

HIMALAYA DIWAS

September 2024 Edition

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Voices for Creative Renditions



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The third edition of the Mountains of Life newsletter celebrates Himalaya Diwas (Himalaya Day), observed annually on 9th September to recognise the role of these majestic mountains in safeguarding nature and protecting the region from adverse weather conditions.

This edition highlights the pressing issue of climate change, focusing on its impact on the Himalayas. Alarming realities such as melting glaciers, shifting weather patterns, and the changing face of these ancient mountains are explored, followed by a data visualisation on the changes in snow cover over the past two decades.

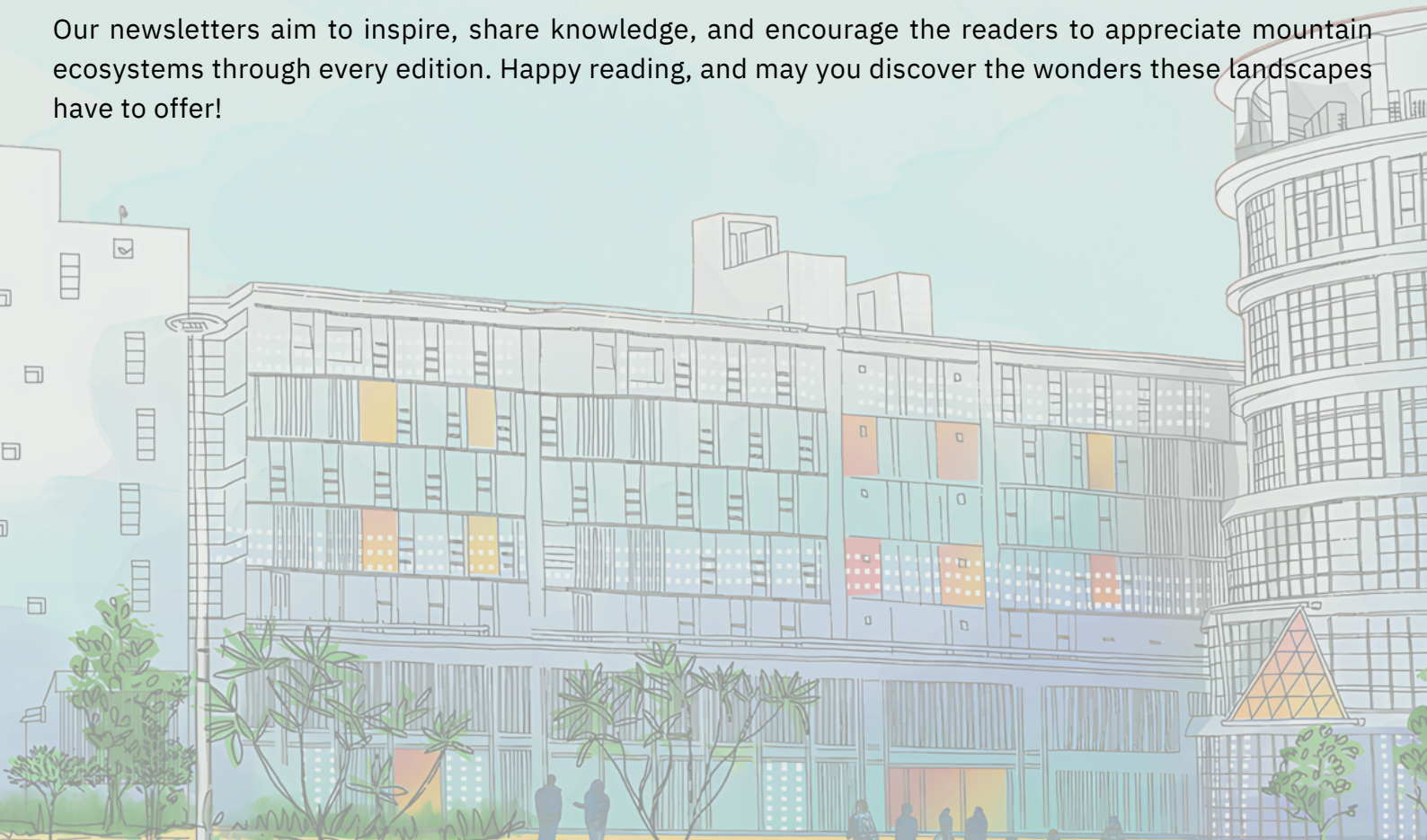
This newsletter takes readers across the Himalayan range, uncovering the unique ecosystems in the region. From the rich biodiversity of flora and fauna to critical conservation efforts, this exploration highlights the importance of protecting the Himalayan environment. A collection of folklore and myths, along with a taste of Himalayan cuisine featuring recipes and the stories behind them, is shared in this edition.

We also feature the need for protection of Himalayan aquatic life and the growing threat of invasive species to the Himalayan ecosystems. On this Himalaya Diwas, the efforts of heroes who have championed conservation—from the Chipko movement to innovative upcycling and waste management solutions—are recognised.

With the *Mountains of Life* climate festival, scheduled to be held between 11th and 22nd November 2024 in our Azim Premji University's Bengaluru campus, fast approaching a series of events suitable for diverse age groups is lined up from October onwards. If you are in or around Bengaluru, do check out the announcements section and register.

We extend our gratitude to the readers for the overwhelming responses to the previous edition. The contributions we received spanning all age groups, were truly inspiring, and a selection of the best has been included at the end of this newsletter.

Our newsletters aim to inspire, share knowledge, and encourage the readers to appreciate mountain ecosystems through every edition. Happy reading, and may you discover the wonders these landscapes have to offer!





FORESTS
of LIFE

RIVERS
of LIFE

MOUNTAINS
of LIFE
Festival

Rivers and Forests of Life

Azim Premji University presents an immersive climate exhibition featuring India's extraordinary natural beauty

Free and open to all

Pre-register here:



Write to us at
mountainsoflife@apu.edu.in
for queries



October 19-20, 2024



Rangoli Metro Art Center,
Metro Station, MG Road:
Vismaya, Belaku, Katte and
Chaya halls.



MOUNTAINS
of LIFE
Festival

eco
Xplorers
2024

Join us for ecoXplorers 2024!

Azim Premji University invites you to **ecoXplorers 2024 - Environment and Climate Inter-College Quiz Competition.**

THEMES

- Disciplines of ecology
- Planetary evolution
- Climate change
- Biodiversity
- Communities
- Connections and Much more.

Who can apply?

All undergraduate and postgraduate students. **Free registration!**

Highlights:

- Cash prizes
- Medals
- Book vouchers and certificates for the top 3 teams.

The Quiz is part of the University's flagship Climate Festival Series, **Mountains of Life 2024-25.**

✉ mountainsoflife@apu.edu.in

Scan to QR code
to know more



WHEN



Sunday, October 27, 2024



8:15 AM – 12:15 PM

VENUE

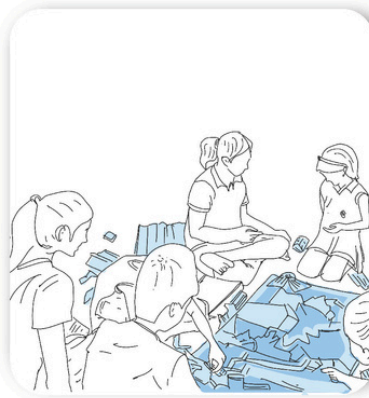


Good Shepherd
Auditorium, Museum Rd,
Bengaluru



Join us for Mountains of Life 2024 at Azim Premji University, Bengaluru, from November 11-22!

