An Educational Visit to Damagundam Reserve Forest

Report by Eco Club, Department of Botany, AMS Arts & Science College

Introduction

On 28th September 2024, the Eco Club of the Department of Botany, AMS Arts & Science College, in collaboration with the Janavignana Vedika, Telangana State, and environmentalists, organized an educational field visit to the Damagundam Reserve Forest in Pudur Mandal, Vikarabad District. The primary objective of the visit was to provide students with first-hand experience of environmental advocacy, raise awareness of the potential ecological damage caused by the proposed Navy VLF Radar Station, and support the local community in their protest against the project.

This field visit included a delegation of 40 students of B.Sc (BZC), accompanied by faculty members Dr. Rajani (Secretary & Correspondent), Dr. K. Jhansi Rani (Principal), Dr. A. Pramila (Head, Department of Botany), Dr. Parameshwari, Mrs. Sandhya, and Ms. Sree Shravani Reddy. Environmentalists and JVV activists around twenty joined hands with the students and faculty to engage with the local communities and observe the ecological significance of the forest.

Exploring the Damagundam Reserve Forest:

Upon arrival at Damagundam Reserve Forest, the students and faculty explored the rich biodiversity by trekking through the forest, accompanied by guides and environmental activists. The participants observed the diverse flora and fauna that inhabit this ecologically sensitive region. The forest, located approximately 80 km from Hyderabad, plays a crucial role in sustaining the Musi River and maintaining the local climate.

The group noted the Ramalingeshwara Swamy Temple, which adds cultural and spiritual significance to the forest for indigenous tribes and local villagers. This small, stone-

structured temple perfectly complements the serene and lush environment of the forest. The visit also shed light on how the local communities depend on the forest for their livelihoods and spiritual well-being.

Flora and Fauna Observations

During the visit, participants identified a wide array of plant species, particularly medicinal plants and trees, contributing to the ecological richness of the area. Some of the notable species observed include:

- ✓ Lantana camara (Korentha)
- ✓ Ficus benghalensis (Marri)
- ✓ Wrightia tinctoria (Ankudu chettu)
- ✓ Tectona grandis (Teak)
- ✓ Terminalia arjuna (Thella Maddi)
- ✓ Ziziphus mauritiana (Regu)
- ✓ Calotropis gigantea (Gilledu)
- ✓ Syzygium cumini (Neredu)
- ✓ Abrus precatorius (Guruvinda)

Micropus Xanthopus (a type of macro mushroom)

This reserve forest is also home to various wildlife species such as spotted deer, sambar deer, wild boar, wolves, and countless bird species. The students learned about the complex interactions between plant and animal species in maintaining the forest's ecosystem and the importance of biodiversity conservation.

Community Engagement and Protest

The group participated in a rally organized by environmental activists and local residents of Puduru village. The rally aimed to protest the planned destruction of large portions of the Damagundam Reserve Forest for the construction of the Very Low Frequency (VLF) Radar Station by the Indian Navy. Students and faculty joined the awareness march in the village, gaining insight into the concerns of the local villagers and the negative impact the project would have on their lives.

Community members expressed their deep concern over the loss of biodiversity, destruction of natural habitats, and the displacement of indigenous communities. The rally was a powerful display of grassroots resistance, with local residents voicing their determination to protect their lands from encroachment.

Ecological and Cultural Significance of Damagundam Reserve Forest

Damagundam Reserve Forest is an ecological treasure trove, contributing to watershed protection, climate regulation, and supporting local livelihoods. Its dense forests help conserve water resources, recharge groundwater, and reduce soil erosion, benefiting surrounding agricultural lands and maintaining air quality.

Moreover, the Musi River, which flows through the forest, is a lifeline for nearby villages, providing water for drinking and irrigation. The river feeds into two major reservoirs of Hyderabad, Osman Sagar and Himayat Sagar, before joining the Krishna River. The preservation of this forest is vital not only for biodiversity but also for maintaining the water resources that support both rural and urban populations.

