Ecological Impacts

Invasive species are the second leading threat to biodiversity, with habitat loss being the greatest threat. Invasive plant species can have a detrimental impact on the environment they invade. Not only do invasive plants have a negative effect on the survival of native plants and animals in the ecosystem, but some can be harmful to humans and livestock and can be an economic burden.

Their lack of natural predators and competitors in a new environment and their adaptations allowing them to outcompete native species are factors that contribute to the rapid spread of invasive plants at the expense of native ones. The rapid establishment of invasive plants can lead to habitat loss for native plants. This can also be a problem for wildlife. Some wildlife species depend on specific plants for their habitat. When invasives overtake the native plants, wildlife species can lose their habitat entirely. Invasive plants can also grow so dense that they take up living space for wildlife.

Not only do they use the vital resources needed by native plant species, but invasive plants can actually alter the nutrient availability in the environment and create an inhospitable environment for other plants. One example is nitrogen fixation. Plants need nitrogen to survive. Some plants, such as *Acacia longifolia*, have a symbiotic relationship with bacteria that converts nitrogen in the air into nitrogen that plants can use. Other plants have adapted to surviving in areas with little soil nitrogen. If nitrogen fixing plants are introduced to an area with low nitrogen content, it can greatly interfere with the nutrient balance in the area. Native plants that had adapted to the nutrient availability in the area would have difficulty surviving. Other invasive plant species will alter the content of salt and water in the soil, making it impossible for some native species to survive. *Tamarix* (salt cedar) is a common invasive plant in the West that alters soil water availability.

Other imbalances caused by invasive plants are changes to the fire regime in the ecosystem and changes to the trophic levels. Change to the trophic levels can occur in several ways. Inedible invasive plants might out-compete native forage for some herbivores. If the herbivores no longer have an adequate food supply, they will not survive. The populations of predators in the area would also decrease with the decrease in their prey – the herbivores.

Fire regime is important for the ecological balance of an area. If the regime is altered, it can significantly affect the establishment of native plants. Many seeds need fire to germinate. Some plants need regular fire to clear the area for the plant to grow. The effects of fire on plant life have a direct impact on wildlife in the area that depends on native plants for energy.

Some invasive plants, like cheat grass (*Bromus tectorum*), have changed the fire regime from 60-100 years to 3-5 years in some regions. More frequent fires prevent native plants from establishing themselves but promote the establishment of cheat grass. This causes a cheat grass-fire cycle that is difficult to control.

Physical features of invasive plants can affect the ecosystem. Some invasive plants have shallow roots systems which do not provide much erosion control. If native plants with deeper roots systems are unable to establish themselves in an area, there might be an increase in erosion. Some invasive plants grow tall or grow as vines and block sunlight from other plants. Another problem associated with invasive plants is that they produce toxic chemicals that are emitted into the soil, killing and preventing other plant species. This is known as allelopathy. Finally, other invasives produce toxic chemicals that remain within the plant and are poisonous to herbivores that ingest the plant.

Sources

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