

Talking Points about the Gardens

Hello Teachers! The information that follows provides an overview of the Gardens along with interesting details about many of the plants in these sub-gardens. If you are part of a guided tour, your guide will share much of this information with your students. Following the tour, feel free to augment your experiences by sharing whatever additional material you'd like to cover. If your tour is self-guided, mix and match the following sections to fit the flow of your tour.

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

Historic Selby House:

- o We have two people to thank for this lovely garden; Marie and William Selby who bought the property in the early 1920's – almost 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.
- o 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.
- o Although wealthy enough to construct an ornate mansion, they preferred a low-key simple life. They were avid outdoors people who loved nature and had no children.
- o The area known as Kids' Corner was originally the Selby's garage, but now used as a hands-on area of play and learning for young families.

Sho Fu Bonsai Exhibit:

- o Bonsai (pronounced "bone-sigh") is an ancient Asian art form which began in China then spread to Japan
- o Bonsai is not a particular type of tree but those with smaller leaves are more adaptable; such as different types of Ficus, Cypress, Juniper and Pines. The leaves and roots are trimmed regularly to keep them small.
- o The goal in Bonsai is to create a miniature representation of an old tree or forest of trees.

Cycads:

- o On both sides of the sidewalk and heading to the plant shop are these ancient cone-bearing plants. They may look like low-growing palms but they are not closely related to any other plant on earth. Today's cycads arose as recently as 12 million years ago. While ancient cycads shared the planet with dinosaurs over 240 million years ago, those species are long-gone, and not among the 300 or so species of cycads currently living today.
- o Florida Coontie:
 - An unusual Florida native cycad considered a "living fossil." It's become very popular in FL landscape which has encouraged the presence of the rare Atala butterfly, which uses coontie as a larval host plant.
 - Coontie 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, brown female cones are covered with velvety fuzz. Once mature, female cones will crumble open to reveal bright reddish orange seeds.
 - Native Floridians removed a toxic chemical from the stem and used the plant's starch to produce bread. The name, "coontie," is derived from a Seminole phrase meaning white root or white bread.

Fern Garden:

- o There are over 12,000 species of ferns world-wide; 164 species in Florida
- o Australian Tree Fern is not a tree!
- o Resurrection Fern, *Pleopeltis polypodioides* is green and lush after a rain. To conserve moisture during a dry period, the leaves curl and turn brown. *Fun fact: they can be dormant for up to 40 years*

Koi Pond:

- o Koi are Japanese carp and are closely related to goldfish. They can live 30-40 years. Some have been reported up to 200 years old and priced up to thousands of dollars and like the bonsai, can be passed down through generations.
- o On the far side of the pond, notice the banana trees and the tall traveler's tree.
- o Please do not put your fingers into the pond. Though the fish have no teeth, the oils and germs on human hands can be a health hazard for them.
- o The floating islands provide shade and protection from birds of prey for the koi fish.
- o *Fun Fact: for the past several years, the Koi Pond has become a favorite home to a couple of duck families in the spring who take up residence and feast on the koi fish food.*

Bamboo Garden:

- o Marie Selby planted bamboo along the waterfront to block the view of developing Bird-Key.
- o There are about 10 different species of tropical bamboo in this garden.
- o Important sustainable crop world-wide for food and building materials b/c it is quick growing, some up to 4 ft per day. Height ranges from 1 ft. to 100 ft.
- o Growth habit: Categorized as "clumpers" (Tropical) or runners (Temperate). We have planted "clumpers" so that they don't take over the garden.
- o Some species bloom every year. Many bloom irregularly, with one mass blooming, and then they die. We do not know when ours will bloom. Could take between 60-120 years.
- o Bamboo is one of the planet's most useful plants – it can be as shelter, food, clothing, instruments, and more.

