DAILY NEWS ANALYSIS

Ecosystem Red List Assessment in Keralam: A New Milestone for Biodiversity Conservation in India

Faculty/Author: Faculty Editorial Board
Date: 16 October 2026
Platform: Civil Service Gurukul Research Wing
Reading Time: 5 Mins

Keralam has launched India's first State-level Red List Assessment of Ecosystems to identify habitats at risk of degradation and ecological collapse. Using the IUCN Red List of Ecosystems framework, the initiative aims to assess forests, wetlands, river systems, grasslands and coastal ecosystems across the state. Explore its objectives, conservation significance, decentralised planning benefits and importance for UPSC Civil Services preparation.

CIVIL SERVICE GURUKUL
www.civilservicegurukul.com

Why is this in the news? Keralam has launched a State-level Red List Assessment of Ecosystems to identify habitats facing degradation and potential collapse. The initiative applies a scientific framework to ecosystem conservation and seeks to improve ecological restoration and climate resilience.

First in India
State-level ecosystem risk assessment initiative

14 districts
Statewide geographical coverage

IUCN framework
Science-based assessment of ecosystem collapse risk

One year
Stated duration of the assessment initiative

1. What Is an Ecosystem Red List Assessment?

An Ecosystem Red List Assessment (RLE) evaluates the risk that an ecosystem may collapse or lose the defining ecological characteristics that sustain its biodiversity and functions. It considers the condition of an ecological system as a whole rather than concentrating exclusively on the survival of individual species.

The assessment draws on the International Union for Conservation of Nature (IUCN) Red List of Ecosystems framework. It uses scientific evidence about ecosystem distribution, environmental degradation, disrupted ecological processes and other indicators to identify risks and guide conservation decisions.

For example, a wetland may still contain several native species but may be approaching ecological collapse because its water regime has changed, pollution has increased, and its natural vegetation has been extensively lost. An ecosystem-level assessment helps identify these combined pressures.

2. What Is Keralam's Initiative?

The Kerala State Biodiversity Board (KSBB) is funding the State-level assessment, designed to improve understanding of ecosystem vulnerability and help prioritise conservation action.

The initiative covers all 14 districts and includes a range of habitats, from forest and river systems to wetlands, high-altitude grasslands and coastal ecosystems. The assessment aims to build an evidence base that government departments and local institutions can use for environmental planning.

Key objectives

- Identify ecosystems exposed to degradation, fragmentation and collapse risk.
- Develop a more systematic picture of ecological vulnerability across the State.
- Support conservation priorities based on scientific evidence.
- Identify locations requiring ecological restoration or improved protection.
- Integrate ecosystem risk information into development and climate adaptation planning.

3. How Does the IUCN Red List of Ecosystems Work?

The IUCN Red List of Ecosystems provides a standardised framework for assessing ecosystem collapse risk. Its five main criteria examine different dimensions of vulnerability.

Criterion	What it assesses	Why it matters
A	Decline in ecosystem distribution	Shows whether the ecosystem has lost a substantial part of its former area.
B	Restricted geographic distribution	Identifies ecosystems concentrated in limited areas and potentially vulnerable to sudden threats.
C	Environmental degradation	Examines deterioration in the physical environment that supports ecosystem functioning.

CIVIL SERVICE GURUKUL
www.civilservicegurukul.com

Criterion	What it assesses	Why it matters
D	Disruption of biotic processes	Considers changes in species interactions and ecological processes.
E	Quantitative analysis of collapse risk	Uses quantitative approaches to estimate the probability of ecosystem collapse.

Assessments use the applicable IUCN criteria and evidence to assign risk categories. The results can help decision-makers compare vulnerability across ecosystem types and determine where intervention is most urgent.

UPSC distinction: The IUCN Red List of Threatened Species focuses on extinction risk for species. The IUCN Red List of Ecosystems assesses the risk of collapse of entire ecosystems. They are related but different conservation tools.

4. Ecosystems That Need Attention in Keralam

Keralam contains a wide variety of habitats shaped by its Western Ghats highlands, rivers, wetlands and long coastline. These systems provide water regulation, soil stability, carbon storage, biodiversity habitat and livelihoods.

