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PURNIMA DEVI BARMAN: A MODEL OF WOMEN'S ECOLOGICAL LEADERSHIP IN ASSAM

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Abstract

Biodiversity conservation increasingly requires approaches that integrate ecological science, community participation, gender-inclusive leadership, and sustainable development. While previous studies have documented the recovery of the endangered Greater Adjutant (*Leptoptilos dubius*) in Assam, limited attention has been given to analysing Purnima Devi Barman's work as a model of women's ecological leadership. Addressing this gap, the present study examines how her conservation initiatives combine scientific knowledge, community mobilisation, women's leadership, and cultural engagement to promote biodiversity conservation.

The study adopts a qualitative analytical case study based exclusively on secondary sources, including peer-reviewed journal articles, books, conservation reports, policy documents, and published interviews. Data were analysed thematically through the perspectives of ecofeminism, community-based conservation, and participatory environmental governance.

The findings reveal that Purnima Devi Barman transformed the conservation of the Greater Adjutant into a community-led movement through the establishment of the Hargila Army. By mobilising rural women, promoting environmental education, protecting habitats, and integrating conservation with Assamese cultural traditions and livelihood opportunities, the initiative strengthened biodiversity conservation and community participation.

The study concludes that her conservation philosophy represents an innovative model of women's ecological leadership with broader implications for participatory environmental governance and community-centred conservation.

Keywords: Women's Ecological Leadership; Purnima Devi Barman; Greater Adjutant; Community-Based Conservation; Ecofeminism; Participatory Environmental Governance; Biodiversity Conservation; Sustainable Development.

Introduction

Biodiversity loss has become one of the most pressing environmental challenges of the twenty-first century. Habitat degradation, climate change, urbanisation, and unsustainable resource use continue to threaten ecosystems and endangered species worldwide. Consequently, biodiversity conservation has evolved beyond species protection to include community participation, environmental governance, and sustainable development.

Recent conservation research increasingly recognises that long-term environmental protection cannot rely solely on scientific research or government intervention. Instead, effective conservation requires collaboration among researchers, local communities, civil society organisations, and public institutions. Community-based conservation reflects this shift by promoting local stewardship, environmental awareness, and shared responsibility for protecting biodiversity.

Women's contributions to environmental conservation have also gained increasing scholarly attention. Through environmental education, resource management, and community mobilisation, women have demonstrated significant leadership in promoting sustainable conservation practices. However, empirical studies examining women as leaders of successful biodiversity conservation movements remain comparatively limited, particularly in India.

Assam, one of India's biodiversity-rich states, supports diverse wetlands, forests, and endangered wildlife but faces increasing ecological pressures from habitat degradation and human activities. Among the state's most significant conservation initiatives is the Hargila movement led by **Purnima Devi Barman**, whose efforts transformed the conservation of the endangered Greater Adjutant (*Leptoptilos dubius*) into a globally recognised example of community-based conservation.

Initially regarded as an undesirable scavenger, the Greater Adjutant suffered from habitat destruction, the loss of nesting trees, and widespread public indifference. Recognising that scientific management alone could not ensure the species' survival, Purnima Devi Barman integrated ecological research with community participation, environmental education, cultural revitalisation, and women's leadership. Through the formation of the **Hargila Army**, thousands of rural women became active participants in habitat protection, rescue operations, environmental awareness, and conservation-based livelihood initiatives.

Although previous studies have documented the recovery of the Greater Adjutant and acknowledged the success of the Hargila movement, relatively few have analysed it as a comprehensive model of women's ecological leadership. Existing literature primarily emphasises ecological outcomes while giving less attention to the interaction between scientific research, community participation, cultural engagement, and participatory environmental governance.

Against this background, the present study examines Purnima Devi Barman's conservation philosophy as an integrated model of women's ecological leadership. It analyses how scientific knowledge, grassroots participation, and gender-inclusive conservation collectively contributed to biodiversity protection and discusses the wider implications of the Hargila movement for environmental governance and sustainable development.

Review of Literature

Research on biodiversity conservation has increasingly shifted from species-oriented approaches towards participatory models that integrate ecological sustainability, community engagement, and inclusive governance. This transition reflects growing recognition that long-term conservation success depends not only on scientific interventions but also on the active involvement of local communities and social institutions. Consequently, studies on community-based conservation, ecofeminism, and environmental governance have expanded considerably over the past two decades.

