refrigeration is available. All lunch trash must be packed out.

May we stay and explore the Gardens or work on our own projects after the guided tour?
Absolutely! Please note, though, that due to space limitations and safety considerations. Please limit groups visiting the Tropical Conservatory or Payne Mansion to 5 students at a time, accompanied by a teacher or chaperone.

May we visit the Gift Shop or Cafe?
Yes! Please remember that The Plant Shop and Cafe are part of the Garden and chaperones must stay with their groups at all times. Due to space limitations, please limit groups visiting the Shop or Cafe to 5 students at a time.

What is your rainy day policy?
Selby Gardens is open rain or shine! We may, however, close the Gardens temporarily during lightning or severe storms. Please dress for the outdoors! If you prefer to cancel in the case of inclement weather, there is no cancellation fee. We will do our best to reschedule you, but cannot guarantee a booking.

I have another question, or need to change plans.
Email us at schools@selby.org, or call 941-366-5731

Our mission:

To provide an oasis of inspiration and tranquility, while furthering the understanding and appreciation of plants, especially epiphytes

GARDEN ETIQUETTE

Help us keep our Gardens healthy and happy!

Our plants are part of our research collection. Please do not touch the plants, or collect leaves, fruits, flowers, etc. Collecting things, even when on the ground, causes unwanted impacts to our Gardens as well as scientific work, especially when multiplied by lots of other people who wish to do the same thing. Plants may also be irritating, thorny, or poisonous. If students see something unique or beautiful, consider taking pictures, drawing, or writing about it instead!

Please do not reach into the koi pond. Bacteria and residues on our hands can make our beloved fish sick!

Guides may invite groups to run on the Great Lawn or explore the roots of the banyan trees, but otherwise, please walk on the sidewalks and do not enter planted areas or flower beds.

Please put electronic devices away during the guided portion of your visit.

TEACHERS' TALKING POINTS ABOUT THE GARDENS

The information on these pages will help you orient yourself to the Gardens and provide details about many of the interesting plants in our collections. If you are part of a guided tour, your guide will share much of this information with your students. If your tour is self-guided, mix and match the following sections to fit the flow of your tour, or use these points to launch further research!

(The following information has been vetted by Selby Gardens' Directors of Botany, Horticulture, and Education.)

Map Points #11-13: Historic Selby House

- We have two people to thank for this lovely garden; Marie and William Selby who bought the property in the early 1920's – about 100 years ago! When Mrs. Selby passed away in 1971, she left her property to the community as a botanical garden for all to enjoy.
- Marie and William Selby's home was originally intended as a gate house but instead of building a larger home Marie convinced Bill to just add on to the original plan.
- Although wealthy enough to construct an ornate mansion, they had no children, and preferred a low-key simple life. They were avid outdoors people who loved nature.
- The area known as Kids' Corner was originally the Selby's garage.

Map Point #4: Sho Fu Bonsai Exhibit

- Bonsai (pronounced "bone-sigh") is an ancient Asian art form which began in China then spread to Japan.
- The goal in Bonsai is to create a miniature representation of an old tree or forest of trees.
- Bonsai can be made from many kinds of trees, but those with smaller leaves are more adaptable. The branches and roots are trimmed regularly to keep them small. A bonsai artist sometimes uses flexible wire to train branches.
- Some bonsai are kept for many, many years and passed down from one generation to the next.

MapPoint #5: Cycads

- On both sides of the sidewalk are these ancient cone-bearing plants. They may look like palms but they are not. In fact, they aren't closely related to any other plant on earth! Prehistoric cycads shared the planet with dinosaurs over 240 million years ago. Their "modern" relatives arose as recently as 12 million years ago. There are about 300 or so species of cycads currently living today. They are considered living fossils.
- Cycads are either male or female; producing distinct cones. The sex of young plants cannot be determined until the cones form on the mature plants. Smaller, slender male cones produce pollen. Larger female cones are covered with velvety fuzz. Once mature, female cones will crumble open to reveal brightly colored (usually red or orange) seeds
- An unusual Florida native cycad is the Coontie (*Zamia floridana*). The Seminoles removed a toxic chemical from the roots and used the plant's starch to produce a kind of flour for bread and a porridge-like food called "sofkee." The name, "coontie," is derived from a Seminole phrase meaning white root or white bread.
- Coontie has become a popular FL landscape plant, which has encouraged the comeback of the rare Atala butterfly, which uses coontie as a larval host plant.