Potential Environmental Threats

The Navy's proposal to establish a VLF radar station poses a significant threat to the forest's fragile ecosystem. 1,174 hectares of forest land have already been transferred for the project, which is expected to be completed by 2027. The radar station requires clearing a substantial portion of the forest, endangering local wildlife and vegetation, including species critical for the region's biodiversity.

The destruction of forests will have dire consequences, such as:

- ✓ Displacement of wildlife and potential extinction of endemic species.
- ✓ Reduced groundwater recharge, which could lead to water shortages and affect agricultural lands.
- ✓ Increased temperatures and altered climate patterns, potentially increasing the risk of floods and droughts.
- ✓ Cultural loss for the indigenous tribes that rely on the forest for sustenance and spiritual practices.
- ✓ Additionally, approximately 60,000 villagers who depend on the forest for firewood, medicinal plants, and grazing lands will see their livelihoods severely impacted.

The visit to Damagundam Reserve Forest was an eye-opening experience for students and faculty alike. It underscored the importance of environmental advocacy and the role of communities in safeguarding natural resources. The unity of the villagers in their fight against the VLF radar project serves as a reminder of the essential need to strike a balance between national security and environmental conservation.

This educational experience inspired participants to become advocates for environmental justice and sustainability. As citizens and future professionals, we must support efforts to protect forests like Damagundam, not just for their ecological value, but for the cultural and social wellbeing of the communities they sustain.

Recommendations to Mitigate Environmental Impact of the VLF Radar Station in Damagundam Reserve Forest

The following measures aim to balance the critical need for national security with the preservation of the biodiversity and ecological integrity of the Damagundam Reserve Forest, ensuring a sustainable approach to the construction and operation of the VLF Radar station.

1. Pre-Construction Phase:

Comprehensive Environmental and Social Assessments:

Conduct detailed Environmental Impact Assessments (EIA) and Social Impact Assessments (SIA) to evaluate the project's effects on the ecosystem and local communities. These assessments should include biodiversity studies, potential deforestation impacts, and effects on local water resources and wildlife habitats. Community and Stakeholder Engagement:

Collaborate with local communities, environmental groups, and scientific experts to fully understand the local environmental challenges and identify effective mitigation strategies. Transparency and involvement of all stakeholders are crucial for minimizing conflict and ensuring long-term success.

Exploring Alternative Locations:

Investigate alternative sites that have lower ecological sensitivity, such as non-forested areas or previously developed land, which could reduce the need for extensive deforestation. Relocating the project to a less vulnerable area would help protect the forest's unique biodiversity.

2 During Construction Phase:

Sustainable Forest Management:

Implement minimally invasive construction methods to reduce tree felling and land disturbance. Clear only what is necessary and ensure that the most ecologically significant areas remain untouched.

Eco-Friendly Construction Practices:

Use environmentally friendly materials and construction methods that minimize pollution. Avoid chemicals harmful to local water sources and soil and incorporate sustainable infrastructure designs.

Pollution Control and Waste Management:

Develop a waste management plan to prevent contamination of soil and water. Regular monitoring of air and water quality during construction can mitigate pollution risks.

Noise and Disturbance Control:

Implement noise-reducing measures to minimize the disturbance to wildlife, especially during critical breeding or migration seasons. Construction activities should be restricted during sensitive times to avoid disrupting natural behaviours of wildlife.

3 Post-Construction Phase:

Habitat Connectivity and Wildlife Corridors:

Establish wildlife corridors to maintain habitat connectivity for species that rely on large areas of forest. These corridors should allow free movement of animals between different parts of the forest, avoiding habitat fragmentation.

Restoration of Disturbed Areas:

Reforest the disturbed areas using native species and focus on ecological restoration to bring back the natural balance of the region. Restoration efforts should prioritize key species that are vital to the forest's ecosystem.

