



INVASIVE SPECIES – ENVIRONMENT

NEWS: The water hyacinth invasion of Kenya's Lake Naivasha has emerged as a critical issue, causing profound economic and environmental challenges, particularly for local fishermen.

WHAT'S IN THE NEWS?

About Lake Naivasha

- **Geographical Location:**
Lake Naivasha is a freshwater lake located in the Great Rift Valley of Kenya. It is one of the most ecologically significant lakes in the country due to its unique biodiversity and socio-economic contributions to local communities.
- **Primary Water Sources:**
The lake is fed by two perennial rivers, the Malewa and the Gilgil, both originating in the Aberdare Mountains in central Kenya. These rivers provide a consistent supply of freshwater, supporting the lake's ecosystem and surrounding communities.
- **Global Significance:**
Lake Naivasha has been designated as a Ramsar Site, underscoring its importance as a wetland of international significance. This designation highlights the lake's ecological value, as it supports a wide variety of flora and fauna, including fish species, birds, and mammals.

About the Water Hyacinth

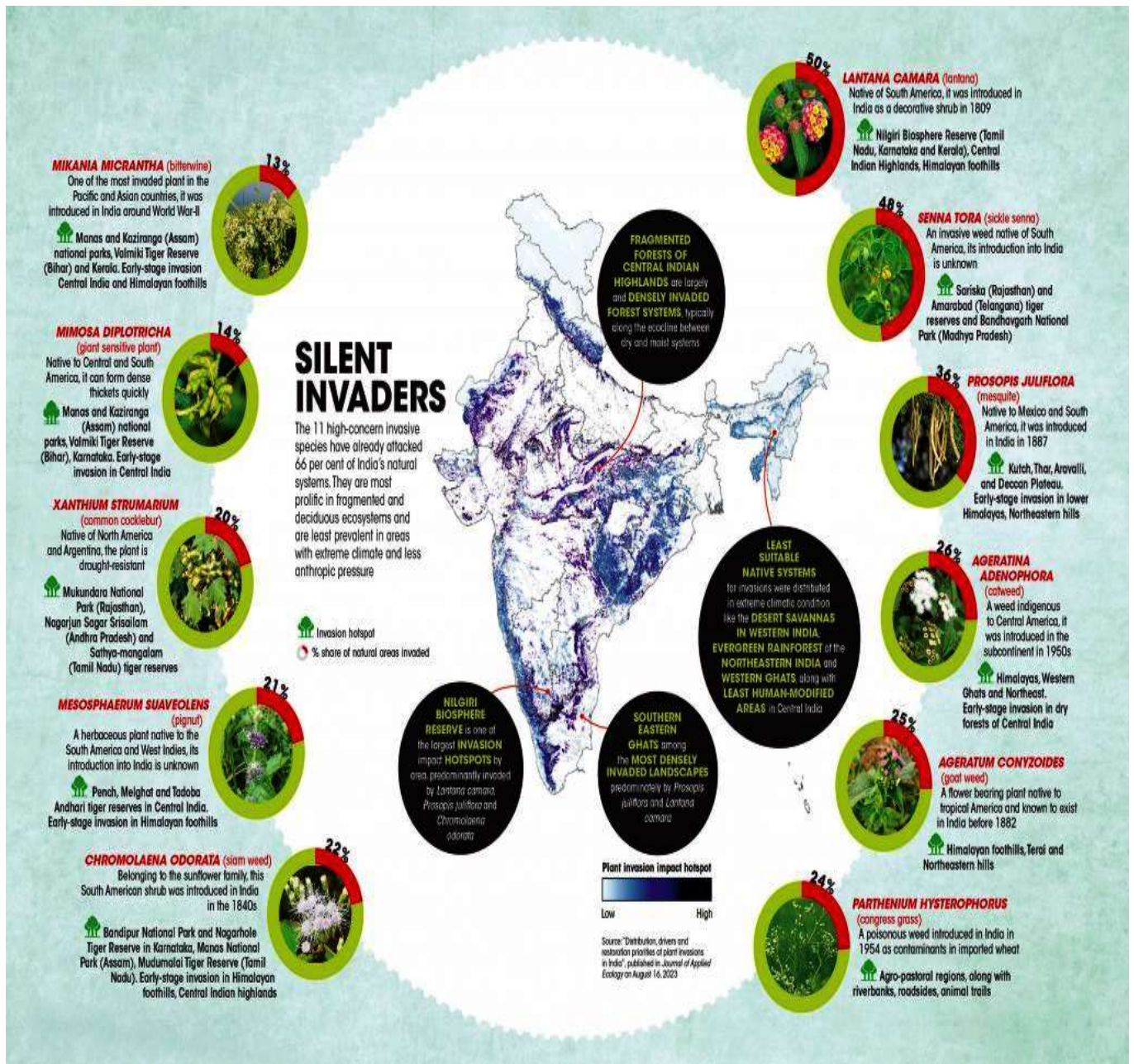
- **Scientific Name and Origin:**
The water hyacinth (*Eichhornia crassipes*) is an aquatic plant native to South America. While originally confined to its natural habitat, it was introduced to Kenya in the 1980s, where it quickly became a problematic invasive species.
- **Characteristics and Growth:**
The plant thrives in polluted and nutrient-rich waters, where it can grow and reproduce rapidly. Its ability to absorb contaminants from the water gives it a competitive advantage over native aquatic plants.
- **Global Invasiveness:**
Water hyacinth is considered the most invasive aquatic plant globally due to its rapid growth, ability to form dense mats, and the ecological and economic disruption it causes in invaded water bodies.