Immerse yourselves in stories of mountains from India and around the world, alongside art installations, cultural performances, movies, installations, artefacts, interactive workshops and more!

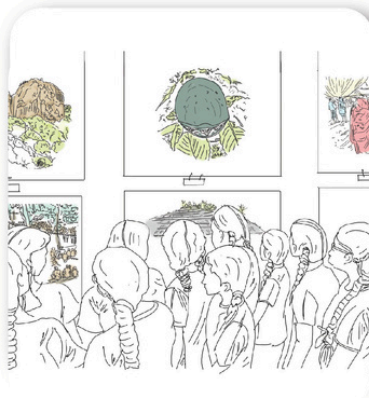


Who Can Attend?

Free and open to all – including schools, colleges, organisations, and the public.

Note:

- Advance registration is required for all visitors.
- Scan the QR code for specific registration links based on your visitor category and more details.



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Climate Change Impacts on the Himalayas

Santonu Goswami

Have you ever heard of Mount Everest, the tallest peak in the Himalayas? If you have, you've probably seen beautiful pictures of the snow-covered mountains. But have you ever wondered what would happen if all that snow and ice melted? Where would all that water go?

The Himalayas, where Everest and many other peaks are located, are at a very high altitude. If the snow and ice melt, all that water will flow down into the valleys below, filling the rivers and streams. This is a normal process, as melting snow and ice create rivers like the Ganga and Brahmaputra, which make the valleys downstream fertile. That is why so many people live in the Ganga-Brahmaputra basin with these rivers providing water for agriculture, and supporting the growth of civilisations in the region. The Himalayas are often called the "water tower" of Asia because they store so much frozen water that feeds the rivers flowing from the mountains.



However, climate change is causing temperatures to rise, leading to increased melting in the Himalayas. This extra meltwater can cause rivers to overflow, leading to more frequent and severe floods in the valleys below.

One of the most noticeable effects of climate change in the Himalayas is the rapid melting of glaciers. These glaciers have been feeding Asia's great rivers for thousands of years, but now they are shrinking at an alarming rate. Studies show that Himalayan glaciers are retreating faster than the global average, losing about one percent of their ice mass each year. This rapid glacial melt has serious consequences.

As the glaciers melt, they create glacial lakes, many of which are at risk of bursting and causing catastrophic floods downstream. You might have heard about some of the recent disasters in the Himalayan states, like the flooding in Himachal Pradesh and Sikkim, or the sinking of Joshimath. These events are becoming more common, and people are facing greater hardships because of them.



Climate change is also altering the weather patterns in the Himalayas, making weather more unpredictable. The region has traditionally relied on the monsoon season for most of its rainfall, but climate change is shifting the timing, intensity, and distribution of this rain. In some areas, the monsoons arrive later or bring less rainfall, leading to drought. In other places, sudden and intense downpours are causing landslides and flash floods.

These changing weather patterns are disrupting agriculture, which is the primary livelihood for many Himalayan communities. They are also affecting the delicate balance of the region's ecosystems. Plants and animals are being pushed beyond their tolerance limits, bringing some to the brink of extinction.

The impact of climate change on the Himalayas is a powerful reminder of the urgent need for global climate action. The melting glaciers, changing weather patterns, and threats to endangered species not only highlight the vulnerability of this fragile region but also emphasise the broader implications for the millions of people who rely on the Himalayas for water, food, and livelihoods. Raising awareness about these impacts and promoting sustainable practices is crucial to protecting this vital region and ensuring the well-being of future generations.

Indian Himalayan Region in the Last 20 Years

Syed Hazeem Qadri and Neeti

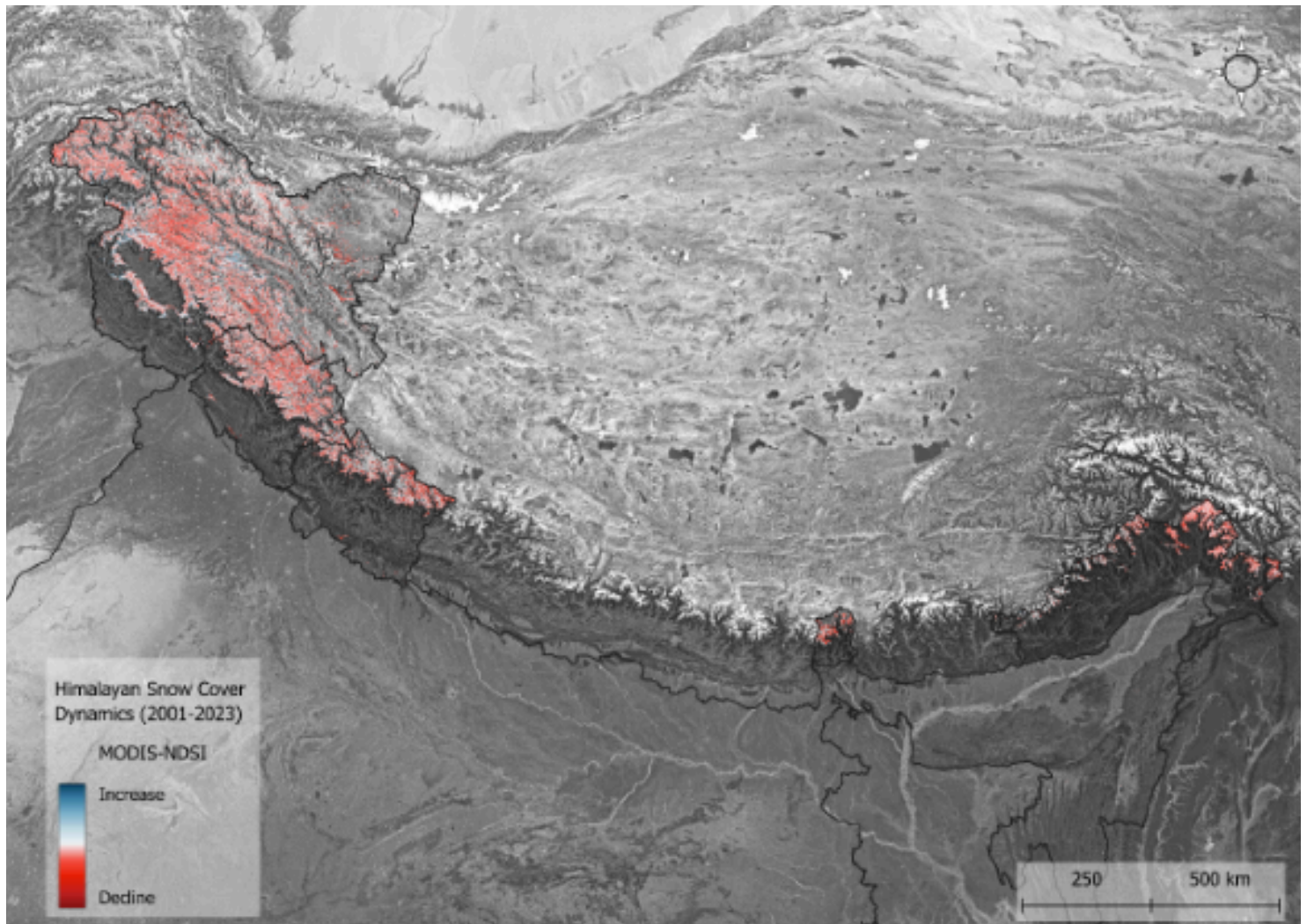











Figure: Change in snow cover in last two decades through the lens of MODIS Sensor (NDSI: Normalised Difference Snow Index)

