

Environmental Science and Literary Imagination: An Ecocritical Study of Richard Powers's *The Overstory* and Barbara Kingsolver's *Flight Behaviour*

Ms. T. Authi Bhuvaneswari

Assistant Professor, Department of English PERI College of Arts and Science

DOI: <https://doi.org/10.51584/IJRIAS.2026.11080096>

Received: 21 August 2026; Accepted: 26 August 2026; Published: 10 September 2026

ABSTRACT

Environmental science has become an important area of contemporary intellectual discussion because the relationship between human beings and the natural world is increasingly affected by deforestation, climate change, biodiversity loss, pollution, habitat destruction and the unsustainable exploitation of natural resources. Literature, although primarily a creative form of expression, has the ability to transform scientific concerns into human experiences that can be emotionally understood by readers. Contemporary literary works therefore provide an important space for examining environmental problems not only as scientific issues but also as social, ethical and psychological concerns. This research paper examines the representation of environmental science in Richard Powers's *The Overstory* (2018) and Barbara Kingsolver's *Flight Behaviour* (2012) through an ecocritical perspective. Powers presents trees and forests as active participants in the human world and questions the anthropocentric assumption that nature exists primarily for human use. Kingsolver, through the unexpected migration of monarch butterflies, brings climate change into the everyday life of a rural community and demonstrates how ecological disruption affects human relationships, economic security and social consciousness. The comparative analysis argues that both novels transform environmental science into literary experience by connecting scientific knowledge with emotion, memory, social responsibility and ethical action. The study further suggests that environmental literature can contribute to ecological awareness by encouraging readers to understand the interdependence between human and non-human life.

Keywords: Environmental Science, Ecocriticism, Climate Change, Biodiversity, Deforestation, Ecological Consciousness, Human-Nature Relationship, *The Overstory*, *Flight Behaviour*

INTRODUCTION

The environment has become one of the most urgent concerns of the contemporary world. Scientific discussions about climate change, global warming, deforestation, biodiversity loss, water scarcity and ecological degradation have increasingly entered public and academic discourse. However, environmental problems cannot be understood completely through scientific information alone. They also involve questions of human behaviour, economic development, social inequality, ethical responsibility and cultural attitudes towards nature. Literature becomes significant in this context because it gives an imaginative form to environmental realities and enables readers to experience ecological problems through characters, landscapes, conflicts and narratives.

The relationship between literature and the physical environment is generally examined through the theoretical framework of ecocriticism. Cheryll Glotfelty describes ecocriticism as the study of the relationship between literature and the physical environment, while contemporary ecocritical scholarship extends this approach towards ecological crisis, climate change, environmental ethics and the position of human beings within larger ecological systems. Ecocriticism therefore shifts literary attention from a purely human-centred interpretation towards a broader understanding of human and non-human relationships.

Richard Powers's *The Overstory* and Barbara Kingsolver's *Flight Behaviour* are particularly significant for such a study. *The Overstory* brings trees, forests and ecological networks to the centre of its narrative. The novel

follows different characters whose lives become connected through their relationships with trees and the destruction of forests. Critical studies have observed that Powers challenges anthropocentric thinking by presenting trees as living entities with ecological significance and by connecting human experiences with forest systems.

Kingsolver's *Flight Behaviour*, on the other hand, presents climate change through the unusual appearance of monarch butterflies in an Appalachian farming community. The migration of the butterflies is not merely a beautiful natural event; it becomes an indication of ecological disturbance. Scholarship on the novel has similarly interpreted the disrupted migration as a representation of climate change and the interconnectedness of human and non-human life.

The present study therefore examines how these two writers transform environmental science into literary narrative. Rather than treating environmental science as a collection of scientific facts, the novels demonstrate how ecological changes enter human life and alter the way people understand themselves, their communities and the natural world.

Environmental Science and Ecocritical Reading

Environmental science studies the relationship between living organisms and their physical surroundings. It incorporates knowledge from several disciplines, including biology, ecology, geography, climatology and environmental studies. Concepts such as ecosystems, biodiversity, conservation, climate change and habitat destruction are therefore not isolated scientific subjects. They describe complex relationships between human beings, animals, plants, soil, water, atmosphere and other elements of the natural world.

