Adapting to Change

Unit 13: Partner Resource

Life Sciences: Ecosystems, Animal groups, Adaptations and Fossils

Washington University in St. Louis
Institute for School Partnership

mySci
hands on science for elementary students

MONSANTO Fund
Additional Teacher Resources

MINI PD VIDEOS - COMING SOON!
(Password: MySci1)

BOOKS
Fishy Facts, by Anne Miranda

ONLINE RESOURCES
“Invaders of the Ecosystem” http://www.readworks.org/passages/invaders-ecosystem
“Pythons Invade the Everglades” http://www.readworks.org/passages/pythons-invade-florida-everglades
“Wild Things” http://www.readworks.org/passages/wild-things
“Vanishing Frogs” http://www.readworks.org/passages/vanishing-frogs
“Moose On The Move” http://www.readworks.org/passages/moose-move
http://www.exploringnature.org/graphics/foodwebs/pred-prey%20game.pdf
http://phylogame.org/ This free card game can be printed from the internet and teaches students about food chains and interconnectedness in the environment.

LOANER ITEMS
Animal X-Rays (ISP 101-2395) http://schoolpartnership.wustl.edu/products/animal-x-rays/
Preserved Insect Specimens, Set of 12 (ISP101-2396) or Set of 30 (ISP101-2397) http://schoolpartnership.wustl.edu/products/preserved-insect-specimens/

DISCOVERY ED (Subscription Required)
Ecosystems: http://bit.ly/1QlQdRw
Tips: Examples of Ecosystems

Ecosystem: http://bit.ly/1B0nACN
Tips: Roles in an Ecosystem
Animals, Environment, and Adaptations: http://bit.ly/1S-1RUkI
Tips: As the environment changes, animals adapt.
What are Fossils: http://bit.ly/1Hnb9It
Tips: What fossils tell us about ecosystems from long ago.
1. What type of organism helps return nutrients from dead plants and animals to the soil?
   a. producer  b. consumer  c. predator  d. decomposer

2. What is the main source of energy for almost all food chains on Earth?
   a. the sun  b. water  c. green plants  d. consumers

3. A maple tree produces wing-shaped fruits (some people call them helicopters) that float away in the wind and fall far from the parent maple tree. This helps make sure that new maple seedlings don’t sprout too close to the big parent tree. The seed now has a better chance of survival in its environment. This wing-shaped fruit is an example of ____________________.
   a. learning  b. an adaptation  c. a defensive mechanism  d. camouflage

4. A prairie dog living in a community barks loudly. Other prairie dogs nearby know that danger is near and quickly go underground to hide. This warning call is an example of _________________.
   a. a predator/prey relationship  b. migration  c. social group behavior  d. hibernation

5. What would most likely happen if an orchid from a rainforest were transplanted into a desert?
   a. The orchid would adapt to the dry desert environment and survive.
   b. The orchid would die because it is not adapted to a dry desert environment.
   c. The orchid would work together with other plants in order to survive in the dry desert environment.
   d. The orchid would go on living as it did in the rainforest.

Use the food chain below to answer questions 6 and 7.

[Diagram of a food chain]

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6. In the food chain above, what would happen if the fish were removed?
   a. The number of cranes would increase in this environment.
   b. The number of dragonflies would decrease in this environment.
   c. The number of cranes would decrease in this environment.
   d. There would be no change in the number of organisms in this environment.

7. In the food chain above, what do the arrows represent?
   a. amount of energy in the food chain
   b. direction of the flow of energy in the food chain
   c. a dragonfly eating a fish
   d. the number of each organism in the ecosystem

Use the following picture of an energy pyramid to answer questions 8 and 9.

8. Which role do organisms at the bottom of the pyramid (first trophic level) play in the desert ecosystem?
   a. Primary consumer    b. Secondary consumer
   c. Decomposer            d. Producer

9. What is an example of a predator in this desert ecosystem?
   a. cacti           b. small mammals
   c. insects          d. small birds
10. Using the picture to the right, describe why the penguin would not be able to survive in a hot, dry environment.

   ______________________________________________________
   ______________________________________________________
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   ______________________________________________________
   ______________________________________________________

11. Look at the picture of the layers of fossils to the right to answer this question: Look at how the types of animals in these fossil layers change over time. Use this evidence to describe how this environment changed over time.

   ______________________________________________________
   ______________________________________________________
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   ______________________________________________________

12. The picture below shows how a Missouri forest area was changed when a subdivision of large houses was built.
a. Describe two ways the living things in this Missouri forest ecosystem might respond to this environmental change.