- Indian Himalayan Region (IHR) is spread across 13 Indian States/Union Territories
- The elevation range varies from 122 m to 7,023 m
- It is one of the biodiversity hotspots
- The forest types in IHR are moist, dry temperate, alpine and subalpine forests
- The main tree species include oak, chestnut, chir, sal, black juniper, birch, and larch
- The fauna of IHR include snow leopard, red panda, Himalayan black bear, Himalayan monal, Himalayan yak, blue sheep, musk deer, golden eagle
- There has been rapid melting of glaciers, snow and permafrost on the mountains of IHR
- Warming over the Himalayas has exceeded the global average rise in temperature leading to shift in the tree line and has altered ecosystems and heightened natural hazards
- One of the major consequences will be decline in availability of freshwater
- There is an urgent need to focus on climate adaptation strategies

A Stroll along the Himalayas

Shruthi Mulakala and Aswathy Arun

- 
- Area** covered is approximately 2,500 km
- 
- Location:** Extends from Pakistan through Northwestern India, Nepal, Bhutan, Northeastern India, and Myanmar. The width varies from 400 km in the west to 150 km in the east.
- 
- Origin:** The name “Himalayas” is derived from Sanskrit in which “Hima” means snow and “alaya” means “dwelling abode”, representing that the mountains are covered with snow and glaciers.
- 
- Formation:** When big pieces of Earth's crust, called Indo-Australian tectonic plates, collided, the Himalayas were formed. Tectonic plates are large sections of the Earth's crust (lithosphere) that move on their own.
- 
- Widespread:** Spanning across thirteen Indian States and Union Territories - Jammu and Kashmir, Ladakh, Uttarakhand, Himachal Pradesh, Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Tripura, Assam and West Bengal.
- 
- Highest peak:** Mount Everest
- 
- Rivers:** Home to 19 rivers, Indus and Brahmaputra being the largest. Five of them belong to the Indus system—Jhelum, Chenab, Ravi, Beas and Sutlej. Nine belong to the Ganges system—Ganges, Yamuna, Ramganga, Kali, Karnali, Rapti, Gandak, Bagmati and Kosi rivers. The remaining three belong to the Brahmaputra system—Tista, Raidak and Manas.
- 
- Climate:** Ranges from cold arid, temperate, subtropical temperate transitional, to low altitude subtropical zones.
- 
- Longitudinal divisions:** The Punjab Himalayas, The Kumaon Himalayas, The Nepal Himalayas and The Assam Himalayas

Physiography:



The Greater Himalaya:

- Other name(s): Inner Himalayas or Himadri
- Average height: 6,000 m
- Width: Between 140 and 190 km
- Peaks: Mount Everest, Kanchenjunga, Badrinath, Nanda-devi
- Composition: Crystalline rocks like granite, schists and gneiss
- Rivers: Ganga and Yamuna originate here



The Lesser Himalaya:

- Other name(s): Himachal
- Average height: 3,700 to 4,500 m
- Width: 50 km
- Ranges: Pir Pangal is the longest while Dhuala Dhar and Mahabharat ranges are also prominent
- Composition: Highly compressed and altered rocks
- Famous for: Hill stations of Darjeeling, Mussoorie and Dalhousie



Siwaliks:

- Other name(s): Outer Himalaya
- Average height: 900 to 1,100 m
- Width: 10 to 50 km
- Composition: Formed by the unconsolidated sediments brought by the rivers from the main Himalayas



The Trans Himalaya:

- Other name(s): Tibet Himalayas
- Average height: 5,330 m
- Width: 225 km in the centre and narrowing down to 32 km at eastern and western ends
- Composition: Granites and volcanic rocks of Neogene and Paleogene age
- Peak: The highest peak, K2 in the world lies in this region. The Karakoram range also known as the “backbone of Asia” lies in this region as well.



Few plant species found in the region:

Eastern Himalayas

- Common name: Nodding bamboo
- Scientific name: *Bambusa nutans*
- Family: Poaceae
- Local name in Nepalese: Mal bans
- Habit: Bamboo
- Habitat: It is a bamboo and grows primarily in the wet tropical biome

Central Himalayas

- Common name(s): Highest garlic, highest onion, highest wild garlic
- Scientific name: *Allium hypsistum*
- Family: Amaryllidaceae
- Local name in Nepalese: Jimbu
- Habit: Bulbous geophyte
- Habitat: Grows primarily in the temperate biome

Western Himalayas

- Common name: West-Himalayan silver fir
- Scientific name: *Abies pindrow*
- Family: Pinaceae (Pine family)
- Habit: Tree
- Habitat: Grows primarily in the temperate biome
- A useful timber tree for building purposes. The wood is used for making matches and paper pulp





Birds found in the region:

Eastern Himalayas

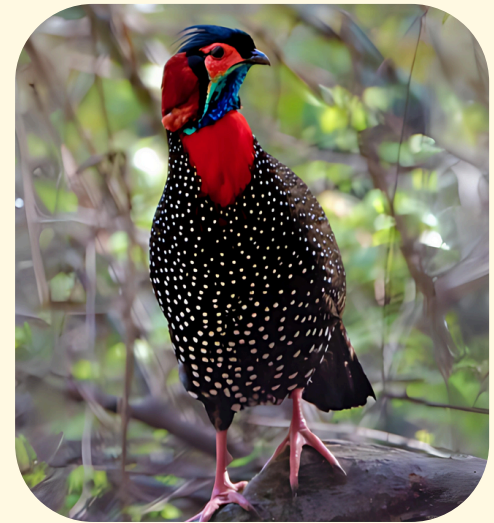
- Common name(s): Broad-billed flycatcher warbler, broad-billed warbler
- Scientific name: *Tickellia hodgsoni*
- Family: Cettiidae
- Local name in Nepalese: Katusateuke fisto
- This species lives in thick, tangled areas of shrubs and bushes, as well as in clusters of bamboo found near the boundaries of forests.

Central Himalayas

- Common name: Spiny babbler
- Scientific name: *Turdoides nipalensis*
- Family: Leiotrichidae
- Local name in Nepali: Kande Vyakur
- Exclusively found in the middle hills of Nepal, this bird is commonly seen around the Kathmandu valley, particularly in the Godavari and Phulchoki areas near Lalitpur.

Western Himalayas

- Common name(s): Black-headed tragopan, western horned pheasant, western tragopan
- Scientific name: *Tragopan melanocephalus*
- Family: Phasianidae
- Local name in Hindi: Jujurana
- This species is a habitat specialist that thrives in open, moist deciduous forests as well as in temperate coniferous forests with dense undergrowth.



