

UNDERSTANDING THE ECO-SUSTAINABILITY LESSONS THROUGH THE FOLKLORE: A CASE STUDY FROM RARH BENGAL, INDIA

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Abstract: The dual processes of urbanization and globalization have resulted in a significant decline in environmental conditions, necessitating an urgent increase in environmental protection awareness among people. As the global community faces increasing ecological crises, a burgeoning consciousness surrounding environmental issues, even within traditional societies, has been encouraged. These societies are foundational to cultural heritage and offer critical frameworks for sustainable living practices. To mitigate the adverse impacts of urbanization, industrialization, and globalization, it is essential to integrate adaptive strategies inherent in traditional and indigenous cultures into contemporary sustainability practices. Folklore has emerged as a pivotal vehicle for fostering environmental conservation and has been deeply intertwined with traditional ecological knowledge (TEK) since ancient times. In regions such as tropical India, rural areas serve as rich reservoirs of folklore and provide profound insights into ecological sustainability. One salient example is Rarh Bengal, where various elements of folklore illuminate pathways to achieve a harmonious ecological balance in the region. Thus, integrating folklore into environmental education can be a potent strategy for enhancing awareness and promoting eco-sustainability. The communities in this area have historically coexisted with the abundant forests surrounding them, amassing a wealth of ecological knowledge encoded in their cultural practices and folklore over generations. Their traditions encompass symbolic and ethical imperatives that underscore the importance of respect and compassion toward all living entities. The present study, which employs an empirical framework, endeavors to elucidate the invaluable lessons in eco-sustainability from the perspective of the communities. It seeks to explore, analyze, and interpret their worldview, traditional ecological knowledge, and diverse expressions such as folktales, myths, rhymes, legends, riddles, and proverbs. They are vital elements that are deeply interwoven with the cultural ecology of the Rarh region. Furthermore, the research highlights the relevance of folklore in promoting ecological sustainability, examining the beliefs and practices that shape communities' identities and interactions with their natural surroundings.

Keywords: Rarh region, Folk community, Folklore, Traditional ecological knowledge, Ecological sustainability.

چکیده: فرآیندهای دوگانه شهرنشینی و جهانی شدن منجر به افول چشمگیر شرایط زیست‌محیطی شده‌اند و از این رو افزایش فوری آگاهی عمومی نسبت به حفاظت از محیط زیست ضرورتی انکارناپذیر یافته است. با گسترش بحران‌های زیست‌محیطی در مقیاس جهانی، نوعی بیداری و آگاهی فزاینده نسبت به مسائل محیط زیست حتی در جوامع سنتی نیز پدید آمده است. این جوامع که شالوده میراث فرهنگی را تشکیل می‌دهند، الگوهایی بنیادین برای شیوه‌های زیست پایدار ارائه می‌کنند. برای کاهش اثرات منفی شهرنشینی، صنعتی شدن و جهانی شدن، لازم است راهبردهای سازگارانه‌ای که در فرهنگ‌های بومی و سنتی وجود دارند در سیاست‌ها و اقدامات معاصر توسعه پایدار ادغام شوند. ادبیات عامه (فولکلور) به عنوان ابزاری محوری در ترویج حفاظت از محیط زیست مطرح شده و از دیرباز با «دانش بوم‌شناختی سنتی» پیوندی عمیق داشته است. در مناطقی مانند نواحی گرمسیری هند، روستاها به‌منزله مخازن غنی فولکلور، بینش‌های ژرفی نسبت به پایداری بوم‌شناختی فراهم می‌کنند. یکی از نمونه‌های برجسته، منطقه «رار بنگال» است که در آن عناصر گوناگون فولکلور مسیری برای دستیابی به تعادل بوم‌شناختی هماهنگ در منطقه را روشن می‌سازند. از این رو، ادغام فولکلور در آموزش‌های محیط‌زیستی می‌تواند راهبردی مؤثر برای ارتقای آگاهی و ترویج پایداری زیست‌محیطی باشد. جوامع این منطقه از دیرباز در کنار جنگل‌های انبوه پیرامون خود زیسته و در طول نسل‌ها، گنجینه‌ای از دانش بوم‌شناختی را در قالب سنت‌ها و فولکلور خود انباشته‌اند. آیین‌ها و باورهای آنان دربردارنده مضامین نمادین و اخلاقی هستند که بر احترام و شفقت نسبت به همه موجودات زنده تأکید می‌ورزند. پژوهش حاضر با رویکردی تجربی در پی آن است که آموزه‌های ارزشمند مربوط به پایداری بوم‌شناختی را از منظر این جوامع تبیین نماید و جهان‌بینی، دانش بوم‌شناختی سنتی و نموده‌های گوناگون آن‌ها همچون داستان‌های عامیانه، اسطوره‌ها، ترانه‌ها، افسانه‌ها، چیستان‌ها و ضرب‌المثل‌ها را بررسی، تحلیل و تفسیر کند. این عناصر، اجزای حیاتی‌ای هستند که به‌طور عمیق در بوم‌فرهنگ منطقه رار تنیده شده‌اند. افزون بر این، پژوهش حاضر بر اهمیت فولکلور در ترویج پایداری زیست‌محیطی تأکید کرده و باورها و کنش‌هایی را بررسی می‌کند که هویت جوامع و رابطه آن‌ها با محیط طبیعی پیرامونشان را شکل می‌دهند.

کلیدواژه: منطقه رار، جامعه عامیانه، فولکلور، دانش بوم‌شناختی سنتی، پایداری زیست‌محیطی.

I. Introduction

The ongoing processes of urbanization and industrialization have led to the gradual disintegration of the environment, characterized by the rapid and often reckless consumption of natural resources. Environmental degradation occurs when either abiotic

or biotic resources are utilized unsustainably. The foremost contributors to this decline are anthropogenic activities, which, coupled with natural hazards, serve as primary drivers of environmental deterioration. These activities contribute to a range of consequences, including rising global temperatures, climate change,

habitat loss, and species extinction. The pressures from unprecedented development and commercialization have exacerbated the challenges associated with resource depletion and the degradation of ecosystem services. Consequently, the sustainability of human existence on Earth is increasingly at risk. In light of these challenges, there is an urgent need to reform our approach to resource utilization, moving away from a commercialization mindset toward sustainable environmental stewardship. It is crucial to implement strategies that safeguard and conserve our environment against the myriad of unsustainable practices that currently impede it. This necessitates a collective commitment to ecological sustainability principles. In this era of ecological conservation, the traditional knowledge and cultural practices of indigenous communities are invaluable. However, over time, there has been a decline in the transmission of this traditional ecological wisdom, which has historically contributed to environmental sustainability. Recently, there has been a notable increase in the focus on climate education and the exchange of ecological knowledge on a global scale. Consequently, numerous scientific studies have investigated various methodologies for enhancing environmental education, highlighting the importance of integrating scientific insights with traditional ecological understanding (Otiende, 2008:17-23; Ajaps and McLellan, 2015: 5; Aldy and Gianfrate, 2019: 32-35; Reid, 2019: 770; Holbrook and Tingley, 2022: 7-11; Molthan-Hill et al., 2022: 3395-3403; UNESCO, 2023: 20 IPCC, 2021: 7). While fact-based approaches have been traditionally favored by the scientific community, recent research suggests that narrative approaches to ecological learning through folklore, myth, oral history, and storytelling could be more effective (Nelson and Shilling, 2018: 15-26; Yunkaporta, 2019: 8-11; Clwyd Powys Archaeological Trust, 2009: 11). In recent centuries, there has been a marked increase in the scholarly examination and documentation of folklore (Tehrani, 2023: 90). This trend can be attributed to several interrelated factors.

First, there is increasing scholarly interest in the preservation of cultural and literary heritages, which has prompted academics to engage more deeply with the complexities of folklore. Second, there is a pronounced desire to forge connections between contemporary societies and their historical antecedents; folklore serves as a crucial repository of our ancestors' belief systems, customs, and traditions. Additionally, the rise of nationalist sentiment globally has fostered a renewed impetus for the conservation and celebration of diverse cultural heritages. These dynamics collectively underscore the increasing relevance of folklore in contemporary discourse and the imperative to systematically study and document it for posterity (Shahed, 1993: 149--152). Research indicates that

storytelling and mythologically informed narratives serve as potent tools for enhancing engagement and retention in ecological education (Hopper et al., 2018: 4; Holmes et al., 2018: 232-236; Hallam, 2019: 13). Through narrative frameworks, learners can establish emotional connections to environmental issues, thereby facilitating their comprehension of complex ecological concepts. This approach not only promotes cognitive retention but also fosters a more comprehensive understanding of environmental phenomena by integrating cultural perspectives and indigenous knowledge systems. Such narratives are crucial for the development of robust strategies aimed at mitigating climate change and ecological degradation.

Moreover, acquiring knowledge about ecological systems is instrumental in building societal resilience against emerging environmental challenges. Myths and legends, as vital components of cultural heritage, provide essential insights into the worldviews, values, and existential beliefs of traditional societies. These narratives encapsulate how communities interpret their relationships with nature, their spiritual beliefs, and their conceptions of the human experience. By analyzing these cultural artifacts, one can gain a nuanced appreciation of the historical and contextual layers that shape human cognition and creativity. In addition, environmental education that leverages folklore and traditional narratives has the potential to cultivate a profound sense of connection and stewardship toward the natural world (EARTH.ORG, 2023; National Environmental Education Foundation, 2021). The implementation of folk traditions as educational frameworks enables individuals to engage deeply with their local ecologies, fostering meaningful relationships with their environments. Ultimately, this strategy encourages a comprehensive understanding and appreciation of ecological systems, thereby contributing to the sustainable management of natural resources for future generations (Hopper et al., 2018: 8; Satapathy and Bhattacharya, 2021: 3; Mago and Anand, 2022: 2-6). The interplay between natural landscapes and folk traditions is profound and remains a significant factor in contemporary societal dynamics (Osembo, 1994: 50-53; Wu, 2010: 1147--1149; Voices for Biodiversity, 2012: 10). Numerous natural areas and features are preserved, primarily due to the cultural narratives and folklore associated with them (Brodie et al., 2023: 23-27 UNESCO, 2023: 10-12; EARTH. ORG, 2019: 13). Importantly, folklore significantly contributes to ecological restoration efforts (Putnam, 1964: 364; Oza, 2014: 25-27; 2020: 6-7).