Map Point #6: Fern Garden

- There are over 12,000 species of ferns world-wide; 164 species reside in Florida.
- Like cycads, ferns are ancient plants, and first evolved over 300 million years ago. The ferns on Earth today evolved relatively recently - only in the last 70 million years.
- Fun Facts:
- A tree fern is not a tree! The "trunk" is really an upright collection of tightly packed rhizomes that support the fronds.
- Florida native Resurrection Fern, *Pleopeltis polypodioides* is green and lush after a rain. To conserve moisture during dry periods, the leaves curl and turn brown. They can be dormant for up to 40 years.

Map Point #7: Koi Pond

Koi are Japanese carp and are closely related to goldfish. They can live 30-60 years. Some have been reported up to 200 years old and priced at thousands of dollars. Koi can be like family heirlooms, passed down through generations.

- Please do not put your hands into the pond. The fish have no teeth, but the oils and germs on human hands can be a health hazard for them.
- The floating islands provide shade and protection for the fish from birds of prey.

Map Point #8: Bamboo Garden

- Bamboo is one of the planet's most useful plants – it can be shelter, food, clothing, musical instruments, bicycles and more!
- It's an important crop world-wide for food as well as handicraft and building materials because it is fast- growing.
- Marie Selby planted bamboo along the waterfront to block the view of developing Bird Key.
- There are now about 10 different species of tropical bamboo in this garden.
- Tropical bamboos are "clumpers" that form clusters of stems, as opposed to the "runners" from temperate climates. We have planted tropical bamboos because they are better suited to our Florida climate, and will not spread unpredictably.
- Fun facts:
- There are over 1500 species of bamboos in the world, ranging in height from a few inches to over 100+ ft.
- Most species bloom infrequently. It could take anywhere between 50-150 years. The species planted by Mrs. Selby , *Bambusa oldhamii*, hasn't bloomed in over 1000 years! When bamboo does bloom, all individuals of the same species bloom around the world at the same time (over the course of several years), and then they die. We do not know when ours will bloom.

Map Point #9: Banyans and other Ficus Species

- The Ficus (Fig) family is comprised of well over 1,000 species of trees, shrubs and vines.
- Several of our large Ficus species were planted by Marie Selby's gardener, Grover Yancy, in the 1930's. The banyan at the entrance to the Children's Rainforest Garden are thought to be just two trees, but it appears to be many more.
- Aerial prop roots grow down until they meet the ground, thickening into woody trunks. Old trees can spread out laterally using these prop roots to cover a wide area.
- These large spreading roots help to physically support the tree as well as to access more nutrients from the thin layer of soil.
- Moreton Bay Fig, *Ficus macrophylla,* is the tall majestic tree south of the banyans with the large octopus-like buttress roots
- All banyans are figs, but not all figs are banyans.
- In an Indian dialect, banyan means "grocer/merchant." Traditionally, these trees provided a shaded place for meetings or for merchants to sell their goods. Eventually "banyan" became the common name of the tree itself.
- *Ficus aurea,* the strangler fig, is widespread in Florida and the Caribbean region.
- The seeds of strangler figs germinate in a tree canopy, or the "boots" of palms. Their roots eventually grow long enough to reach down into the ground. Eventually they achieve sufficient size and vigor to surround and overwhelm their host, hence the common name "strangler fig."
- Several of these figs can be seen at Selby Gardens, particularly on cabbage palms.

