I. Food Web Poster: Students may work individually or in a group of two

A PICTURE OF YOUR COMPLETED POSTER IS DUE BY AUGUST 3 — Reminder AP Classes have a policy of no late work.

You will need a full size sheet of poster board, some colorful markers, and a printer that prints color copies.

1. Title your poster – title should be in the top center of your poster.
2. Write the name of at least 20 organisms (first lightly in pencil) from the list of organisms found in the Florida Everglades Ecosystem list, randomly, to cover the entire poster board (don’t write too big).
3. You should have at least 2 different producers and 1 decomposer in your food web. (Label each of these as “producer” or “decomposer” on your poster.)
4. Draw arrows to connect each organism to the organism(s) it eats and/or that eat it. You must draw the arrows to show the direction of the flow of energy in the ecosystem. (You do not need to draw arrows from every organism to the decomposer(s).)
5. From your food web, identify an herbivore, omnivore, and carnivore. Label one example of each of these types of consumers on your poster.
6. Select a food chain within your food web that has 4 trophic levels. Identify and label the producer and three levels of consumers (i.e. primary consumer, secondary consumer, and tertiary consumer) from the food chain you have chosen.
7. Make this food chain stand out from the rest of your food web, by making the arrows within this food chain different. For example, use a different color for the arrows, highlight the arrows, or make the shape of the arrows different from all of the other arrows within the food web.
8. Final version – use marker instead of pencil. Add color pictures of the actual organisms to your poster next to the organism’s name. (Glue these onto the poster).
9. Write your name(s) on the back of the food web poster in pencil.
10. Email a picture of your completed poster to Ms. Dempsey dempseyl@bishopmoore.org no later than August 1. If working in a group of two, both students need to email me a picture of their poster and tell me who your partner is.

Note: Your e-textbook would be a good resource for this project. In addition to your AP Environmental Science eBook, you are free to use whatever resources that are available to you for this project.

Textbook Information: Environmental Science for the AP Course, Third Edition ©2019 Andrew Friedland; Rick Relyea

- AP ENVI SCI S2 Science AP ENVIRONMENTAL SCIENCE Ebooks only 978-1-319-11329-2 Sapling Plus etext & Online Resources bfw Publishers (Bedford, Freeman & Worth High School) 3rd edition
II. Analysis Questions:

- All answers must be typed, and written in complete sentences. Your assignment will be submitted to turnitin.com within the first week of school.
- All students must submit their own individual answers to the Analysis Questions, even if working in a team of two. Your answers may be similar, but NOT identical.

1. What are “wetlands”?

2. Two main types of wetlands are marshes and swamps. Explain the difference between a marsh and a swamp.

3. List and Explain in your own words 3 ecological functions that wetlands provide.

4. A subtype of wetlands can be Mangroves. Explain 2 ecological functions that Mangrove trees/forests provide.

5. What is an Estuary? What important ecological function(s) does it serve? (Hint: Seagrasses grow within an estuary. Explain two ecological functions of the seagrasses)

6. Define herbivore, omnivore, and carnivore AND provide one example of each.

7. Speculate and explain what might happen if all of the primary consumers in the ecosystem became extinct.

8. Speculate and explain what might happen if all of the decomposers in the ecosystem became extinct.

9. Speculate and explain what might happen if a non-native, species like the large Burmese Python were introduced into this ecosystem.

   (Your answer should be SPECIFIC, with at least 2 supporting details. For example, “It would mess up the ecosystem” is not an acceptable answer. This answer lacks detail and does not demonstrate understanding of the material/concept.)

10. Identify an organism from the Everglades Ecosystem (i.e. from ALL the organisms on the list given to you, not just the organisms on your poster) that is a “specialist” consumer and explain why this species is at greater risk for being endangered or extinct. (Hint: Pandas eat only bamboo. Pandas are considered a “specialist” consumer).

11. Explain why the “Shrike” songbird is also called the “Butcherbird”. Provide supporting details in your answer.

12. Explain why food webs with many species are more resilient than food webs with few species.

Hard Copies of the completed poster and analysis questions will be due during the first week of School.
Selected Organisms found in the Florida Ecosystem  