Literature can communicate these relationships in a different manner. A scientific report may explain the causes of deforestation, but a literary narrative can show what the destruction of a forest means to a person whose identity, memory or livelihood is connected with that forest. Similarly, scientific research may explain changes in animal migration, while a novel can present the emotional and social consequences of such changes through individual characters.

This is where ecocriticism becomes important. Ecocriticism encourages literary studies to examine the ways in which texts represent nature, environmental destruction and the relationship between human and non-human beings. Oxford's overview of ecocriticism describes it as a broad field concerned with the intersection of literature, culture and the physical environment and notes its development as a major literary and cultural approach from the late twentieth century onwards.

The two novels selected for this study demonstrate different dimensions of environmental science. Powers concentrates primarily on trees, forests, biodiversity and ecological interdependence, whereas Kingsolver focuses on climate change, species migration, rural livelihood and environmental uncertainty. Their methods are different, but their central concern is similar: human survival cannot be separated from the health of the natural world.

LITERATURE REVIEW

Recent scholarship demonstrates the growing importance of ecocritical approaches to contemporary environmental fiction. Studies of *The Overstory* have emphasized its representation of trees, ecological interdependence and environmental activism. One recent ecocritical study argues that Powers uses the novel to challenge anthropocentrism and encourage environmental stewardship. Another study identifies the relationship between human characters and ancient trees as central to the novel's exploration of human transformation and ecological consciousness.

Scholarship on *Flight Behaviour* has similarly focused on climate change and ecological consciousness. A study published in *Textual Practice* examines the novel's movement between local experience and planetary climate change, showing how personal and geographical experiences can be connected to the larger environmental crisis.

More recent research interprets the displaced monarch butterflies as evidence of ecological disruption and examines the novel's treatment of psychological avoidance, climate justice and human responsibility.

Existing studies provide valuable interpretations of both novels individually. However, there remains scope for a comparative study that places environmental science at the centre of both texts and examines how scientific ecological concepts are transformed into literary experiences. The present research addresses this area by comparing the novels through the interconnected themes of biodiversity, climate change, ecological destruction, environmental ethics and human responsibility.

Research Gap

Much of the existing criticism on *The Overstory* concentrates on trees, forests, anthropocentrism and ecological activism, while scholarship on *Flight Behaviour* frequently focuses on climate change, butterfly migration and environmental consciousness. Although these approaches are valuable, comparatively less attention can be given to the way both novels convert environmental scientific knowledge into narrative experience.

The present study therefore attempts to bridge literature and environmental science by examining how scientific environmental realities become part of character development, narrative structure, symbolism and ethical reflection. The research does not treat the novels as scientific textbooks. Instead, it investigates how literary imagination can make scientific environmental problems more accessible and emotionally meaningful.

Objectives of the Study

The major objectives of this research are:

1. To examine the representation of environmental science in *The Overstory* and *Flight Behaviour*.
2. To analyse the human-nature relationship through an ecocritical framework.
3. To study the representation of deforestation, biodiversity loss and climate change.
4. To examine the literary significance of trees and butterflies as ecological symbols.
5. To understand how environmental problems influence individual and social consciousness.
6. To analyse the ethical responsibility of human beings towards the non-human world.
7. To explore the role of literature in creating environmental awareness.

Research Questions

1. How do *The Overstory* and *Flight Behaviour* represent major environmental scientific concerns?
2. How do the novels challenge human-centred attitudes towards nature?
3. How are trees and butterflies used as literary representations of ecological change?
4. In what ways do environmental crises affect the psychological and social lives of the characters?
5. How can literature contribute to environmental consciousness and ecological responsibility?

METHODOLOGY

The study adopts a qualitative literary methodology based primarily on textual interpretation. Ecocriticism is used as the principal theoretical framework because it enables the researcher to examine the relationship between literary representation and the physical environment. The analysis focuses on selected environmental themes,

narrative strategies, symbols, characters and ecological conflicts in Richard Powers's *The Overstory* and Barbara Kingsolver's *Flight Behaviour*.

The study also refers to relevant scholarly criticism concerning ecocriticism, climate fiction, ecological consciousness and environmental literature. The approach is comparative, allowing similarities and differences between the two novels to be examined systematically.

