



- **Connection to Conservation**

My artwork incorporates four images focusing on the life cycle of leaves in a temperate deciduous setting. Three photos are meant to visually emphasize the nature of leaves as they thrive, change colors, and ultimately die. The last image was taken after I set leaves of various stages of decomposition on the ground in a circle. I ordered them from the darkest shade of green, to signify life, to dry and brown, highlighting the final stage of the leaf cycle. In creating a circle, I feel that I effectively represent how the leaf cycle does not end when leaves decompose. Rather, the nutrients from dead leaves provide the soil with vital nutrients, inducing bottom-up effects and restarting the cycle. I experimented with different camera angles, sometimes focusing on shooting from the bottom of a tree towards the top, to symbolize these bottom-up effects in my work.

- **Ecosystem Services**

Leaf decomposition sustains bird life in the Sanctuary through bottom-up forces, contributing to cultural ecosystem services as birders are able to identify a wide variety of species. A recent report identified 24 unique species of birds, demonstrating the breadth of biodiversity in the Sanctuary. This provides an outlet for recreation for the town of Andover, encouraging creativity and a greater interaction with natural resources. Leaves also reduce air and soil contamination by collecting dust, ash, and pollen, exemplifying regulating ecosystem services.

If you feel inclined, please share your Sanctuary artwork with us on Instagram! @agreenerblue and use #DrawnToEarth



- **Bottom-Up Effects**

While the life cycle of leaves contributes to the beautiful foliage seen in the Sanctuary during autumn, the decomposition of leaves supplements the soil with valuable nutrients and enhances the ecosystem as a whole. Specifically, leaf litter returns vital nutrient elements, like nitrogen and phosphorus to the soil. Decomposing leaves also improve soil structure, allowing the soil to absorb more moisture during rains. Soil microorganisms are also supported by the nutrients provided by dead leaves, contributing to a greater degree of biodiversity within an ecosystem. These microorganisms directly influence nutrient cycling, improving soil fertility and making other critical elements, such as phosphorus and zinc, accessible to plants. This is an essential component of the Cochran Sanctuary, as such biological processes are essential to the growth of plants like the Mountain Laurel. The Mountain Laurel is best grown in soil with rich organic matter and in dense forest conditions. Thus, the decomposition of leaves in the fall and winter supplies vast amounts of micronutrients to the soil prior to the blooming of the Mountain Laurel in the spring. Flowers like the Mountain Laurel offer food to pollinators, simultaneously fertilizing the plant and inducing seed dispersal across the Sanctuary. These pollinators serve as a key part of the food chain for other species commonly found in the sanctuary, such as the White-Throated Sparrow and Dark-Eyed Junco. Both species feed on seeds, which are a direct product of the fertilization of plants via pollinators.