



PART 3

Read the text below and answer questions 27–40.

NOVEL ECOSYSTEMS AND THE FUTURE OF RESTORATION

A

The phrase “novel ecosystem” has emerged to describe ecological communities that have crossed biotic or abiotic thresholds such that a return to a former reference baseline is no longer a realistic management objective. Novelty, in this sense, is not merely a degraded version of the past but a reassembled system shaped by biotic homogenization, species introductions, and altered physical conditions. Land-use conversion, repeated disturbance, pollution, hydrological engineering, and the local extinction of keystone organisms can restructure community assembly, producing new species combinations and unfamiliar interaction networks. Just as importantly, these systems often operate under new disturbance *regimes*: fire may occur more frequently or at different intensities; floods may be constrained by levees; herbivory pressure may shift due to livestock dominance or predator loss. The central claim is therefore categorical rather than rhetorical: once certain thresholds are crossed, the ecological pathway that once sustained an earlier community is not simply “damaged” but replaced by another pathway, making historical re-creation unlikely even with considerable intervention.

B

This concept unsettles the traditional ideal that restoration success equals high ecological fidelity to an earlier state. Historically, restoration planning relied on a reference ecosystem—either a nearby intact site or a reconstructed picture derived from records—to specify what composition and structure should be rebuilt. Yet the reference problem is increasingly difficult to solve. In many landscapes, truly comparable remnants have disappeared, while soils have been compacted, contaminated, or nutritionally altered through agriculture and urbanization. Even if a reference site exists, it may represent conditions that are no longer climatically attainable; what grew under one rainfall regime or temperature envelope may be unstable under another. Consequently, “looking back” can become a methodological trap: it implies a stable baseline and a predictable endpoint, when the environment is moving and historical conditions may be unrecoverable. Rather than a purely technical inconvenience, the absence or obsolescence of reference baselines becomes a philosophical problem about what restoration is for: to reproduce a museum-like past, or to re-establish processes that can persist in the future.



C

Supporters of the novel ecosystem framework propose a pragmatic acceptance of this shifting reality. They argue that management should treat function as at least as important as form, prioritising what ecosystems do rather than insisting on what they once were. Even in altered systems, ecological processes can still operate in ways that matter to people and biodiversity: vegetation cover can stabilise slopes, reduce heat in urban districts, support pollinator communities, and store carbon. In such cases, the question becomes whether the system provides ecosystem *services* that reduce risk and support ecological complexity, even if the species mix appears historically “unexpected.” Proponents also contend that rigid adherence to ecological fidelity can be counterproductive. If repeated attempts to recreate a past community fail because key conditions no longer exist, resources may be exhausted while the landscape continues to erode, heat, or lose habitat connectivity. From this perspective, embracing managed novelty can accelerate action and avoid the paralysis that sometimes accompanies unattainable goals.

D

Critics, however, warn that the language of novelty contains a moral hazard. If a site is declared “novel,” the label can be used as a political excuse for accepting damage that could have been prevented—or for abandoning restoration attempts that are merely difficult rather than impossible. In this reading, novelty becomes a rhetorical shield for lowering standards: once degradation is normalised as a new ecological state, the urgency to prevent further anthropogenic disturbance may weaken. Critics also argue that the framework risks shifting attention away from conservation of intact ecosystems, which remain the most reliable reservoirs of biodiversity and evolutionary potential. There is, moreover, an ethical concern about intergenerational responsibility: treating historical ecosystems as unrecoverable may reduce long-term investment precisely when recovery might be achievable with time, protection, and sufficient funding. Thus, the debate is not only scientific but normative, because it shapes what society considers an acceptable endpoint for damaged landscapes.

E

A central scientific dispute turns on how “irreversibility” should be judged. Some changes are plausibly difficult to reverse in biophysical terms: soil salinisation, severe nutrient loading, hydrological reconfiguration, or local extinction of foundational species can shift conditions so fundamentally that former communities cannot re-establish. Yet other cases are ambiguous. A landscape may appear irreversible primarily because the interventions required are politically unpopular or economically costly. This distinction matters, because it separates “cannot restore” from “will not restore.” Paragraph E therefore



highlights that apparent irreversibility may reflect social and economic constraints that limit what can be attempted, rather than definitive ecological impossibility. Determining where a site falls on this continuum requires evidence: the state of seed banks, soil processes, water dynamics, and the feasibility of reintroducing missing organisms. Novelty, in other words, is not a slogan but a diagnosis, and diagnoses can be mistaken when scarcity of resources is confused with ecological limitation.

