

Nature-based Solutions: A Sustainable Model for Urban Resilience – A Case Study from Tamil Nadu

The implementation of Nature-based Solutions addressed certain challenges like heat mitigation, flood control, water sustainability, and biodiversity support at the Chennai Zoo. Following two drought years in 2018 and 2019 causing an acute water crisis, efforts were made to establish a network of percolation ponds and to restore Otteri Lake. Spanning 18 acres within Arignar Anna Zoological Park, Otteri Lake was crucial for local biodiversity. Its restoration involved desilting, planting native vegetation, and sustainable water management in the catchment area to create a resilient ecosystem.

With such similar models adopted across the state, NbS was proposed in the "Tamil Nadu Heat Mitigation Strategy" as a means of passive cooling and a framework to adopt NBS in various sectors is being developed for Tier 2 cities, focusing on sustainable urban planning and resilience.



Otteri Lake Model of restoration through NbS

Restoration methods adopted combined physical, chemical, and biological eco-restoration techniques. Key interventions included sediment dredging, desilting, and deepening the lake to improve water quality and storage capacity. Invasive species were managed, native vegetation was planted, and water flow was optimized to maintain stable water levels. Initiatives were taken to improve wildlife habitat and created recreational spaces for the community. Scientific plan in creation of a network of percolation ponds at pivotal points contributed to ground water recharge. Monitoring and evaluation ensured adaptive management and long-term sustainability.



Environmental benefits

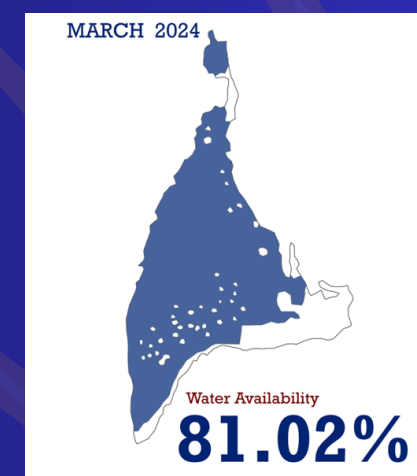
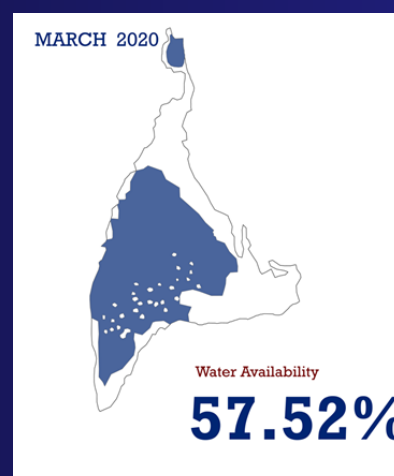
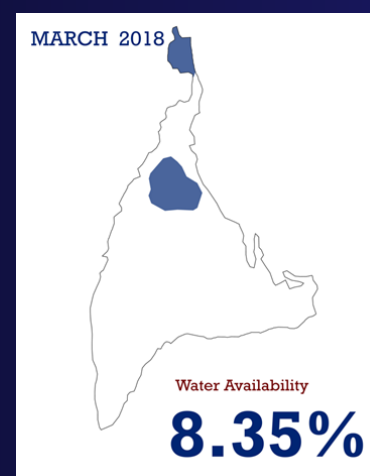
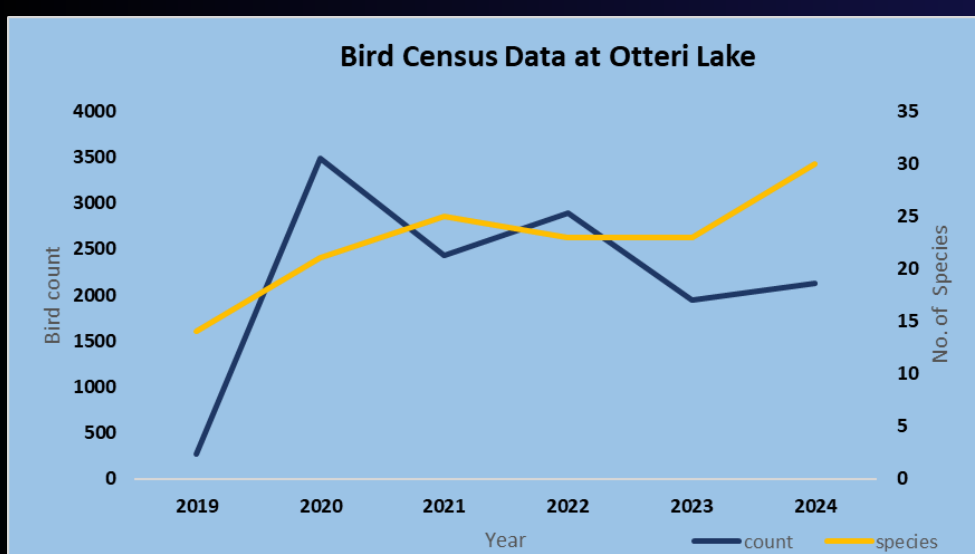
- **Biodiversity Recovery**
- **Sustained Water Availability and Ecological Balance**
- **Green Cover**

Social Benefits

- **Conservation Education to children and youth**
- **Community Engagement and awareness**
- **Recreational Opportunities**

Economic Benefits

- **Tourism and Local Business Activity**
- **Cost Reduction on water procurement and Ecosystem Services**
- **Supported financial sustainability**



Implementation

Various NbS based solutions were implemented at different scales in Tamil Nadu

Strategy

NbS as potential solution for passive cooling in Tamil Nadu Heat Mitigation Strategy

Framework

NbS framework for Tier 2 cities in Tamil Nadu is under development