

bers/golfers. Well, there you go, contact the Florida Master Naturalists!

Since the program started in 2001, more than 1500 certificates have been issued and there are 150 trained FMNP Instructors representing 85 organizations/entities, and they are in 43 counties in Florida. Workshops are held throughout the state, and you can find more information about this program and even register for classes through their website, [www.MasterNaturalist.org](http://www.MasterNaturalist.org).

Larry Livingston, CGCS at Camp Creek Golf Club in Panama City Beach recently completed the classes and he thinks it is a great program for all superintendents to consider. "I am really glad that I decided to take the class. It not only teaches about our environment, but teaches 'how to teach' as well." So, if you won't listen to me about taking the classes, listen to Larry. He is now the "expert." I really like the quote the FMNP has on its Web site:

"For in the end, we will conserve only what we love. We will love only what we understand. We will understand only what we are taught." – Baba Dioum

That's very cool and very true.

An Environmental Case Study for ACSP Certification

# Butterfly Garden Revamp

**Project Title:** Butterfly Garden Revamp

**Property Name:** Chi Chi Rodriguez Golf Course

**Location:** Clearwater, Fla.

**Project Coordinators:** Jamye Pecci, program coordinator and Albert Boline, golf course superintendent

**Project Description. Give an overview of the project. Why did you choose it? What were conditions like before and after implementing the project?**

The project was a revamp of an existing butterfly garden to provide ample food, additional areas for egg laying, and expansion of the garden into another courtyard area. Our purpose in doing this was to create a self-sustaining butterfly garden and attract a wider variety of butterflies. The previous garden had been smaller and had fewer plants to sustain the butterfly population. The

results were quick defoliation of plants, plant death and butterfly attrition as they moved on to search for food.

**Goals: Please list your goals for the project.**

1. Expand current garden into second garden courtyard.
2. Research butterfly food plants available and stock garden with plenty of plants.
3. Add butterfly houses.
4. Involve students, teachers and aides from on-site fourth- and fifth-grade classes.

NOTE: The Modesta Robbins Partnership School is the only privately funded public school in the United States to be located on a golf course. There are currently two classrooms which house fourth- and fifth-grade students. The school is part of the Pinellas County School System. The school caters to students who are struggling in a large classroom setting and/or have low self-esteem.

**Implementation and Maintenance: What specific steps did you take to implement it? What kind of on-going maintenance does it require? Please give sufficient detail so that someone interested in duplicating this project could do so.**

1. Research was conducted by the fourth- and fifth-grade students, resulting in a list of plants that attracted butterflies and that grew in our planting zone.

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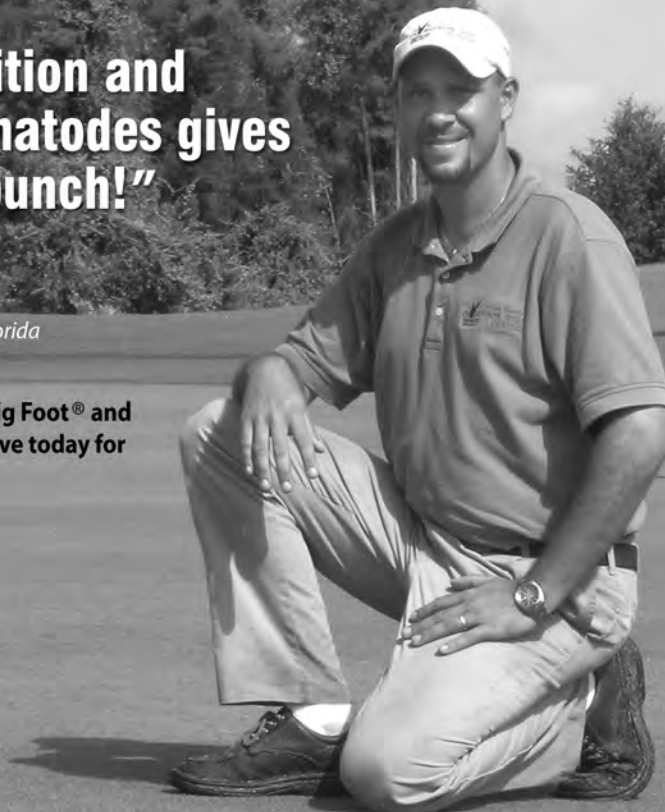
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Thirty-eight fourth- and fifth-grade students at the Modesta Robbins Partnership School helped with the ACSP Butterfly Garden on the Chi Chi Rodriguez Golf Course. On the back row from left: Jayme Pecci, Ginger Francisco, Garth Boline and Lori Vander Klok supervised the project. Photo by Chuck Grussing.