Folk narratives not only reflect sustainable practices in addressing environmental concerns but also play an essential role in ecological conservation strategies (Selim, 2019: 8). A critical analysis of folklore, myths, and cultural narratives reveals that this connection

remains deeply embedded within our societal framework. The capacity of these narratives to shape behaviors, attitudes, and belief systems underscores the enduring influence of storytelling and its profound implications for human interaction with the environment. These narratives serve as a reminder of our intrinsic link to the natural world and our collective duty to safeguard it for future generations.

The ecological and cultural diversity of India is intricately linked to its complex topography, environmental conditions, linguistic variations, and rich cultural heritage. The folklore and traditional knowledge of the ethnic communities in India are intricately linked to the cultural ecology of the region. Cultural ecology, a concept introduced by Julian Steward in 1955 (Steward, 1955: 244), pertains to the adaptations that humans have developed in response to their social and physical environments. This framework posits that a society's culture is influenced by its environmental context and the methods it employs to utilize available resources. In the tribal regions of India, both folklore and traditional knowledge exemplify this relationship. Various forms of expression, such as folktales, myths, folk rhymes, folk riddles, folk legends, proverbs, and rituals, illustrate the profound connection these communities maintain with their surroundings and how they leverage their environment for survival. Steward's theory underscores the critical role of the natural environment in the formation of cultural identity. India is characterized by a multitude of ethnic groups, each possessing distinct cultural expressions that reflect their adaptations to specific ecological contexts within rural areas. These tribal communities have historically depended on agriculture, forests, and waterways to meet their sustenance needs. This reliance is evident in their folklore, where elements of nature, including mountains, forests, and rivers, are frequently personified or imbued with symbolic meanings.

Furthermore, cultural ecology theory emphasizes the importance of resource exploitation in shaping social structures. Within the tribal belt of India, folklore encompasses narratives regarding hunting, fishing, and agricultural practices, demonstrating how these communities have adjusted their technologies and social frameworks to extract resources from their environment. The cultural ecology framework illustrates the dynamic process through which cultures adapt to their surroundings, resulting in diverse social systems. The folklore of the tribal regions of rural India reflects the unique social structures, rituals, and belief systems that have arisen from the interactions between tribal communities and their environments. A critical avenue for deepening our understanding of India's extensive knowledge systems lies in the exploration of localized wisdom that has been transmitted across generations. This indigenous knowledge is pivotal for

fostering sustainable practices and enhancing ecosystem services that are essential for the health and resilience of human and ecological communities alike. By engaging with India's local wisdom, we gain insights into the nation's unique cultural frameworks, which significantly influence contemporary environmental practices and policy-making. The traditional ecological knowledge (TEK) embedded within Indian cultures underscores the importance of conservation, not only in the context of protecting individual species but also for the maintenance of overall ecosystem functions and processes. This understanding has vital ecological implications for the preservation of vulnerable species populations and the integrity of critical ecosystems, thus contributing to biodiversity conservation on a broader scale (Kala and Sharma, 2010: 86).

Therefore, it can be inferred that throughout human history, ecological awareness has been a fundamental aspect of society's right from its inception. India has a rich and diverse tradition of folklore that spans centuries. This lore is a testimony to the country's cultural heritage and has played a significant role in shaping the psyche of its people. The unique blend of marvellous elements in Indian folklore reflects the country's rich history, diverse traditions, and multicultural heritage. From epic poems to fables, songs, and tales, Indian folklore is a treasure trove of stories passed down from generation to generation. These stories inspire, educate and enlighten people about their history, moral values, and way of life. They are essential to India's cultural identity and continue to inspire and attract people from all walks of life. Ramakrishnan's (2008: 18-23) work explores the complex interplay between humans and the natural environment, emphasizing the critical role of indigenous practices in environmental conservation within India. His findings highlight the necessity of conserving the environment not only as an ecological imperative but also as a fundamental societal concern. This study underscores the importance of community engagement in the management of natural resources, linking it to the sustainable development of both natural and anthropogenic ecosystems. Ramakrishnan advocated for a dual focus: ensuring the short-term sustainable livelihoods of local populations while concurrently crafting a comprehensive long-term strategy for the region's sustainable development. He argues for the active involvement of local communities in decision-making processes, positing that this participation can enhance resource management and foster a sustainable future. Furthermore, the author articulates that the conservation of natural ecosystems is not merely advantageous but essential for the survival of life on Earth, calling for the prioritization of natural resource preservation across all societal levels. Ultimately, Ramakrishnan's work serves as a compelling

call for action for individuals and communities to assume accountability for environmental stewardship to safeguard a sustainable future for subsequent generations. In addition, the cultural landscape of West Bengal is rich with an extensive tradition of folklore, which stems from rural localities and is transmitted orally across generations. Many of these folklore narratives are believed to have ancient origins, with significant portions maintaining a continuous oral tradition for several centuries, which is indicative of their cultural importance. The distinct characteristics of West Bengal's folklore include evocative imagery and the use of metaphors and allegories, rendering it a unique and captivating genre within the broader spectrum of folklore studies (Bali, 2016: 327; Roy, 2022: 490-493).

Mishra (2010: 37) undertook a detailed examination of the interconnections among various folk traditions in West Bengal, providing an in-depth analysis of their relational dynamics. In a complementary study, Sarkar (2016) explored the rich tapestry of West Bengal's folklore, emphasizing its significance within the region's cultural heritage. Sarkar's comprehensive analysis of diverse folklore forms and genres has established his work as a key reference for scholars and enthusiasts engaged in folkloric studies. The objective of the current study is to augment the existing body of knowledge by framing folklore within an environmental context. This research specifically investigates the perception of folklore and evaluates its potential role in fostering ecological sustainability, with implications for extension education in this sphere. Employing an applied ecological approach, the study assesses various folkloric sectors to ascertain their contributions to environmental sustainability. By systematically analyzing the interplay between folklore and ecological practices, this study elucidates the relevance of folklore in advancing ecological sustainability. Ultimately, it contributes to the discourse on ecological sustainability, underscoring the significant role that folklore can play in this domain. The findings provide essential insights for academics, researchers, and policymakers aiming to integrate folkloric knowledge into strategies for promoting ecological sustainability. The objectives of this study are (a) to shed light on the Folklore of the Rarh region of West Bengal through a field survey, (b) to study and understand the intricate relationship between folklore and ecology and how nature plays an essential role in the day-to-day life of the communities in the study region, (c) to ascertain how the folk people in the study area maintain ecological sustainability through folklore and (d) to suggest some strategies to protect their oral tradition.

II. Methodology

The present study was conducted in the Rarh region of West Bengal, which covers ten districts: Purba Midnapur, Paschim Midnapur, Jhargram, Bankura, Purulia, Purba Bardhaman, Paschim Bardhaman, Birbhum, Murshidabad, Howrah, and Hooghly (Fig. 1). Rarh means rocky area. It is a geographical locale of the state of West Bengal. According to Bagchi and Mukherjee (1983: 36), the western region of the Bhagirathi-Hooghly River is the Rarh region of West Bengal, which is between the 115 m and 45 m contours. 'Rarh' originates in the Sanskrit word *Roorha*, meaning rough or uneven (Chakrabarty & Mandal, 2019: 19). However, the latter texts suggest that the term *Rarha* had its origin in the local language of the Australoid family. Another observation is that the word *Rarha* is an amalgamation of three Santali words: *lar* denotes 'thread', *rarh* indicates 'time', and *larh* signifies 'snake'. According to Sarkar (2004: 44), the word originates from a Proto-Australoid word that indicates land with red soil or laterite soil. Overall, seventy-one ($n = 71$) villages were selected for the study (Table 1).

The villages were selected purposefully on the basis of the criteria where communities have folklore, folktales, myths, proverbs, riddles, and oral histories regarding their ecological setup and landscape. Intensive fieldwork was carried out in the study region in 2022 for one year. Data collection involved a field survey in the studied villages. Data were collected from two hundred fifty-five ($n = 255$) households. A mixed-method approach involving interviews, questionnaire surveys, focus group discussions, case studies, onsite observations, informal conversations, and photographic and audio-visual documentation was used. The authors obtained prior consent from the respondents, ensuring their willingness to participate in the study. The data were collected via audio-visual recording techniques during the interviews. A semi-structured interview protocol with structured questions was followed to collect the respondents' views.

A pretested questionnaire format was used during the interviews. The language used during the interviews was Bengali. All the audio-visual recordings were transcribed into text. The data gathered throughout the study were described, explained, and analyzed before being interpreted. The narratives of the respondents were analyzed. The collection of folk tales, folk legends, riddles, and proverbs was transcribed into English, and their meanings were recorded with the help of several formal and informal discussions with villagers. Among the respondents, 75% were male and 25% were female. The respondents were mostly between 30 and 75 years old (Table 2).

