



PART 1

Read the text below and answer questions 1–13.

ECOLOGICAL RESTORATION: MENDING DAMAGED ECOSYSTEMS

A

Ecological restoration is frequently misunderstood as a cosmetic exercise—clearing debris, planting a few trees, and declaring a landscape “fixed.” In scientific terms, however, restoration is the deliberate assistance of recovery in ecosystems that have been degraded by anthropogenic disturbance. The goal is not aesthetic improvement but the re-establishment of ecological function: nutrient cycling, hydrological regulation, habitat architecture, and the web of interactions that allow a system to persist without continuous external inputs. Because ecosystems are dynamic, restoration is framed as guiding an ecological trajectory rather than reconstructing a frozen historical snapshot. Practitioners therefore attend to processes and feedbacks—soil formation, recruitment, competition, predation—through which communities assemble over time. Success is increasingly defined by whether the restored system can maintain itself and respond to disturbance, not by whether it looks identical to an earlier moment.

B

The first operational challenge is deciding what “recovered” should mean. Many projects adopt a reference ecosystem, often a nearby reference site with similar geology and climate that has remained comparatively intact, using it to infer appropriate structure and species composition. Where no suitable reference remains, practitioners turn to historical archives, pollen records, oral histories, and old photographs to reconstruct probable conditions. Yet strict historical fidelity is increasingly difficult. Climate change shifts temperature and rainfall regimes, alters fire frequency, and reshapes species ranges, meaning that the conditions under which a past ecosystem assembled may no longer exist. As a result, target-setting involves trade-offs: projects may aim for functional resemblance and resilience rather than exact replication, especially where future stress is expected to intensify. The passage from “restore the past” to “restore capacity” is thus partly pragmatic: earlier ecological conditions can be hard to recreate in practice when the climate baseline is moving.

C

Once a target is established, effective restoration begins with diagnosis rather than planting. Degradation rarely results from a single missing species; it typically reflects underlying stressors that prevent recovery. Erosion, altered hydrology, nutrient loading, soil contamination, invasive species, or chronic overgrazing can lock a system into a



degraded state, even if seeds are added. Consequently, many projects follow a “fix the process first” principle: the remediation of abiotic constraints—particularly soil stability and water flow—becomes a prerequisite for biological recovery. Stabilising slopes, re-establishing natural drainage, improving water quality, or changing grazing pressure may be essential before re-vegetation can succeed. This approach recognises that planting is often a treatment of symptoms, whereas removing the driver of decline restores the conditions under which succession and self-organisation can proceed.

D

Re-vegetation is among the most visible restoration tools, but it is scientifically complex. Practitioners must consider local genetics, species diversity, planting density, and the timing of interventions relative to rainfall and seasonal stress. In many systems, the use of successional species is critical: early colonisers (pioneer plants) can shade exposed ground, reduce surface temperatures, and contribute organic matter that improves soil structure. By moderating microclimate and building the substrate, these species facilitate later arrivals that would otherwise fail in harsh, degraded conditions. Such successional dynamics mean that restoration is often staged rather than immediate; it may begin by establishing hardy functional groups and then expanding diversity as site conditions improve. In some landscapes, the most effective strategy is to enable natural regeneration through fencing, protecting seed sources, or managing fire regimes, rather than relying on mass planting. Whether active planting or assisted regeneration is chosen, the central logic remains the same: vegetation recovery is shaped by process and timing, not by the mere presence of seedlings.

E

Restoration also involves fauna, because animals are not decorative additions but ecological agents. Pollinators influence plant reproduction, seed dispersers determine recruitment patterns, and predators regulate herbivore pressure, shaping community composition and trophic stability. Where key species have been locally extirpated, reintroduction may restore ecological roles that plants alone cannot replace. Yet the passage emphasises that such interventions can generate conflict with human land use. Reintroducing large herbivores or predators may increase crop damage or livestock losses, or alter access to land and resources. Consequently, successful programmes often require social contracts—community consultation, compensation schemes, monitoring agreements, and practical measures that reduce risk. Ecological logic alone rarely determines outcomes; the feasibility of fauna restoration depends on whether people perceive the costs as acceptable and whether governance can sustain coexistence.