Early investigations of the **Greater Adjutant (Leptoptilos dubius)** concentrated primarily on the species' ecology, breeding biology, habitat preferences, and causes of population decline.

These studies identified habitat degradation, wetland destruction, felling of nesting trees, and human disturbance as the principal threats to its survival. While these ecological investigations provided an essential scientific foundation for conservation planning, they devoted comparatively less attention to the social, cultural, and institutional factors influencing conservation outcomes.

A substantial body of literature on **community-based conservation (CBC)** argues that biodiversity protection becomes more sustainable when local communities participate actively in planning, implementation, and resource management. Such participatory approaches strengthen environmental stewardship, foster collective responsibility, and improve the long-term acceptance of conservation initiatives. Nevertheless, many studies discuss these principles in theoretical terms without demonstrating how local leadership can transform conservation into a sustained, community-owned movement.

Scholarly work on **women and environmental conservation** similarly highlights women's contributions to natural resource management, environmental education, and sustainable development. Ecofeminist perspectives emphasise that women's ecological knowledge, social networks, and leadership capacities can strengthen environmental governance when supported by inclusive institutional frameworks. However, empirical studies examining women as principal leaders of large-scale biodiversity conservation movements remain relatively limited, particularly within the Indian context.

Research specifically addressing **Purnima Devi Barman** has documented remarkable achievements in conserving the Greater Adjutant through habitat protection, scientific monitoring, environmental education, and community mobilisation. Existing studies also acknowledge the innovative establishment of the **Hargila Army**, which successfully mobilised rural women and incorporated Assamese cultural traditions into conservation practice. Despite these valuable contributions, most published work remains descriptive, focusing primarily on ecological achievements and species recovery rather than critically examining the broader leadership model underlying the movement.

A review of the existing literature therefore indicates that limited scholarly attention has been given to understanding how scientific knowledge, women's leadership, community participation, cultural engagement, and participatory environmental governance collectively interact to produce sustainable conservation outcomes. Addressing this gap, the present study analyses Purnima Devi Barman's conservation initiatives as an integrated model of women's ecological leadership. By synthesising insights from ecofeminism, community-based conservation, and participatory environmental governance, the study offers a broader conceptual understanding of community-centred biodiversity conservation. It extends existing scholarship beyond species recovery to encompass social transformation and inclusive environmental leadership.

Research Gap

Existing studies on the Greater Adjutant primarily emphasise ecological conservation, habitat management, and population recovery, while research on Purnima Devi Barman largely documents the success of the Hargila conservation movement. Comparatively little attention has been devoted to examining her work as an integrated model of women's ecological leadership that combines scientific research, community participation, environmental education, cultural engagement, and participatory environmental governance. Similarly, although ecofeminism and community-based conservation acknowledge women's role in environmental management, empirical analyses of women-led biodiversity conservation initiatives in India remain limited. The present study addresses these gaps by critically analysing Purnima Devi Barman's conservation philosophy as a comprehensive framework for inclusive and sustainable biodiversity conservation.

Significance of the Study

This study contributes to the literature on biodiversity conservation by analysing Purnima Devi Barman's conservation initiatives through the perspective of women's ecological leadership. It demonstrates that successful conservation depends not only on ecological management but also on community participation, environmental education, cultural engagement, and gender-inclusive leadership. The study further contributes to discussions on ecofeminism, participatory environmental governance, and sustainable development by illustrating how scientific

knowledge can be effectively integrated with local traditions and grassroots participation. The findings provide practical insights for policymakers, conservation organisations, educators, and community leaders seeking to develop inclusive and community-centred conservation strategies.

Objectives of the Study

The study aims to achieve the following objectives:

1. To examine Purnima Devi Barman's contribution to the conservation of the endangered Greater Adjutant through a community-based approach to biodiversity conservation in Assam.
2. To analyse how women's ecological leadership, community participation, environmental education, cultural engagement, and participatory environmental governance contributed to the success of the Hargila conservation movement as a model of sustainable biodiversity conservation.

Research Methodology

The present study adopts a **qualitative analytical case study** approach to examine Purnima Devi Barman's contribution to biodiversity conservation and women's ecological leadership in Assam. A qualitative design is appropriate because the study seeks to interpret the social, ecological, and institutional dimensions of the Hargila conservation movement rather than establish quantitative relationships.