2. The school applied for and received a grant from the SAVE (Students Against Violence Everywhere) Foundation to pay for the project.
3. The students, teachers and horticulture personnel took a field trip to a county extension project garden to view plant life and butterflies in a real life situation.
4. After amending the soil and buying plants, 38 fourth- and fifth-grade students, two teachers (Ginger Francisco and Lori Vander Klok, two teacher assistants

- (Leslie Melko and LouAnn Brown), Jayme Pecci, the school counselor and Garth Boline, golf course superintendent and Chuck Grussing, horticulturist from Chi Chi Rodriguez, did the actual planting.
5. Two butterfly houses were added.
  6. Very little maintenance is needed, as plant population is fairly dense. The only maintenance needed is general weeding, fertilization, plant replacement, and upkeep of the butterfly houses and bench.

**Results: Describe the results you achieved. What were the environmental benefits? Please be as specific as possible about any tangible results (e.g., number of acres naturalized, new species observed, increase in habitat acreage, number of birds fledged from nest boxes, number of gallons of water saved, acres taken out of intensive management, increase or decrease in man-hours needed to maintain, increase or decrease in equipment wear and tear).**

1. Increased numbers and breeds of butterflies are being observed in the garden.
2. The increased density of plants in the two gardens is able to supply more food for the butterflies and actually decreases maintenance frequency and efforts. The students do the general weeding with help from the horticulture and golf course maintenance staff. The plants are basically self-sustaining, low maintenance, and

drought tolerant. Weed reduction is apparent because of shade.

3. The butterfly garden is now 1150 sq. ft. – approximately double the prior size.
4. Perhaps the greatest benefit is that the project is an ongoing science project for the school. Each class goes out once a week for a formal science class. The students monitor the kind and amount of butterflies on a daily basis. Additionally, they monitor the health and growth of the plants and determine what interventions are needed to maintain them. They keep track of the butterfly life cycle through documentation throughout the school year.

**Golfer/Employee Response: How did golfers respond to the project? How did you communicate about your actions?**

The entire Chi Chi Rodriguez community has given very favorable comments about the revamped garden and was very proud of the involvement and leadership provided by the students, teachers and administrators of the school.

The students are very proud of the garden. Updates of the progress of the project are provided in our management team meetings and golf course newsletters.

**Perspective and Recommendations: What, if any-**

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**thing, would you do differently if you were to do the project again? What would you recommend to others implementing this project?**

This was an easy project to do and involved a lot of collaborative fun putting it together. By using the grant process, the financial impact was minimal. Highlights of the process were visits to the county Extension gardens and the actual purchasing of plants. The committee consists of teachers, school staff, and students who actually compiled the list through research and visiting the Extension gardens. The golf course and horticulture staff were always available to answer questions. Garth Boline, superintendent of grounds, Chuck Grussing, horticulture, and Jayme Pecci, school counselor, purchased the plants.

**Economic Costs and Benefits**

**What was the funding source for the project:** A grant from SAVE (Students Against Violence Everywhere)

**How much did it cost to implement this project?** \$675

**What are your anticipated or actual financial savings?** Monies will be saved through reduced maintenance costs

**Wild Side  
Toad in the Road!**

*By Craig Weyandt*

One of our employees was edging a flower bed when a giant toad popped out. It took the worker several tries to contain it and bring it in alive for identification. I had seen these *Bufo* toads before, but not this far north. We took a couple of photos for our wildlife scrapbook and released him back into the wild. Here is what we found out about these critters.