Trees as Living Ecological Systems in *The Overstory*

One of the most important achievements of *The Overstory* is its transformation of trees from background scenery into central elements of narrative meaning. In conventional literary narratives, trees and forests may function simply as settings against which human action takes place. Powers challenges this convention by giving trees an active ecological presence. The novel's narrative organization itself reflects this concern, with sections associated with the structures of a tree: "Roots," "Trunk," "Crown" and "Seeds." Scholarly discussions of the novel have identified this structure as part of Powers's attempt to establish a deeper relationship between human lives and trees.

The scientific understanding of forests emphasizes that trees are not isolated organisms. They exist within complex ecological systems involving soil, fungi, insects, animals, water and climate. Powers transforms this ecological understanding into literary form. The trees in the novel become reminders that human beings are part of a much larger living system.

This representation questions anthropocentrism. Anthropocentrism places human interests at the centre of moral and intellectual consideration, often treating nature as a resource available for human consumption. Powers presents an alternative vision in which human beings are only one part of a much larger ecological network. The destruction of forests is therefore not merely an economic or geographical event; it becomes a disturbance of an entire living system.

The novel's environmental concern is also connected with human transformation. Characters who encounter trees begin to reconsider their assumptions about time, life, death and responsibility. Nature becomes a force that changes human consciousness rather than a passive object that exists for human observation.

Deforestation and the Crisis of Biodiversity

Deforestation is one of the major environmental concerns represented in *The Overstory*. The destruction of trees demonstrates the conflict between economic development and ecological sustainability. Forests possess economic value as sources of timber and land, but they also possess ecological value that cannot easily be calculated in financial terms.

The novel exposes the limitations of viewing forests only as commercial resources. When a forest disappears, countless relationships involving plants, animals, insects, soil and water are also disturbed. Biodiversity is therefore threatened not simply because individual trees are removed but because the larger ecological network is weakened.

Powers's narrative makes the reader consider an important environmental question: what happens when human beings measure nature only according to immediate economic usefulness? The answer presented by the novel is that ecological destruction ultimately produces consequences that extend beyond the original act of exploitation.

Recent scholarship similarly observes that *The Overstory* uses the destruction of forests and the loss of biodiversity to develop ideas of ecological trauma and environmental memory. Thus, the environmental crisis becomes both a physical and psychological experience.

Climate Change and Ecological Disruption in *Flight Behaviour*

While *The Overstory* concentrates strongly on forests, *Flight Behaviour* brings climate change into the everyday life of an ordinary rural community. The unusual arrival of monarch butterflies in Tennessee becomes the central ecological event of the novel. The butterflies appear beautiful and extraordinary, but their presence in an unexpected location indicates a serious disturbance in their normal migratory pattern.

The scientific significance of the butterflies is gradually understood through the narrative. Their altered migration becomes connected with changes in temperature and ecological conditions. The novel therefore demonstrates an important feature of environmental science: ecological systems are interconnected, and changes in one part of the system can affect other species and human communities.

The butterflies also function as a literary symbol. They represent both beauty and danger. At first, the spectacle creates wonder and fascination, but scientific interpretation reveals the disturbing environmental reality behind it. Kingsolver therefore transforms climate change from an abstract global issue into something visible within an ordinary community.

The novel's environmental crisis is especially powerful because it is experienced locally. Research on *Flight Behaviour* has noted the movement between local and planetary understandings of climate change. The local appearance of the butterflies becomes connected to a much larger global environmental transformation.

Human Denial and Environmental Awareness

Another important issue in *Flight Behaviour* is the difficulty of accepting environmental change. Scientific explanations do not immediately convince everyone in the community. People interpret the butterflies according to their existing beliefs, religious assumptions, economic concerns and personal experiences.

This situation demonstrates that environmental problems are not merely scientific problems. Even when scientific evidence is available, people may resist accepting it because ecological change can threaten established beliefs or economic interests. Recent criticism of the novel similarly examines psychological avoidance, ecological denial and the difficulty of responding to climate change.

Dellarobia's gradual development is therefore significant. Her understanding changes as she encounters scientific explanations and begins to connect the unusual environmental event with larger climatic processes. Her intellectual transformation represents the movement from environmental observation towards environmental consciousness.

Kingsolver does not present environmental awareness as an immediate or simple process. Instead, awareness develops through uncertainty, questioning and experience. This makes the environmental issue more realistic because contemporary society also struggles to translate scientific knowledge into collective action.