Purnima Devi Barman and the Hargila conservation movement were selected as the case for this study because they represent one of India's most successful examples of women-led, community-based biodiversity conservation. The initiative has received national and international recognition for integrating scientific research, community participation, environmental education, cultural engagement, and women's leadership in conserving the endangered Greater Adjutant. As such, it provides an appropriate case for examining women's ecological leadership and participatory environmental governance.

The study is based exclusively on **secondary data** collected from peer-reviewed journal articles, books, government publications, conservation reports, policy documents, published interviews, and other credible academic sources. Preference was given to recent and authoritative publications to ensure the reliability of the analysis.

The collected data were analysed using **thematic analysis**, focusing on recurring themes such as women's ecological leadership, community participation, biodiversity conservation, environmental education, cultural engagement, and participatory environmental governance. The findings were interpreted through the perspectives of ecofeminism, community-based conservation, and participatory environmental governance to explain how these interconnected factors contributed to the success of the Hargila movement.

As the study relies entirely on secondary sources, its findings are limited to the availability and scope of published literature. Nevertheless, the use of diverse and credible sources provides a comprehensive understanding of Purnima Devi Barman's conservation model and its broader implications for biodiversity conservation and sustainable development.

Theoretical Framework

The study is guided by an interdisciplinary framework comprising **Ecofeminism**, **Community-Based Conservation (CBC)**, and **Participatory Environmental Governance (PEG)**. Together, these perspectives explain how ecological conservation can be strengthened through women's leadership, community participation, and collaborative decision-making.

Ecofeminism provides the conceptual basis for understanding women's ecological leadership by emphasising the relationship between environmental sustainability, gender equity, and social empowerment. The present study helps explain how rural women became active leaders in biodiversity conservation through the Hargila Army.

Community-Based Conservation (CBC) highlights the importance of local participation in achieving sustainable conservation outcomes. Rather than relying solely on scientific management or government intervention, CBC encourages shared responsibility among

communities, researchers, and institutions. The Hargila movement reflects this principle by transforming residents into active custodians of the Greater Adjutant and its habitat.

Participatory Environmental Governance (PEG) emphasises collaboration among governments, researchers, educational institutions, conservation organisations, and local communities. This perspective explains how scientific knowledge, environmental education, cultural engagement, and institutional partnerships collectively contributed to the long-term success of the Hargila conservation movement.

Taken together, these perspectives provide a comprehensive framework for analysing Purnima Devi Barman's conservation initiatives as an integrated model of women's ecological leadership that combines ecological sustainability with community participation and inclusive environmental governance.