What are Invasive Alien Species?

- **About:**
 - Invasive alien species (IAS) are **non-native organisms**, including plants, animals, pathogens, and others, introduced outside their natural habitat, **posing economic, environmental, and health risks.**



- According to the **Convention on Biological Diversity (CBD)**, IAS are characterised by their ability to "**arrive, survive, and thrive,**" outcompeting native species for resources.
- In India, IAS are defined under the **Wildlife Protection Act, 1972 (amended in 2022)**, as **non-native species posing a threat to wildlife or habitats**.
- They adversely affect biodiversity by causing the **decline or elimination of native species** through **competition, predation, or transmission** of pathogens.
- Invasive species disrupt local ecosystems and ecosystem functions, leading to ecological imbalance and loss of habitat.
- Invasive species negatively affect livelihoods, particularly in developing countries, where agriculture, forestry, and fisheries are essential sources of income.
- Invasive alien species are **one of the five major direct drivers of biodiversity loss globally**, alongside land and sea-use change, direct exploitation of organisms, climate change, and pollution.
- **Examples:**
 - Species such as **African catfish, Nile tilapia, red-bellied piranha, and alligator gar** **dominate** the list of invasive wildlife in India.
 - **Red-eared Slider**, a North American turtle, popular as a pet, has been introduced into Indian water bodies, outcompeting native species for food and habitat.
- **Impact on Native Flora and Fauna:**
 - **1 in 10 species on the IUCN Red List are threatened by invasive alien species.**
 - Invasive species disrupt food chains and upset ecosystem balance, often dominating habitats devoid of natural competitors.
 - Since the 17th century, IAS has contributed to **nearly 40% of all known animal extinctions**, highlighting their significant role in biodiversity loss.
 - **Case Study:** In **Keoladeo National Park**, Rajasthan, African catfish prey on waterfowl and migratory birds, altering the park's ecological dynamics.



Economic and Environmental Challenges at Lake Naivasha

1. Impact on Local Fishermen:

- **Decline in Fish Populations:**

The water hyacinth blocks sunlight from penetrating the water, disrupting photosynthesis in aquatic plants and reducing oxygen levels. This negatively affects fish populations, leading to reduced catches for fishermen.

- **Obstructed Access to Fishing Grounds:**

Dense mats of water hyacinth make navigation difficult, often trapping boats and forcing fishermen to spend additional time and resources clearing pathways.



2. Biodiversity Loss:

- **Displacement of Native Species:**

The dense coverage of water hyacinth crowds out native aquatic plants, disrupting the ecological balance and reducing habitat availability for aquatic organisms.

