Sustainable Management of Invasive Species

Why in News?

Herbicide treatments designed to cull invasive plants have affected butterfly populations by unintentionally killing off native plants.

What are Introduced Species?

- **Introduced Species** – These are non-native species that are introduced into places outside their natural range.
- Non-native species can have various effects on the local ecosystem and not all non-native species are invasive.
- **Naturalization** - Some introduced species adapt to the introduced environment and thrive well better than the native species.
- **Invasive species** – The introduced species become invasive when it spreads beyond the introduced region and threatens the native ecosystem.
- In the case of plants, invasiveness refers to a plant's ability to dominate and overtake other plants, or cause other ecological or economic harm.
- **Impacts of invasive species** - The role of introduced plants in ecological communities is complex.

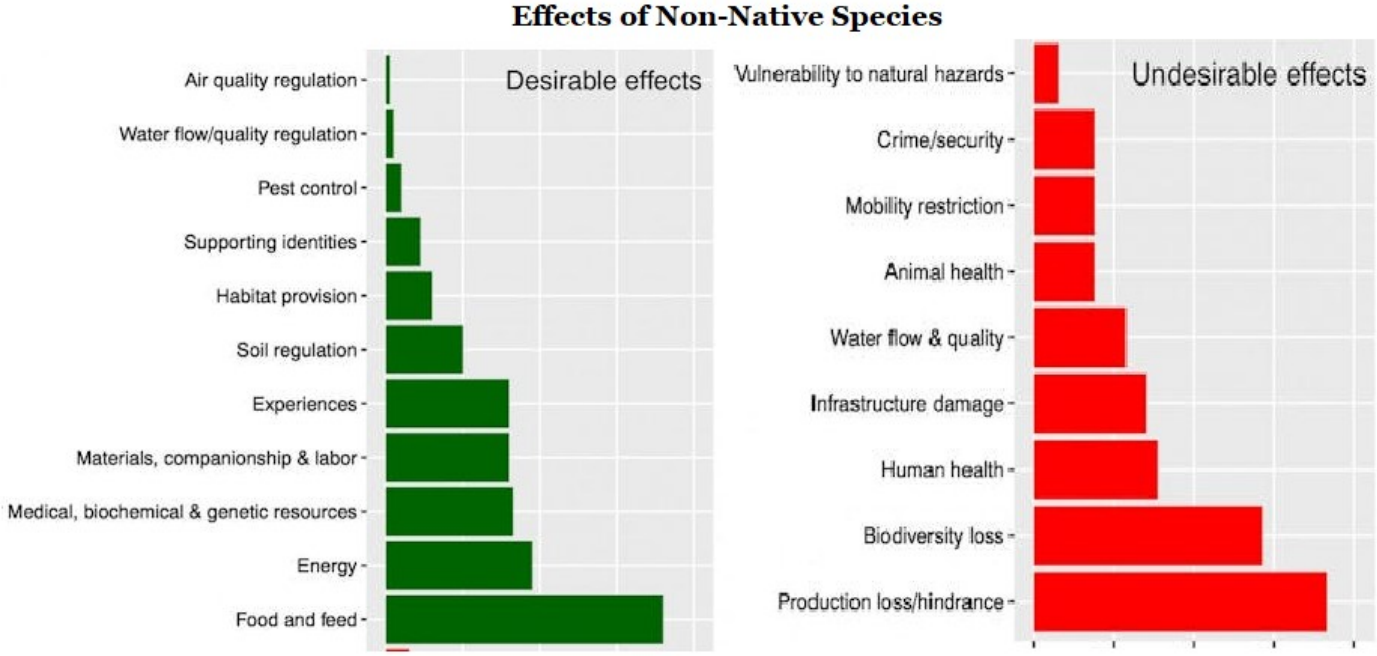
To know more about Invasive species and their negative impacts click here.

What are the benefits of invasive species?

- Some introduced species have been vital in the fight against biodiversity loss, control of invasive species and adaptation to climate change.
- **Ecosystem Resilience** - Introduced species can play positively in maintaining ecosystem resiliency.
- **Aid Local System** - Some invasive species can aid local ecosystems by helping to filter the air and water of contaminants.
- **New Ecological Roles** - Introduced plants often differ in their characteristics from native plants, meaning they can provide new roles or replace the roles formerly served by native plants.
- **Substitute Native Species** – When native species are unable to withstand the climate change, invasive species can fulfil their role in the ecosystem.
- Introduced Siberian elm has adapted well to river areas that are now too dry for native elms and contribute similar roles of latter in the community, like photosynthesis and providing wildlife habitats.
- **Climate Change Mitigation** - Introduced plants could be well-placed to support, or even buffer, current ecosystems as they undergo transitions due to climate change.
- **Drought Tolerant** - Some introduced species can be more drought-tolerant than

native species to adapt to human-modified climate extremes.

- **Carbon Sequestration** - Introduced species can be used to increase carbon sequestration.
- **Positive Competition** - The introduced humulus japonicus vine in river habitats in southern France reduced vine diversity but increased the height of the plants, resulting in more photosynthesis.
- **Increase Agri Productivity** - earthworms are non-native in most of the Midwest, but they can increase agricultural productivity by 25%.



What are the negative impacts of unsustainable control efforts?

- While invasive species control measures are crucial to protect ecosystems and biodiversity, they can sometimes have unintended negative consequences.
- **Non-Target Species Harm -** Control methods, such as herbicides or pesticides, can unintentionally harm native species.
- For example, herbicides might kill off beneficial plants along with the invasive species.
- **Ecosystem Disruption -** Aggressive control measures, like clearing large areas of habitat, can disrupt the intricate balance of ecosystems.
- **Evolutionary Responses -** Invasive species can evolve resistance to control measures, making them harder to eradicate in the future.
- **Economic Costs -** Control measures can be expensive, especially for large-scale infestations. This can strain resources and divert funds from other conservation efforts.
- **Social Impacts -** Control measures may affect local communities, especially those that rely on natural resources for their livelihoods.
- For example, herbicide use in agricultural areas might impact farmers' income.

Way forward?

- Introduced plants are already highly adapted to local habitats, making their eradication challenging and perhaps even counter-productive to overall ecosystem

health.

- Conduct regular study, monitoring of introduced pieces and create a holistic ecosystem-wide viewpoint to prioritize management of introduced plants.
- Organize and prioritize the management and restoration of habitats based on the net benefit (or harm) of a species to an ecological community, instead of on the origin of the species.
- Consider the potential ramifications of the removal process of introduced species on the community.

Reference

DownToEarth | Learn to live with invasive species