Conceptual Framework

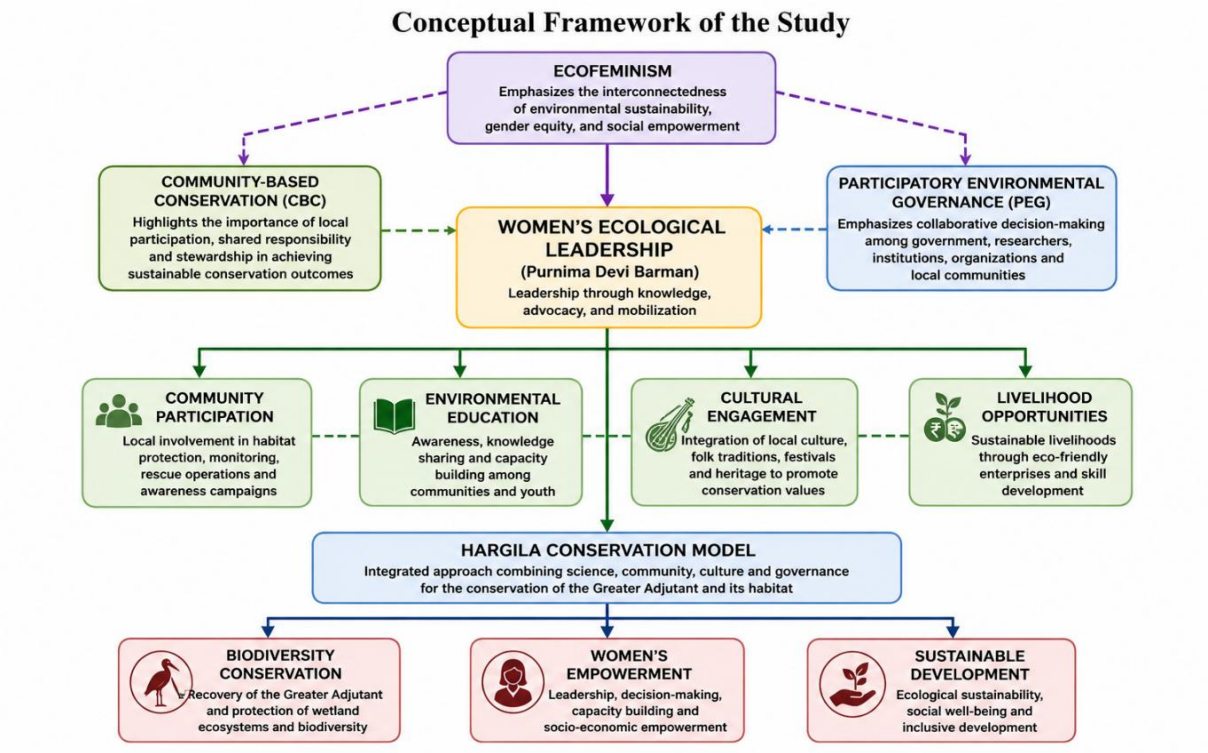

Figure 1. *Conceptual framework illustrating the relationship between the theoretical perspectives and the analytical dimensions of the study. (Developed by the author.)*

Background and Emergence of Ecological Leadership

- **Background and Early Career**

Purnima Devi Barman's ecological leadership emerged from the intersection of scientific training and practical conservation experience in Assam, a region recognised for its rich biodiversity and complex environmental challenges. Her academic background in zoology and subsequent field research on the endangered Greater Adjutant (*Leptoptilos dubius*) provided her with a strong understanding of wildlife ecology and conservation biology.

During her field studies, she observed that the decline of the Greater Adjutant resulted not only from habitat loss and wetland degradation but also from negative public perceptions. The bird was widely regarded as unattractive and inauspicious, leading to the destruction of nesting trees and limited community support for its conservation. These observations convinced her that scientific interventions alone would be insufficient without changes to public attitudes and encouraging community participation.

This realisation marked a turning point in her conservation philosophy. Rather than focusing exclusively on wildlife research, she adopted a participatory approach that integrated ecological science, environmental education, and community engagement. This shift laid the foundation for what later became one of India's most successful examples of women-led biodiversity conservation.

From Wildlife Researcher to Community Leader

Purnima Devi Barman's transition from researcher to conservation leader demonstrates how scientific knowledge can be translated into effective grassroots action. Recognising that biodiversity conservation required social acceptance as much as ecological management, she worked closely with local communities to transform attitudes towards the Greater Adjutant.

A defining milestone was the formation of the **Hargila Army**, a grassroots movement led primarily by rural women. Members actively participated in protecting nesting trees, rescuing fallen chicks, restoring habitats, conducting awareness campaigns, and promoting the bird

through Assamese cultural traditions. By combining conservation with environmental education, local culture, and livelihood opportunities, the initiative fostered community ownership while expanding women's leadership in environmental governance.

This transformation from researcher to community leader illustrates that successful conservation depends not only on scientific expertise but also on inclusive leadership, sustained community engagement, and collaborative action. The Hargila movement therefore represents an innovative model of women's ecological leadership that integrates biodiversity conservation with social empowerment and sustainable development.

Conservation Strategies: An Integrated Community-Based Approach

Purnima Devi Barman's conservation model differs from conventional wildlife conservation by combining scientific research with community participation, environmental education, cultural engagement, and women's leadership. Rather than relying solely on legal protection or scientific intervention, her approach recognises that long-term biodiversity conservation depends on the active involvement of local communities.

Scientific research formed the foundation of the initiative. Field studies identified habitat degradation, wetland loss, destruction of nesting trees, and human disturbance as the principal threats to the Greater Adjutant (*Leptoptilos dubius*). These findings guided conservation planning, including habitat protection, nest monitoring, rescue of fallen chicks, and ecological assessment, ensuring that interventions were generated from scientific evidence.

Recognising that conservation could not succeed without public support, Purnima Devi Barman adopted a **community-based conservation** approach that encouraged local people to become custodians of biodiversity. Villagers actively participated in protecting nesting trees, reporting threats, rescuing injured birds, and promoting environmental awareness. This participatory

model strengthened local stewardship and created a sense of shared responsibility for conservation.