Banyans and other Ficus Species:

- o The Fig family (Moraceae) is comprised of well over 1,000 species of trees, shrubs and vines.
- o Several of our large *Ficus* species were planted in Marie Selby's day and are now over seventy years old.
- o All banyans are figs, but not all figs are banyans.
 - *Ficus benghalensis*, the true banyan, is exceptional for its potentially amazing spread.
 - The banyans in front of the Selby House were planted by Marie Selby's gardener, Grover Yancy in 1939. Thought to be just two trees, it appears to the casual observer 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.
 - In an Indian dialect, banyan means "grocer/merchant." Traditionally, these trees provided a shaded place for village meetings or for merchants to sell their goods. Eventually "banyan" became the common name of the tree itself.
- o **Moreton Bay Fig**
 - *Ficus macrophylla* is the tall majestic tree south of the banyans with the large octopus-like buttress roots.
 - These large roots help to physically support the tree as well as to provide a means to tap into the thin layer of nutrients in the soil. (see sign)
- o **Strangler Figs** (one can be seen wrapped around a cabbage palm near the mangrove boardwalk)

- *Ficus aurea*, the Florida strangler fig, is widespread in Florida and the Caribbean region.
- Many live as epiphytes (hemi epiphytes) until they reach sufficient size and vigor to overwhelm their host, hence the common name “strangler fig.”
 - A **hemi epiphyte** is a plant which begins its life as an epiphyte but which later grows roots down into the ground. The seeds of hemi epiphytes germinate in the canopy and initially live epiphytically. During one part of their lifecycle, they live epiphytically. They can start in the ground or in the air and then flip flop. For example, they can either send roots up or down, and these roots eventually make contact with the ground.
- Several of these figs can be seen at Selby Gardens. If they surround a palm or other monocot (a tree that grows tall, not wide) they will not strangle the tree. If they choose to take root on say, an oak or maple (dicots or trees that grow wide), they will kill the host through shade/competition – not through strangulation/choking.

Succulent Garden:

- o A succulent is a plant that has thick, juicy, fleshy leaves and/or stems; often an adaptation to an arid climate. Surprisingly, many rainforest plants such as orchids and bromeliads have similar adaptations b/c they also have limited access to water.
- o Some common succulents include *Aloe*, *Agave*, *Yucca*, *Kalanchoe* and most cacti.
- o The cactus family is only one of about 40 families that have succulent species.
- o Not all plants with spines are cacti, and not all cacti have spines.
- o To replicate an arid environment, there is no irrigation provided for the succulent garden. Also, full sun and growth in sandy soil and mounds allows for quick drainage.
- o Along Hudson Bayou a large number of sea grapes was recently removed to all the mangroves to flourish as well as to make way for a new planting of sun loving bougainvillea vines on a trellis.

Bo Tree, or Bodhi Tree (*Ficus religiosa*):

- o This *Ficus* tree 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.
- o The leaves make a beautiful, meditative sound in the wind. (Sometimes associated with running water or rainfall.)
- o 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. It has since miraculously recovered!*

Bay Walk:

- o This area is a collection of Florida Native costal Plants including sea grape and mangroves
- o State and local regulations have been enacted to protect Florida’s mangrove forests.
- o Mangroves: A varied group of salt-tolerant shrubs and trees that form one of the most productive ecosystems in Florida, as well as along many tropical coastlines worldwide.
 - Mangroves are rich in life, providing food and a safe haven for coastal and marine creatures. (Fun Fact: 80% of all the world’s seafood started life in a mangrove “nursery”)
 - They filter pollutants and play a major role in stabilizing shores and preventing erosion.
- o **Red Mangrove** can live directly in salty, fresh, or brackish water.
 - o **ROOTS**: Arching prop roots that provide air and stabilization (“walking tree”)Salt excluders, filtering salt out at the roots
 - o **BARK**: The smoothest of the three mangroves.

- o LEAVES: Prominent long pointed terminal bud; Leaves are opposite, thick, oval with a short point, notably darker on the upper surface when compared to the lower.
- o FLOWERS & SEEDS: White, fringed petals with yellowish sepals; Torpedo-shaped propagules – fully germinated seedlings; Viviparous – seeds germinate while still on the plant
SIZE: Can grow to over 25 m (80 ft.) tall in the tropics; to 7 m (20 ft.) in Florida.