Map Point #10: Ann Goldstein Children's Rainforest Garden

- Opened in 2013, the Children's Rainforest offers a delightful space for discovery, exploration, learning and PLAY!
- Rainforests are made up of four vertical layers, each with its own unique inhabitants. From bottom to top: the forest floor, the understory, the canopy, and finally, the emergent layer. Our rainforest represents all but the emergent.
- Half of the entire world's plant and animal species are found in the rainforest, and rainforests are very high in epiphyte diversity.
- The size of the world's rainforest has shrunk to half the size they were just 50 years ago. The better we understand the living world, the better we are able to conserve it for future generations
- Selby's botanical research has focused on the rainforests of the New World tropics: the Caribbean, Central, and South America. However, we also have a large collection of specimens from the Old World rainforests of Africa and Asia. Our rainforest displays extend from the Tropical Display House, through the Cycad, Fern, and Bamboo Gardens, to the Children's Rainforest Garden.

Map Point #14: Succulent Garden

- A succulent is a plant that has thick, fleshy leaves and/or stems, often an adaptation to an arid climate.

- Surprisingly, many rainforest plants such as orchids and bromeliads have similar adaptations because they perch on other plants, rather than live in soil, and also have limited access to water.
- Some well-known succulents include Aloe, Agave, Yucca, Kalanchoe and most cacti.
- Not all plants with spines are cacti, and not all cacti have spines!
- The cactus family is only one of about 40 families that have succulent species.
- To replicate an arid environment, there is no irrigation provided for the succulent garden. Growth in sandy soil and on mounds allows for quick drainage.

Across from Map Point #16: Bo Tree, or Bodhi Tree

- This fig tree, *Ficus religiosa,* from southern Asia has a long cultural association with both Buddhists and Hindus. It is believed that Buddha sat under a bo tree for 7 years to reach enlightenment.
- The leaves make a beautiful, meditative sound in the wind. (Sometimes associated with running water or rainfall.)
- Leaf has a pointed "drip tip" that enables water to run off quickly; discouraging algae growth and enhancing the plant's ability to photosynthesize.
- Fun fact: Selby's Bo tree was downed in Hurricane Gabrielle in 2001 and propped back up with the use of a tug boat. As you can see, it has recovered beautifully!

Map Point #17: Mangrove Walk

- This area is a collection of Florida Native coastal plants including sea grape and mangroves.
- Mangroves aren't a particular species of tree, but rather a varied group of salt-tolerant shrubs and trees that grow along many tropical coastlines worldwide.
- Mangroves represent one of the most productive ecosystems in Florida, providing food and a safe haven for many birds, fish and other coastal and marine creatures. They filter pollutants and play a major role in stabilizing shorelines and preventing erosion. State and local regulations have been enacted to protect Florida's mangrove forests.
- There are 3 species of mangroves in Florida (and they are not related to one another!)
- Red Mangroves can live directly in salty or brackish water by filtering salt out at the roots. The have arching prop roots that stabilize them in the shifting tides and provide air. They are also known as "walking mangroves" because their roots look like legs that have allowed them to walk out into the water.
- One of their other notable characteristics are their long green torpedo-shaped propagules, which are seedling that have germinated while still on the plant. They can be seen in late spring and summer.
- Black mangroves grow in the intermediate intertidal zone. They have "pneumatophores", which are pencil-like roots that stick up vertically to obtain oxygen when the tide is high.
- The backs of black mangrove leaves are whitish and salty. You can lick it! Excreting salt through their leaves allows them to survive in brackish water.
- White Mangroves are usually found a little farther inland of red and black mangroves.
- They are identifiable by holding a leaf up to light to see little black pits along the edge of the leaves, at the ends of some veins. They also have a small pair of nodular nectar glands found at the base of the leaf.
- 80% of all the world's seafood started life in a mangrove "nursery".
- The flowers of the Black mangroves produce excellent nectar for honeybees. Look for mangrove honey in stores!