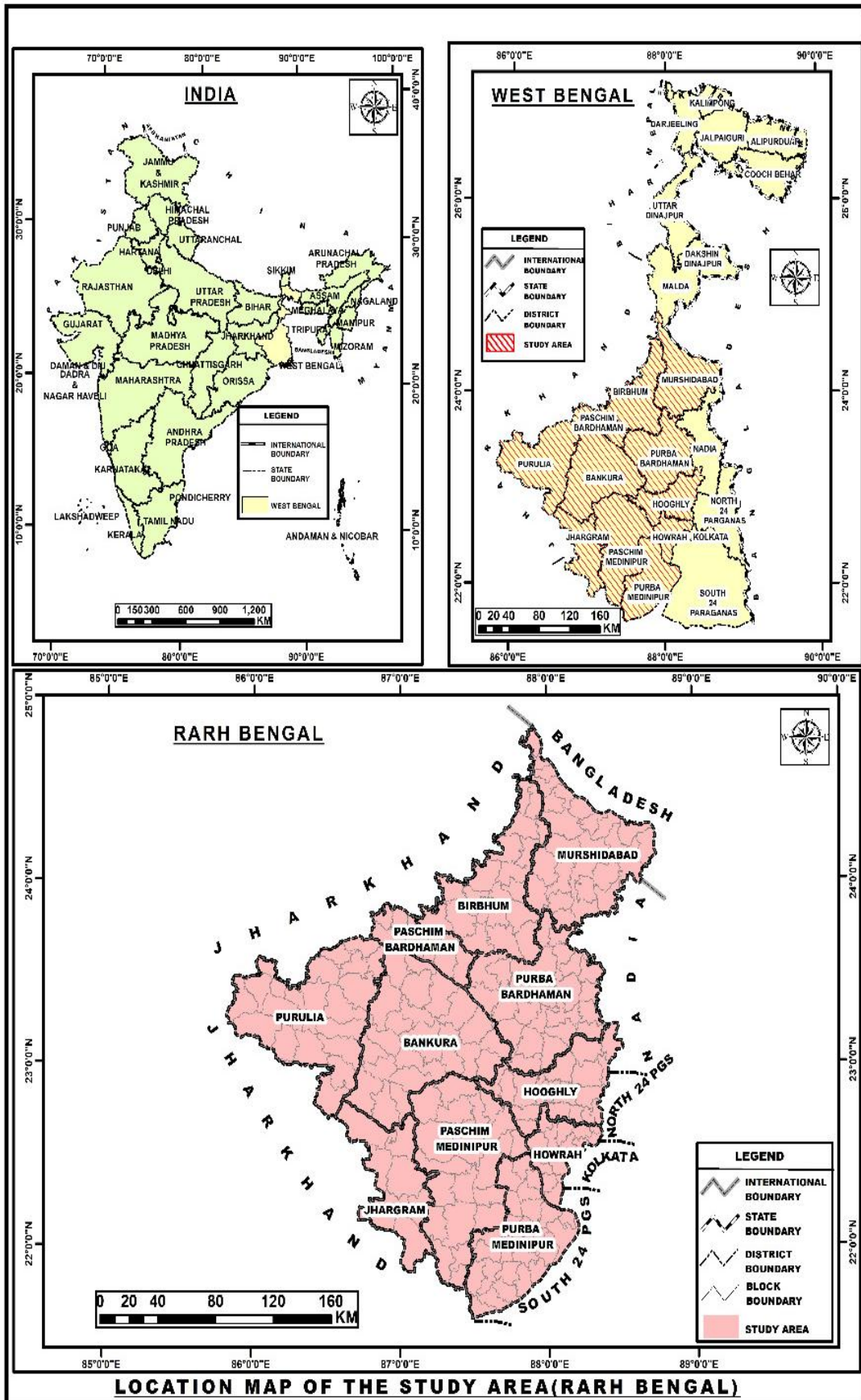


Figure 1: Location map of the study area (source: the data for preparing the map were retrieved from Google Earth and prepared through ArcGIS-9.3 software)

Table 1: Studied villages

Name of the village	District	Subdivision	Community Development Blocks
Dhadka	Purulia	Manbazar	Bundwan
Kalabani	Purulia	Purulia Sadar	Hura
Kenda	Purulia	Manbazar	Manbazar I
Jamteria	Purulia	Manbazar	Manbazar II
Laulara	Purulia	Manbazar	Puncha
Ajodhya	Purulia	Jhalda	Bagmundi
Bela	Purulia	Purulia Sadar	Balarampur
Rangamati	Purulia	Purulia Sadar	Arsha
Kotshila	Purulia	Jhalda	Jhalda II
Barra	Purulia	Raghunathpur	Kashipur
Phusrabai	Purulia	Raghunathpur	Para
Paschim Bero	Purulia	Raghunathpur	Raghunathpur I
Cheyama	Purulia	Raghunathpur	Raghunathpur II
Ajoypur	Birbhum	Suri	Suri I
Hetampur	Birbhum	Suri Sadar	Dubrajpur
Deucha	Birbhum	Suri Sadar	Mohammad Bazar
Nanasol	Birbhum	Bolpur	Hambazar
Baraturigram	Birbhum	Rampurhat	Mayursehwar I
Bagtui	Birbhum	Rampurhat	Rampurhat I
Birnagar	Birbhum	Rampurhat	Murarai I
Shaldiha	Bankura	Bankura (Sadar)	Chhatna
Amjhor	Bankura	Bankura (Sadar)	Saltora
Pirrabani	Bankura	Bankura (Sadar)	Gangajalghati
Sharjora	Bankura	Bankura (Sadar)	Barjora
Lodna	Bankura	Bankura (Sadar)	Onda
Hasandanga	Bankura	Kotulpur	Kotulpur
Kochdihi	Bankura	Bishnupur	Sonamukhi
Kantaban	Bankura	Bishnupur	Patrasyer
Ambikanagar	Bankura	Khatra	Ranibandh
Chenchurya	Bankura	Khatra	Taldangra
Amchura	Paschim Medinipur	Medinipur	Salboni
Akmura	Paschim Medinipur	Medinipur	Keshpur
Bera Chapra	Paschim Medinipur	Medinipur	Garhbeta-I
Alichak	Paschim Medinipur	Kharagpur	Pingla
A Amilasai	Paschim Medinipur	Kharagpur	Keshiary
Shalikota	Paschim Medinipur	Kharagpur	Dantan-I
Agarsthi	Paschim Medinipur	Kharagpur	Narayangarah
Manikkunda	Paschim Medinipur	Ghatal	Chandrakona-I
Amodarkul	Paschim Medinipur	Ghatal	Ghatal
Amdan	Purba Medinipur	Tamluk	Panskura-I
Baital Chak	Purba Medinipur	Tamluk	Moyna
Alasuli	Purba Medinipur	Tamluk	Nandakumar
Bamanpur	Purba Medinipur	Haldia	Mahishadal
Herya Atmarampur	Purba Medinipur	Kanthi	Khejuri-I
Benasol	Paschim Bardhaman	Asansol Sadar	Jamuria
Bhaskajuri	Paschim Bardhaman	Asansol Sadar	Barabani
Gaidhoba	Paschim Bardhaman	Durgapur	Ondal
Ausgram	Purba Bardhaman	Bardhaman Sadar North	Ausgram I
Babuisol	Purba Bardhaman	Bardhaman Sadar North	Bhatar
Banagram	Purba Bardhaman	Bardhaman Sadar North	Galsi I
Kenna	Purba Bardhaman	Bardhaman Sadar South	Memari I
Kalyanpur	Purba Bardhaman	Katwa	Mongalkot
Amjuri	Jhargram	Jhargram	Gopiballavpur I
Amlagura	Jhargram	Jhargram	Jamboni
Asur Hata	Jhargram	Jhargram	Nayagram
Aschitpur	Hooghly	Hooghly Sadar	Balagarh
Asua	Hooghly	Hooghly Sadar	Pandua
Batanal	Hooghly	Arambagh	Arambagh
Bamunia	Hooghly	Arambagh	Goghat-I
Ratanpur	Hooghly	Chandannagar	Singur
Dwipa	Howrah	Howrah Sadar	Jagatballavpur
Khajutti	Howrah	Uluberia	Bagnan-I

Mahisali	Howrah	Uluberia	Uluberia-I
Debipur	Howrah	Uluberia	Udaynarayanpur
Lohadaha	Murshidabad	Kandi	Bharatpur
Sijgram	Murshidabad	Kandi	Bharatpur
Chhatrapur	Murshidabad	Kandi	Khargram
Bilbagaur	Murshidabad	Lalbag	Nabagram
Ajagarpara	Murshidabad	Jangipur	Suti-I
Mahesail	Murshidabad	Jangipur	Suti-II
Teghari	Murshidabad	Jangipur	Raghunathganj- II

Table 2: Percentage values of the respondents according to their age groups

Gender	n	Age groups (years)			Total
		30- 45	46- 60	61- 75	
Male	407	24%	38%	13%	75%
Female	293	9%	11%	5%	25%

III. Results

Folklore is a rich and diverse form of expression that reflects the unique character and history of a particular region or cultural group. It encompasses a wide range of oral and written narratives, including myths, legends, folktales, songs, and poems, passed down from generation to generation. Through its stories and characters, folklore captures the essence of people's values, beliefs, customs, and daily life, providing a window into their collective identity and worldview. It is a testament to the creative spirit of human civilization and the enduring power of cultural tradition to shape and inspire generations of people. Folklore is the outcome of the overall aims of a unified society. Since the creation of the earth, several kinds of stories of gods and goddesses, rivers, canals, plants, animals, birds, and even the daily requirements of life have been prevalent. Folklore studies the interaction between human people and the natural world. It explores the communication between human civilization and nature through traditional folk tales, which are considered a form of patronage. With respect to environmental degradation, raising awareness of environmental protection has become essential; otherwise, the world will soon face a crisis. Humans are solely responsible for destroying nature. This crisis exists worldwide. We should protect the environment. At present, there is widespread awareness of environmental awareness across the globe. Folk society is not excluded from this awareness. The seeds of our culture are rooted in this folk society. The way to eliminate the degradation created by urbanization, industrialization or globalization is to practice folk culture or take indigenous adaptive measures. Folklore can be useful in this regard. The role of folklore in raising environmental awareness and awareness of ecological conservation since ancient times has been undeniable. There is an inseparable link between folklore and traditional ecological knowledge.