A defining feature of the initiative was the establishment of the **Hargila Army**, a women-led grassroots movement that transformed rural women into environmental leaders. Members contributed to habitat protection, rescue operations, awareness campaigns, and conservation education while encouraging wider community participation. Their leadership challenged traditional gender roles and demonstrated that women could play a central role in biodiversity conservation and environmental governance.

Environmental education further strengthened the movement by addressing misconceptions surrounding the Greater Adjutant. Awareness programmes in schools and villages promoted scientific understanding of the species and encouraged local participation in conservation. These initiatives helped replace negative perceptions with a greater appreciation of the bird's ecological importance.

The movement also successfully integrated conservation with **Assamese cultural traditions**. Through folk songs, storytelling, traditional weaving, festivals, and community celebrations, the Greater Adjutant was reimagined as a symbol of local ecological heritage rather than an unwanted scavenger. This cultural engagement created an emotional connection between communities and biodiversity, strengthening long-term public support for conservation.

To sustain community participation, conservation was linked with **livelihood opportunities**. Women associated with the Hargila Army produced Hargila-themed handloom and handicraft products, generating supplementary income while reinforcing conservation awareness. By connecting environmental protection with economic benefits, the initiative demonstrated that biodiversity conservation and rural development can complement one another.

The movement was further strengthened through collaboration among local communities, conservation organisations, researchers, educational institutions, and government agencies. Such partnerships provided technical expertise, institutional support, and wider public recognition while reinforcing participatory environmental governance.

Overall, Purnima Devi Barman's conservation strategy demonstrates that successful biodiversity conservation depends on integrating ecological science with community participation, women's leadership, cultural engagement, environmental education, and collaborative governance. The Hargila movement therefore represents a sustainable and replicable model of community-centred conservation that extends beyond species protection to promote broader social and environmental transformation.

Challenges Faced

The success of the Hargila conservation movement was achieved despite significant ecological, social, institutional, and cultural challenges. These obstacles influenced the development of Purnima Devi Barman's conservation philosophy and demonstrate that effective biodiversity conservation requires both ecological expertise and sustained community engagement.

A major challenge was the **negative perception of the Greater Adjutant**. The bird was widely regarded as unattractive and inauspicious, leading many residents to destroy nesting trees or ignore conservation efforts. To address this, Purnima Devi Barman combined environmental education with Assamese cultural traditions, including folk songs, weaving, festivals, and community awareness programmes. These initiatives gradually transformed the bird into a symbol of local ecological heritage and encouraged voluntary participation in conservation.

Another significant challenge was **habitat degradation** caused by wetland loss, urban expansion, and the removal of mature nesting trees. As many nesting sites are located on private land, successful conservation depends on cooperation from local communities. Instead of relying solely on legal protection, the initiative encouraged villagers to conserve nesting trees, restore habitats, and participate in monitoring activities. This participatory approach strengthened long-term stewardship and reduced conflict between conservation goals and local interests.

Building **community trust** also required sustained effort. Initial resistance arose because many people questioned the value of protecting a species long viewed negatively. Through regular interaction, awareness campaigns, and the visible success of rescue operations, local attitudes gradually changed, allowing conservation to become a shared community responsibility.

The movement also challenged **traditional gender roles** by placing rural women at the centre of conservation activities. Through the Hargila Army, women became educators, conservation volunteers, and community leaders, demonstrating that gender-inclusive participation can strengthen both biodiversity conservation and local governance.

Finally, maintaining a long-term conservation programme required continued **institutional collaboration and financial support**. Partnerships among researchers, government agencies, educational institutions, conservation organisations, and local communities were essential for sustaining habitat restoration, environmental education, and rescue initiatives. Linking conservation with livelihood opportunities, particularly through Hargila-themed handloom and handicraft production, further strengthened community participation by aligning ecological protection with economic benefits.

Overall, these challenges demonstrate that the success of the Hargila movement resulted not only from scientific conservation but also from its ability to transform public attitudes, empower local communities, and establish collaborative environmental governance.

Impact of the Hargila Conservation Movement

The Hargila conservation movement demonstrates that biodiversity conservation can generate ecological, social, and institutional benefits when scientific research is integrated with community participation and inclusive leadership. Its impact extends beyond the recovery of the Greater Adjutant to broader improvements in environmental awareness, women's empowerment, and participatory conservation.

