Environment & Ecology · GS - III

“Ecosystem engineers play a vital role in maintaining biodiversity and ecosystem resilience.” Explain with suitable examples, including alligator-created “gator holes” in wetlands.

EXAM YEAR	PAPER	SUBJECT
DAILY PRACTICE 14/10/2026	GS - III	Environment & Ecology

MARKS	WORD LIMIT
10	~150 words

Answer Hint

Ecosystem engineers, habitat modification, gator holes, water retention, drought refuges, biodiversity conservation, food webs, ecosystem resilience, beavers, earthworms, corals, mangroves.

Model Answer

Introduction

Ecosystem engineers are organisms that modify their physical environment, creating or altering habitats and influencing the survival of other species. They play an important role in biodiversity conservation and ecosystem functioning.

Ecological Role with Examples

1. Habitat Creation:

Alligators in Florida dig “gator holes” that retain water during dry seasons. These ponds provide refuges for fish, turtles, birds and other wildlife, helping sustain wetland biodiversity.

2. Ecosystem Modification:

Beavers construct dams that create ponds and wetlands, providing habitats for aquatic organisms and birds. Similarly, earthworms improve soil structure, aeration and nutrient cycling, supporting plant growth.

3. Biodiversity and Ecosystem Resilience:

Corals build reefs that provide shelter and breeding grounds for marine species, while mangroves stabilise coastlines and create nurseries for fish and crustaceans. Such habitat modifications support food webs and ecological stability.

4. Conservation Significance:

The loss of ecosystem engineers can alter habitats, reduce biodiversity and weaken ecosystem resilience, especially under climate stress.

Conclusion

Ecosystem engineers demonstrate how individual species can shape entire ecological communities. Protecting these organisms and their habitats is essential for biodiversity conservation and sustainable ecosystem management.

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