- Saw grass [plant]
- Bladder wart [floating aquatic plant]
- Periphyton algae
- Cypress Tree
- Bromeliads [air plant]
- Fern [plant]
- Mangrove Tree {small fish, shrimp, crayfish, and crabs feed on its roots & leaves}
- Lubber grasshopper (plants of any kind)
- Loggerhead Shrike [bird] (grasshoppers, lizards, small birds and rodents)
- Mosquito (aquatic plants, animal blood)
- Whooping Crane (insects, snails, berries, small fish, frogs, crustaceans)
- Great Blue Heron (large insects, fish, frogs, small mammals)
- Roseate Spoonbill [wading bird](minnows, pink shrimp, aquatic insects, aquatic plants)
- Crabs (aquatic plants, algae, worms, shrimp, dead fish)
- Butterfly (nectar, pollen, eat leaves as caterpillars)
- Osprey (fish)
- Green Sea Turtle (algae, sea grass, crabs)
- Red-shouldered hawk (small mammals, lizards, snakes, amphibians)
- Piping Plover (insects, worms, shrimp, crabs, crayfish)
- Burrowing Owl (large insects and small rodents)
- Florida Black Bear (acorns, nuts, berries, insects, small mammals)
- Snail Kite [bird] (feeds exclusively on the apple snail)
- Apple snail (plants, algae)
- Spotted Gar [fish](small fish, crustaceans)
- Bobcat (small mammals, birds, reptiles, deer)
- Key Deer (mangrove trees, and many herbaceous plants)
- Opossum (berries, nuts, frogs, birds, mice, snakes, eggs)
- Turkey Vulture (carrion, dead animals)
- Florida Panther (deer, small mammals, birds)
- Anole Lizard (insects, spiders)
- Dragon Fly (mosquitos, midges, moths)
- Marsh Rabbit (grasses, fruit)
- Brown Pelican (fish)
- Water Moccasin (fish, frogs, lizards, turtles, small mammals, birds, other snakes)
- Eastern Garter Snake (frogs, toads, lizards, baby birds)
- Florida alligator (fish, frogs, turtles, birds, small mammals)
- Sandhill Crane (seeds, berries, insects, worms, mice, lizards, frogs)
- Florida Otter (fish, amphibians, small mammals)
- Bald Eagle (fish, frogs, snakes, turtles, small mammals, other birds)
- Mushroom [decomposer]
- Beetles (plants, fungi)
- Snapping Turtle (aquatic plants, small fish, insects, frogs, small birds)
- Eastern Indigo Snake (fish, frogs, lizards, turtles, birds, eggs, small mammals)
- Spiders (insects)
- Indian Manatee (sea grasses, aquatic plants, fish)
- Bottlenose Dolphin (fish, crustaceans)
- Worms (dead plants and animals)
- Phytoplankton
- Anhinga [bird] (fish, frogs, shrimp, crayfish, crabs, young alligators, water snakes)
- Bacteria [decomposer]
- Raccoon (berries, nuts, insects, frogs, turtles, fish, snakes, eggs)
- Salt Marsh Top Minnow (insects, worms)
- Key Largo Woodrat (plants)
- Everglades Mink (crayfish, fish, small mammals)
- Flatwoods Salamander (worms, insects, spiders)
- Florida Bog Frog (insects)
- Crayfish (dead fish, shrimp, aquatic plants, algae)
- Common Crow (small animals such as mammals, amphibians, reptiles, eggs and carrion. They also eat insects, seeds, fruit, crayfish, shrimp, snails, worms and even other birds like the shrike)
- Everglades grass shrimp (algae, plant material, zooplankton, detritus)
- Pink Shrimp (algae, plant material, zooplankton, detritus)
# Rubric – APES Everglades Food Webbing Summer Assignment

Name(s) ____________________________________________________________

<table>
<thead>
<tr>
<th>Poster</th>
<th>Possible Points</th>
<th>Points Earned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poster has a descriptive title</td>
<td>3</td>
<td></td>
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<tr>
<td>The title should be large and easy to read, located on the top, center of the poster board</td>
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<td></td>
</tr>
<tr>
<td>Food web has at least 2 different producers</td>
<td>2</td>
<td></td>
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<tr>
<td>Food web has at least 1 decomposer</td>
<td>1</td>
<td></td>
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<tr>
<td>Minimum of 20 organisms</td>
<td>10</td>
<td></td>
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<tr>
<td>Color Pictures of each organism</td>
<td>10</td>
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<tr>
<td>Poster reflects an interconnected food web (not a series of unconnected food chains)</td>
<td>5</td>
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<tr>
<td>Arrows reflect correct flow of energy</td>
<td>5</td>
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<tr>
<td>Identify from food chain: Producer, Primary, Secondary and Tertiary consumers</td>
<td>4</td>
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<tr>
<td>Indicate an example of a simple food chain within a food web by using different color arrows for that food chain only</td>
<td>4</td>
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<tr>
<td>Label ONE example of each of the following: Carnivore, Herbivore, Omnivore</td>
<td>6</td>
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<tr>
<td>Neatness, poster reflects effort, and overall Appearance</td>
<td>10</td>
<td></td>
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</tbody>
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Total Score for Poster ________/ 60 points

<table>
<thead>
<tr>
<th>No#</th>
<th>Analysis Questions</th>
<th>Possible Points</th>
<th>Points Earned</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>What are wetlands?</td>
<td>2</td>
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<tr>
<td>2</td>
<td>Explain the difference between a marsh and a swamp.</td>
<td>2</td>
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<tr>
<td>3</td>
<td>List and Explain 3 ecological services provided by WETLANDS.</td>
<td>9</td>
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<td>4</td>
<td>Explain two ecological functions of Mangroves</td>
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<tr>
<td>5</td>
<td>What is an estuary? Explain 2 ecological function(s)?</td>
<td>5</td>
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<tr>
<td>6</td>
<td>Define and give an example: Carnivore, Herbivore, and Omnivore</td>
<td>6</td>
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<tr>
<td>7</td>
<td>Speculate and explain what might happen if all of the primary consumers became extinct....</td>
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<tr>
<td>8</td>
<td>Speculate and explain what might happen if all of the decomposers in the ecosystem became extinct....</td>
<td>2</td>
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<tr>
<td>9</td>
<td>Speculate and explain what might happen to the populations of native species if a non-native species like the Burmese Python were introduced into this ecosystem...</td>
<td>2</td>
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<tr>
<td>10</td>
<td>Identify an organism from the everglades “list” that is a specialist consumer and explain why this species is at greater risk for becoming endangered.</td>
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<td>11</td>
<td>Explain why the Shrike is called a “Butcher Bird”</td>
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<tr>
<td>12</td>
<td>Explain why food webs with many species are more resilient than those with few species</td>
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Total Score for Analysis Questions ________/ 40 points