PUT IT BACK TOGETHER

Objectives:
Students will

- discover the challenges of restoring an altered watershed
- develop a restoration plan for a local site.

Materials:

- Pictures of sites of water areas (lakes, rivers, wetlands, etc) found in magazines (let the students choose them and cut them out)
- Poster board or heavy paper
- Copies of a puzzle pattern (included)
- Glue and scissors

Procedure:

1. Divide the class into groups. Give each group a copy of the puzzle pattern and have them glue it to the poster board. Cut out the perimeter of the circle.
2. Using the photos of water-related pictures, have the students center the picture on the backside of puzzle pattern and glue it to the paper or poster board. Have the students cut the edges so they end up with a circle with the puzzle on one side and a picture on the other.
3. After it is dry, cut out the puzzle pieces. Place them so the picture side is not showing. Scatter the pieces and explain that this represents an altered natural area. Discuss possible ways areas get disturbed (natural disasters like floods or tornadoes, chemical use on fields, urbanization, etc)
4. Discuss complications of putting the ecosystems back together.
5. Have the groups switch areas. Explain that restoration usually happens by people other than the ones who did the altering. Without turning over the pieces, have the groups try to put the puzzles back together. Have them tape them together when they are done.
6. Flip them over to see the "new" picture. Some may be correct others may not be due to puzzle pieces fitting together in many ways. Discuss that the parts of the ecosystem may all still be there, but that incomplete knowledge of the parts can complicate restoration. Even if the puzzle was put together correctly it has still been changed when it got cut. Discuss effects on wildlife, plant life, human use, etc.

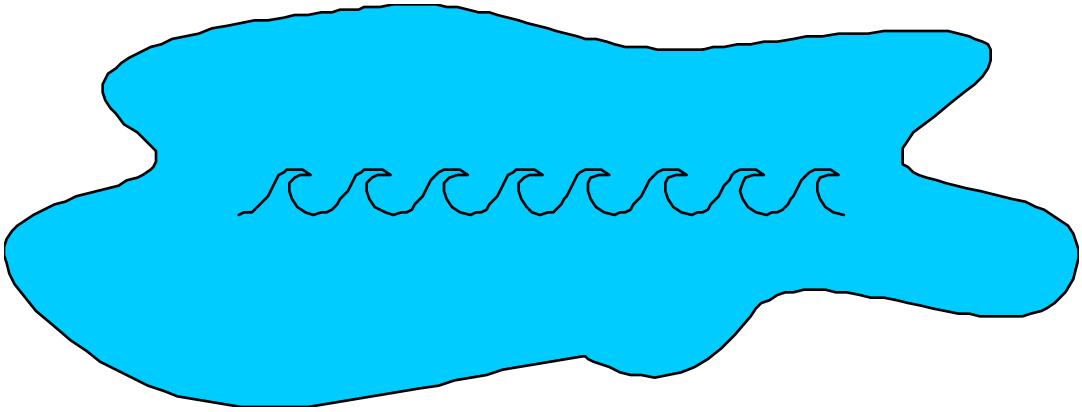
Discussion:

- What if you removed some of the pieces (extinct species of animals or plants), would the picture ever be the same?
- What if you added pieces to the puzzle?
- Are all of the pieces necessary for a complete puzzle or ecosystem?
- Summarize why ecosystems are altered and why they are difficult to restore.
- Identify strategies for using resources and still maintaining the integrity of an ecosystem (inventory plants and animals species, monitor air and water quality, etc).
- Research a potential water-related restoration project either nationally or locally. Consider the following: establishing a restoration goal; formulation a restoration plan;

predicting difficulties; analyzing costs; determining a time frame; projecting results; maintaining restored sites.

- Discuss why some areas may not be able to be restored to their original state.

Conservationist Aldo Leopold once said "The sign of an intelligent tinkerer is one who saves all the pieces."



Puzzle Patterns