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CREATIVE CONTENT, ECO-ENGAGED

Riparian Rush: Soil Erosion

Objective: Students will gain familiarity with the process of erosion and how it can be slowed through the implementation of Riparian Buffer Zones along the river.

Goals: Students will be able to define Riparian Buffer Zone, recognize what one may look like, and can give a general description of its impact on a creek, river, or stream.

Materials:

- Open area to run
- Two long ropes/tape to mark start/end zones
- Optional: Reversable tags that are brown on one side and green on the other (representing loose soil and standing trees)

Methods: Students will discuss riparian buffer zones with their teacher and will play the game "Riparian Rush" to simulate soil moving into a waterway. Debrief at the end will allow students to process how less soil was able to reach the water with more trees in place.

Applies: Students' knowledge of watersheds/water systems, erosion, nutrient overload, agricultural and industrial development effects, riparian buffer zones, and conservation efforts for creeks, streams, and rivers.

Time: 20 minutes

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Background: Riparian Buffer (Forested) Zones are vegetated areas (trees, shrubs, and other vegetation) that occur between terrestrial and aquatic ecosystems. The buffer zone regulates the transfer of materials between these two ecosystems, slowing erosion and soil degradation within the aquatic ecosystem. Riparian Buffer Zones play a major role in maintaining sufficient water quality in streams, rivers, and lakes. These zones are threatened by human factors, such as road building, industrial and residential expansion, and the clearing of trees for increased farmlands. A healthy riparian zone contains ample vegetation that functions to quickly absorb and dissipate high water flow, which in turn reduces erosion and improves water quality. Unhealthy riparian zones can be identified when there is a lack of wooded vegetation, and the surrounding ground terrain is bare and trampled.

Activity/Procedures:

- This is a game of freeze tag themed along a river and its banks. The river is the running zone in between the two shorelines (where the rope boundaries will be placed).
- Place the “no tag” zones (the ropes) across the running space from one another, with enough space on either side for students to line up horizontally before starting to run. The goal is to make it to the other side without being tagged. Again, and again, the students will run until only one or two people remain (the winners).
- Appoint one or two taggers to stand in the river (the tagging zone). The remaining students stand along the rope on the shoreline. On one side of the river, there is a farm field, on the other side, a small town/city. Neither has any shoreline tree coverage.

- The taggers are Environmental City Planners hoping to reduce the amount of soil flowing into the river when it rains. They can accomplish this by tagging the soil particles as close to the shoreline as possible without letting it pass to the other shore (the "no tag" zones). Once a soil particle is tagged by a city planner, they must plant their feet and freeze in place for the remainder of the game – they have become a tree. The trees can also tag soil particles (remaining players) but cannot move their feet – only the Environmental City Planners can run to tag other players.
- If a tree tags a soil particle, that player must also freeze in place and has become a tree as well.
- The game continues until only one (or two) soil particles remain and they become the next City Planners in the next game.
- All soil particles start on the farm field side and try to run to the city side (and then reverse for the next round). City Planners start each round by counting down "3, 2, 1, Go!" and soil particles can then run to the other side. Once the City Planners have said "Go!" the shoreline is no longer safe, and players can be tagged there. If players are tagged behind the shoreline rope, they move to the river side of the shoreline and become a tree.

NOTE: If City Planners tag players in the middle of the river, they have created a hazard for paddlers and fishermen who want to recreate on the river. Try to keep trees out of the main river flow to keep tourists visiting the town *and* capture as much soil as possible.

Extension Activities/Discussion:

1. Can you think of what other benefits we could get from Riparian Buffer Zones?
    a. Provides canopy coverage, shading streams and providing shelter to animals and birds.
2. How can the successful implementation of Riparian Buffer Zones increase a local economy along a river?
    a. Increased property value from the reduction of flood impact/shoreline erosion, supports recreation on a river that is healthier (less downed trees from erosion posing hazards, increased aquatic life and activity), additional sequestered carbon and improves air quality, and can create green jobs/jobs within eco-tourism industry (riverside birdwatching/wildlife, upkeep of barrier zone, education initiatives, etc).