III.1. Folk Tale

The most popular branch of folklore is the folk tale, which still survives today by influencing social life. It

has become a separate branch after gaining liberation from myths. Both are oral, but the myth is largely a miraculous world of divine reliance. In legends, animals and trees become goddesses. Hurting them is strictly prohibited. Later, in Folk tales, they become closer to humans. They were seen in husband-wife characters, sometimes in sons or daughters or occasionally in the character of a cheater. Many examples are found in the folk tales of the world, where the animal is presented as the absolute friend of man. Animal marriage is a prominent element of folk tales. This marriage is found in all cultural circles of the world. The reason for this type of marital relationship lies in the belief in animal- or tree-related tales. The animals are considered very close members of humans here. In this type of marriage, the animal can be a husband, a wife or a child. Under the influence of someone's curse or magic, he or she is transformed into an animal. Like animals, trees also have a special place in folk tales. By eating special tree roots, bananas or any special fruit of a tree, queens can conceive children. It is also seen in folk tales that between the two satins, *Duorani* tricked *Suyorani* into tying the roots of a tree on her head, and *Suyorani* became a bird and flew away. When a human child is buried in the ground, a tree grows, and each flower of the tree is a sibling, seven brothers and one sister. In the case of trees, the magic faith has been more effective. The perfect history of human society continues to be composed even today owing to the differences in the animal characteristics of folk tales. The tales such as '*Dubraj O Pakhalboti Konya*', '*Ek sofyodrosta Brahmin er Golpo*', and '*Kushtbo Swami*' portray the story of various miraculous births where it is seen that man has changed the form of his body to the form of a tree, the form of a flower and the fruit to the form of an animal. Folk tales drenched with environmental awareness are much more valuable. It is essential to sense proximity to nature, making people understand the need to return to their natural settings and preserve the environment. Folktales play a vital role in transforming people from anthropocentric to ecocentric. Most primitive people worldwide live close

to nature. Therefore, the tales they narrated include animals and trees that help children unite with nature. In folktales, trees, animals, birds, and humans all live with affectionately. No distinction has been found between humans and the environment. The passing on of traditional tales thus forms a lasting, tangible connection between the living and their ancestors and presents meaning to a people's existence. The following are some folk tales where a wonderful relationship or bonding between people and animals or plants is observed, which have been collected from the studied area.

III.1.1. Birth story of Sabai grass (*Eulaliopsis binate*)

According to the villagers of Jamteria and Laulara villages, "Once, seven brothers and one sister lived in one village. The brothers decided to cut a pond. They started to excavate the area for that purpose. The sister brought food and water to the brothers and provided them with food and water. The time passed away by doing this. Even after tireless effort and long-term soil cutting, the water in the pond does not rise. Owing to this, they became very furious and depressed. They decide to go to a saint to solve this problem. After listening to them, the saint advised them that the water would rise only if their sister was immersed in this pond. They are shocked to hear this advice, but ultimately, they abandon their only sister for their self-interest. Moreover, the sister's wedding day arrives. However, they did not inform their mother about her sister's death. On the day of the wedding, the bridegroom came to marry their sister and saw that there was no bride. Since there was no bride, the grooms became very upset and left that place. When he left, he saw a beautiful flower in the pond and asked his friends to bring that flower. However, it moved away as soon as they tried to catch the flower. They could not touch the flower even after trying a lot. When the groom continues to pick up the flower, the flower automatically moves toward the groom. The groom picked the plant carefully and placed it in the palanquin. After a while, the bridegroom saw a beautiful girl sitting in a palanquin with whom he was supposed to marry. After seeing that, everyone there was shocked and wanted to know the truth. The brothers admitted their mistakes and were disheartened. The brothers' economic situation deteriorated after their sister left for her father-in-law's house. They began to live through hardships. They started selling sal leaves (*Shorea Robusta*) to relieve the persecution of scarcity. While selling, they went toward their sister's in-law's house. The sister saw them and started crying after seeing her brothers in poor condition. The sister wanted to know the reason for abandoning her. As soon as that question was asked, the ground cracked, and the brothers began to enter the ground one by one. One by one, five brothers started to enter the crack. The sister wanted to save her brother, but she could not save them. While her younger brother was supposed to enter the crack, she tried to save her and grab his hair, but some of his hair came out of her fist, and her brother entered the ground. Reminiscing about his younger brother, he soaked his hair in tears and buried it in a corner of her garden. She cared for that soil and

regularly gave water to that ground. As a result, a few days later, seedlings of sabai grass were born".

III.1.2. Birth story of bamboo (*Bambusa vulgaris*)

This folk tale was collected from Hetampur village. According to the villagers, "There was a Brahmin girl named Marula. She married a lower-caste man. After a while, she came to know that the person she is married belongs to a lower-caste community. Determined to end her life, she went to Vishnu and prayed that her cremation ground would be built on the hill and that it would be her burial place. A few days later, as it turned out, a bunch of bamboo trees were born from the ashes of that cremation ground".

III.1.3. Folk tale of Hunter and Dog

This folk tale has been recorded from Amjhor village. According to the villagers, "very long years ago, a dog lived in a forest. The dog was very lonely and had no friends. One day, he thought he should make some friends to sustain life in the jungle. Therefore, he went to a rabbit and asked him to become his friend. Rabbit agreed with his proposal and made friends with the dog. One night, the dog started barking after hearing some noise in the jungle. The rabbit asked him not to bark; otherwise, the lion would listen to them and attack them. The dog thought the lion must be courageous, so he should befriend the lion. He left the rabbit alone, went off to the lion, and wanted the lion to become his friend. The lion and dog became good friends. They lived happily in caves. However, again, the dog began barking. The lion advised him not to make a sound and that if any hunter heard the noise, he would kill them. The dog realized that the hunter must be the strongest; that is why all the animals in the jungle were scared of the hunter. Therefore, he thought of going to the hunter and becoming his friend. As per his thinking, he left the lion, proceeded to the hunter, and became his friend. Again, at night, he started barking to examine the hunter. The hunter told him not to bark and assured the dog that he would never leave him and protected him. On that day, the dog got a brave friend as he wanted and lived with that hunter forever".

III.1.4. Folk tale of Snake and King

Folk tales collected from Sharjora village in Bankura district also show a close relationship between humans and animals. According to the villagers, "Two fatherless brothers and a sister lived in a village. One day, the sister came to the garden of the king's house to graze the goats and saw beautiful flowers in the garden. Seeing the flower, she became astonished and wished to have that flower. He asked the gardener to give her that flower, but the gardener refused to give that flower and told her that the flower was very special. The gardener informed her that the prince would marry the girl who would take the flower. When the gardener refused to give the flower, she plucked the flowers from the garden, and eventually, as per the condition, the prince had to marry her. The mother-in-law was not satisfied or happy at all. The prince went hunting occasionally. When the king went hunting, the mother of the king used to persuade the queen

to eat snakes. Eventually, the queen took the form of a snake. After that, the mother-in-law forced her to leave the house. The queen took shelter on the bank of the river along with her younger brother. She gave birth to a human child. Moreover, after returning from hunting, the king did not see her wife; thus, he asked his mother about her wife. Without receiving an answer from his mother, he searched for the queen. Suddenly, he saw a child and the queen's brother lying under a banyan tree. He went to his wife's brother and asked him about the queen. The brother of the queen portrayed everything to him. After hearing that, he cut the snake's tail, rescued the queen from the snake's shell, and brought his queen and his son home."

III.1.5. Folk tale of Tusu

Folk tales on Tusu are recorded from the Pirrabani, Lodna, and Ambikanagar villages of the Bankura district, where Tusu symbolizes virginity and purity. According to the villagers of Pirrabani village, "Tusu was born into a Hindu household under Mughal rule, according to one of these folktales. Tusu was wonderfully gorgeous from childhood, and her beauty expanded even more as she grew older. Tusu drew the attention of all the men. While her parents were busy looking for a suitable bridegroom, a Muslim ruler was captivated by her beauty. The Muslim monarch became active in snatching Tusu away by force, knowing that her Hindu parents would not give her in marriage to a Muslim. She fled in secret because she, her parents, and her relatives were in danger in this situation. When the Muslim monarch and his followers learned of her flight, they pursued her. Tusu was about to be caught when she reached the bank of a river and strangled herself with the end of her cloth before plunging into the full torrent of the river to protect her chastity. The 'Satighat' is where Tusu sacrificed herself in the river. Tusu has been revered in folk society as a model of virginity since that time. According to the villagers of the Amjuri and Asur Hata villages of the Jhargram district, "She was a girl of the Kurmi community, her name was Rukmini, and her nickname was Tusu, according to another folktale. Tusu became a stand-alone figure due to her attractiveness and qualifications. She was smitten by Kurmi, a young man. A band of Muslim thieves stormed the house on the day of the wedding and kidnapped Tusu and her husband before the ceremony was completed. When Muslim raiders discovered that Tusu and her husband ate ham, which is forbidden for Muslims, they released it. Ham is forbidden by Muslims. Tusu returned to her hometown. Tusu began to go without food and sleep after the locals and her relatives protested her marriage to the Kurmi youth, who became a mendicant and withdrew to the jungle. Tusu finally left her house one day in search of her loved one. She discovered her husband in the guise of a 'Sannyasi' on the bank of the river Subarnarekha after much toil. Tusu, who was unwell from a lack of food, sleep, and strain of the trek, died on the bank of the Subarnarekha under the police station of Ichagarb. After that, the place was dubbed Satighat". During the Tusu celebration, a large crowd gathers at 'Satighat'. Tusu is also described as the daughter of the King of Kasipur in Panchakot in another folktale. On the last day of the month of Pous, the most beautiful

and universally adored daughter of the kind became ill and died unexpectedly. Tusu Puja was first performed during that period. A similar event may be found in other folktales, except that Tusu was the daughter of the King of Jhargram rather than the King of Kasipur.