Amphibians found in the region:

Eastern Himalayas

- Common name(s): Boulenger's garo hill frog, Daniel's frog, Garo hills frog, Mawphlang frog, swift cascade frog
- Scientific name: *Hylarana garoensis*
- Family: Ranidae
- They inhabit the forest floor covered with leaf-litter in subtropical moist forests at elevations ranging from 1,500 to 1,800 m above sea level in Northeast India.

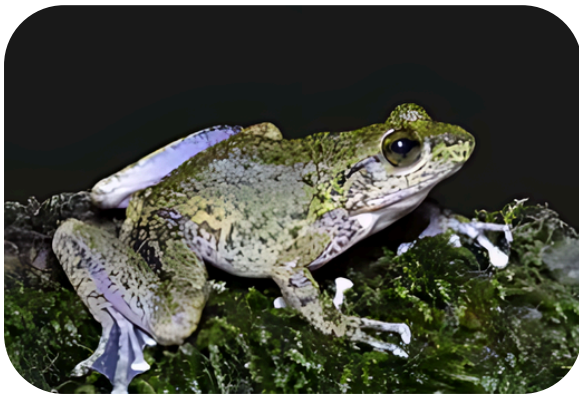




Amphibians found in the region:

Central Himalayas

- Common name: Mahabharat torrent frog
- Scientific name: *Amolops mahabharatensis*
- Family: Ranidae
- Local Name in Nepali: Pahadi Pirre Paha
- Commonly found in the Mahabharat range of Nepal in torrent streams with significant canopy cover, typically found in subtropical mixed forests.



Western Himalayas

- Common names(s): Himalaya paa frog, Stoliczka's frog, Murree frog, Murree hill's frog
- Scientific name: *Nanorana vicina*
- Family: Dicroglossidae
- They live in high-altitude streams, springs, and other flowing water sources in open forest and grassland environments.



Mammals' of significance found in the region:

Eastern Himalayas

- Common name: Chinese water shrew
- Scientific name: *Chimarrogale styani*
- Family: Soricidae
- According to Lunde and Musser (2002), this semi-aquatic species is found in China at high altitudes ranging from 1,700 to 3,500 m above sea level. It typically inhabits or is located near cool mountain streams, frequently within forested areas.



Central Himalayas

- Common name: Csorba's mouse-eared myotis, Csorba's mouse-eared bat
- Scientific name: *Myotis csorbai*
- Family: Vespertilionidae
- The species is usually seen in a cave surrounded by subtropical secondary forest and sometimes over a river and along the riverbank.





Mammals' of significance found in the region:

Western Himalayas

- Common name: Snow leopard
- Scientific name: *Panthera uncia*
- Family: Felidae
- Local name in Tibet: Iker
- Snow leopards reside in mountainous rangelands at elevations between 3,000 and over 5,000 m in the Himalayas and the Tibetan Plateau, although they can be found as low as 500 m in the Altai region.



Reptiles of the region:

Eastern Himalayas

- Common name(s): Khasi bent-toed gecko, Khasi hills bent-toed gecko
- Scientific name: *Cyrtodactylus khasiensis*
- Family: Gekkonidae
- Local name in Assamese: Khasia jethi
- They inhabit tropical forests and areas with secondary growth. They are often found near large rocks and trees close to streams, as well as in plantations, roadside culverts, and other vegetated areas.



Central Himalayas

- Common name(s): Agaupani mountain lizard, Agaupani forest agama
- Scientific name: *Japalura dasi*
- Family: Agamidae
- Local name in Nepalese: Agaupani jangali chheparo
- This species is discovered in cultivated regions, both on small bushes and stone walls. Additionally, it has been found in mixed temperate forests of oak, rhododendron, and conifers, where its presence is constrained by the availability of basking spots.



Western Himalayas

- Common name(s): Red sand boa, Baluchistani blind snake, brown sand boa, Indian sand boa
- Scientific name: *Eryx johnii*
- Family: Boidae
- Local name in Hindi: Do muh wala saap, Domuhi
- They lie hidden beneath the sand, with only their eyes or head exposed as they patiently wait for prey. When a target approaches, they emerge, strike, and use their powerful grip to immobilise the prey.



Challenges faced in the Himalayan region:

The Himalayan flora and fauna are particularly vulnerable to the effects of natural changes, human-induced emissions leading to climate change, and modern human practices. The widening gap between resource consumption and replenishment is the result of increasing resource consumption by people and pressures of population. Additionally, decades of forest clearing for agriculture have resulted in significant deforestation in the Himalayan region.

Conservation efforts:

1. The National Mission for Sustaining the Himalayan Ecosystem (NMSHE), launched in 2008, aims to address the challenges faced by the Himalayan regions. It focuses on climate change impacts on glaciers, water resources, biodiversity, and traditional cultures. Collaboration with experts is essential to influence natural resources and climate conditions.
2. Organic farming in the Himalayan region: Indian states and neighboring countries sharing the border have adopted initiatives of organic farming to obtain quality products of the region and to strengthen the health and economy for better livelihood and sustainability.
3. Wildlife conservation in the Himalayas is a priority. In 2017, India, with support from the United Nations Development Program (UNDP) and funding from the Global Environment Fund (GEF) through the Global Wildlife Program (GWP), launched a seven-year initiative to combat wildlife trafficking and protect the region's biodiversity. India's efforts include strategies like the National Biodiversity Strategy and Action Plan (NBSAP), participation in international wildlife protection efforts like CITES (Convention on International Trade in Endangered Species), and specific programmes such as Species Recovery Programme for endangered species like the snow leopard.
4. Pollution poses a serious threat to the ecosystem. The Ministry of Environment, Forest and Climate Change has implemented various initiatives to address this, such as the National River Conservation Programme, schemes for natural resource conservation, and the Green India Mission.



Himalayan Folklore and Legends

Ranju Sarma

Some fascinating Himalayan folklore that highlight the region's significance as a sacred landscape and a place of spiritual growth:

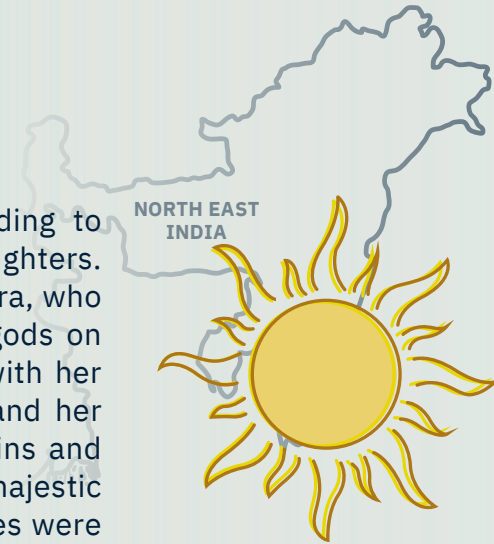


The Goddess Nanda Devi

In Uttarakhand, locals believe that the goddess Nanda Devi resides on the peak of Nanda Devi, bringing prosperity and protection to the community. According to legend, Nanda Devi was the daughter of a sage and was mesmerically beautiful. To protect her from unwanted suitors, the gods transformed her into a mountain. It is also believed that Shiva and Parvati dwell in the snowy peaks of Nanda Devi. Locals believe that the snow and glaciers of Nanda Devi have healing properties, and that the mountain's purity helps maintain the region's ecological balance.

