

Jack Gaines

The students in my AP Environmental Science classes will learn about biodiversity with a strong focus on native grasslands and the usage of disturbances through fire and grazing to enhance or maintain the native biodiversity. I will focus on Unit 2: Biodiversity, and I will use prairie ecosystems extensively as the primary examples for my students. We will also use our new school's prairie for a biodiversity lab comparing a burned path, to a mowed patch, to an undisturbed patch.

The learning objective my students will accomplish at the end of the unit is to explain interactions that take place within ecosystems. We will do this through the aforementioned biodiversity lab, learning the ecosystem services, ecological tolerance, island biogeography, natural disturbances of ecosystems, adaptations, and ecological succession. And all of these will be tied directly to native grassland/prairie type ecosystems.

For the ecosystem services, students will come up with things that ecosystems do for humans individually. Then as a group they will take their brainstormed list and try to put them into categories without any direction from me. Then I will give them the categories and they'll have the opportunity to correctly place them in their appropriate category. During the lesson on ecological tolerance, we will look at a native species' range of tolerance for two factors and graph them. For island biogeography, they will do a lab designed for islands in the ocean, but will then relate it to man-made islands created by building roads, cities, etc., and we will use Attwater's Prairie Chickens as a case study. Through natural disturbances of ecosystems, we will use the Prairie Protector game to show how humans can recreate natural disturbances to maintain a threatened ecosystem like prairies. During the lesson on adaptations, we will look at roots of grasses that are native to our prairies as well as forbs to identify why they survive so well in this climate, as well as herbivores native to these areas that allow them to be so successful eating grasses. And lastly during our ecological succession unit, we will look specifically at fire as a disturbance and how ecosystems recover from major disturbances, both human and naturally caused.

Their assessment will be their assignments during the unit as well as their summative exam.

They will also be evaluated with formative assignments and through conversations with me and their peers during labs and assignments.

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Currently the primary materials needed are the Online Controlled Burn course through TAMU and Morgan Treadwell. I am working on getting approved to burn .1 acre portions of our prairie at school rotationally each year. This will help reassure admin that it can be done safely and for educational purposes.