III.1.6. Tale of Baghut

This folk tale was collected from the Dhadka, Barra and Cheyama villages of the Purulia district. The same folk tale has also been recorded in the Shaldiha and Kochdih village of Bankura, which are situated near the Purulia district. Tigers and Kharia-Sabaras are intimately connected. According to the Kharia-Sabar villagers, in their early jungle life, tigers lived with contiguity; the tigers never caused harm to them. If the tiger was met, it would pass them by. They restrained themselves from hitting the tiger. The tiger deity Baghut is conciliated with different deities. They created an earthen mandapa (a sacred hall used for worship and ceremonies) underneath a tree and worshipped the deity there. According to Ratan Sabar (villager of Cheyama village), "Once an old Sabar man and woman traveled to the forest. On their way, a tiger comes to kill them. The female Sabar asked the tiger not to kill her, adding that she would worship him. After hearing that, the tiger left them. From that day onward, we started worshipping Baghut (Tiger) in the jungle".

The interpretation of folk tales collected from the studied villages offers valuable insights into the ecological sustainability strategies employed by the ethnic communities. The tales shed light on the long-standing ecological knowledge and practices of the ethnic groups, which have enabled them to maintain a harmonious relationship with their environment over generations. The narratives highlight the significance of animal companionship, illustrating the deep connections between humans, animals, and nature, which fosters love and care for these relationships. These folktales have garnered significant attention for their capacity to impart wisdom while engaging the audience. Often, the study of animal folklore recalls moments when humans and animals have demonstrated respect for the earth and one another. However, the increasing number of endangered species and persistent environmental issues highlight a gap between the symbiotic ties described in folklore and the reality of today. Humans often find themselves in conflict with their surroundings and the animals that inhabit them. In light of the collaboration and conflict depicted in folklore, examining the dynamics between humans and animals provides a brief yet insightful perspective on ecology and the challenges facing endangered species. By exploring basic ecological principles, we can better understand how human-animal interactions in folk culture relate to our broader relationships with the environment.

III.2. Myth

Across various disciplines, the study of myth has given rise to a range of distinctive practices. In folklore studies, a myth is typically defined as a narrative capable of being believed in yet remains unverifiable in the real realm. It may endure within society for an extended period despite compelling evidence that it is, in fact, false. During fieldwork, numerous myths have been documented and analyzed. This paper presents a selection of those myths.

III.2.1. Myths Related to Hillock Worship

There is a myth regarding the worship of *Marangburu* (the supreme deity) among the Santal community, which has been recorded from Kalabani village. According to Tinanath Murmu (one of the respondents from Kalabani village), “*The myth regarding the hill worshipping among our community was that during flood hazards, Santal people moved to the peak of the mountain to protect themselves, and they believed this highland was the abode of the lord, who protects them from dying. That is why they worship sacred hills. Hill worship is an integrated part of our life. We worship Marangburu, which is an example of hill worship*”. The word *Marang* means hill/hillock, and *Buru* means worship. This cultural tradition is nourished by tribal people worshipping rocks under trees.

Studying the myths from the studied region offers valuable insights into the ecological sustainability of local communities. These myths reveal a profound connection to nature, with its elements often perceived as sacred or divine. The study also demonstrates how these myths serve as a tool for passing down environmental ethics and practices from one generation to the next within the communities.

III.2.2. Myth Related to Shrine Placement

During the village-to-village survey, in a group discussion, one of the elderly Santal informants from Tamla village, Paschim Bardhaman, noted that the horses and elephants become alive in the dark and that they carry the village ancestral spirits to drive off evil spirits from the village. The placement of shrines is also an important event. As the group discussion reveals, the shrines were placed at the beginning of the settlement when, for the first time, people came to settle down at that place. Another one is positioned at the end of the settlement. There were elaborate rituals of carrying the shrine stones and terracotta horses, and elephants to the

place. Therefore, any lifecycle rituals involve visits and offerings at the *Manasa* (folk deity) and *Gramdevata* (village deity).

III.2.3. Origin Myths of the Kansari Community

The Kansari community is the bell metal manufacturing community of Bankura district (Fig. 2) and proudly upholds a myth, which is related to the origin of the community. They strongly believe that they are descendants of Lord Vishwakarma. According to the myth, during the marriage ceremony of Lord Shiva and Goddess Durga in heaven, there was a need for a *Darpan* (a mirror-like bell metal product). *Darpan* is generally used by the bridegroom, and he has to keep it in his hand throughout the wedding day in Bengali and Assamese tradition. When Lord Shiva could not find the *Darpan*, he called Lord Vishwakarma and gave him the responsibility of managing a *Darpan* so that the wedding ceremony could be solemnized properly. Lord Vishwakarma assured Lord Shiva that he would do the needful to manage a *Darpan* for Lord Shiva. Lord Vishwakarma is the god of creation and can easily create a *Darpan* of bell metal. However, instead of doing so himself, he called a Kansari (bell metal artisan) and asked him to manufacture a *Darpan* for Lord Shiva. The Kansari was indeed very happy to do the work for Lord Vishwakarma. However, there were some problems, and Kansari asked Lord Vishwakarma to help him kindly prepare *Darpan*. Kansari noted that bell metal work could not be performed under direct sunlight because while the bell metal was heated in a furnace, it would not be possible to observe changes in the color of the metal. However, if he worked in the shade, this color change in bell metal could easily be monitored. Kansari further reported that he would need fire, water, hammer, charcoal, pincers, anvil, etc., to beat the heated bell metal when it turned red to give the bell metal the desired shape of a *Darpan*. Accordingly, Lord Vishwakarma provided him with a shade erected for the growth of pumpkins and all the necessary tools. Kansari, along with several other co-workers, established a bell metal workshop under the shade of pumpkin plants; thus, they prepared a *Darpan* bell metal for Lord Shiva. In this way, the Kansari community came into existence, and from that day, it was associated with the work of various bell metal utensils and products.



Figure 2: A bell metal artisan (Kansari) from Bankura (Source- Authors).

The origin myth of the bell metal communities in the studied area demonstrates the close relationship that exists between their environment, beliefs, and culture. The sanctity of the natural materials used in bell metal crafting is highlighted by this myth. In the end, it strengthens these communities' cultural identity linked to the area's resources by highlighting the strong links they have to their craft and the surrounding nature.

III.3. Folk Rhyme

Folk rhyme is an essential element of folklore. The source of the folk rhyme is still unclear. A clear reflection of society can be seen through folk rhymes. A clear understanding of the social scenario can be observed through the rhymes. Different elements of the

environment are exposed through these rhymes. Agriculture is the main livelihood of most people in the study area. During the investigation, various rhymes related to paddy cultivation were observed in the area. These rhymes are transmitted from one village to another orally, and these are their intangible cultural heritage, which records the earliest conditions of their agricultural activity and its transformation, as well as their social life and teaches them moral lessons of virtue predominating over vice in the long run. Through these rhymes, the identity of the minds of the peasantry has come to light. The researchers collected a few folk rhymes from different villages during the field investigation, which are listed in Table 3 along with their meanings.

Table 3. Details of the folk rhymes collected from the study area

Folk rhyme	Collected village	Meaning
<i>Chas Korbi Apon Mone</i> <i>Ghor Vorabi Dhone-Dhane</i> <i>Math hoy jodi sobar kone</i> <i>Fosol folbe sobai jane</i>	Nanasol	This folk rhyme holds significant cultural and agricultural value as it symbolizes the traditional method of paddy cultivation among the villagers. It serves as a reminder of the importance of farming to the community.
<i>Dhan ruibe jotone</i> <i>Ta na hole abad hobek kemne</i> <i>Ugal pagal tobei chash</i> <i>Jomite rakbis na gbas</i> <i>Ghas hole dhan hobek kemne</i> <i>Chas korbi jotone</i> <i>Ta na hole bachbek kemne</i>	Ambikanagar	If there is grass in the land, cultivation would not be good. So we must keep an eye on the ground so it is not full of hay. If paddy production is good, then we can sustain their life well. This folk rhyme sheds light on the benefits of cultivation and the proper way of cultivation.
<i>Daak Diye Koye Rabon</i> <i>Kola Pote Ashar Aar Shrabon,</i> <i>Kola Pute Na Keto Pat</i> <i>Tatei Hobe Kapor Aar Bhat</i>	Ajodhya village	Ravana (the mythical multiheaded demon-king of Lanka in Hindu mythology) asks to cultivate the Banana tree (<i>Musa spp.</i>) in the Bengali month of <i>Ashar</i> and <i>Shrabon</i> (June-July August). According to this rhyme, there is a need to cultivate banana trees during the Bengali month of <i>Ashar</i> and <i>Shrabon</i> (June-July August), and if it is cultivated during the abovementioned time, then nobody has to be worried about the need for food and dress. By cultivating this,

		anyone can meet their basic needs. Through this rhyme, the value of cultivating the Banana tree has been highlighted.
<i>Megh koreche Akashe</i> <i>Bij putbo mathe</i> <i>Bij tolote Lakshmi Thakuron</i> <i>Bosben Ashye Pate</i>	Hasandanga	The cloudy sky is the ideal time to sow the seeds in the field. This rhyme promotes the knowledge of weather forecasting related to farming.
<i>Mathke jabo langol liye</i> <i>Hoiche chaser botor</i> <i>Gocha gocha dhan folaiya</i> <i>Pishbo tader gotor</i> <i>O tora mathke cholo</i> <i>Fellye kapor ful</i> <i>Chaser bade gorai dibo</i> <i>Mukta diya ful</i>	Khatra	Farmers have been encouraging women to participate in farming activities to achieve better yields. It is common for women to carry the harvested crops on their heads, a physically demanding task that they have been performing for generations. Additionally, there is an interesting cultural aspect: men are often motivated to create valuable ornaments for women after cultivating the crops. This has been a tradition among some farming communities for many years.
<i>Dekha dekbi Chas</i> <i>Lagalagi Bas</i>	Bamunia	Suggestion of cultivation
<i>Sosha bunle Falgune</i> <i>Folon boy Dwigune</i>	Khajutti and Debipur	Cucumber is a popular summer season crop, belonging to the Zaid category, which is cultivated during the Bengali month of <i>Falgun</i> , spanning from February to March.
<i>Nodi dhare korle chash</i> <i>Folon hobe baro Mash</i>	Herya Atmarampur	Farmers have been advised that the soil along the river bank has high fertility levels, making it an ideal location for agricultural purposes. This recommendation is based on the suitability of the soil for farming, which is a factor that can significantly impact crop yield and quality. Therefore, It is suggested that farmers consider this area a viable option for their farming activities.