Western Ghats forests

Forest ecosystems in the Western Ghats support rich biodiversity and regulate catchment processes. Habitat fragmentation, land-use change, invasive species and climate-related stress can reduce their ecological integrity.

Riparian evergreen forests

Riparian ecosystems occur alongside rivers and streams. They help stabilise riverbanks, filter runoff, maintain habitat connectivity and regulate local ecological processes. The reported assessment highlights tropical riparian evergreen forests that have lost nearly 83% of their extent over the past century. This figure underscores the need for carefully targeted restoration and protection.

Wetlands and river basins

Wetlands store water, support aquatic biodiversity, filter pollutants and help moderate floods. Encroachment, drainage, pollution and altered hydrology can undermine these functions.

High-altitude grasslands and shola mosaics

High-elevation grassland and forest mosaics contain specialised habitats and influence water regulation. Infrastructure pressure, inappropriate land management and climate shifts can threaten their ecological balance.

Coastal ecosystems and mangroves

Coastal habitats support fisheries, biodiversity and natural protection from erosion and storm impacts. Sea-level rise, development pressure, pollution and changes to sediment movement can increase vulnerability.

CIVIL SERVICE GURUKUL
www.civilservicegurukul.com

5. Why Is an Ecosystem-Level Assessment Important?

A. Conservation beyond individual species

Species protection remains essential, but many species depend on the same habitat and ecological processes. Ecosystem assessment can reveal the wider causes of biodiversity loss and help address them at landscape scale.

B. Better ecological restoration

Restoration is more effective when planners understand the specific pressures affecting a habitat. Risk maps can help identify degraded sites, prioritise investment and select interventions suited to local ecological conditions.

C. Climate resilience and disaster risk reduction

Healthy forests, wetlands and riparian systems can support water regulation, reduce erosion and contribute to resilience against some floods and landslides. Protecting these functions can complement engineering-based disaster management.

D. Evidence-based public policy

A consistent assessment framework helps government agencies move from broad conservation intentions to measurable priorities. It can inform land-use planning, infrastructure decisions, biodiversity strategies and environmental monitoring.

E. Community participation

Local communities often hold practical knowledge about ecosystem changes and depend directly on ecosystem services. Involving them in conservation planning can improve local accountability and the long-term success of restoration.

CIVIL SERVICE GURUKUL
www.civilservicegurukul.com

6. Key Outputs and Decentralised Conservation

The initiative is expected to produce information products that translate scientific findings into practical conservation planning.

- **Ecosystem Risk Register:** A structured record of assessed ecosystems and their identified risks.
- **Ecosystem Typology Atlas:** A resource to classify and map ecosystem types across the State.
- **Ecological restoration priority maps:** Spatial information to help identify areas where restoration and protection may be most urgent.
- **Planning integration:** Use of ecosystem risk information in State planning systems and local conservation decisions.

The proposed use of these outputs by panchayats and Biodiversity Management Committees can help connect State-level scientific assessment with local environmental action.

7. Role of Biodiversity Management Committees

Biodiversity Management Committees (BMCs) are local institutions associated with biodiversity governance under India's Biological Diversity Act, 2002. They can contribute local knowledge, support documentation of biodiversity and help connect

communities with conservation planning.

When reliable ecosystem risk information is made accessible to local bodies, it can help them:

- Identify ecologically sensitive areas within their jurisdictions.
- Support protection of local habitats and biodiversity resources.
- Contribute to restoration planning and community participation.
- Improve awareness of the links between ecosystem health and local livelihoods.
- Inform development choices that may affect wetlands, forests or river systems.

8. Challenges in Ecosystem Risk Assessment

- **Data limitations:** Historical ecosystem maps and long-term ecological observations may be incomplete.
- **Scientific complexity:** Different ecosystem types require suitable indicators and careful interpretation.
- **Changing land use:** Construction, agriculture, plantations and infrastructure can alter habitats rapidly.
- **Institutional coordination:** Conservation responsibilities often involve multiple departments and levels of government.
- **Implementation gaps:** Risk maps must lead to practical action, adequate funding and regular monitoring.
- **Community needs:** Conservation policies must consider livelihoods, land rights and local development priorities.

