The Unsung Heroes, Our Native Plants And Their Ecological Roles

When looking into a natural undisturbed area you are looking at the past, present, and future. Native species of plants have spent thousands of years co-evolving with the areas specific soil, wildlife, and climate. These plants have no ecological replacement. To know and understand the native plants of an area is to understand the history of the land. Planting a native flower restores a deep connection between the past and the present. A native plant is defined as a plant that evolved within a specific ecosystem for thousands of years without human intervention. Native plants are the baseline for most ecosystems. Their benefits are many yet they are in decline. With the recent trend of urban sprawl and more industrialization we are losing natural areas that were once full of these life providing plants. People do not think about this loss because nobody is educating the public of their importance. This paper is about the necessity of native plants and how they benefit their respective ecosystems and humans. The reduction of native plants harms the food chain and weakens ecosystems. Natural areas which contain many kinds of native plants are being destroyed at an alarming rate. Native plants are essential in providing habitat for wildlife, creating the necessary baseline of the food chain, producing pollen for pollinators, and restoring and improving soil conditions.

What is a native plant? A native plant is a plant that evolved within a specific ecosystem for thousands of years without human intervention. These specific ecosystems include other plants, insects, birds, mammals, amphibians, and environmental factors such as rainfall and temperature. These plants grow in a specific area for a long time and have evolved special relationships with other factors in the ecosystem. In central Iowa these plants have been evolving and creating these special relationships for about the last 12 to 14 thousand years after the last glacier. The Wisconsin glacier came across central Iowa literally flattening it, and gave the land a

fresh start (Des Moines Lobe). The glacier allowed different plants to move into Iowa and continue their adaptations. The plants that moved in and have lived here since, would all be examples of native plants. These plants going through their life cycles in this timeframe allows opportunity for plants and other components in the ecosystem to co-evolve and create special relationships.

Native plants create special relationships with other things in its given ecosystem. An example of this co-evolution between a plant and an insect is the Monarch Butterfly and the Aesclepias family of Milkweeds. The Monarch is what is known as a host plant specialist, meaning they can only raise their young on Milkweeds. Evidence shows that the Monarch-Milkweed symbiosis could be as old as one million years (Milkweeds and Monarchs).. The only food the monarch caterpillar can eat is the milkweed leaves and stems. The relationship between the Monarch and Milkweeds is just one example of the importance of native plants.

Native plants are essential parts of almost every ecosystem. Native plants provide the baseline for the entire food chain. Birds are a good indicator of the abundance of native plants because they are easy to view and identify. Monitoring bird species and numbers can tell us a lot about where we live and how they work with the trees, shrubs, and perennial plants. The plants not only provide berries and seeds, but provide the necessary insects the birds use. Ninety six percent of terrestrial birds rely on insects to raise their young (Wildlife & Biodiversity). For a specific example we can use the Black Capped Chickadee and caterpillars. It may take as many as nine thousand caterpillars for one mother Chickadee to raise a nest of three or four young. (Wildlife & Biodiversity) An earlier paper did a study on twenty five properties in Illinois along the north branch of the Chicago river. They did bird surveys on people's properties and counted the different types and abundance of each plant. They found that a homeowner is 91% more

likely to have birds in the yard if they have evergreen or deciduous trees, compared to 40% with berry producing shrubs. (Belaire et al, 2014). This influx of birds on trees is likely due to the insects found on the trees. An entomologist did a study in 2009 over the most important plants of eastern North America. He found that one oak tree could support up to 534 species of Lepidoptera. This is the family of butterflies and moths which includes their caterpillars. (Tallamy and Shropspire 2009). These numbers may not seem that significant, take as another example the Ginko Tree. A tree from east Asia which has now turned into a popular landscape tree. In the eastern US where it has been popularized it supports zero species of Lepidoptera. These insects that are from North America do not recognise the plant from east Asia, making it useless to the food web.

Native plants and many types of pollinators have essential symbiotic relationships. Pollination is the process of fertilization that almost all flowering plants must go through. Most flowering plants depend on bees, butterflies, and other animals for pollination. Some plants are wind or self pollinated, but most are pollinated by bees and other insects (Reel). Without this process these plants would not reproduce and produce fruits or seeds. Some of these pollinators need to start life on a specific native plant but once they reach maturity they can pollinate all types of flowers. The Monarch Butterfly is an example. The egg and caterpillar need to be laid onto a native Milkweed plant, once they mature and become a butterfly they can nectar and pollinate many types of flowers. The base of their survival is off of that family of native plants (The Life Cycle). There are many different types of pollinators who feed on many different plants. If there is a lack of diversity in the plants there will be a lack of biodiversity in the pollinators. For example if there is only milkweeds on a property, there may be an abundance of Monarch’s and Milkweed Beetles but a lack of everything else. There may not be hummingbirds,

social bees, solitary bees, moths, or other types of butterflies. Non-native, introduced flowers can benefit pollinators by providing pollen, but the introduced plant cannot be eaten by the insects. Other than being a functional base in the food chain, pollinators help humans. Pollinators help fertilize the food we eat by spreading the pollen from flower to flower and plant to plant (Bradshaw 2024). These pollinators spread the pollen of strawberries, apples, avocados, almonds, and various other types of human crops. These pollinators help ensure we have clean water as well. By spreading pollen these pollinators ensure the plants they use create seed. The plants themselves help purify water by reducing water runoff and filtering the water through the roots (Bradshaw 2024).

Native plants such as the grasses and forbs that make up prairies restore and improve our soil. Most of Iowa's prairie plants are herbaceous perennials which means they grow back every year from the same root stock. Some rootlets die every year but the majority of the root lives and grows (Müller 2014). Some prairie plant roots are shallow but some can reach up to 25 feet deep. For example the perennial grass Big Bluestem consistently reached root depths of 10 feet deep. The tops of the plants grow and die every year while the roots stay alive. The plants come back every year adding to the soil nutrients and creating organic material which breaks down. The tops of the plants that die add to the organic material in the topsoil and create rich dark topsoil. This cycle of life and death in the prairie over 10 thousand years is why Iowa has such rich soil. Prairie plants reduce water runoff and filter water before it reaches the watershed. Prairies may have soaked up as much as six inches of rain without shedding runoff (Müller 2011). The tops of the soil catch and slow down the rainfall while the soil and the roots soak up and filter the water. The abundance of the roots filters and cleans the water before it can make its way into creeks and rivers.

Native plants are essential in providing habitat for insects, providing food to the food chain, providing pollinators pollen, and restoring and improving soil conditions. If more people understood the importance of native plants we would plant more in our yards. If more people planted native plants we would have better biodiversity, stronger food chains, and better soils. The people would see an improvement in their yards and surrounding areas.

Citations

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