Long-Term Environmental Monitoring:

Implement a continuous monitoring program to track environmental changes post-construction, including water quality, soil health, and wildlife populations. Adaptive management strategies should be in place to address any unforeseen environmental impacts.

Community Engagement and Compensation:

- **Fair Compensation for Affected Communities:**

Ensure that local communities receive fair compensation for the loss of access to forest resources. This should include financial support, as well as rehabilitation packages, especially for those who depend on the forest for livelihood.

- **Inclusive Decision-Making:**

Involve community members in decision-making processes to ensure that their concerns and knowledge are incorporated into the management and conservation strategies for the forest post-construction.

- **Support for Sustainable Livelihoods:**

Develop programs that offer alternative income sources for the local communities, such as eco-tourism, medicinal plant harvesting, or community-based forest management, which can reduce their dependence on deforested areas.

ALTERNATIVE SOLUTIONS:

Technological Innovation:

Explore alternative technologies that could reduce the environmental footprint of the VLF radar station. For example, smaller or less intrusive communication technologies that require less land could be explored.

Co-location of Infrastructure:

Consider building the radar station in conjunction with existing military or governmental infrastructure in areas that have already been developed, to minimize the creation of new disturbances in untouched forest areas.

Underground or Elevated Construction:

Investigate the possibility of constructing the radar facility underground or on elevated platforms to reduce the need for extensive clearing of forest areas and to minimize the physical footprint of the project.

STRENGTHENING THE REGULATORY FRAMEWORK:

Enhanced Environmental Regulations:

Strengthen the enforcement of environmental laws and ensure compliance with international environmental standards, including those set by the United Nations and other global organizations, to protect ecosystems.

Transparent Grievance Mechanism:

Set up a transparent grievance redressal mechanism where communities can raise their concerns regarding environmental damage or violations and ensure that these grievances are addressed promptly.

RESEARCH AND DEVELOPMENT:

Innovative Solutions for Ecological Conservation:

Conduct research on minimizing the environmental impacts of large-scale infrastructure projects like the VLF Radar station. Develop new designs or materials that have a lower environmental impact.

International Collaboration:

Collaborate with global experts and organizations to adopt best practices in radar construction and forest conservation, learning from other countries' experiences with similar projects.

EFFECTS OF VLF RADAR RADIATION -

Given the potential adverse effects of Very Low Frequency (VLF) radar radiation, it is crucial to assess the possible impacts on human health and the environment at varying distances from the station:

Immediate Vicinity (0-1 km):

Health Risks:

High exposure levels could result in neurological effects, cancer risks, and electromagnetic hypersensitivity (EHS) in some individuals.

Ecological Impact:

Significant habitat destruction could disrupt wildlife behaviour, leading to changes in migration, breeding patterns, and survival rates.

Near-Field Zone (1-5 km):

Health Concerns:

Moderate exposure may cause cardiovascular effects, sleep disturbances, and long- term health risks.

Ecological Impact:

Altered plant growth and reduced agricultural yields are possible, along with changes in the local microclimate.

Far-Field Zone (5-20 km):

Health Risks:

Lower exposure levels but still a potential risk for increased cancer rates and subtle neurological issues.

Ecological Impact:

Disruption of animal migration patterns and changes in biodiversity, as the radar's radiation interferes with natural biological cycles.

Long-Range and Cumulative Effects (20+ km):

Health Risks:

Cumulative exposure over a long period could increase susceptibility to disease and chronic health issues, though effects are less intense at these distances.

Ecological Impact:

Ecosystem disruption could occur, affecting soil chemistry and leading to biodiversity loss over time.

Conclusion

Mitigating the environmental and social impact of the VLF Radar station in Damagundam Reserve Forest requires a comprehensive, multi-faceted approach. By combining advanced technological solutions, community involvement, and stringent environmental regulations, it is possible to ensure that national security interests are met without compromising the ecological balance and well-being of local communities. This project, if managed responsibly, can become a model for how development and conservation can coexist harmoniously.

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