One of the most significant achievements has been the recovery of the **Greater Adjutant** in Assam. Since the initiative began in 2007, sustained efforts in habitat protection, nest monitoring, rescue and rehabilitation of chicks, and community participation have contributed to a substantial increase in breeding success. The Dadara–Pachariya–Singimari landscape has become one of the world's largest breeding sites for the species, demonstrating the effectiveness of long-term conservation supported by scientific monitoring and local stewardship.

The movement has also transformed local communities into active partners in conservation. Through the **Hargila Army**, thousands of rural women participate in habitat protection, rescue operations, environmental education, and awareness programmes. Their involvement has strengthened community ownership of biodiversity conservation while promoting women's leadership in environmental decision-making.

Beyond species conservation, the initiative has contributed to habitat restoration by protecting nesting trees and planting native species around wetlands and breeding sites. These efforts have improved local ecosystems and benefited other wildlife sharing the same habitat, illustrating the wider ecological value of community-based conservation.

An equally important outcome has been the transformation of public attitudes. Through environmental education, cultural programmes, and community engagement, the Greater Adjutant has evolved from being viewed as an unwanted scavenger to becoming a symbol of Assam's ecological heritage. This shift has encouraged voluntary conservation efforts and strengthened long-term public support.

The movement has further promoted **women's socio-economic empowerment** by linking conservation with livelihood opportunities such as Hargila-themed handloom and handicraft production. These initiatives provide supplementary income while reinforcing conservation awareness, demonstrating that biodiversity conservation and rural development can complement one another.

Overall, the Hargila movement illustrates that effective conservation extends beyond species protection to include ecological restoration, social empowerment, environmental education, and collaborative governance. Its success demonstrates the value of integrating scientific knowledge with community participation to achieve sustainable conservation outcomes.

Achievements and Recognition

The achievements of Purnima Devi Barman reflect international recognition of an innovative conservation model that integrates biodiversity protection with women's leadership and community participation. Her work has received widespread appreciation because it

demonstrates that conservation becomes more sustainable when scientific knowledge is combined with grassroots mobilisation and local cultural engagement.

Among her most significant recognitions is the **Whitley Award (2017)**, often referred to as the "Green Oscar," which acknowledged her success in mobilising communities for Greater Adjutant conservation. In the same year, she received the **Nari Shakti Puraskar**, India's highest civilian honour for women, recognising her contribution to environmental conservation and women's empowerment.

Her international reputation was further strengthened through the **UNEP Champions of the Earth Award (2022)** in the Entrepreneurial Vision category, honouring her leadership in establishing the Hargila Army and promoting community-based conservation. She later received the **Whitley Gold Award (2024)** for expanding the impact of the Hargila movement, followed by recognition among **TIME Women of the Year (2025)**.

These honours should be viewed not merely as personal achievements but as recognition of a conservation model that successfully integrates ecological science, community participation, cultural engagement, environmental education, and women's leadership. They reinforce the broader significance of the Hargila movement as an internationally recognised example of participatory biodiversity conservation.

Critical Analysis

The Hargila conservation movement represents a significant shift from conventional wildlife conservation by demonstrating that long-term biodiversity protection depends on social transformation as much as ecological intervention. Rather than relying exclusively on habitat management or legal protection, Purnima Devi Barman integrated scientific research with community participation, cultural engagement, environmental education, and women's leadership. This multidimensional approach explains the long-term success of the initiative.

A major strength of the Hargila model lies in its ability to transform local communities from passive beneficiaries into active custodians of biodiversity. Community members participated in habitat protection, rescue operations, awareness campaigns, and environmental education,

fostering collective responsibility for conservation. This approach supports the principles of community-based conservation, which emphasise that long-term ecological sustainability is strengthened when local stakeholders are directly involved in conservation planning and implementation.

The movement also demonstrates the importance of **women's ecological leadership**. Through the Hargila Army, rural women assumed roles as conservation volunteers, educators, and community leaders, challenging traditional gender roles while strengthening environmental stewardship. Their participation illustrates that gender-inclusive leadership can improve conservation outcomes by promoting social cohesion, local ownership, and sustained public engagement.

Another significant contribution of the movement is its integration of **scientific knowledge with local culture**. By incorporating Assamese traditions such as weaving, folk songs, storytelling, and community celebrations, the initiative successfully transformed public attitudes towards the Greater Adjutant. This cultural engagement complemented scientific conservation by creating an emotional connection between local communities and biodiversity.