F

Because the boundary between restoration and novelty is often uncertain, many practitioners increasingly adopt a triage framework. Rather than choosing between “restore the past” and “accept novelty” as mutually exclusive options, triage allocates effort across a landscape mosaic. High-value remnants are protected where ecological integrity remains strong; degraded sites are restored where recovery is feasible; and genuinely novel systems are managed to maximise benefits and minimise harm. This approach directly contradicts the idea that triage means focusing only on novel ecosystems: it is explicitly a mixed strategy that still prioritises restoration where it can succeed. In managed novel systems, interventions may include controlling invasive species that cause disproportionate damage, enhancing habitat connectivity, and preventing spillover effects that threaten nearby intact ecosystems. The aim is to reduce risk while recognising constraints, ensuring that novelty does not become a source of further biotic homogenization across a wider region.

G

Climate change adds urgency and complexity to these choices by destabilising the assumptions behind historical baselines. Even where reconstructing a past ecosystem is technically possible today, future temperature and rainfall patterns may make that community fragile, pushing it beyond tolerance thresholds. As a result, “forward-looking restoration” has gained attention: practitioners select species, genotypes, and structural features that are expected to persist under projected climates, even if those selections differ from historical composition. This can resemble an embrace of novelty, but its intent is resilience rather than surrender. In effect, climate change turns the restoration project into a probabilistic exercise: managers must decide which ecological trajectories are most likely to survive in a future of heat, drought, and altered disturbance patterns, while acknowledging that uncertainty is unavoidable.

H

Ultimately, the future of restoration may depend on how goals are defined, justified, and communicated. A defensible position does not claim that novelty is always acceptable or always harmful; rather, it insists on transparency about trade-offs and clarity about the



evidence used to categorise a site. Where cultural values demand historically recognisable landscapes, ecological fidelity may remain the priority; where urgent risks exist—flood protection, erosion control, heat mitigation—function may justifiably take precedence. Crucially, the passage does not describe a single standard test for determining novelty, because ecological states differ by context and the relevant evidence varies across systems. What it advocates instead is explicit reasoning, continual monitoring, and adaptive management in the broad sense: learning from outcomes, revising targets, and remaining honest about constraints. Novel ecosystems thus become less a final label than a prompt to think more carefully about what restoration can and should mean in a changing world.

Questions 27–34

Choose the correct heading for each paragraph.

List of Headings

- i** A triage approach to deciding where to protect, restore, or manage novelty
- ii** The risks of treating novelty as a justification for accepting damage
- iii** A definition of ecosystems that cannot realistically return to a former state
- iv** Why climate change pushes restoration towards future resilience
- v** The debate about whether novel ecosystems can deliver valuable services
- vi** The difficulty of setting goals when reference conditions are missing or outdated
- vii** How to determine whether change is truly irreversible
- viii** An argument that novelty should always be welcomed in restoration policy
- ix** A concluding emphasis on clear goals, evidence and adaptability
- x** The claim that novelty is mainly a result of technology rather than ecology
- xi** How cultural values can shift priorities between historical composition and function
- xii** The view that services matter more than biodiversity in all restoration decisions

27 Paragraph **A**

28 Paragraph **B**

29 Paragraph **C**

30 Paragraph **D**

31 Paragraph **E**

32 Paragraph **F**

33 Paragraph **G**



34 Paragraph H

Questions 35–36

Complete the notes below. Choose **ONE WORD ONLY** from the text for each answer.

Characteristics and potential value of novel ecosystems

- Novel ecosystems are frequently characterised by communities reorganised after thresholds have been crossed, so that familiar species interactions are replaced by new combinations.
- Novel ecosystems may develop when biological or physical changes push communities beyond certain **35**, yet supporters argue that, even without historical fidelity, they may still supply ecosystem **36** such as erosion control, urban cooling, and carbon storage.

Questions 37–40

Choose **TRUE** if the statement agrees with the information given in the text, choose **FALSE** if the statement contradicts the information, or choose **NOT GIVEN** if there is no information on this.

37 Supporters of the novel ecosystem framework claim that novel ecosystems are always more biodiverse than historical ones.

38 In some cases, restoration may seem impossible because it is too costly or lacks political support, rather than because ecological recovery cannot occur.

39 Under the triage approach, sites that still have a realistic chance of recovery are left unrestored so that effort can be concentrated on novel systems.

40 Management of novel ecosystems may include measures intended to prevent harmful effects from spreading into nearby ecosystems that remain intact.

Answer Key

27. iii

28. vi

29. v

30. ii

31. vii



32. i

33. iv

34. ix

35. thresholds

36. services

37. NOT GIVEN

38. TRUE

39. FALSE

40. TRUE