- **Impact on Birds and Other Wildlife:**

Birds and other wildlife dependent on the lake's ecosystem face habitat destruction and limited food resources due to the invasive plant's dominance.

3. Water Quality Degradation:

- The plant thrives in polluted water, absorbing nutrients from agricultural runoff and sewage, but its decomposition after death releases these nutrients back into the water. This leads to eutrophication, creating dead zones in the lake.

4. Economic Costs:

- Efforts to control and remove water hyacinth require significant financial and human resources. Local authorities and communities often struggle to implement sustainable management practices due to limited funds and expertise.
- Tourism, a key industry around Lake Naivasha, has also been affected as the invasive plant diminishes the lake's aesthetic and recreational appeal.

What are the Initiatives Related to the Management of Invasive Alien Species?

- **Global:**

- **Convention on Biological Diversity (CBD):**

- The CBD and its Parties including India recognize the urgent need to address the impact of IAS.
- Article 8(h) of the CBD states that each Party should prevent the introduction of, control, or eradicate alien species that threaten ecosystems, habitats, or species.
- The CBD sets global priorities, guidelines, collects information, and helps coordinate international action on invasive alien species.

- **Kunming-Montreal Global Biodiversity Framework:**

- Target 6 of the recently adopted **Kunming-Montreal Global Biodiversity Framework**, an international agreement under the UN-CBD, requires member states, including India, to reduce the impacts of **invasive alien species on biodiversity and ecosystem services by 50% by 2030.**

- **IUCN Invasive Species Specialist Group (ISSG):**



- Manages the **Global Invasive Species Database (GISD)** and the Global Register of Introduced and Invasive Alien Species.
 - Provides information on invasive species across taxonomic groups to support management efforts.
- **India:**
- **National Biodiversity Action Plan:**
 - Target 4 is specifically focused on the prevention and management of invasive species.
 - **National Action Plan on Invasive Alien Species (NAPINVAS):**
 - Launched by the Ministry of Environment, Forest and Climate Change (MoEFCC), NAPINVAS focuses on preventing new introductions, early detection, control, and management of established IAS.
 - **National Invasive Species Information Center (NISIC):**
 - This centre provides information and resources on invasive species in India, raising awareness about the issue.
 - **Plant Quarantine (Regulation of Import into India) Order, 2003:**
 - Under the Department of Agriculture and Cooperation (DAC) it regulates the import of plants and plant material to prevent the introduction of IAS.

Lessons from the Invasion

The water hyacinth invasion of Lake Naivasha illustrates the profound impact of invasive species on ecosystems and local economies. It highlights the urgent need for:

- **Proactive Measures:** Preventing the introduction and spread of invasive species through stringent regulations and monitoring.
- **Sustainable Management:** Adopting long-term strategies for controlling and eradicating invasive plants, such as biological control methods, mechanical removal, and community-led initiatives.
- **Awareness and Education:** Increasing public awareness about the dangers of invasive species and the importance of preserving biodiversity.

By addressing the root causes of water hyacinth proliferation, such as water pollution and unchecked agricultural runoff, stakeholders can work together to restore the ecological integrity of Lake Naivasha and secure the livelihoods of its surrounding communities.

Source: <https://www.thehindu.com/sci-tech/science/invasive-water-hyacinth-threatens-fishers-livelihoods-on-popular-kenyan->



PL RAJ IAS & IPS ACADEMY

MAKING YOU SERVE THE NATION

<lake/article69115884.ece#:~:text=Water%20hyacinth%20was%20first%20sighted%20on%20Lake%20Naivasha%20about%2010,hyacinth%20is%20linked%20to%20pollution.>



**P.L. RAJ IAS & IPS ACADEMY | 1447/C, 3rd floor, 15th Main Road,
Anna Nagar West, Chennai-40. Ph.No.044-42323192, 9445032221
Email: plrajmemorial@gmail.com Website: www.plrajasacademy.com
Telegram link: <https://t.me/plrajas2006> YouTube: P L RAJ IAS & IPS ACADEMY**