Folk rhymes from studied communities offer a rich depiction of the region's ecological resilience. The present study shows that the folk rhymes from Rarh Bengal incorporate traditional ecological knowledge (TEK), which is wisdom passed down through generations about the local ecosystem. These rhymes provide insights about numerous plants, their traits, and their roles in the ecosystem, guiding sustainable interactions with nature. The plants also suggest the optimal seasons for harvesting or planting, emphasising sustainable approaches such as managed harvesting to minimise depletion. Folk rhymes of the area emphasise sustainable farming and show the optimal timing and procedures for agricultural tasks. They also advocate for the use of natural fertilisers within traditional farming techniques. They also promote practices that improve soil health and advocate for the use of natural fertilizers within traditional farming. Thus, it can be said that the folk rhymes of the studied communities are more than mere expressions; they strengthen a collective understanding of sustainable living and facilitate the transmission of this knowledge through generations. By interpreting these rhymes, the researchers have uncovered the deeply embedded traditional ecological knowledge of the ethnic communities, their strong spiritual ties to nature, and the practices they employ to

maintain sustainable living. This rich tradition serves as a compelling testament to these communities' enduring commitment to ecological sustainability, offering invaluable insights that could benefit modern environmental conservation efforts.

III.4. Folk Legends

Folk legends are folklore that narrate stories about events that people believe have occurred in human history. These stories are often passed down through generations and are integral to various cultures worldwide. Folk legends are significant, as they provide insights into a community's beliefs, values, and traditions. Typically, these stories are characterized by their authenticity, often derived from their historical context and the cultural practices of the people who share them. During the present study, a collection of such legends was assembled to better understand their origins, meanings, and significance.

III.4.1. Sal Tree Worship

Jaber Era is known as the chief Goddess of the Santal community, which is considered almighty. She is so dominant that the Santals think that her arrow can penetrate a rock. The first flowers and fruits are usually offered to the Goddess, as well as domestic animals.

The fruits and flowers of mango (*Mangifera indica*) and *mabua* (*Madhuca longifolia*) are important. The first fruits and flowers are delivered to *Jaber Era* at the *Baha Bonga festival* (flower spirit). A sacred grove known as *Jaber Than* is generally located on the outskirts of each Santal village, where there must be Sal trees (Fig. 3). They think that if they worship and make offerings to *Jaber Era*, then she will help them in various ways (Fig. 4). There is a legend regarding the *Jaber Era*. According to Dayal Murmu (one of the informants from Phusrabai village of Purulia district), “One day, a Muslim attempted to steal a Goddess from *Jaber Than*. However, he failed in his effort,

as *Majbi's* spouse prevented him while taking away the Goddess. Her arrow, which was aimed at the thief, struck the Sal tree, and since then, the tree has worshipped. The Santal required choosing where to live and what to do for their sustenance. For that purpose, they called meetings and gatherings at diverse places under the *Kendu tree* (*Diospyros melanoxylon*). They had met under the *mabua tree* (*Madhuca longifolia*), where again it was unsuccessful, which, in their language, was called *Khade Matkam*. After that, they moved to the *banyan tree* (*Ficus benghalensis*). Finally, they assembled under a *Sal tree* (*Shorea robusta*) where they succeeded and made a decision. This is known as *Sari Sarjam*, which indicates Sal, and they worship this tree”.



Figure 3: *Jaber Than* of Phusrabai village of Purulia (Source- Authors).



Figure 4: Worship to *Jaber Era* at Ambikanagar village of Bankura (Source- Authors).

III.4.2. Worship of the Karam Tree (*Neolamarckia cadamba*)

Several legends regarding the Karam festival (a harvest festival of the Santal community) have been

documented during field investigations, which are discussed below. It is dedicated to worshipping *Karam Devta* (the god of power, youth, and youthfulness). It is celebrated for a good harvest and health (Fig. 5).



Figure 5: Karam puja in Kotshila village of Purulia (Source- Authors).

The origins of the Karam festival have been described in many different ways. Sukhdev Soren (one of the informants from the Bela village of Purulia) stated, "There were seven brothers once upon a time. They were working in agriculture. They did not have time for lunch, so their wives brought food to the field daily. Once upon a time, their wives forgot to bring them lunch. They were starving. They went home without supper in the evening to find their wives dancing and singing in the courtyard near a limb of the Karam tree. This enraged them, and one of them lost his cool. He pulled the Karam limb from the tree and tossed it into the river. As a result of the affront to the Karam divinity, their family's financial situation continued to deteriorate. They were famished. A Brahman (priest) came to them one day. The entire story was told by the seven brothers. The Brahman informed them that the Karam Rani was enraged and that she needed to be appeased. The Brahmin warned them that if nothing was done, their situation would worsen. The seven brothers then set out to find the Karam Rani and left the hamlet. They continued to move from place to place until they came across the tree one day. They worshipped it as a result. Following that, their financial situation began to improve." Ratan Murmu (one of the informants from Pirrabani village in Bankura district) said, "Seven brothers were living together among the Bhumij, Ho, and Oraon. The six seniors worked in the fields, whereas the youngest remained home. With his six sisters-in-law, he was dancing and singing around a Karam tree in the courtyard. The wives did not carry the brothers' morning food to the field one day because they were so involved in dances and songs. The brothers were upset when they returned home and hurled the karam tree into a river. In a rage, the younger brother stormed out of the house. After that, the remaining brothers were subjected to the gods' wrath. Their house was destroyed, their crops

failed, and they were on the verge of starvation. The younger brother came across the karam tree floating in the river while strolling. Then, he prayed to the god, who miraculously restored everything. He returned home and told his brothers that they had been cursed by Karam Devta because they had offended him. The Karam Devta has been worshipped since then." The Pauri Bhuiya community has folklore related to the Karam festival. According to Jamal Bhuiya (one of the informants from Phusrabai village of Purulia district), "After a very successful voyage, a merchant returned home. His ship was laden with precious metals and other riches that he had brought from far-flung destinations. As was customary, he waited in the vessel to be greeted ceremoniously by his wife and relatives. Because it was the day of the Karama festival, all the women danced, and all the men drummed, but no one greeted him. The businessman grew enraged with them. The Karam tree was uprooted and thrown away by him. Then, Karam Devta's anger poured on him. His ship sank into the water right away. The merchant sought advice from astrologers, who advised him to worship Karam Devta. He launched a new vessel and set out to find the deity, which he discovered floating in the sea. He propitiated him with tremendous devotion and received all of his possessions back. The yearly celebration of Karam Puja has been held since that day. The people pluck the branches and transport them to local rivers or rivulets for immersion after dancing and singing the entire night."

The legends of folk gods and goddesses have profoundly impacted the psychology of the people who believe in them. These legends are not only accounts of divine beings but also serve as insightful commentators on their environment and the deities who inhabit it. The veneration and fear that people hold for these divine

beings have resulted in deeply ingrained rituals that have become central to their daily lives. These rituals are performed to placate the gods and to seek their blessings, protection, and guidance. It is believed that through these rituals, individuals can connect with the divine and receive their favor. Therefore, the legends of gods and goddesses are fascinating and provide valuable insights into the beliefs and practices of different cultures worldwide.

III.5. Riddles

Throughout history, riddles have served as entertainment and relaxation in agrarian societies. Their

function was to provide people with a way to alleviate their hardships and unwind at the end of a long day. Although the use of puzzles in daily life has waned over time, certain cultures still preserve environmental puzzle patterns, which demonstrates the continued relevance and importance of this tradition in various parts of the world. The agrarian people have used riddles to alleviate their hardships or to relax at the end of the day. Nevertheless, the use of puzzles in folk life is still observed in certain cultures where environmental puzzle patterns are found. The present field survey explored several riddles (Fig. 6), which are presented in Table 4 along with their meanings.



Figure 6: Narrating of folk riddles by the villagers of Bera Chapra village of Paschim Medinipur (Source Authors).

Table 4: Details of the riddles collected from the study area

Riddle	Collected village	Meaning
<i>Debotar gora Rupa Ghor Charidike tar sunar Ghor Sunar Ghor lukiye thake Jibjogot bachiye rakhe</i>	Birnagar	The agrarian people of the village have accepted the paddy as a deity. Rice is the staple food of the whole human race. Rice, as a staple food, helps to keep people alive. In this enigma, the statement of the eternal truth in the hearts of agricultural people has come to light.
<i>Aak Katlam Paak Katlam Laginu Cara Patay Patay gada Hoy Naam bolo Tomra</i>	Bera Chapra	Offer insights into the nature and type of betel (<i>Piper betle</i>) cultivation, making it a unique and fascinating topic for those interested in agriculture.
<i>Evabe kaker Istho kon brikkho boy, Jabar sannidhye swastho kharap nabi boy, Fol, ful chari pata tara khay, Sishugon Swo-ichhay kbete nabi chay</i>	Kotulpur	The Neem tree's (<i>Azadirachta indica</i>) flowers, fruits, leaves, bark, and seeds are all used in different forms for their medicinal properties. Neem is known for its anti-inflammatory, antibacterial, and antifungal properties. The riddle also says that the children are hesitating to take it due to its bitter taste.