Legend of the Northeast

The mountain region of Northeast India are rich in folklore. According to legend, the seven states were created by the Sun God and his daughters. Assam was formed by Surya's rays and the tears of his daughter Ahomara, who fell in love with a mortal prince. Arunachal Pradesh was created by gods on mountain peaks. Nagara, the Sun God's daughter, created Nagaland with her strength. Meghala's smile formed the misty clouds around Shillong, and her tears created the hills and valleys of Meghalaya. Manipur's fertile plains and mountains were created by the god Chingthang Khongwari. Sikkim's majestic landscapes were created by Guru Padmasambhava. Tripura's three cities were formed by Tripura Sundari's beauty. Mizoram's lush forests and mountains were created by the god Hmanpa Chhungchua.



The Snow Leopard and Goddess Tara

In Tibetan folklore, the snow leopard is considered a sacred animal associated with the mountain goddess Tara. Goddess Tara is known for her compassion and protection. In some folktales, it is believed that she took the form of a snow leopard to help the people of Tibet, roaming the mountains and forests. The stories of Tara's protection for the people and wildlife of the Tibetan region are deeply rooted in their culture, reflecting the people's reverence for nature, their connection to the land, and their spiritual beliefs. The snow leopard, now an endangered species, is considered a symbol of Tibetan heritage.



The Tale of Nagray and Princess Himal

Kashmiri folklore is rich with cultural stories. One tale features Soda Ram, a poor Brahmin with a difficult wife. On a pilgrimage, a serpent crawls inside Soda Ram's bag, which later turns into a boy named Nagray. Raised by Soda Ram and his wife, Nagray grows wise and marries Princess Himal after an encounter at a pool. Nagray's snake wives, jealous of Himal, disguise themselves and trick her into harming their children. They bite Himal, causing her death. Nagray mourns her and places her body in a tree. A holy man revives Himal through prayer, but when Nagray finds her at the holy man's home, he is cut in half by the holy man's son. Grieving, Himal throws herself onto Nagray's funeral pyre.



Traditional Himalayan and Regional Dishes

Ranju Sarma

Thukpa - a popular Tibetan noodle soup! This hearty and comforting dish originated in Tibet and is widely enjoyed in the Himalayan region, including Nepal, Bhutan, and India.

To prepare Thukpa, heat vegetable oil in a pot and sauté onion, garlic, and ginger. Add diced meat (or tofu/tempeh) and cook until browned. Pour in broth, water, cumin, coriander, turmeric, chili powder, and salt. Simmer for 10-15 minutes. Cook noodles separately, then divide into bowls. Ladle the broth over the noodles, and top with scallions, carrots, cabbage, and mushrooms. Serve with soy sauce or chilli sauce.

This is a highly nutritional dish rich in carbohydrates, protein, fat, fibre, iron, calcium, zinc, magnesium, phosphorus, sodium, potassium, folic acid etc.



Phanu - a curry that is a specialty of Uttarakhand. This dish comes in many versions. It is typically made with Gahat ki Daal, which is available in the hills, but it can also be made with black garbanzo beans.

To prepare this dish, soak black gram overnight, then wash and make a coarse paste. Finely chop garlic, onion, and green chilies, and dice the tomatoes. Heat oil, sauté garlic and onion until pink, then add green chilies and tomatoes. Stir in coriander, cumin, and red chili powder. Add the gram paste, roast for 4-5 minutes, and add hot water. Cook on low heat for 15-20 minutes, skimming off foam as needed.

Phanu is rich in fat, carbohydrates, and protein, making it a popular dish enjoyed throughout the year.



Gushtaba - a traditional Kashmiri dish made with meat, yogurt, and spices.

For Gushtaba, heat oil in a pan and sauté onion, garlic, and ginger until translucent. Add meat and cook until browned. Stir in cumin, coriander, turmeric, and chili powder, then add salt and water. Cover and cook until meat is tender. In a bowl, mix yogurt, lemon juice, and spices. Heat ghee or oil, then stir in the yogurt mixture until thickened. Add the cooked meat, adjust the seasoning, and garnish with cilantro. Serve with rice or roti.

This is high in carbohydrates, protein, and fat.



Losar - a traditional Tibetan New Year dessert made with buckwheat flour, sugar, and spices. It is traditionally cooked in a clay oven or over an open flame.

To make losar, start by roasting buckwheat flour in a pan over medium heat until fragrant, then let it cool. In a bowl, combine the cooled flour with sugar, ghee or oil, cinnamon, cardamom, ginger, and salt. Gradually add milk or water and knead into a smooth dough. Divide the dough into small portions, then shape into balls, and flatten into disks. Heat oil in a frying pan and fry the disks until golden and crispy. Drain on paper towels and garnish with nuts or dried fruits if desired. Serve warm or at room temperature.

This dish is rich in calories, fibre, protein, and carbohydrates.



Gota seddho - a traditional dish from West Bengal, consists of boiled whole vegetables seasoned with a mix of spices. It is traditionally cooked in a clay pot over an open flame.

For this vegetable stew, start by washing and cleaning the vegetables. Heat mustard oil in a large pot over medium heat, then add cumin seeds and let them sizzle. Sauté onion, garlic, and ginger until the onion becomes translucent. Add the vegetables and cook for 5 minutes. Stir in coriander powder, turmeric powder, and red chili powder, then season with salt. Add enough water to cover the vegetables, bring to a boil, then reduce heat and simmer for 20-25 minutes, or until the vegetables are tender.

This dish is rich in calories, protein, fat, saturated fat, cholesterol, carbohydrate, fibre, sugar, and sodium.



Smoked pork with Naga chutney – Naga cuisine is known for its use of smoked meats, chutneys, and fermented foods. Smoked pork, a staple in this cuisine, is particularly delicious when paired with Naga chutney. Traditionally, the pork is cooked in a pit oven or over an open flame, smoking for several hours to develop a rich, savory flavor.

To prepare this dish, heat oil in a pan over medium heat. Sauté onion, garlic, and ginger until the onion is translucent. Add diced smoked pork and cook until browned. Stir in Naga chutney, soy sauce, and vinegar, and mix well. Season with salt to taste. Garnish with chopped scallions and serve with steamed rice or noodles.

This dish is rich in calories, protein, saturated fat, cholesterol, fibre, sugar, carbohydrates, and sodium.



Impact of Invasive Species on Himalayan Mountain Ecosystems

Pavan Vyas

Imagine the towering peaks of the Himalayas, a place where life has evolved in harmony since ages, creating a breathtaking rainbow of unique species and delicate ecosystems. Each plant, animal, and microbe has found its place in this intricate web, a balance as fragile as it is beautiful. But now, something foreign begins to creep in, silent and uninvited. Invasive species, with no natural predators to keep them in check, start to spread.

Invasive species are non-native organisms that can cause harm to the environment, economy, and human health. They can outcompete native species, disrupt ecosystems by altering the fabric of the landscape, and lead to significant ecological and economic consequences. The focus here is on their impact on mountain ecosystems, specifically the Himalayas, known for their unique biodiversity and specialised habitats. When invasive species are introduced to these areas, they can severely disrupt the delicate ecological balance.