*Bufo marinus* is also known as the Cane Toad, Giant Toad, or Marine toad. The species is not native to Florida, but was introduced here, the Caribbean Islands, and Australia to control French and Grayback beetles on sugar cane. (Tyler, M, et al, 1996)

The toads, however, can jump only about 30 centimeters, and were therefore not able to reach the beetles, which normally stay in the upper regions of the cane stalks. Also, when the time of year came that served as breeding season for the beetles and their larvae was profusely found crawling from the ground, *Bufo marinus* was nowhere to be found.

One of the reasons Cane toads are so successful when introduced to new areas is that they possess a remarkable ability to adapt to a wide range of habitats. One study conducted in 1990 by Australia's Commonwealth Scientific and Industrial Research Organization showed that these toads are very effective

competitors with other insect-eating animals, were highly toxic to many possible potential predators, and also could have a negative impact on other native frog species. (Zug, et al, 1979)

*Bufo marinus* is a tropical species that if



*Imported in the 1930s to control sugar cane beetles, the Giant Toad is a threat to the native frog populations in South Florida. Photo by Craig Weyandt.*

given a choice, prefers to inhabit forested areas with water, and therefore insects, nearby. The species is usually much more active at night, but can also be seen hopping along sidewalks and resting in or near canals or pools of water. During the daytime hours and even in cold or dry seasons the toad will remain inactive underground in small shallow excavations or hide under debris, fallen trees, stones, or any other covering found typically outdoors. (Zug, et al, 1979)

*Bufo marinus* exhibits two prominent, triangular paratoid glands that extend from the anterior side of the tympanum to the halfway point down the toad's back. It is from these glands that the toad expels a milky-white fluid when attacked or threatened, capable of irritating the mucous membranes of the attacker. This toxin is largely composed of cardioactive substances, and the toxins can lead to profuse salivation, vomiting, shallow breathing, twitching, and even collapse of the hind legs if ingested.

Although many species of snakes and birds seem unaffected by this poison, it may seriously sicken or even kill small mammals, and dogs and cats that have been exposed have been frequently reported as victims of its effect (Carmichael and Williams, 1991; Conant and Collins, 1991).

An interesting aspect of *Bufo marinus* reproduction is that males are able to reproduce without the presence of female toads because they possess a structure called a rudimentary ovary. (Behler et al, 1994).

Marine toads are voracious, omnivorous animals and will prey on a large variety of animals. They have been known to consume small vertebrates, mollusks, arthropods, plant matter, and even dog and cat food when found (Krakauer 1968). They have

been reported to scavenge garbage and vegetable matter that had been discarded such as fruit and vegetable peels and pits in Florida (Alexander 1964). Lab specimens have even been kept on strict diets of small mice!

An idea of the size of the toad population in a particular area can be correlated to the size of individual toads found within it. It is thought that when the toads first populate a new patch of land, there is a fresh and "untouched" abundant supply of food. The toads gorge themselves and eat every possible food source imaginable, growing up to their maximum lengths. Once they begin to multiply and increase in numbers, the food supply is not able to regenerate to the previous amount in existence at the time prior to the toads spreading, and because food then becomes more limited the resulting sizes of the toads found tend to be smaller than the previous ones.

Although there is still much work to be done in areas such as Australia where *Bufo marinus* continues to spread, there are reasons for optimism as far as the control of the problem. (Aguirre et al, 1999) In areas where the toads have been around for the longest times known to this day, their population numbers tend to decline after the initial breeding sprout and increase.

One of the reasons is that some native animals are learning to get around the toxins and have adapted to eating them. The Keelback snake can detoxify the toxins found in *Bufo*, and it has been shown that some species of ibis, water rats, and crows have developed ways to eat them by ingeniously "peeling" the skin and glands off, thereby avoiding the venomous secretions.

We are still a very long way to effectively controlling *Bufo marinus* population numbers and stopping their continual expansion, however. They are definitely a great example of what can happen to native species when an exotic species is introduced into the ecology of a new habitat.

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