**Biodiversity Stock Market**

**Number of Players:** 2-4

**Materials:**

1. Assorted color squares of construction paper (orange, brown, purple, blue). Alternatively assorted colored toothpicks or beads will also work.
2. Deck of 13 chance cards. Chance cards can be cut out of the sheet attached to this lesson plan.
3. Score sheet.

**Background:** The purpose of this game is to demonstrate the importance of biodiversity. Biodiversity has been declining across the planet due to a variety of factors including habitat loss, introduction of invasive species, and climate change. This loss of biodiversity forces governments and the public to ask the question “is biodiversity worth preserving”.

Players of this game step into the role of a large land owner or farmer. As a player, you must decide how best to invest your resources. As a landowner you can have up to four different species living on your land at the same time. Each species has a different economic value associated with it, and it is up to you to decide whether to invest all of your land’s resources on only one species or on mixture of species. Along the way players may encounter chance events that have different impacts depending on what is living on their lands. The overall objective of the game is to become the landowner with the most valuable land (the player with most points at the end of the game). It is up to the players to decide whether biodiversity is important.

**Setup:** Before beginning a game cut out the 13 chance cards attached to this lesson. The deck of chance cards should be shuffled and placed face down in front of the players. Additionally, the assorted color squares (orange, brown, purple, blue) should all be placed in a pile in front of the players.

**Rules:** The game consists of six rounds, each round simulating one year. The first round begins with each player selecting 4 of the colored squares from the pile. These squares represent individuals from 4 different species (each color is a different species). Each species has its own economic/point value:

1 Orange = 5 points

1 Brown = 4 points

1 Purple = 4 points

1 Blue = 3 point

The player can select individuals from the same species, or from a mix of species. After selection, a chance card is flipped over and all players read and follow any instructions on the card. The round ends when players record how many individuals of each species are living on their land, and the player calculates their land’s current worth using the point values above and any instructions given by the chance cards.

The remaining 5 rounds follow the same instructions as the first round with the exception that players can only select **1** new individual from the pile at the start of each round. At the end of the last round the player with the most points has the most valuable land and wins the game!

**Biodiversity Stock Market Score Sheet**

Please record the number of individuals from each species you have as well as your point total at the end of each round. *When calculating point total be sure to apply any instructions from chance cards.*

**Player Name:**

Round 1 \_\_\_\_\_Orange, \_\_\_\_\_Brown, \_\_\_\_\_Purple, \_\_\_\_\_Blue, \_\_\_\_\_\_Point Total

Round 2 \_\_\_\_\_Orange, \_\_\_\_\_Brown, \_\_\_\_\_Purple, \_\_\_\_\_Blue, \_\_\_\_\_\_Point Total

Round 3 \_\_\_\_\_Orange, \_\_\_\_\_Brown, \_\_\_\_\_Purple, \_\_\_\_\_Blue, \_\_\_\_\_\_Point Total

Round 4 \_\_\_\_\_Orange, \_\_\_\_\_Brown, \_\_\_\_\_Purple, \_\_\_\_\_Blue, \_\_\_\_\_\_Point Total

Round 5 \_\_\_\_\_Orange, \_\_\_\_\_Brown, \_\_\_\_\_Purple, \_\_\_\_\_Blue, \_\_\_\_\_\_Point Total

Round 6 \_\_\_\_\_Orange, \_\_\_\_\_Brown, \_\_\_\_\_Purple, \_\_\_\_\_Blue, \_\_\_\_\_\_Point Total

**Thought questions:**

1) What was your investment strategy during this game? Did it work?

**Please play through the game a second time:**

Round 1 \_\_\_\_\_Orange, \_\_\_\_\_ Brown, \_\_\_\_\_Purple, \_\_\_\_\_Blue, \_\_\_\_\_\_Point Total

Round 2 \_\_\_\_\_ Orange, \_\_\_\_\_ Brown, \_\_\_\_\_ Purple, \_\_\_\_\_Blue, \_\_\_\_\_\_Point Total

Round 3 \_\_\_\_\_ Orange, \_\_\_\_\_ Brown, \_\_\_\_\_ Purple, \_\_\_\_\_Blue, \_\_\_\_\_\_Point Total

Round 4 \_\_\_\_\_ Orange, \_\_\_\_\_ Brown, \_\_\_\_\_ Purple, \_\_\_\_\_Blue, \_\_\_\_\_\_Point Total

Round 5 \_\_\_\_\_ Orange, \_\_\_\_\_ Brown, \_\_\_\_\_ Purple, \_\_\_\_\_Blue, \_\_\_\_\_\_Point Total

Round 6 \_\_\_\_\_ Orange, \_\_\_\_\_ Brown, \_\_\_\_\_ Purple, \_\_\_\_\_Blue, \_\_\_\_\_\_Point Total

2) Did you change your strategy for the second game?

3) Does biodiversity provide any benefits to humans?

4) Do you think that preserving biodiversity is important? Why?

**Disease**

A disease has spread through the orange species.

Lose 3 orange individuals.

**Invasive Species**

A non-native pest is attempting to invade.

If you have less than 3 species the pest successfully invades. The point value for each species is reduced by 1.

**Economy**

The economic demand for orange has increased.

Orange is now worth 6 points.

**Disease**

A disease has spread through the blue species.

Lose 1 blue individual.

**Disease**

A disease has spread through the purple species.

Lose 1 purple individual.

**Disease**

A disease has spread through the brown species.

Lose 2 brown individuals.

**Ecotourism**

If you have an intact ecosystem (all 4 species) you can attract tourists.

Add 5 points to total score.

**Ecosystem Service**

If you have an intact ecosystem (all 4 species) you benefit from services like water purification and nutrient recycling.

Add 10 points to total score.

**Disease**

A devastating disease has spread through your land.

If you have a monoculture (only 1 species), lose all individuals.

**Facilitation**

Orange and purple depend on brown to grow successfully.

If you have fewer than 1 brown, then lose 1 orange and 1 purple individual.

**Medicine**

Scientists find compounds in the blue species that can be used in medicine.

Blue is now worth 5 points.

**Biofuels**

Scientists investigate using the purple species as a biofuel.

Purple is now worth 5 points.

**Complementarity**

If you have all 4 species you are able to use your lands resources more completely.

Add 5 points to your total score.