- o **Black Mangrove** grows in intermediate intertidal zone.
 - o ROOTS: Distinctive *pneumatophores*, pencil-shaped aerial roots, used to obtain oxygen
 - o BARK: Dark-colored bark has a distinctive checkered texture
 - o LEAVES: Opposite, elliptic to oblong leaves with obtuse tip; Leaves are shiny green on upper surface, whitish and salty on lower ; Salt excreted through leaves (Fun fact: can lick the back of the leaf for a salty treat)
 - o FLOWERS & SEEDS: Fragrant white flowers with yellow throat produce excellent nectar for honeybees; lima bean or tear-shaped leathery fruits or propagules; Viviparous - seeds germinate while still on the plant
SIZE: Trees grow to 20 meters (65 ft.) tall

- o **White Mangrove** usually found landward of red and black mangroves.
 - o ROOTS: Salt extruder - filters out salt at the roots Not always visible, may produce a few isolated pneumatophores (aerial roots) under certain conditions
 - o BARK: longitudinally and deeply furrowed
 - o LEAVES: Opposite, broadly rounded leaves, often with a shallow notch at the tip; light green on both surfaces; Blackish pits at the ends of some veins toward the leaf margin (hold leaf up to light to see); Pair of nodular nectaries found at the base of the leaf blade; Salt excreted through leaf glands
 - o FLOWERS & SEEDS: Small whitish flowers occur in terminal clusters; Small greenish fruits with longitudinal ridges; Viviparous – seeds germinate while still on the plant
 - o SIZE: Shrubs or trees to 15 meters tall (50 ft.)

Palm Grove:

- o Various palms growing along the bay, from mid-point to north end of the Gardens.
- o Fun fact: Palms are not like normal trees; they are more like a grass. Palms are monocots (like bamboo, grass, corn and irises) - they don't develop growth rings annually, and their stems are different from tree trunks in that they stop adding width to their trunk once they mature.
- o The **coconut palm** (*Cocos nucifera*) is one of the most popular.
 - They may live as long as 100 years, producing fruits till 80 years of age.
 - The coconut fruits start developing when the plant is around 6-10 years old and take a full year to ripen.
 - The fruit contains just one seed and is one of the largest seeds in the world.
 - Inside the fruit lies a nut filled with a layer of white coconut "meat," and a salty-sweet watery liquid.
 - One of the most useful fruits in the world; coconut oil is used for cooking and in a wide range of beauty products. Coconut "milk" or "water" has become an increasingly popular health drink.

Tidal Lagoon:

- o The tidal lagoon intercepts runoff, allowing it to percolate through vegetation and sediment instead of flowing directly into the bay. It filters out pollutants carried from urban landscapes to the bay through storm water runoff.
- o The excavation of the lagoon, hammock area and marsh flat that extends toward the bay was part of a restoration project that began in January 1997. It included the removal of exotic plant species from the shoreline.
- o The restoration addressed the need to protect coastal zone natural habitats, wildlife habitats, shoreline species, and freshwater resources.
- o Functioning as a storm water retention pond, the freshwater/brackish lagoon also provides a wildlife habitat.
- o Species include: black rush and leather fern (freshwater/brackish), native Florida trees (buttonwoods, royal palm, southern red cedar, oaks and stoppers), native palms, grasses, as well as wild cotton and coffee.
- o A bald cypress planted prior to the project is well established in the freshwater natural area, where it is sending up characteristic knees visible along the path.
- o An iconic live oak (*Quercus geminata*) sits at the south end of the pond and is dripping with epiphytic plants – this is a great place to point out three of the most commonly found epiphytes seen in the Gardens: ferns, bromeliads and orchids.

Bromeliad Garden:

- o Located near the south side of the Christy Payne Mansion, this garden demonstrates the diversity of these interesting plants. (3300 known species with 16 species of Florida natives)
- o Some bromeliads are terrestrial - growing on the ground. *Fun fact: the pineapple is the fruit of a popular terrestrial variety of bromeliad.*
- o Many bromeliads are epiphytic – living upon other plants without doing harm to or taking nourishment from the host plant.
- o 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 in one tank.
- o *Fun fact: Spanish moss, is neither Spanish nor moss! Look for fragrant small green flowers in late spring. They do not harm the trees however, as a tree declines and loses leaves, the improved light provides opportunity for growth of Spanish moss.*

Butterfly Garden:

- o A lovely and colorful open-air garden located in front of the Christy Payne Mansion designed to attract butterflies and provide them with host plants.
- o Ideally, a butterfly garden should be sunny, sheltered from the wind, and provide damp areas where the butterflies can find water and rocks on which to sun themselves.
- o Butterflies are attracted by the many native plants in this garden, which provide their required nectar (food). A butterfly drinks through its *proboscis* – a tongue-like coiled tubular feeding structure that can reach inside the flowers.
- o While butterflies travel from flower to flower, they help with pollination by transferring the pollen they encounter.
- o Host plants provide food for the caterpillars to grow and thrive. Caterpillars eat & butterflies drink.