Invasive species affect mountain ecosystems through:

1. **Competition with native species:** They outcompete native flora and fauna for resources, leading to the decline or extinction of native species.
2. **Habitat alteration:** Invasive species can change soil composition, water availability, and fire regimes, further stressing native species and ecosystems.
3. **Predation:** Non-native predators can decimate populations of native species, which may lack defenses against these new threats.
4. **Disease:** Invasive species can introduce diseases to which native species have no immunity, causing population declines or extinctions.
5. **Hybridisation:** They can interbreed with closely related native species, leading to genetic dilution and loss of unique genetic traits in native populations.

The Himalayas have experienced severe impacts due to invasive species, particularly pine in the western Himalayas and lantana in the Himalayan foothills.

Pine:

Originally, Himalayan forests were rich with deciduous and evergreen trees, including native conifers. However, colonisation led to massive exploitation for timber, significantly reducing the original forest cover. Fast-growing exotic species such as pine were planted to replenish tree counts. Today, pine forests cover 76,200 sq km of the Himalayan region, contributing to an estimated habitat loss of 86.65 percent. Pine trees consume large amounts of water, deplete groundwater levels and inhibit the growth of other vegetation. Their acidic needles carpet the forest floor, changing soil pH and creating food scarcity for both livestock and wildlife. Villagers often burn these needles, leading to uncontrollable forest fires. Since 2015, there have been over 350,000 forest fires, causing approximately USD 91 billion in damages. This has led to a decline in agriculture and livestock practices, urban migration of youth, and immeasurable impacts on local communities.

Lantana:

Lantana camara, a tropical American shrub, was introduced to India in 1807. It has now invaded about 13.2 million hectares of Indian pasture lands and the Himalayan forests, including Corbett and Rajaji National Parks. It is considered one of the world's most invasive species, threatening about 300,000 sq km of Indian forests and more than 40 percent of the country's tiger reserves.

Lantana competes with native plants for resources and alters soil nutrient cycles, reducing tree diversity and impacting forest structure. It affects bird populations and forage plants for wild herbivores. If consumed, lantana can cause allergies, liver failure, and death in animals. Managing lantana invasions is costly, requiring extensive labour and financial resources. It is mainly dispersed by fruit-eating animals and needs to be uprooted to prevent regrowth.



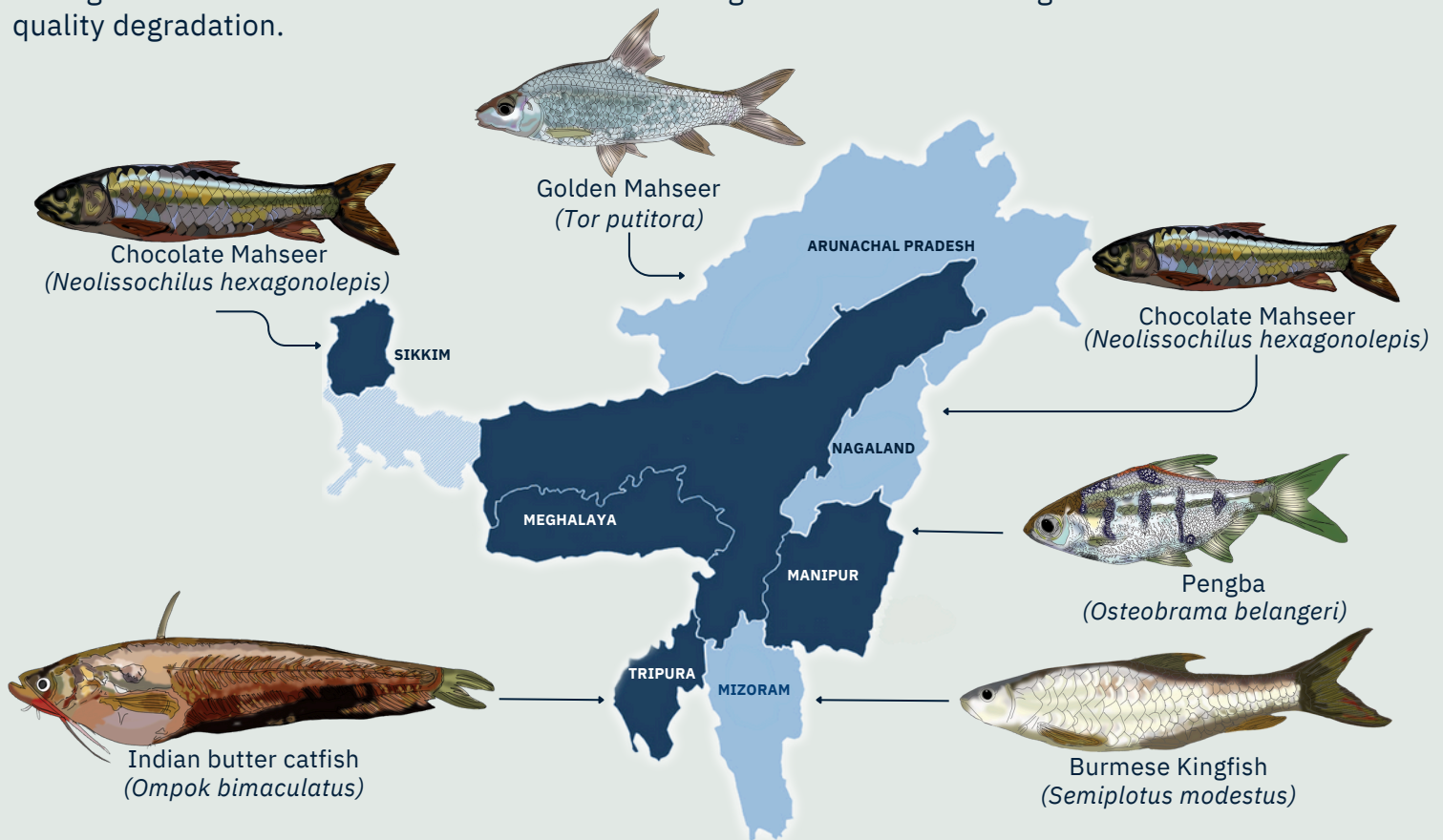
In conclusion, without effective management and conservation efforts, invasive species like pine and lantana pose severe threats to mountain ecosystems and the well-being of local communities. These challenges highlight the need for sustainable strategies to control invasive species and protect biodiversity.

Protecting the Himalayan Aquatic Life

Ankur Jamwal

The Himalayan river ecosystems support a delicate balance of life, including a diverse fish population adapted to swift, cold, and oxygenated waters. These fish constitute a vital protein source for local communities. Species like the mahseer are particularly renowned for their fighting spirit, making them prized targets for anglers.

However, these aquatic ecosystems face significant threats. Overfishing, exacerbated by destructive methods such as electrocution and dynamiting, has severely depleted fish populations. The introduction of non-native species and the construction of dams have further disrupted delicate ecological balances. Deforestation and climate change are also contributing to habitat loss and water quality degradation.



The decline of these fish populations has far-reaching consequences. Beyond the ecological implications, the loss of fish species erodes cultural heritage and threatens the livelihoods of communities dependent on fishing. Urgent conservation measures are imperative to safeguard these invaluable aquatic resources.