Environmental Science and Human Livelihood

Both novels demonstrate that ecological problems cannot be separated from economic life. Environmental degradation affects employment, agriculture, land, food systems and community stability. This dimension is particularly visible in *Flight Behaviour*, where climate-related changes are experienced within a rural agricultural community.

Environmental science often explains ecological systems at a large scale, but literary fiction can show how those changes affect individuals. A farmer does not experience climate change merely as a statistical increase in temperature. It may appear through changing rainfall, agricultural uncertainty, crop failure, altered animal behaviour or financial pressure.

Kingsolver therefore connects global climate change with local livelihood. This relationship strengthens the novel because it prevents climate change from becoming an abstract scientific concept. It becomes part of everyday human existence.

Similarly, *The Overstory* presents the economic exploitation of forests alongside their ecological importance. The contrast between commercial interests and environmental preservation reveals the difficult choices involved in sustainable development.

Human and Non-Human Interdependence

The most significant similarity between the two novels is their emphasis on interdependence. Neither Powers nor Kingsolver presents humanity as independent from nature. Human beings depend upon forests, water, soil, animals, plants and climatic systems, even when modern societies attempt to separate themselves from the natural world.

In *The Overstory*, trees become a powerful representation of this interdependence. Human characters discover that their individual lives are connected to ecological systems that existed long before them and will potentially continue after them.

In *Flight Behaviour*, the butterflies perform a similar function. Their disrupted migration reveals that environmental changes cross the boundaries between species. What appears to be a problem affecting butterflies eventually becomes connected to human communities and global climate systems.

Both novels therefore replace the idea of human superiority with the idea of ecological relationship. The human being is not presented as the master of nature but as one participant within a complex environmental network.

Environmental Ethics and Human Responsibility

Environmental science can explain what is happening to ecosystems, but literature can ask why human beings should care. This ethical dimension is central to both novels.

The Overstory encourages readers to consider whether trees possess value beyond their usefulness to humans. By presenting forests as complex living systems, Powers creates an ethical challenge to destructive human behaviour. Environmental responsibility becomes a question of recognizing the value of non-human life.

Flight Behaviour approaches environmental ethics through climate change. The novel asks readers to consider the consequences of environmental decisions on future generations and on vulnerable communities. Climate change is therefore represented not simply as a physical phenomenon but as an ethical issue involving responsibility and justice.

The two novels suggest that environmental responsibility begins with a transformation of perception. When nature is regarded merely as a resource, exploitation appears normal. When nature is understood as a living network of interdependent beings, environmental destruction becomes an ethical concern.

Environmental Literature as a Bridge Between Science and Society

One of the major contributions of environmental literature is its ability to connect scientific knowledge with human emotion. Scientific information can demonstrate that climate change is occurring or that biodiversity is declining, but literature can help readers imagine the consequences of these changes.

Powers achieves this through trees, forests and multiple human narratives. Kingsolver achieves it through butterflies, climate change and the personal development of Dellarobia. Both writers use storytelling to make environmental science accessible through human experience.

This is particularly important in the contemporary period because environmental issues often appear overwhelming. Terms such as “climate change,” “global warming,” “biodiversity loss” and “carbon emissions”

can become distant concepts when presented only through technical language. Literature gives these concepts emotional and imaginative dimensions.

The novels consequently demonstrate that environmental awareness is not produced only through scientific information. It can also emerge through empathy, imagination and narrative identification.

Comparative Discussion

A comparison of *The Overstory* and *Flight Behaviour* reveals several important similarities and differences.

Environmental Concern	<i>The Overstory</i>	<i>Flight Behaviour</i>
Major ecological focus	Forests and trees	Climate change and butterflies
Central environmental issue	Deforestation and biodiversity loss	Climate change and ecological disruption
Major non-human presence	Trees and forests	Monarch butterflies
Human response	Activism, resistance and ecological awakening	Denial, questioning and gradual awareness
Major ecological idea	Interdependence of species	Climate-related disruption of ecosystems
Ethical concern	Protection of forests and non-human life	Responsibility towards climate and vulnerable communities
Literary strategy	Multiple narratives and tree-based structure	Local community and climate narrative
Overall message	Humanity must recognize its dependence on nature	Climate change requires awareness and responsibility

Although the novels differ in narrative technique and environmental focus, they reach a similar conclusion: ecological destruction cannot remain outside human experience. The destruction of forests and the disruption of climate systems eventually affect human societies because human life itself is embedded within nature.