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b. When building future subdivisions, what are two things that the builders could do to shrink the negative impacts of building houses in a habitat?

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________________________________________________________________________
Name: ___________________ SCORING GUIDE: 17 points total ___________________ Date: ___________________

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Circle one: Pre- OR Post-Assessment

1. What type of organism helps return nutrients from dead plants and animals to the soil? 
(GLE EC 2 A 4 b) 1 POINT

   a. producer  b. consumer  c. predator  d. decomposer

2. What is the main source of energy for almost all food chains on Earth? (GLE ME 2 C 3 a) 1 POINT

   a. the sun  b. water  c. green plants  d. consumers

3. A maple tree produces wing-shaped fruits (some people call them helicopters) that float away in the wind and fall far from the parent maple tree. This helps make sure that new maple seedlings don’t sprout too close to the big parent tree. The seed now has a better chance of survival in its environment. This wing-shaped fruit is an example of ________________. (GLE EC 1 A 4 a) 1 POINT

   a. learning  b. an adaptation  c. a defensive mechanism  d. camouflage

4. A prairie dog living in a community barks loudly. Other prairie dogs nearby know that danger is near and quickly go underground to hide. This warning call is an example of ________________. (NGSS 3-LS2-1) 1 POINT

   a. a predator/prey relationship  b. migration  c. social group behavior  d. hibernation

5. What would most likely happen if an orchid from a rainforest were transplanted into a desert? 
(NGSS 3-LS4-3 & GLE EC 3 C 4 d) 1 POINT

   a. The orchid would adapt to the dry desert environment and survive.
   b. The orchid would die because it is not adapted to a dry desert environment.
   c. The orchid would work together with other plants in order to survive in the dry desert environment.
   d. The orchid would go on living as it did in the rainforest.

Use the food chain below to answer questions 6 and 7.

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6. In the food chain above, what would happen if the fish were removed? (GLE EC 2 A 3 d) 1 POINT
   a. The number of cranes would increase in this environment.
   b. The number of dragonflies would decrease in this environment.
   c. The number of cranes would decrease in this environment.
   d. There would be no change in the number of organisms in this environment.

7. In the food chain above, what do the arrows represent? (GLE EC 2 A 3 c) 1 POINT
   a. amount of energy in the food chain
   b. direction of the flow of energy in the food chain
   c. a dragonfly eating a fish
   d. the number of each organism in the ecosystem

Use the following picture of an energy pyramid to answer questions 8 and 9.

8. Which role do organisms at the bottom of the pyramid (first trophic level) play in the desert ecosystem? (GLE EC 2 A 4 a) 1 POINT
   a. Primary consumer
   b. Secondary consumer
   c. Decomposer
   d. Producer

9. What is an example of a predator in this desert ecosystem? (GLE EC 2 A 4 c) 1 POINT
   a. cacti
   b. small mammals
   c. insects
   d. small birds
10. Using the picture to the right, describe why the penguin would not be able to survive in a hot, dry environment.

(GLE EC 1 A 4 b & NGSS 3-LS4-3) **2 POINTS**

Give 1 point for mentioning that the body fat would keep the penguin warm, which would be problematic in a hot environment. Give 1 point for mentioning that webbed feet are best suited for an aquatic environment.

11. Look at the picture of the layers of fossils to the right to answer this question: Look at how the types of animals in these fossil layers change over time. Use this evidence to describe how this environment changed over time.

(NGSS 3-LS4-1) **2 POINTS**. Give 1 point for mentioning that the fish skeletons indicate that at one point, this area was covered in water. Give 1 point for mentioning that at the top layer, the fossil is now a carnivorous animal with four legs, which indicates that more recently, this area was not covered in water. The environment has changed over time from a body of water to dry land.

12. The picture below shows how a Missouri forest area was changed when a subdivision of large houses was built.
a. Describe two ways the living things in this Missouri forest ecosystem might respond to this environmental change.

(NGSS 3-LS4-3, 3-LS4-4 & GLE EC 1 D 4 a) **2 POINTS.** Give 1 point for each way that the ecosystem might respond. Answers may include the following: Some living things may survive the change and keep living there. Some may migrate/move to a new location. Some may die out due to this change.

b. When building future subdivisions, what are two things that the builders could do to shrink the negative impacts of building houses in a habitat?

(NGSS 3-LS4-3, 3-LS4-4 & GLE EC 1 D 4 a) **2 POINTS.** Give 1 point for each reasonable suggestion. Answers may include: Plant trees to replace the removed trees. Build houses closer together. Build an apartment complex instead. Make yards smaller to take up less space.