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Ecology
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The ecological concept that I am depicting in my work of art is how every species in a particular ecosystem is connected and rely on another. Food chains are proposed to be the "central theory of ecology." For my ecological concept I did not just want to focus on the basic food chain, but the energy flow through the food chain, and the various cycles that take place along with the food chain, such as carbon, nitrogen, and phosphorous cycling. I chose my concept because of its importance for an ecosystem to run smoothly. When species are removed from the ecosystem, the entire ecosystem/ food chain run a risk of becoming weak. On the other hand, ecosystems and food chains are also at risk when new species are brought into a pre-existing ecosystem. It is hard to know what species will be affected by other species removal or invasion therefor it is important to preserve ecosystems and their biodiversity.

The bottom of the food chain is the autotrophs or the producers. They receive most of their energy from photosynthesis. Herbivores are the next trophic level; they are the primary consumers. This means that they only eat plants. The next trophic level consists of carnivores also referred to as secondary consumers. These carnivores only eat herbivores. Carnivores that feed on other carnivores are known as tertiary consumers. The last link in the food web are the decomposers. The decomposers breakdown what is left over by the other species in the chain. The decomposers provide the Autotrophs or producers with nutrients to grow. Thus completing the food chain.

Food chains go beyond who eats who in an ecosystem and provide the way in which energy moves through the ecosystem. With each trophic level consuming the previous, the energy is transferred up the food chain. How energy moves through a food chain can be represented as a pyramid. At each trophic level a lot of energy is lost that was initially trapped by the producers from photosynthesis. Also represented as a pyramid is biomass. Autotrophs/ plants have the most biomass, biomass of a population continues to get smaller and smaller through the trophic levels.

Energy is not a cycle and is lost at the end of the food chain unlike nutrients. Nutrients are in a constant cycle. Nutrients cycle through the food chain and decomposers breakdown the remaining biomass from the food chain which then goes back into the soil to provide plants with nutrients to grow. The most abundant nutrients that are in a continuos cycle are Nitrogen and Phosphorous.

I have depicted the food chain in my necklace. I portrayed the Producers/ Autotrophs as the vines of my necklace. The vines of the necklace support all the other pieces of the necklace because the producers are the base of the food chain and therefor support the rest of the trophic levels. The vines of the necklace are also the biggest part of the necklace because the Autotrophs have the most biomass in the food web. The next piece of the food chain that I represented are the Primary Consumers. This piece of my necklace is more abstracted. To depict the Primary Consumers I used twine to represent mice tails, who are herbivores. The next trophic level I set forth to represent in my necklace are the Secondary Consumers. Snakes are Secondary

Consumers feeding on mice therefor I used shed snake skin in my necklace. To portray Tertiary Consumers, who feed on other carnivores I used feathers since Hawks feed on snakes.

The way in which this necklace was constructed was a conscious effort to showcase more about food chains. I chose to have the base of the necklace be the producer and from there I wove in each element to show how everything in the chain is connected. I chose to design the necklace into being more of a collar to represent that that the food chain is a continuos cycle. I chose not to glue everything together and make it a fragile piece of work to represent how fragile a food chain is. Each piece is woven in through the other pieces of the necklace, each piece relies on the other pieces for its support, just as the interactions of the food web rely on one another.

Works Cited

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1. This website helped me with the importance of bio-diversity in a food web. It clearly provided evidence of how each level of a food chain is connected and how the food chain must be balanced. It provided me with multiple examples of why bio-diversity is important in an ecosystem. It showed an example of the outcome of losing a trophic level to the entire food chain. On the Autotroph level, if the amount of plants decrease, due to numerous reasons such as drought or disease, the herbivore population will decrease. Affecting one trophic level will affect the entire food web/ ecosystem. This website explains why bio-diversity is important. If one species is removed from the food web the other trophic levels must find an alternate source for food. Finding an alternate source puts a strain on the other species. If the top trophic level is absent the trophic levels below it (its prey) will grow as a population putting a strain on the trophic levels below it. For example, if Sea Otters are absent in the ecosystem, the Urchins will have no predators therefore the population will grow putting more strain on the Kelp population. With Sea Otters gone, the Urchins could completely wipe out the Kelp population.

2. This website gave me the basic rundown of a food chain. It helped me with the names of each trophic level and gave me a clear breakdown of how the pyramid represents energy and biomass in the food chain. This information lent support to how I wanted to construct my necklace having the base of my necklace being the producers. Other links on this page also gave me knowledge about ecological balance and ways that humans have put ecosystems at an unbalance and what the unbalance caused.

3. This book helped me take a closer look at nutrient cycling. I found nutrient cycling to be an important aspect for my project. My necklace represents a circle of how the food chain is all interconnected. It is through nutrient cycling that the circle aspect of my necklace makes sense. I looked at parts in this book that focused on the processes of nutrient cycling and why nutrient cycling is important for plant growth. This aspect of the book is what I found most relatable to my project and to help me achieve my goals in completing the project. This book also talked about how nutrient cycling is an important to keep ecosystems stable.

4. This website helped me form the basis of what my ecological concept would be. It showed me that there are many more chains in the ecosystem than who eats who. This website laid out many more cycles that go hand in hand with food chains that I did not think of when I did my proposal. This website shows the Carbon Cycle, the Nitrogen Cycle, and the Phosphorous Cycle.

5. This website I found interesting in the fact that scientists found “rules” about what makes a food web stable. This website helped my project by me understanding how each interaction or relationship in a food web works and the difference between large and small food webs. This website taught me that food webs are more stable when many interactions between trophic levels exist. However, small and large food webs differ. Small food webs are more stable when the interactions between predators and

prey differ in strength. While large food webs are more stable when each interaction between predator and prey are relatively the same strength as other the interactions.

6. This website was helpful to my project to show how the living and non living parts of a deciduous forest interact. This website helped me justify making my necklace into a collar describing how a food chain “describes the path of energy and nutrients from the nonliving parts of the ecosystem, through the living components. and back to the nonliving environment”. It provided in a clear simple way how nutrient cycling and the flow of energy is how all the species of a food web are interconnected.

7. This paper talked about the importance of biodiversity and productivity of species in the food chain. This paper helped me explore the relationship between each species in a food chain. This paper brought to my attention the true complexity of the food chain. it showed the strength of each interaction and how each interaction affects the ecosystem. It talked about strong and weak relationships in a food chain and which enables a more stable ecosystem. It showed how most interactions between species are weak with only a few strong or dominant relationships.


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