



# Humanities and the Sunshine State

What Sustains Us?

Florida Ecosystems in an Era of Rapid Change

University of Florida 20-24 June, 2016

## ACTION PLAN TEMPLATE

Teacher(s): MICHAEL SOARES

Grade(s): 9-12 Biology / Biology Honors

Subject(s): Biology / Biology Honors

Title of Lesson: Systems in ~~Food~~ Aquatic Food Webs

Learning Objectives: Students will be able to make connections between biotic and abiotic variables of ~~a~~ a ~~food web~~ Spring / river ecosystem.

Standards Addressed: SC.9/12.L.17.9 - Food webs

### Lesson Outline:

- Switch
1. Engage: Dynamic Systems Dance
    - Students stand in circle
    - each student chooses 2 local plants and move to be equidistant
    - Teacher moves two "variables" (students) after system becomes stable
    - and forces them to readjust
    - Questions to ask "How does this relate to nature?" "What will happen if I take a variable(s) out of system?"
  2. Explore: Food chain game
    - students work in teams to put producer w/ 2+ consumers in order of a food chain; introduce words
    - Students calculate reduction of energy of same food chains
  3. Explain: Food web systems (Activities 8 from Southeastern forests & climate change)
    - students given a food web w/out arrows
    - teacher leads them to make connections then students make own
    - teacher provides new variables to add
  4. Evaluate: Systems drawing

Systems thinking connection (learning habits and/or tools used):

Activity 8 from Southeastern Forests & Climate Change

Learning Strategies:

Science Concept(s): Food webs

Humanities Concept(s):

Human interaction

Student Assessment Strategies:

System Drawings

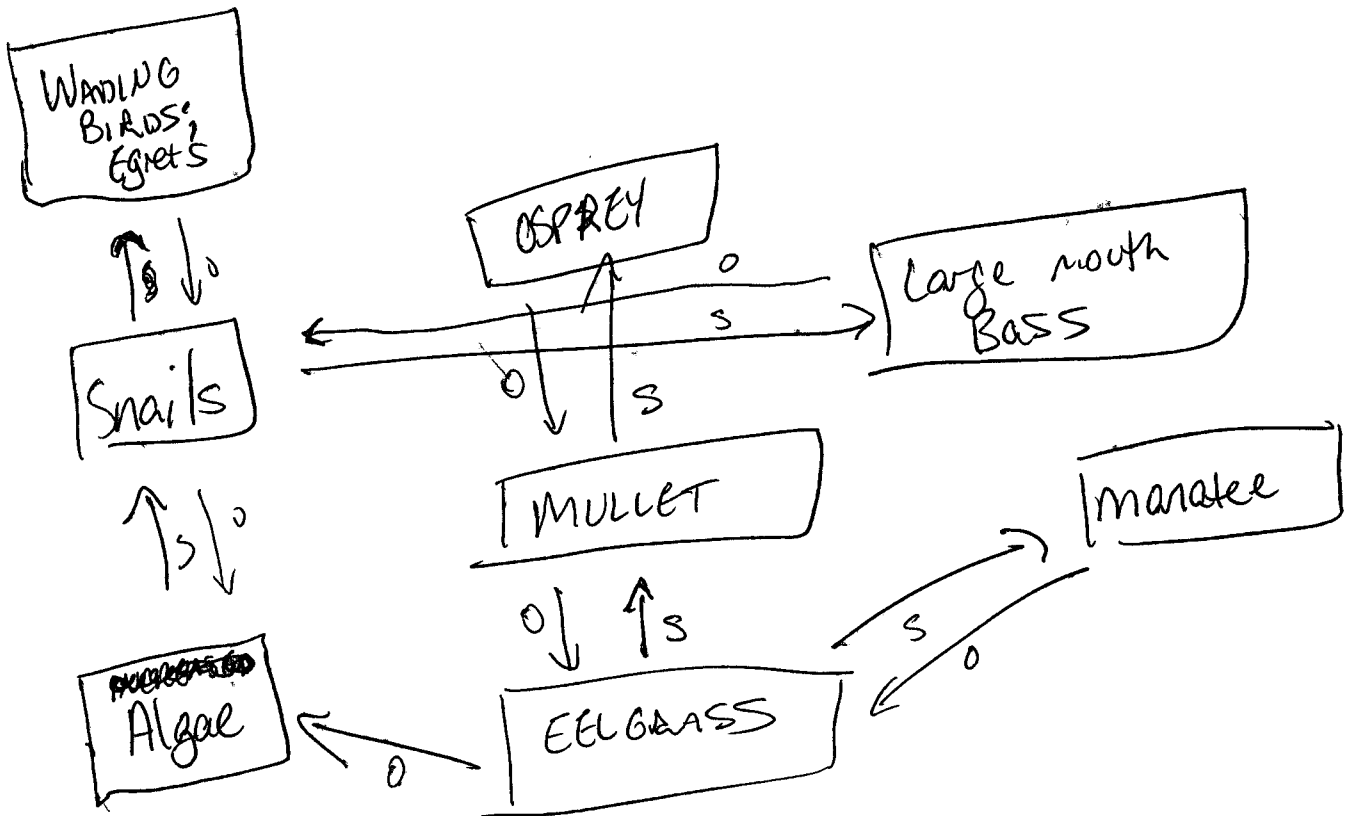
Benefit to my students:

See how complex nature is.  
Change one variable will change  
everything

Resources and Materials (supplies needed for activities):

Southeastern Forests & Climate Change book  
and Food web systems diagram  
Student ~~worksheet~~<sup>over</sup> and teacher key

SAME (S) relationship  
 Opposite (O) relationship



### Extra Variables

- Provide to students after connections made to above systems diagram.

INCREASED NITRATES

DECREASED Dissolved Oxygen

INCREASED INVASIVE plant Species; Hyacinth

INCREASED Calcium

HUMAN RECREATION

→ Boats

→ sunscreen