While the efforts are on to breed the fish in man-made hatcheries and replenish the stocks in the wild (ranching), maintaining the sanctity of the fish habitat is of paramount importance.



Himalayan Heroes: From Chipko and Forest Conservation to Upcycling and Waste Solutions

Shruthi Mulakala and Aswathy Arun

The Chipko Movement: Protecting the Himalayas

The Chipko Movement began in the Uttarakhand region of the Himalayas in early 1973, with the women of the hills along with environmentalist and social activist Chandi Prasad Bhatt leading the initial protest near the village of Mandal. Later, eco-activist Sunderlal Bahuguna dedicated his life to educating villagers and leading protests against the destruction of forests and the Himalayan mountains. His famous slogan, "ecology is the permanent economy," continues to inspire environmentalists today.

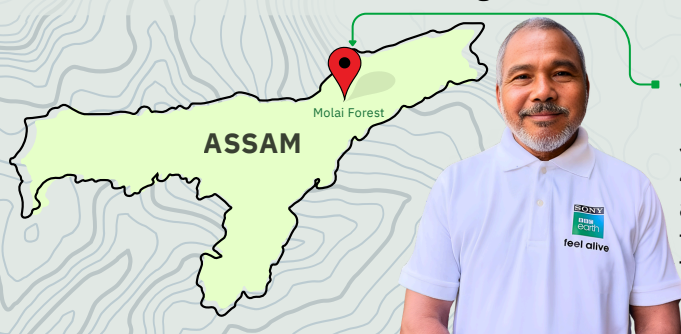


Dr. Ravi Chopra, an environmentalist from Uttarakhand

Dr. Chopra is widely recognised for his significant contributions to conserving natural resources in the Himalayan region. Motivated by a deep interest in the relationship between technology, society, and the environment, as well as a strong belief in the role of young people in nation-building, he founded the People's Science Institute (PSI) in Dehradun in 1988. Since then, PSI has led initiatives in water resource management, environmental quality monitoring, disaster mitigation, and river conservation, particularly in the Himalayan region.

Helping Himalayas through upcycling - An initiative by Damat Ji.

In Uttarakhand's villages of Wan, Mundoli, and Kuling, women are transforming plastic waste and old clothes into cushions, creating economic independence and improving village cleanliness. This initiative, led by Indiahikes' Green Trails team, also includes upcycling plastic into bottle bricks used in community projects. The cushions are sold to trekkers in Lohajung, with proceeds supporting further waste management efforts. This initiative not only addresses waste but also educates villagers about environmental impacts and fosters community ownership, making it a model for sustainable waste management in the Himalayas.



Jadav Payeng - Forest man of India from Assam.

Jadav Payeng also known as "Molai Payeng" has planted over 40 million trees over the 30 years creating a man-made forest across the sandbar of Brahmaputra river. His work earned him the title "Forest Man of India" and also a Padma Shri in 2015. The 550 ha of forest is called "Molai Forest" named after him.

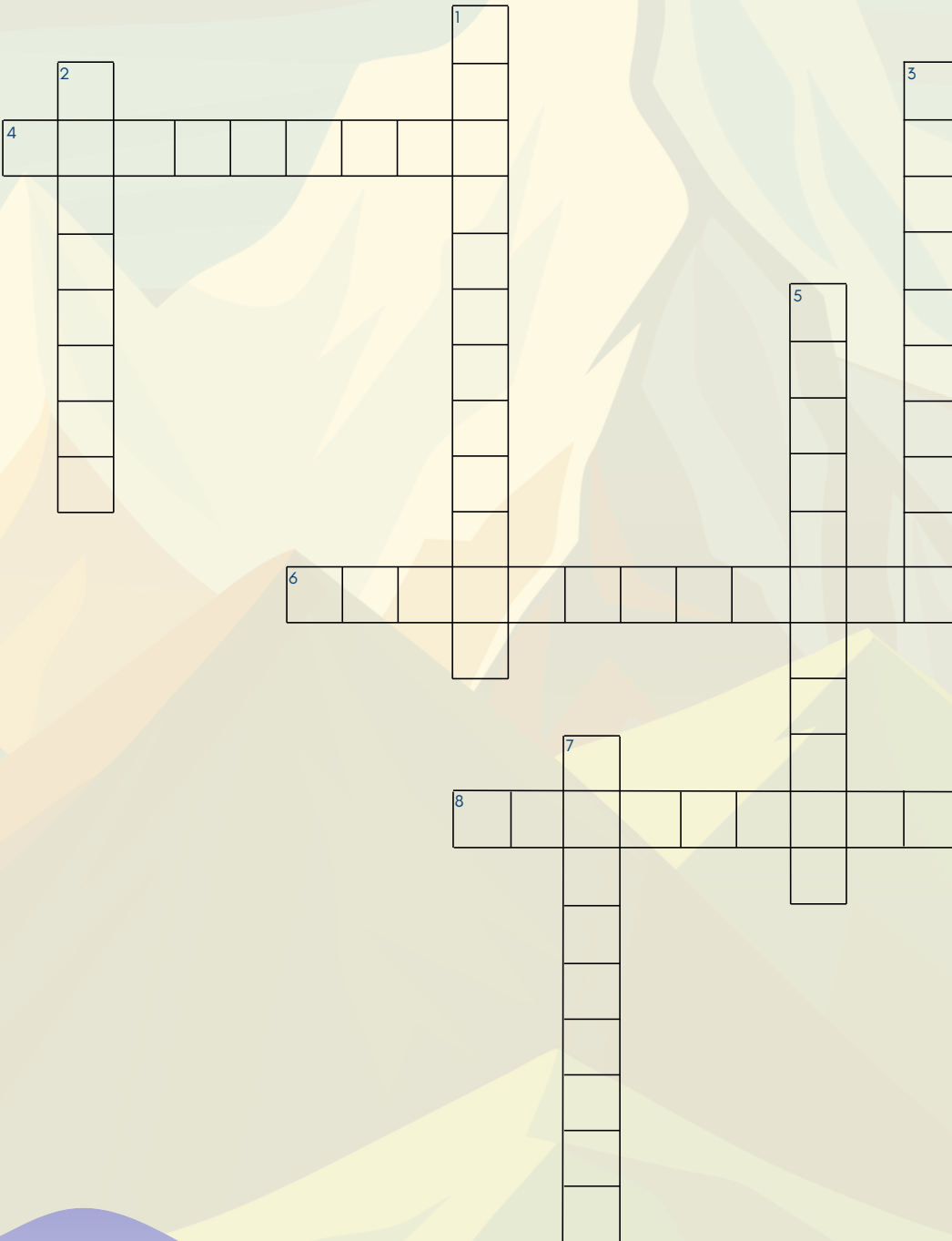
Nima Rai's Trash Bag Initiative on the Sandakphu trail

Nima turned a simple idea into impactful change by keeping a trash bag in his car. Noticing the litter along the roads of Rimbick in West Bengal, he began collecting waste during his drives. His initiative inspired other drivers on the Sandakphu trail to adopt the same practice. Over four months, Nima collected about 8,000 wrappers, reducing roadside litter significantly. His small but effective action has led to a broader adoption of waste bags in local vehicles, demonstrating how a simple idea can drive meaningful environmental change.



