

Ecological mutualism is a reciprocal relationship between two species in which both species provide for and survive off each other while enhancing each other's fitness, health and survival (1). I was inspired by this ecological concept and by how a relationship such as this could exist so easily in nature, while humans seem to struggle with these relationships all the time. For my project I decided to focus on the mutual relationship between pollinators and plants, more specifically the mutual relationship between bees and flowers.

The relationship between bees and flowers is a perfect example of how mutualism works in nature. Bees' extract nectar, waxes and resins from flowers which, provide them with the energy and the materials to build their hives (2). Flowers are dependent on bees for pollination services. Every time a bee visits a flower, it picks up a little bit of pollen from the inside of the flower and carries it to the next. This enables a plant to be pollinated or in other words, fertilized (3).

In creating this project, I wanted to encapsulate this relationship between the plants and bees. The box I made represents the ecosystem the two species live in. The mobius strip which rests on the two dowels is supposed to illustrate the constant relationship the two have with each other. A mobius strip, can be described as a link of fabric with a twist in it that can never be untwisted. I thought this would be a good way to depict the relationship between bees and flowers for they cannot survive without each other, therefore their relationship can never be "untwisted." The two dowels on which this mobius strip rests, represents the movement of their relationship and how each species takes from and gives to the other species. It is important to look at how these species are vital reasons for each other's survival

and how we, as humans, should learn from this harmonious relationship of give and take.

## **Annotated Bibliography**

1. Mutualism, <http://www2.mcdaniel.edu/Biology/eco/mut/mutualism.html>, accessed 12-2-11  
This document was used to depict the definition of mutualism both mathematically and ecologically.
2. Mighty mutualisms: The Nature of Plant-pollinator Interactions, accessed 12-2-11, <http://www.nature.com/scitable/knowledge/library/mighty-mutualisms-the-nature-of-plant-pollinator-13235427>  
This article was used to depict the benefits bees and flowers gain from being mutualist partners.
3. Pollination, accessed 12-6-11  
[http://www.nbii.gov/portal/server.pt/community/learn\\_about\\_pollination/872](http://www.nbii.gov/portal/server.pt/community/learn_about_pollination/872)  
This article helped me in my research on the process of pollination and how flowers actually gain from the visitation of bees.