9. Way Forward for Keralam and India

1. **Maintain regular assessments:** Update ecosystem condition and risk estimates as new data become available.
2. **Improve geospatial monitoring:** Combine field surveys, satellite imagery and transparent mapping methods.
3. **Prioritise high-risk habitats:** Direct conservation resources towards ecosystems facing the greatest threats.
4. **Integrate findings into planning:** Use ecological risk information in land-use decisions, infrastructure assessment and climate adaptation.
5. **Strengthen local institutions:** Provide panchayats and BMCs with accessible maps, training and technical support.
6. **Restore ecological processes:** Focus on habitat connectivity, natural water flows, native vegetation and ecosystem functioning.
7. **Monitor outcomes:** Track ecological recovery, not merely the number of projects or area treated.
8. **Promote public participation:** Engage researchers, communities, civil society and relevant departments in conservation decisions.

CIVIL SERVICE GURUKUL
www.civilservicegurukul.com

10. Significance for the UPSC Civil Services Examination

Prelims: Facts to Remember

- IUCN stands for International Union for Conservation of Nature.
- The Red List of Ecosystems evaluates ecosystem collapse risk.
- The Red List of Threatened Species assesses species extinction risk.
- The Kerala State Biodiversity Board is funding the State-level assessment.
- The initiative covers all 14 districts of Keralam.
- Biodiversity Management Committees are linked to the Biological Diversity Act, 2002.

Mains: GS Paper III

Connect the topic with biodiversity conservation, environmental degradation, ecological restoration, climate adaptation and disaster risk reduction.

Mains: GS Paper II

Discuss decentralised governance, State institutions, local bodies and community participation in environmental management.

CIVIL SERVICE GURUKUL
www.civilservicegurukul.com

11. UPSC Prelims Practice Question

Question: With reference to the IUCN Red List of Ecosystems, consider the following statements:

1. It assesses the risk of collapse of ecosystems.
2. It is identical to the IUCN Red List of Threatened Species.
3. Its criteria include ecosystem distribution and environmental degradation.

Which of the statements given above is/are correct?

- (a) 1 only
- (b) 1 and 2 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

Show answer and explanation

Correct answer: (c) 1 and 3 only.

The Red List of Ecosystems assesses ecosystem collapse risk and considers factors such as distribution and environmental degradation. It is distinct from the species-focused Red List.

12. Frequently Asked Questions

What is the Ecosystem Red List Assessment?

It is a scientific assessment of the risk that an ecosystem may collapse or lose its defining ecological characteristics and functions.

Why is Keralam's assessment significant?

It applies an ecosystem-level risk framework at State scale and aims to help prioritise conservation, restoration and climate adaptation across different habitats.

Which organisation is funding the assessment?

The Kerala State Biodiversity Board (KSBB) is funding the initiative.

How is an ecosystem Red List different from a species Red List?

A species Red List evaluates the risk of extinction for individual species. An ecosystem Red List evaluates the risk of collapse of an entire ecosystem.

How is this topic relevant to UPSC?

It is relevant to biodiversity, environmental governance, ecological restoration, climate resilience and decentralised conservation, particularly in GS Paper II and GS Paper III.

Conclusion

Keralam's Ecosystem Red List Assessment represents an important shift towards evidence-based, landscape-level conservation. By identifying vulnerable habitats and translating scientific findings into practical planning tools, the initiative can help improve ecological restoration, climate resilience and biodiversity governance.

Its success will depend on reliable data, coordination between institutions, sustained funding and the effective use of findings by local communities and decision-makers.

Prepare smarter with Civil Service Gurukul: connect current affairs with core environmental concepts to strengthen your understanding for UPSC Prelims and Mains.

CIVIL SERVICE GURUKUL
www.civilservicegurukul.com

CIVIL SERVICE GURUKUL
UPSC Preparation • Current Affairs • Mentorship • Test Series
Website: www.civilservicegurukul.com • Email: info@civilservicegurukul.com • Mobile: +91 9911020626

CIVIL SERVICE GURUKUL
www.civilservicegurukul.com