Mountain Crosswords:

Dhwani Nagendra



CLUES

ACROSS

- 4. This range separates the plains of the Indian subcontinent from the Tibetan Plateau
- 6. This range is a rich biodiversity hotspot which was declared a UNESCO World Heritage Site
- 8. These are the oldest fold mountains in India

DOWN

- 1. The four main rivers of South India (Mahanadi, Godavari, Krishna and Kaveri) erode and cut through this range
- 2. This range is regarded as the demarcation between northern and peninsular India
- 3. The village having one of the world's highest average annual precipitation levels is located in this range
- 5. A set of caves which is a UNESCO world heritage site is located in the range
- 7. The world's second highest peak is a part of this range

Ode to Mountains:

A mountain sonnet

Prajna P

Calm and breeze it is
so serene I want to freeze
too tall to crawl
Oh hill so chill it made me still.

Echoes and chaos.
It was full of people's yet in midst of all
I stood there with a
Gazing soul and glaring thoughts.

A pinnacle of peace made me at ease.
I wanted the world to chase
Oh hill so chill
It made me still.

Sunset over the mountains

Jiya Kathayat

The sun dips low, a fiery kiss,
Upon the mountains' rugged bliss.
The sky ablaze with colors bright,
orange, pink, and purple light.

The shadows lengthen, cool and deep,
As darkness falls, the stars will peep.
A gentle breeze whispers through the trees,
Carrying secrets on the evening breeze.

This scene of beauty, vast and grand,
Leaves me speechless, on the sand.
A moment captured, bathed in gold,
A story waiting to unfold.



Mountains of life

Nisha Kumari

The mountains are majestic
full of beauty and peace
When we approach the mountain
we feel peace in this place
Our lives can feel like a mountain
when things are good
We sing but when the challenges of life appear
we shudder at our feelings
When faced with overwhelming task
think of moving a mountain
taking one stone at a time
Oh my dear mountain.

In the forests of Champawat, morning light spreads,
Through the shade of trees, the path winds ahead,
The gentle curve of the road
and the greenery's embrace,
In nature's lap, peace tells its tale with grace.

Champawat evening is so beautiful,
The story of the setting sun is so beautiful.
The mountains are painted in pink,
The blue sky is sparkling.

UTTARAKHAND

Champawat



Mountain oh my mountain

Nagarjun

Mountain oh my mountain
without you our life is like dry leaves
without you we never get fresh air,
when I come near you I feel solace
Mountain oh my mountain
Hold me from polluted air
Hold me with your nurturing care
take me to you when I feel downcast
Mountain you are the best
Mountain oh my mountain.

Mountain Artworks

Showcasing the creative renditions submitted

Swarnprastha Public School



ANMOL MATHUR (FLUID DIGITAL ARTIST)



KAAVYA GUPTA

Sunbeam School Lahartara



ARMAAN AHAMAD



MD. ZAID



SARASWATI KESHRI

Sunbeam School Lahartara



SIKHI



RIYA MAURYA



BHAVYA KUMARI

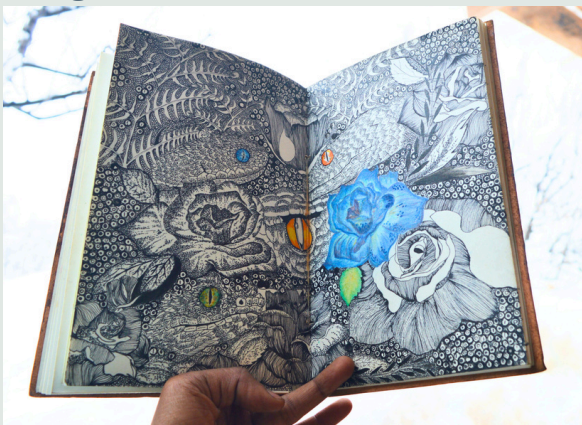


ADHYA MODI



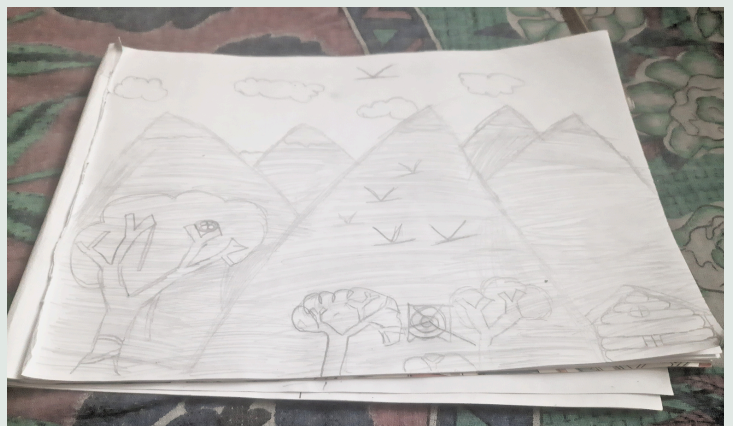
PRAGATI MODI

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Bengaluru**



ISHAN ISLAM

**Ebenezer International School
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BRAHMA SINHA

Patel Pre University College



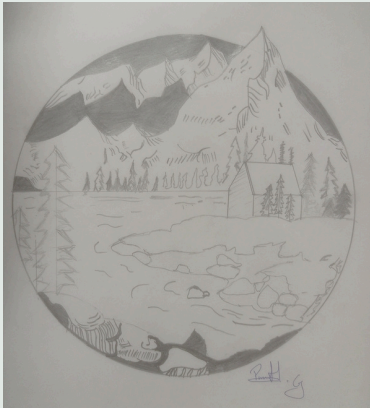
SUBHAM



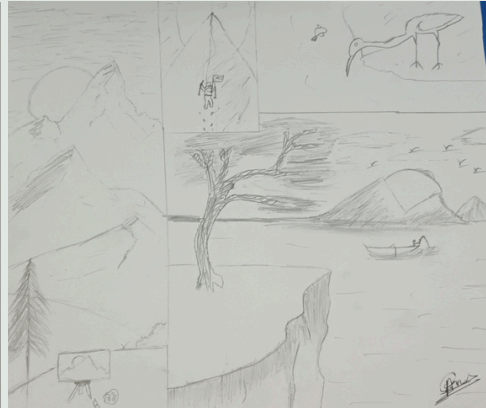
SAHAS



**RAJESH KUMAR
BEHERA**



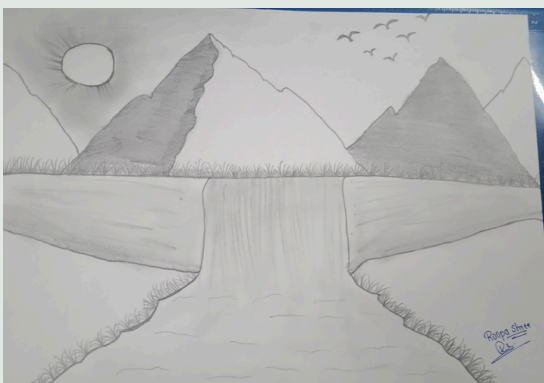
PUNEETH



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YUSUF



ROOPA SHREE



SUBHAM SEKHAR BAT



KUSHI

Prakriya Green Wisdom School



JAIVEEN CHADHA



SUHANYA GAYATRI



DEVAYANI NIKHEEL

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