The novels also challenge the assumption that environmental science belongs exclusively to scientific disciplines. Through fiction, scientific ideas become part of cultural consciousness. Literature can therefore participate in environmental education by encouraging readers to understand ecological relationships at an emotional and ethical level.

FINDINGS AND DISCUSSION

The comparative study produces several significant findings.

First, both novels reject a purely anthropocentric understanding of the environment. Nature is not simply a background against which human stories occur. Trees, forests and butterflies influence human consciousness and narrative development.

Second, both writers connect environmental problems with human social structures. Environmental degradation affects livelihoods, communities, economic security and personal identity.

Third, the novels demonstrate the importance of biodiversity. The destruction or displacement of non-human species is presented as an indication of wider ecological imbalance.

Fourth, environmental science is transformed into accessible narrative experience. Scientific concepts such as climate change, species migration, forest ecology and biodiversity are incorporated into character development and storytelling.

Fifth, both novels emphasize the importance of ecological consciousness. Knowledge alone is insufficient; environmental understanding must lead towards ethical reflection and responsible action.

Finally, literature can help readers recognize the emotional dimension of environmental crisis. Environmental destruction produces fear, grief, uncertainty, hope and transformation. These emotional experiences can deepen the reader's understanding of ecological problems.

CONCLUSION

Environmental science and literature may appear to belong to different intellectual fields, but contemporary environmental fiction demonstrates their strong relationship. Richard Powers's *The Overstory* and Barbara Kingsolver's *Flight Behaviour* reveal how literary imagination can transform scientific environmental concerns into meaningful human experiences.

The Overstory presents trees and forests as essential components of a complex ecological system and questions the human tendency to treat nature as a commodity. *Flight Behaviour* uses the unusual migration of monarch butterflies to make climate change visible within an ordinary rural community. In both novels, environmental disruption becomes a challenge to human assumptions, values and responsibilities.

The comparative analysis demonstrates that environmental literature does more than describe nature. It questions the relationship between human beings and the non-human world. It also encourages readers to recognize that ecological crises are interconnected with social, economic and ethical problems.

The greatest strength of these novels lies in their ability to make environmental science emotionally understandable. Scientific knowledge tells us that ecosystems are interconnected; literature allows us to imagine what that interconnection means for human and non-human life. Through trees, forests and butterflies, Powers and Kingsolver demonstrate that the environment is not something outside human existence. It is the foundation upon which human life itself depends.

Therefore, environmental literature can play an important role in developing ecological consciousness. In an age of climate uncertainty and biodiversity loss, literary narratives can encourage readers to move beyond passive awareness towards a deeper sense of environmental responsibility. The study ultimately argues that protecting the environment requires not only scientific knowledge but also a transformation in the way human beings imagine their place within the natural world.

REFERENCES

1. Buell, Lawrence. *The Environmental Imagination: Thoreau, Nature Writing, and the Formation of American Culture*. Harvard University Press, 1995.
2. Glotfelty, Cheryll, and Harold Fromm, editors. *The Ecocriticism Reader: Landmarks in Literary Ecology*. University of Georgia Press, 1996.
3. Kingsolver, Barbara. *Flight Behaviour*. Harper, 2012.
4. Lloyd, Christopher, and Jessica Rapson. "'Family Territory' to the 'Circumference of the Earth': Local and Planetary Memories of Climate Change in Barbara Kingsolver's *Flight Behaviour*." *Textual Practice*, vol. 31, no. 5, 2017, pp. 911–931.
5. Powers, Richard. *The Overstory*. W. W. Norton, 2018.
6. Ali, Banaz Wirya. "An Eco-Critical Study of Richard Power's *The Overstory*." *Journal of Language Studies*.
7. Lee, Young-hyun. "Psychological Avoidance, Climate Justice, and Agency in *Flight Behavior*." *Literature and Environment*, vol. 23, no. 4, 2024, pp. 117–153.

-
8. Mahmud, Delveen H., and Sherzad Sh. Babo. "Richard Powers' The Overstory: The Interconnectedness of Human Lives and Trees." Humanities Journal of University of Zakho, 2025.