



## HUMANITIES AND THE SUNSHINE STATE

TEACHING FLORIDA'S CLIMATES  
In partnership with the Florida Humanities Council

JUNE 24-28, 2019 UNIVERSITY OF FLORIDA

### "TAKING IT BACK TO THE CLASSROOM"

We know that it's not always possible to develop and implement a new lesson plan in a busy curriculum. How do you envision incorporating our experiences in your classroom teaching?

**Teacher(s):** Joshua O'Leary

**Grade(s):** 4, 7, High school

**Subject(s):** Integrated, biology, environmental, and marine sciences

#### Idea 1 Increased significance of local shell mounds

- Shell mound structure- open side align with rise of summer solstice
- Specific islands for burials, even relocation as inundation occurs
- Cedar key gathering for summer solstices, winter equinoxes elsewhere

Learning Goals/Standards

**Students will better understand prehistoric Floridians' role in shaping the environment and natural resource management**

- SS.2.A.2.1 Recognize that Native Americans were the first inhabitants in North America.
- SS.5.A.2.2 Identify Native American tribes from different geographic regions of North America
- SS.8.A.3.16 Examine key events in Florida history as each impacts this era of American history.

#### Idea 2 Mangrove extent and range

- Mangroves documented on Cedar Key since the 30s
- Presence strongly correlated to a warming period in local climate

Learning Goals/Standards

**Students will understand relationships of certain key species with changing abiotic factors**

- SC.912.L.17.5 Analyze how population size is determined by births, deaths, immigration, emigration, and limiting factors (biotic and abiotic) that determine carrying capacity.
- SC.912.L.17.7 Characterize the biotic and abiotic components that define freshwater systems, marine systems and terrestrial systems.

### **Idea 3 Prehistoric Floridians' migrations**

- **Florida's widest extent was 18000 years ago= 130m below current**
- **Native Americans arrive around this time**
- **Levels rise; 14k years ago= 80m below current**
- **Last 5k fairly stable. Last major shift around 1.5k ya 1-2km inundation**

#### Learning Goals/Standards

Students will understand how coastlines change with climate shifts and the rate at which they occur

SC.6.E.6.2 Recognize that there are a variety of different landforms on Earth's surface such as coastlines, dunes, rivers, mountains, glaciers, deltas, and lakes and relate these landforms as they apply to Florida.

### **Idea 4 Impacts of reduced freshwater inputs to estuary habitat**

- **Freshwater forage fish necessary for nesting birds is decreasing or further away**
  - A. **Ibis abandons preferred nesting colonies**
  - B. **Have to travel farther for food for young**
- **Oyster damage from increased salinity**
  - C. **Increased predators like boring sponge and crown conch**
  - D. **Decreased spat recruitment**

#### Learning Goals/Standards

Students will better understand community interactions

SC.7.L.17.3 Describe and investigate various limiting factors in the local ecosystem and their impact on native populations, including food, shelter, water, space, disease, parasitism, predation, and nesting sites.

SC.912.L.17.3 Discuss how various oceanic and freshwater processes, such as currents, tides, and waves, affect the abundance of aquatic organisms.

### **Idea 5 Snake Island Mutualism**

- **Huge number of Water Moccasins living on Snake Key, also Seahorse until recently**
- **No predation, only eat fish accidentally dropped by birds feeding offspring**
- **Nest predators are discouraged by the presence of so many snakes**

#### Learning Goals/Standards

Students will have a concrete example of local mutualism

SC.7.L.17.2 & SC.912.L.17.6 Compare and contrast the relationships among organisms such as mutualism, predation, parasitism, competition, and commensalism.

#### **Idea 6 Red cedar distribution**

- **Red cedars need high calcium concentrations to grow and survive**
- **Native American shell mounds provide a profound source of this element**
- **High concentrations of red cedars that brought settlers to this part of Florida was due to prehistoric Floridians' activities**

#### Learning Goals/Standards

Students will understand that past human activities can affect future activities

SC.7.E.6.6 Identify the impact that humans have had on Earth, such as deforestation, urbanization, desertification, erosion, air and water quality, changing the flow of water

**What additional resources do you need in order to act on these ideas?**