Map Point #19: Palm Grove

- Various palms growing along the bay, from mid-point to north end of the Gardens.
- Palms are not trees! They don't develop growth rings annually, and their stems stop adding width to once they mature. Palms are monocots, which means they are more like grasses, corn and irises.
- The coconut palm, *Cocos nucifera,* is one of the most popular and well-known palms. They may live as long as 100 years, producing fruits from about 6-10 years old until 80 years of age.
- The fruit takes a year to ripen. Each fruit contains just one seed-- a nut filled with a layer of white coconut "meat," and a salty-sweet watery liquid. It is one of the largest seeds in the world.
- One of the most useful fruits, coconut oil is used for cooking and in a wide range of beauty products. Coconut "milk" and coconut water have become increasingly popular health drinks.

Map Point #21: Tidal Lagoon

- The tidal lagoon intercepts storm water runoff, allowing it to percolate through vegetation and sediment to filter out pollutants from the urban landscape instead of flowing directly into the bay.

- The excavation of the lagoon, hammock area and marsh flat that extends toward the bay was a restoration project that took place in 1997.
- The restoration removed exotic plants and addressed the need to protect coastal zone natural habitats, wildlife, shoreline plant species, and freshwater resources.
- Native species include: black rush and leather fern, buttonwoods, royal palm, southern red cedar, oaks and stoppers, grasses, as well as wild cotton and wild coffee.
- A well-established bald cypress is sending up characteristic "knees" along the path. Knobby cypress knees are icons of southern swamps, but their purpose remains a scientific mystery!

Map Point #23: Bromeliad Garden

- This garden demonstrates the diversity of these interesting plants. (3300 known species, with 16 Florida natives)
- Some bromeliads are terrestrial - growing on the ground. Most bromeliads are epiphytic – living upon other plants without doing harm to or taking nourishment from the host plant.
- Notice the characteristic rosette-shaped cups or "tanks" in the center of the plants. Here you will find water stored for the plant that is also enjoyed by a variety of insects, frogs, lizards, birds, and other small animals; up to 250 micro-organisms can live
- Fun fact: the pineapple is the fruit of a popular terrestrial species of bromeliad, *Ananas comosus*
- Spanish moss is neither Spanish nor moss! It's a bromeliad, and related to….pineapples! Look for tiny green flowers in late spring.
- Spanish moss and other air plants do not harm trees! Air plants perch and grow well on trees that are in decline or have sparse leaves because more sun and rain are available than in a tree with dense foliage.

Map Point #27: Butterfly Garden

- Butterflies are attracted by the many colorful plants in this garden, which provide nectar (their food).
- The leaves of host plants provide food for the caterpillars to grow and thrive.
- While butterflies travel from flower to flower, they help with pollination by transferring the pollen they encounter.
- 4 stages of the butterfly life cycle: egg –> larva (caterpillar) –> pupa (chrysalis) –> adult (butterfly).
- Inside the butterfly cage you can see the stages of metamorphosis or transformation: caterpillars munching on leaves, climbing to the top of the cage, forming a chrysalis and emerging as a butterfly. How exciting!
- The emergent butterflies are released back into the garden where they will lay their eggs and the cycle continues.
- Common sightings include: swallowtails, monarchs, fritillaries, sulphurs, skippers and buckeyes.
- Ideally, a butterfly garden should be sunny, sheltered from the wind, and provide damp areas where the butterflies can find water and rocks or other hard surfaces on which to sun themselves.
- A butterfly has no mouth! It drinks through its proboscis – a tongue-like coiled tubular feeding structure that can reach inside the flowers.

Map Point #28: The Payne Mansion

- Many visitors believe that this stately home was the Selby home. It was home to Anna & Christy Payne, the Selby's neighbors. It's now the Museum of Botany & the Arts which hosts five different botanically themed exhibits each year.

Map Point #25: Tropical Fruit Garden

- Located behind the Carriage House is the edible garden.
- With more than 20,000 edible plants in the world, only a fraction of these are grown commercially. About 100 are commonly used as a food source for humans. The plants displayed here seasonally demonstrate the kinds of edible plants individuals can easily grow at home in Southwest Florida.