The Hargila movement further illustrates the value of **participatory environmental governance**, where collaboration among researchers, government agencies, educational institutions, conservation organisations, and local communities contributed to long-term conservation success. Such partnerships demonstrate that biodiversity conservation is most effective when responsibilities are shared rather than concentrated within a single institution.

Despite these achievements, the model has certain limitations. Its success is closely linked to the ecological and socio-cultural context of Assam, where community participation and cultural engagement could be effectively mobilised. Consequently, similar initiatives in other regions should adapt the underlying principles to local ecological conditions, institutional capacities, and cultural contexts rather than replicate the model directly.

Overall, the study demonstrates that the success of Purnima Devi Barman's conservation initiative resulted from the interaction of scientific research, women's leadership, community

participation, cultural engagement, and collaborative governance. The Hargila movement therefore provides an important model for biodiversity conservation that integrates ecological sustainability with social empowerment and inclusive environmental governance.

Policy Implications

The findings suggest that biodiversity conservation policies should place greater emphasis on community participation, gender-inclusive leadership, and environmental education. Governments and conservation organisations should encourage local stewardship by involving communities in habitat protection, monitoring, and awareness programmes. The Hargila movement demonstrates that empowering women as environmental leaders strengthens both conservation outcomes and social inclusion.

The study also highlights the importance of integrating local cultural traditions into conservation initiatives to improve public participation and long-term sustainability. Furthermore, stronger collaboration among researchers, educational institutions, government agencies, and civil society organisations can enhance conservation planning and implementation. Although conservation strategies must be adapted to local contexts, the principles underlying the Hargila model provide valuable guidance for developing participatory biodiversity conservation programmes.

Limitations of the Study

The present study is based exclusively on secondary sources, including peer-reviewed journal articles, books, conservation reports, policy documents, and other documentary evidence. Consequently, the findings are dependent on the availability, scope, and reliability of existing literature and do not incorporate primary data collected through field observations, interviews, or surveys. In addition, the study adopts a single-case approach by focusing on Purnima Devi Barman and the Hargila conservation movement in Assam. Therefore, the findings should not be interpreted as universally applicable to all biodiversity conservation initiatives. Nevertheless, the study provides a comprehensive analytical understanding of an internationally recognised model of women's ecological leadership. It offers insights that may inform future research on community-based conservation, participatory environmental governance, and sustainable biodiversity conservation.

Future Research

Future research may strengthen the findings of this study through field-based investigations involving interviews with members of the Hargila Army, conservation practitioners, and local communities. Comparative studies of women-led conservation initiatives in different ecological and cultural settings would further enhance understanding of women's ecological leadership and participatory conservation. Longitudinal research may also examine the sustainability of community-led conservation programmes and their contribution to biodiversity conservation, climate resilience, and sustainable development.

Conclusion

This study examined Purnima Devi Barman's contribution to biodiversity conservation through the perspective of women's ecological leadership. The findings demonstrate that the success of the Hargila conservation movement extends beyond the recovery of the Greater Adjutant and reflects the integration of scientific research, community participation, women's leadership, environmental education, cultural engagement, and participatory environmental governance.

The study shows that effective biodiversity conservation depends not only on ecological management but also on empowering local communities to become active partners in conservation. Through the Hargila Army, rural women emerged as conservation leaders, demonstrating that gender-inclusive participation can strengthen environmental stewardship while promoting social empowerment and sustainable livelihoods.

From a theoretical perspective, the study contributes to the literature on women's ecological leadership, community-based conservation, and participatory environmental governance by illustrating how these approaches can work together to achieve sustainable conservation outcomes. It also expands existing scholarship by analysing Purnima Devi Barman's work as an integrated conservation model rather than merely documenting the recovery of an endangered species.

The findings have important practical implications for policymakers, conservation organisations, and educators seeking to develop inclusive and community-centred conservation strategies. While the Hargila movement emerged within the ecological and cultural context of Assam, its

underlying principles provide valuable guidance for designing participatory conservation programmes in other regions.

In conclusion, Purnima Devi Barman's conservation philosophy demonstrates that biodiversity conservation is most effective when ecological science is combined with community participation, cultural engagement, and women's leadership. The Hargila movement therefore represents an important model of inclusive environmental governance that contributes to biodiversity conservation, social empowerment, and sustainable development.

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