

Analyzing Species-Habitat Interactions with GIS and GPS

Summary

Students will use GPSRs and Google Earth or other GIS tools to record locations of fake "animals", positions of various "habitats", and make analytical inferences about relationships.

Main Core Tie

Science - Biology

[Standard 1 Objective 3](#)

Time Frame

2 class periods of 90 minutes each

Group Size

Individual

Life Skills

Thinking & Reasoning

Materials

Each student or small group needs 1 GPSR and a computer with Google Earth or similar simple GIS program. Class requires access to a large out-door area. Computer portion will be conducted in-doors. About 25 small stuffed animals of no more than 4 types.

Background for Teachers

Teacher must be familiar with use of the GPSR's, the GIS software to be used, Familiarity with geographical concepts like lat/long, UTM, azimuth, and manual plotting would be helpful.

Student Prior Knowledge

Basic computer literacy and familiarization with the GPSR to be used.

Intended Learning Outcomes

Primary: Students will understand how links are found between species and habitat. Secondary: Students will learn to use various tools like GPS and GIS to integrate sources of data and analyze products.

Instructional Procedures

Setup: Teacher creates a simulated natural area by distributing stuffed animals in a semi-segregated fashion. There should be overlap and spread such that it appears randomly distributed. Teacher creates several GIS layers depicting things like slope, elevation, soil type, rain fall which can be semi-random. Execution: Students get coordinates for all animals and record what type they are. If animals of same type come in various sizes, students could also record measurements. Students import data into a simplified GIS software package (Google Earth, et al). Students import teacher-created layers for things like slope, elevation, rain fall. By overlapping/intersecting the data, students find patterns whereby some species are more prevalent in certain combinations of conditions.

Strategies for Diverse Learners

This activity can be done individually or in small groups.

Extensions

Collection of data can be done with a map, compass, and protractor. Can be done with real animals. Instead of teacher-generated habitats, have students actually GPS the coordinates of real/simulated habitat vertices.

Assessment Plan

If student's map and analysis reasonably matches the scenario, the student/small group is a "go". Students should be able to make assumptions like "Stuffed Chicken likes grassy, rocky terrain below 2100 feet" or "Stuffed Walrus has not been found above 1200 feet or in clay soil."

Authors

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