- o Butterfly life cycle: egg – larva (caterpillar) – pupa (chrysalis) – adult (butterfly). A chrysalis is the capsule or enclosed pupa from which a butterfly develops.
- o Eggs, caterpillars, and the leaves the caterpillars prefer to eat are placed inside a butterfly cage located in the Garden. Here you can see the stages of their metamorphosis or transformation: caterpillars munching on leaves, climbing to the top of the cage, forming a chrysalis and emerging as a butterfly. How exciting!
- o The emergent butterflies are released back into the garden where they will lay their eggs and the cycle continues.
- o Common sightings include: swallowtails, monarchs, fritillaries, sulphurs, skippers and buckeyes.
- o The Payne mansion was home to Anna & Christy Payne, the Selby's neighbors. Many visitors wrongly believe that the Payne Mansion was the Selby home. It's now the Museum of Botany & the Arts which hosts six botanically themed exhibits each year.

Tropical Fruit Garden:

- o Located behind the Carriage House, is the edible garden. Sometimes Earth Boxes are displayed to demonstrate how individuals can easily grow their own food at home.
- o Although it is assumed that tropical regions are flourishing with plant life, the soil is often overworked and the nutrients have leached out. Some of the species in the Tropical Fruit Garden are adapted to live in harsh areas with inferior conditions.
- o 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.

Green Roof Demonstration Garden:

- o A green roof is a rooftop green space, and can range from a small personal garden, to a park. Daily temperature fluctuations deteriorate conventional roofing materials but green roofs help to maintain a constant temperature. They also provide precious wildlife habitat, reduce heating and cooling costs and lessen urban heat island effect.
- o Selby Gardens' Green Roof demonstration exhibit is the first of its kind in the state of Florida. One of the unique features of this exhibit is that it's built at ground level, making this functional green roof easy for everyone to enjoy. It sits on top of our 55,000 gallon cistern which also collects rainwater for Gardens' irrigation.
- o During rainstorms, water rushes from roofs creating flooding streams that carry debris and chemicals like fertilizers and pesticides from the landscape. As this water flows down streets, oil and residue also gets picked up and funneled into our streams, lakes and bays via storm drains. The water and its pollutants are called storm water runoff. Green roofs help lessen this runoff by absorbing 60 – 100% of the rain, releasing it slowly over time. The plants also use the water, returning clean water back into the air through their leaves.
- o If you note the large conifer growing west the green roof garden, it is a Hoop Pine (*Araucaria cunninghamii*). It was recently discovered that hoop pines can live for up to 450 years and can grow as high as 60 meters (nearly 200ft) tall!

Ann Goldstein Children's Rainforest Garden (CRG):

Opened in November, 2013 at Selby Gardens, the children's rainforest offers a delightful, natural space for discovery, exploration, learning and PLAY! More info can be found [here](#)

<http://www.selby.org/gardens/ann-goldstein-childrens-rainforest-garden> - the three key teaching concepts of the CRG are:

- o Biodiversity of the world's rainforests
- o The physical characteristics of the rainforests
- o The importance of plants to YOU

Selby's botanical research has largely been based in the new world tropics: the Caribbean, Central & South America and much of our rainforest plants come from these regions. However, we also have a large collection of specimens from the old world rainforests of Africa and Asia. Staghorn ferns and bamboo, for example are old world, whereas bromeliads and cacao are new world. Our rainforest display extends from the Tropical Display House, through the Bonsai, trellis, cycad, fern, bamboo, koi and children's rainforest gardens. Selby has focused on the rainforests of the world for two reasons:

- o Half of the entire world's plant and animal species are found in the rainforest! The size of the world's rainforest has shrunk to half the size they were 50 years ago.
- o Rainforests are high in epiphyte diversity