III.6. Proverbs

Proverbs have been an integral part of human communication for centuries, serving as a means of sharing wisdom and knowledge gained from the collective experiences of a community. Proverbs play a significant role as pedagogical and survival tools, imparting shared beliefs, norms, and values that are central to the community's identity. It often encapsulates practical life lessons and offers guidance for navigating complex social situations, making them an essential part of cultural heritage. This oral tradition has been passed down from generation to generation and has become an invaluable repository of cultural heritage. Proverbs are often shrouded in mystery, and their meaning and significance are unclear. Only through careful interpretation and verification of the underlying truth was their relevance fully understood. Regional elements are an essential part of proverbs, reflecting the unique sociocultural and environmental concerns of a particular area. During the study, a few proverbs were found that are based on agriculture, highlighting the crucial role that farming plays in the lives of people living in the study area. The documented proverbs can be broadly categorized into several

sectors, including soil preparation, sowing and planting of seedlings, weed control, agricultural methods, crop production, grain harvesting, and rain-related agriculture. By exploring these proverbs, one can gain a deeper understanding of the rich cultural heritage and the critical role that agriculture has played in shaping the lives of people in the study area. Most of the proverbs about this matter are known as *kebanar bachan* (Maxims of Khana). In terms of oral lore, Khana was a remarkable woman who lived during the medieval period in the Bengal region. She was renowned for her extraordinary ability to predict the patterns of nature and the general way of living. Even today, Khana's compilation of assertions (*kebanar bachan*) serves as a guiding principle for the rural population. The Bachan outlines essential guidelines for leading a prosperous and fulfilling life. It covers various aspects of day-to-day living, including agriculture, health, family, and social relationships. Khana's legacy remains alive and influential among rural people, who continue to follow her teachings today (Nuri, 2021). Some of Khana's compilations of assertions are mentioned in Table 5, along with their meanings, which were collected during the field investigation.

Table 5: Details of the proverbs collected from the study area

Proverb	Collected village	Meaning
<i>Shuvokhon dekhe korbe jatra, Pothe jen n ahoy osubho barta. Age giye koro dig nirapon, Purbo dig hote bolo chalon. Ja kichu asha purobe sokol, Nai sonsboy hobe sofol</i>	Kalyanpur	It has been instructed to cultivate by setting a good day and it has been advised to cultivate toward the eastern side. Here, it has been suggested which side gets the best harvest.
<i>Are bacha lomba chash Sobai koy bochiya kate ghas</i>	Bhaskajuri	If the grass could be cleared along the width of the land and cut the grass of the field while sitting, the work would be finished quickly.
<i>Tar ordbek tula. Tar ordbek dhan, Bina chase pan</i>	Narayanpur	The right procedure for cultivating <i>mula</i> (<i>Raphanus sativus var</i>), <i>tula</i> (<i>Gossypium</i>), <i>dhan</i> (<i>Oryza sativa</i>), and <i>pan</i> (<i>Piper betel</i>) has been referred. It portrays the farming practice.
<i>Mular mati mula, Alur mati gula</i>	Dwipa	<i>Mula</i> (<i>Raphanus sativus var</i>) has to be cultivated in fresh soil, whereas potatoes have to be grown in loamy soil.
<i>Ausher bhui bele, Pater bhui Atale</i>	Ratanpur	The sandy soil is useful for the <i>Aush</i> variety of paddy, and clay soil is useful for jute cultivation. It portrays the knowledge of soil and agriculture.
<i>Fagune na rule ol, Sheshe boy gondogol</i>	Debipur	The Bengali month of <i>Falgun</i> (February-March) is favorable for Elephant foot yam (<i>Oxalis tuberosa</i>) cultivation.
<i>Bole gacha Boraber Po. Doshiti mashe Begun ro. Chaitra Baishak dibe bad, Ite nai kono bibad. Dhorle poka dibe chbai, Er cheye kono upay nai. Mati shukolei dhalbe jol, Tatei pabe baro mash fol</i>	Kenna	The brinjal (Egg Plant) (<i>Solanum melongena</i>) production will be good throughout the year except for the Bengali months <i>Chaitra</i> and <i>Baishak</i> (March and April). The method of cultivating and soil preparation has been mentioned. The method of cultivating and soil preparation has been mentioned in the proverb. It has also been said that only when the soil is dry should water be given.
<i>Sraboner puro, Bhadrer Baro, Er modhye joto paro</i>	Sigram	The best time to plant paddy is till the Bengali month <i>Sbravan</i> (July and August) and the twelfth day of the Bengali month <i>Bhadra</i> (August-September).
<i>Aswatther chhayai Chhaya, Mayer mayai Maya</i>	Teghari	<i>Peepal</i> (<i>Ficus religiosa</i>) is a tree that has been revered since the birth of civilization and, in addition to its religious significance, has a

		considerable medical benefit. The proverb compares the <i>Ashmattha</i> tree (<i>Ficus religiosa</i>) to mothers' affection.
" <i>Goye gobore Banshe mati, Ofola narikeler shikor kati. Ole kuti, mane chbai. Ei rupe krisibi korge bbai</i> "	Bamunia	The yield will be good if any fertilizer is given to a tree. It has been said here that manure at the base of the betel tree and soil at the bottom of the bamboo tree makes the tree grow well. If there is no fruit in the coconut tree, some of the roots of the coconut tree have to be cut. Yield will be better if the rotten straw is given to the elephant foot yam tree (<i>Amorphophallus paeoniifolius</i>) and ash is provided to the Esculent root.
<i>Potol bunle Fagune Folon bare bobu gune</i>	Mahisali	The proverb portrays advice for the farmers. According to it, the Bengali month <i>Fagun</i> (February-March) is favorable for planting the Pointed Gourd (<i>Trichosanthes dioica</i>) plant.
<i>Nodeer dbare putle kochu, Lomba hobe tin hat ubu</i>	Ajagarpara	The esculent root can be grown in a wide variety of soils with a high amount of organic matter. This grows well on well-drained, loamy soil. The riverbank is naturally fertile, and it is best to sow crops along the riverbank. This prediction is associated with soil fertility.

The traditional proverbs of the studied region provide insight into its perspectives towards ecological sustainability. The study found that proverbs contain knowledge on environmental trends, agricultural methods, resource management, and the interdependence of all living things. The analysis of the proverbs indicated a philosophical awareness of the natural world, implying a reverence for it. The proverbs of the studied area also highlight sustainable practices; for example, many proverbs collected from the studied villages provide practical advice on a variety of topics such as agroecology, soil fertility, and farming procedures, indicating a history of sustainable living in harmony with the environment.

IV. Conclusion

The current research represents a foundational effort to comprehend how folklore contributes to enhancing environmental awareness and promoting ecological conservation. Investigating folklore within the Indian ethnic-geographic context has notably enriched this field of study. By exploring this domain, the present researchers have revealed significant insights into indigenous knowledge and lessons related to ecological mindfulness. This study clarifies the complex connection between the cultural ecology of the studied communities and their traditional ecological knowledge (TEK). It argues that folklore—comprising myths, legends, rituals, riddles, and proverbs acts as an essential repository of TEK for these groups. The results illustrate how these folkloric stories improve social cohesion and cultural identity by instilling shared values and practices. This research underscores the importance of these cultural expressions in nurturing a sense of community and belonging, which are vital for collective action and sustainable resource management. Importantly, folktales frequently provide explanations for natural occurrences, the origins of plant and animal life, and the consequences of unsustainable practices, thereby facilitating the intergenerational sharing of ecological wisdom. Moreover, the research explores

how traditional beliefs and practices foster deep respect for nature and advocate for the responsible use of resources. Protected areas, often based on local myths and beliefs, are crucial for biodiversity conservation because they preserve endemic plant species and create habitats for endangered species. These cultural narratives serve as tools to reinforce communities' profound connection to their natural surroundings, encourage sustainable behaviors, and shape their relationships with nearby ecosystems. The folk literature of the ethnic groups in the Rarh region is crucial to Indian folklore studies, as it highlights its vibrant oral traditions and unique cultural expressions. This study provides valuable insights into their cultural identities and the adaptive strategies they have adopted in response to their environment and changing sociopolitical factors. The research focuses on these traditions and has played a significant role in reconstructing and safeguarding the historical and cultural identities of these communities, particularly after independence, when interest in tribal cultures surged. This study emphasizes that documenting and analyzing tribal folk literature is not only essential for preserving these traditions but also serves to protect them from erosion or dilution in the face of mainstream cultural encroachments and globalization. The present research is anchored in an interdisciplinary approach that investigates the intricate interactions between cultural practices, spiritual beliefs, and ecological knowledge within specific communities. By integrating insights from anthropology, ecology, folklore studies, and social sciences, this study seeks to clarify how these narratives not only mirror but also enhance environmental conservation and foster sustainable living practices. Within the fields of folklore research, this work provides a fresh perspective by associating traditional ecological knowledge (TEK) with folklore instead of regarding it as separate entities. The analysis emphasizes how different genres of folklore—myths, legends, riddles, proverbs, and rhymes—function as conduits for conveying ecological wisdom. By

concentrating specifically on tribal communities, this study allows for an in-depth examination of their distinctive adaptive measures concerning their environments, expressed through their oral traditions. Additionally, this research clarifies how folklore plays an essential role in shaping community-led conservation initiatives that promote sustainable land-use practices and influence attitudes toward the environment.