F

For this reason, restoration is increasingly evaluated through a socio-ecological lens rather than purely biological metrics. Many degraded landscapes are inhabited, farmed, or used for grazing, fuelwood, and water extraction. Excluding local communities can undermine projects by creating resistance, encouraging rule-breaking, or ignoring practical knowledge about seasonal constraints and customary rights. Conversely, involving residents in planning and monitoring can generate stewardship, improve compliance, and align restoration goals with livelihoods—such as sustainable harvesting, reduced flood risk, or improved water security. Co-management frameworks, participatory mapping, and benefit-sharing arrangements are therefore not “add-ons” but mechanisms that influence ecological outcomes. The passage’s implication is clear: restoration that neglects social legitimacy often fails regardless of technical competence.

G

Even when projects are well designed, measuring success is difficult because recovery is slow, variable, and sensitive to climate extremes. Short-term indicators may include vegetation cover, water clarity, or reduced erosion, but long-term success is more convincingly demonstrated by self-sustaining reproduction, stable food webs, and resilience to drought or fire. Because uncertainty is unavoidable, many programmes adopt adaptive management: monitoring outcomes, treating interventions as hypotheses, learning from failure, and revising methods as evidence accumulates. This is particularly important where “novel ecosystems” emerge—communities that differ from historical baselines because soils have changed irreversibly, species have been lost, or urban development has altered habitats. In such cases, some ecologists argue that functional improvement and biodiversity gains can justify accepting a new species mix rather than pursuing an unattainable past. The most effective restoration, therefore, is realistic and process-focused, socially inclusive, and designed for ecosystems that must function under changing future conditions.

Questions 1–5

Which paragraph contains the following information?

- 1 The view that restoration should guide the processes through which an ecosystem develops over time.
- 2 The principle that removing the underlying driver of decline should come before planting efforts.
- 3 The suggestion that climate change can make historical targets difficult to re-establish.



4 The view that restoration should be assessed using social outcomes as well as ecological measures.

5 A justification for aiming at functional improvement even when the original community cannot be recreated.

Questions 6–9

Complete the notes below. Choose **NO MORE THAN TWO WORDS** from the text for each answer.

Key principles of ecological restoration

- Restoration aims to rebuild ecological **6** such as nutrient cycling and habitat structure.
- A suitable reference site should have similar **7** and climate to the area being restored.
- The broader group known as **8** includes early colonisers that can improve conditions for later arrivals.
- A process of monitoring results, learning from failure and revising methods is known as **9**

Questions 10–13

Select the correct answer.

10 What difficulty in setting restoration targets is highlighted in the passage?

- A** The only reliable targets are those based on written historical records.
- B** Changing climates can make earlier ecological conditions hard to recreate in practice.
- C** Reference sites cannot be compared because geology never influences ecosystems.
- D** Restoration targets are fixed once planting begins and cannot be revised.

11 According to the passage, why might early successional species be introduced in some projects?

- A** They ensure that later species will not be needed once the site is shaded.
- B** They are chosen mainly because they spread faster than invasive species in all climates.
- C** They can improve conditions by shading the ground and helping soils develop.
- D** They are introduced to prevent fire entirely by removing flammable vegetation.

12 According to the passage, what is one risk of reintroducing animals during restoration?



A It may restore ecological roles but can create conflicts that require local agreement or compensation.

B It is effective only when predators are introduced before any plants are restored.

C It is mainly intended to increase visitor numbers rather than ecosystem function.

D It is rarely attempted because pollinators and seed dispersers have little effect on plants.

13 Which statement best summarises the writer's view of effective ecological restoration?

A Restoration should reproduce past ecosystems as closely as possible before considering how they may respond to future change.

B Successful projects depend on correcting ecological pressures while allowing both environmental and human conditions to shape their goals.

C Natural regeneration is generally preferable to active intervention because ecosystems recover most effectively without continued management.

D Social concerns become important mainly after ecological recovery has already been achieved.

Answer Key

1. A

2. C

3. B

4. F

5. G

6. function

7. geology

8. successional species

9. adaptive management

10. B

11. C

12. A

13. B