

Studying Succession Through Forest Exploration



OBJECTIVE

Forest Succession represents a complex process of shifting in species composition through time. Developing observation skills to collect information and determine the successional stage that defines an area, not only teaches students about the successional process, but also fosters awareness within students about their own local forests. Issues such as the role of fire in our forests require all community members to understand and value processes that shape and maintain healthy ecosystems. Our community must understand these processes and explore the current state of our forest ecosystems, so that we may contribute educated solutions to these issues. *In this activity, the learner will collect data in a local forest, describing forest characteristics, to determine what successional stage describes the forest. Data will be collected from different sites so that students can compare conditions and discuss what history has led to these conditions.*

Appropriate grades: 9th – 12th

Time required: 3 hours

Benchmarks achieved: Classifying organisms based characteristics.

Materials: Background information on succession (for teacher), Forest Succession Timeline Diagram (one for each group), Common Trees of the Rogue Valley Dichotomous Keys (one for each group), increment bores for aging trees (one for each group), tree diameter tapes (one for each group), tape measures (one for each group), Group Data Sheets, Student Data Sheets and Student Activity Reports (make copies).

* This activity requires a working knowledge of succession. Using Drawing Succession or Succession and Habitat Diversity is recommended.

ACTIVITY

This activity requires some scouting to find a place where more than one or two seral stages exist in close proximity. Students will divide into groups and collect data in circle plots of either 10 or 20-meter radius (depending upon time and overall vegetation density). Each group will need supervision to ensure safety and to provide support so that the goals of the activity are achieved. Groups will collect data on tree species, tree density, tree diameter at breast height (DBH=4.5 ft.), tree age, and forest floor vegetation (record all data on group data sheets). Each group should divide tasks up so that all data is collected and recorded onto the data sheets. Tape measures can be pivoted around the circle plot as data is collected to define the plot boundaries (tape must be maneuvered around trees that impede pivoting).

1. Every tree diameter (over 10cm DBH) should be measured and recorded in the appropriate species row. Students should use the dichotomous keys for identifying trees to species.
2. Next, calculate an average DBH for each species as well as an average DBH of all trees.
3. Calculate the number of trees for each species in the plot, and then the total # of trees (all species) in the plot.
4. Choose three representative trees from each of two dominant tree species to estimate average tree age and calculate the average age for that species. Use only one species to estimate tree age if only one species appears dominant. (Teachers may choose to leave this step out or reduce the number of trees since boring trees is both a delicate operation and may be damaging to the tree or the bore if done incorrectly).
5. Estimate percent coverage for the major vegetation types in the understory: tree seedlings (anything under 10 cm that wasn't counted before), shrubs, herbaceous vegetation, and forest litter (these should roughly add up to 100%).
6. Students should also count any dead trees or snags present in the stand as well as determine the relative amount of downed woody debris (circle either little moderate or large).
7. Once all groups have recorded their data, each student should fill out their own student data sheet, summarizing the data from all the groups.



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DISCUSSION

While the process of collecting this data builds skills and knowledge related to forest ecology, the activity requires some type of discussion or written report to add relevance to the data. Students must draw some conclusions as to what types of disturbances or lack of disturbances has led to each plot's successional stage. Students should either write a report answering the question from the Activity Report or have a discussion to cover these topics.

ASSESSMENT

Evaluate the students' individual data sheets for thoroughness and accuracy. Check for understanding during the follow-up discussion.

