Name(s)

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Project Number

J1113

Project Title

The Effect of Biodiversity on Ecosystem Health

Abstract

Objectives/Goals
The experiment's intent was to find the effect of biodiversity (more specifically species diversity as measured by the Simpsons Diversity Index) on the overall health of an ecosystem. It was expected that since a larger biodiversity generates greater vigor, resilience and ecosystem output the greater the species diversity the higher the health of the ecosystem would be.

Methods/Materials
Four ecosystems of the same geographical type each were plotted with two 15ft2 (4.5m2) areas using construction stakes, flags and nylon string. Over a period of three weeks each plots' species richness and evenness was documented. Then, the diversity of each plot was calculated using the Simpsons Diversity Index [(Sum ni (ni-1))/(N (N-1))] and the number of stressed organisms (an indicator of ecosystem health) was measured at each location.

Results
The ecosystems with a higher diversity were home to the fewest stressed organisms (high health) whereas ecosystems with low diversity had a greater number of stressed organisms (low health). For example an ecosystem with a species diversity of 0.64 contained sixteen stressed organisms whereas an ecosystem with a diversity of 0.82 had a relatively perfect health (no visible stressed organisms). The equation delineated from the results was, Health = -170(Diversity) + 137.

Conclusions/Discussion
The greater the biodiversity of an ecosystem the healthier it was, the health being close to perfect from a diversity of 0.75 to 0.99 (0.99 being the greatest possible diversity).

Summary Statement

Biodiversity loss has become a global issue, this project seeks to determine the affect of this loss on ecosystem health and works as a step towards solving the crisis.

Help Received