This study has extended the scope of sustainability education by shedding light on how folklore can serve as a rich repository of traditional wisdom and cultural heritage, highlighting the importance of preserving and promoting these valuable resources. The study revealed an inseparable link between folklore and traditional ecological knowledge, which is undeniable. Notably, folklore sheds light on the intricate relationship between humans and their surroundings. Its narratives illustrate how our actions directly impact the environment and how changes in the ecosystem can have severe consequences for our health and survival. These findings emphasize the importance of maintaining a harmonious relationship with nature to ensure the well-being of humans and the environment, which is necessary for the functionality of the ecosystem around us. The present field investigation revealed that Folktales play a vital role in transforming people from being anthropocentric to being ecocentric. Numerous tales have been examined in the study area, representing the relationship between humans and nature. The folk tales in this study highlight a strong relationship or bonding between people and animals or plants. Storytelling has received much attention because of its capacity to transmit knowledge while it enters the listener. The source of faith, reform, and worship is rooted in legends and myths. These myths and legends show how attached people are to nature. Nature is in the minds of all the people of this region. A picture of the cultivation and planting of seeds is presented through their rhymes and proverbs. The fundamental life connectedness concerning each life form and nature and the interdependence of natural and human lives are represented in the tales, giving a form of thinking regarding the natural world. In the study area, folklore fosters the development of consciousness and awareness in children, enabling them to become agents of the earth while simultaneously improving their environmental culture and bringing ecological education to life. It encourages people to take on the role of environmental change ambassadors in their communities. It aids in developing a warm connection with and response to nature rather than a purely rational-intellectual connection that is insignificant. The stories portray that the underlying life connectedness that exists between all living forms and nature, as well as the interdependence of natural and human existence, exists. These findings provide a way of thinking about

the natural world that is distinct from others. Consequently, folktales contribute to the transformation of people from being anthropocentric to being eco- or biocentric individuals. Importantly, the anthropocentric approach of modern society must be revamped with traditional knowledge and values that are holistic in nature. In a true sense, the present study reveals that folklore has a strong role in the proliferation of sustainability and the promotion of environmental ethics. In today's world of rapid urbanization, globalization, and Westernization, preserving the wealth of knowledge and wisdom in folklore has become increasingly challenging. The lack of appropriate management of local wisdom and a reduction in the number of ecologically literate individuals are the primary reasons behind the gradual disappearance of many folklores. This disruption in disseminating this lore hinders the flow of traditional knowledge in folk communities, resulting in the loss of local sustainable practices and the erosion of cultural heritage. Therefore, raising awareness of the importance of preserving traditional knowledge and highlighting the eco-philosophy embedded in these expressions is crucial. Revitalizing the vitality of traditional knowledge can help keep cultural heritage and sustainable practices passed down through generations. By doing so, we can ensure the continuity of these practices, which not only benefit local communities but also help promote sustainable development and a harmonious relationship between human beings and the environment.

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Author Contributions

The initial research ideas were attributed to Shilpa Biswas; field work, data collection, and analysis were conducted by Shilpa Biswas and Worrel Kumar Bain. Worrel Kumar Bain synthesized and finalized the qualitative analyses. The manuscript was authored by Shilpa Biswas and Worrel Kumar Bain.

References

- Ajaps, S., & McLellan, R. (2015). "We don't know enough": Environmental education and pro-environmental behavior perceptions. *Cogent education*, 2(1), 1-17.
- Aldy, J. E., & Gianfrate, G. (2019). Future proof climate strategy. *Harvard Business Review*, 4, 16-86.
- Ayensu E., Claasen, D. R. van., Collins, M., Dearing, A., Fresco, L., Gadgil, M., Gitay, H. et al. (1999). International ecosystem assessment. *Science*, 286: 685-686.
- Bagchi, K., Mukherjee, K. N. (1983). Diagnostic survey of Rarh Bengal (part II). Calcutta: University of Calcutta.
- Bali, P. (2016). Evolution of Bengali Lore: An Overview, *International Journal of English Language, Lore and Translation Studies*, 3(1), 325-332.
- Brodie, J. F., Mohd-Azlan, J., Chen, C., Wearn, O. R., Deith, M. C., Ball, J. G. & Luskin, M. S. (2023). Landscape-scale benefits of protected areas for tropical biodiversity. *Nature*, 620(7975), 807-812.
- Chakrabarty, P., & Mandal, R. (2019). Geoarchaeosites for geotourism: A spatial analysis for Rarh Bengal in India. *Geo Journal of Tourism and Geosites*, 25(2), 543-554.
- Clwyd Powys Archaeological Trust. 2009. "Historic Landscape Characterization: The Tanat Valley - Funerary, Ecclesiastical and Legendary Landscapes". Retrieved 10 January, 2024 from <https://www.cpat.org.uk/projects/longer/histland/tanat/tnfunera.htm>
- EARTH.ORG. (2023). "The Importance of Environmental Education for a Sustainable Future". Retrieved on 10 October, 2023 from <https://earth.org/environmental-education/>
- EARTH.ORG. (2019). "Protected Areas: the Past, Present, and Future of Conservation". Retrieved on 10 January, 2024 from <https://earth.org/protected-areas-the-past-present-and-future-of-conservation/>
- Hallam, J. (2019). Embedding the Sustainable Development Goals (Sdgs) in the Curriculum, *Environmental Education*, 120: 12-14.
- Holmes, G., Smith, T. A. & Ward, C. (2018). Fantastic Beasts and Why to Conserve Them: Animals, Magic and Biodiversity Conservation. *Oryx*, 52 (2): 231–239.
- Hopper, N. G., Gosler, A. G., Sadler, J. P., & Reynolds, S. J. (2018). Species' cultural heritage inspires a conservation ethos: The evidence in black and white. *Conservation Letters*, 12(3): 1-11.
- Holbrook, N., & Tingley, D. (2022). The Future of Climate Education at Harvard University, 4-29; <https://www.harvard.edu/climate-and-sustainability/climate-education>
- IPCC. (2021). "Climate change widespread, rapid, and intensifying". Retrieved on 4 January, 2024 from <https://www.ipcc.ch/2021/08/09/ar6-wg1-20210809-pr/>
- Kala, M., & Sharma, A. (2010). Traditional Indian beliefs: a key toward sustainable living. *The Environmentalist*, 30, 85-89.
- Mago, P. & Anand, R. (2022). Ecological Worldview in Folklores and Folk Tales Leads to Environmental Conservation. Available at SSRN 4164904. <https://ssrn.com/abstract=4164904>, 1-15.
- Mishra, D. (2010). *Loksanskritir Rup o Swarup*. Sahitya sangi, Kolkata.
- Molthan-Hill, P., Blaj-Ward, L., Mbah, M. F., & Ledley, T. S. (2022). Climate change education at universities: Relevance and strategies for every discipline. In *Handbook of climate change mitigation and adaptation* (pp. 3395-3457). Cham: Springer International Publishing.
- National Environmental Education Foundation. 2021 "The Benefits of Environmental Education (EE)". Retrieved on 30 December 2023 from <https://www.neefusa.org/what-we-do/k-12-education/benefits-environmental-education>
- Nelson, M. K., & Shilling, D. (Eds.). (2018). *Traditional ecological knowledge: Learning from Indigenous practices for environmental sustainability*. Cambridge University Press
- Nuri, M.A. 2(021). Khanar Bachan: Bengali Folklore as a Storehouse of Sustainable Agricultural Wisdom, *The International Journal of humanities & Social Studies*, 9 (1): 151- 155.
- Osemeobo, G. J. (1994). The role of folklore in environmental conservation: evidence from Edo State, Nigeria. *The International Journal of Sustainable Development & World Ecology*, 1(1): 48-55.
- Otiende, J. E. (Ed.). (2008). *An introduction to environmental education*. University of Nairobi Press, 14-77.
- Oza, P. (2014). Folk Literature- Past, Present and Future: An Indian Overview, *Andean Research Journal*, 3: 25-32.
- Oza, P. (2020). Folk Literature and the Rise of Vernaculars in India-Inferences and Analysis. Available at SSRN 3670562. <https://ssrn.com/abstract=3670562>, 1-9.
- Putnam, J. F. (1964). Folklore: A key to cultural Understanding. *Educational Leadership*, 364-368.
- Ramakrishnan, P.S. (2008). *The Cultural Cradle of Biodiversity*. National Book Trust of India, 37-52.
- Reid, A. (2019). Climate change education and research: possibilities and potentials versus problems and perils? *Environmental Education Research*, 25(6): 767-790.
- Roy, S. (2022). Defining the Rupkatha: Tracing the Generic Tradition of the Bengali Fairy Tale. *Children's Lore in Education*, 53(4): 488-506.
- Sarkar, P. R. (2004). Rarh – The cradle of civilization. Kolkata, Ananda Marga Publications.
- Sarkar, P. (2016). *Lokosabitya*. Dey Book Store, Kolkata.
- Satapaty, D. A., & Bhattacharya, P. (2021). Indigenous eco-legends in contemporary North East Indian lore: Lessons in ecological conservation and preservation. *Academia Letters*, 1-6.
- Selim, M. A. (2019). Conservation of Environment through Folkloric Beliefs and Practices. *Environmental Issues: Approaches and Practices*, 1: 85-93.
- Shahed, S. M. (1993). Bengali folk rhymes: An introduction. *Asian folklore studies*, 52 (1): 143-160.
- Steward, J. H. (1955). *Theory of Culture Change: The Methodology of Multilinear Evolution*. Urbana, IL: University of Illinois Press.

- Tehrani, J. J. (2023). The Cultural Transmission and Evolution of Folk Narratives, in Tehrani, J. J., Kendal, J. & Kendal, R. (eds), *The Oxford Handbook of Cultural Evolution* (C39S1-C39P96). Oxford University Press, UK.
- UNESCO. (2023). "Climate change education". Retrieved on 2 January 2024 from <https://www.unesco.org/en/climate-change/education>
- UNESCO. (2023) "Conservation and sustainable use of biodiversity". Retrieved on 21 November 2023 from <https://www.unesco.org/en/biodiversity/conservation>
- Voices for Biodiversity. (2012). "The Ecological Importance of Folklore". Retrieved on 17 August 2023 from <https://voicesforbiodiversity.org/articles/the-ecological-importance-of-folklore-shaping-our>
- Wu, J. (2010). Landscape of culture and culture of landscape: Does landscape ecology need culture? *Landscape ecology*, 25: 1147-1150.
- Yunkaporta, T. (2019). *Sand talk: How Indigenous thinking can save the world*. Text Publishing.