Ball State University
Field Station and Environmental Education Center

Put your Ecosystem into Homeostasis!

Group Names:

_____

_____

You will be given a board representing one of three (3) ecosystems:

Yellow = Prairie	Blue = Wetlands	Green = Forest

Each ecosystem has a total of 36 squares. Each square is the equivalent of 1 unit of food, shelter, space, air, and water. Each ecosystem also has a total of eleven (11) plant and animal species. There are four (4) individuals of each species. Each species has a certain list of requirements it needs in order to survive in the ecosystem. For example, a Gray Squirrel needs 1 space and 1 tree. Other species, such as Red Oak and White-tailed Deer, need 2 spaces each. This list can be seen on the back of your sheet.

Your goal: To fit as many species as possible, and as many individuals as possible, into your ecosystem without overshooting its carrying capacity (36 squares). Remember, if a species requires another species to be present, you must consider the space requirements of both species. For example, a squirrel requires 1 square and 1 tree. That tree also requires 1-2 squares.

When you finish constructing your ecosystem, think about the questions below:

1. How many species were you able to include? How many total individuals were you able to include?

2. Were you able to include more than one individual of each species? If not, how do you think that species will survive in the habitat without a mate?

3. Write out an example of a food chain in your ecosystem that has at least 3 trophic levels (i.e., producer → herbivore → carnivore).

4. What do you think would happen to your ecosystem if the board (your 36 squares) was suddenly cut in half? Who would you lose in your ecosystem?

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FOREST

1. Black Walnut Tree
    a. Needs 2 spaces
2. Red Oak Tree
    a. Needs 2 spaces
3. Sugar Maple Tree
    a. Needs 1 space
4. Spicebush
    a. Needs 1 space
5. White-tailed Deer
    a. Needs 2 spaces
    b. Needs 1 Spicebush
6. Gray Squirrel
    a. Needs 1 space
    b. Needs 1 Tree
7. Eastern Cottontail Rabbit
    a. Needs 1 space
    b. Needs 1 Spicebush
8. Screech Owl
    a. Needs 1 space
    b. Needs 2 squirrels
9. Coyote
    a. Needs 2 spaces
    b. Needs 2 squirrels or rabbits
10. Eastern Blue Jay
    a. Needs 1 space
    b. Needs 1 Poison ivy
11. Poison Ivy
    a. Needs 1 space

WETLAND

1. Giant Bur-reed
    a. Needs 2 spaces
2. Cattail
    a. Needs 2 spaces
3. Common Spike-rush
    a. Needs 1 space
4. Common Arrowhead
    a. Needs 1 space
5. White-tailed Deer
    a. Needs 2 spaces
    b. Needs 1 Cattail
6. Mink
    a. Needs 1 space
    b. Needs 2 Carp
7. Muskrat
    a. Needs 1 space
    b. Needs 1 Carp
8. Beaver
    a. Needs 1 space
    b. Needs 2 Bur-reeds
9. Carp
    a. Needs 2 spaces
    b. Needs 2 Spike-rush
10. Bull Frog
    a. Needs 1 space
    b. Needs 1 Lily Pad
11. Lily Pads
    a. Needs 1 space

PRAIRIE

1. Big Blue Stem
    a. Needs 2 spaces
2. Indian Grass
    a. Needs 2 spaces
3. Cone Flowers
    a. Needs 1 space
4. Black-eyed Susans
    a. Needs 1 space
5. White-tailed Deer
    a. Needs 2 spaces
    b. Needs 1 Big Blue Stem
6. Eastern Gray Squirrel
    a. Needs 1 space
    b. Needs 1 Black-eyed Susan
7. Eastern Cottontail Rabbit
    a. Needs 1 space
    b. Needs 1 Indian Grass
8. Red-tailed Hawk
    a. Needs 1 space
    b. Needs 2 squirrels or Blue jays
9. Coyote
    a. Needs 2 spaces
    b. Needs 2 squirrels or rabbits
10. Eastern Blue Jay
    a. Needs 1 space
    b. Needs 1 Poison ivy
11. Poison Ivy
    a. Needs 1 space