



**MAHARASHTRA STATE BOARD OF TECHNICAL EDUCATION,  
MUMBAI**

**GOVERNMENT POLYTECHNIC, KARAD**

**ACADEMIC YEAR 2023-2024**

**SEMESTER – 5<sup>th</sup> OF COMPUTER ENGINEERING**

**FOR MICRO-PROJECT**

**“SPECIES DIVERSITY IN DIFFERENT LOCATION”**

**COURSE:**

**Environmental Studies (22447)**

**SUBMITTED BY-**

<b>Roll.No.</b>	<b>Name of the Team Members</b>	<b>Enrollment No.</b>
2219	Gita Umesh Sutar	2100100017
2224	Dipti Sambhaji Khande	2100100022
2227	Gayatri Narendra Sawant	2100100025

**Under the guidance of:**

**Prof. K. K. Gaikwad**

**Academic Year 2023-2024**

**DEPARTMENT OF COMPUTER ENGINEERING**

## CERTIFICATE

This is to certify roll no. 2219,2224 and 2227 of fifth semester of Diploma in computer engineering of institute Government Polytechnic, karad has successfully completed microproject under the subject of **Environmental Studies (22447)** for academic year 2022-23 as prescribed in the curriculum.

Enrollment No.	Name of student
2100100017	Gita Umesh Sutar
2100100022	Dipti Sambhaji Khande
2100100025	Gayatri Nrendra Sawant

We have completed the project report titled as **SPECIES DIVERSITY IN DIFFERENT LOCATIONS**

**Subject- Environmental Studies (22447)**

Head of Department.

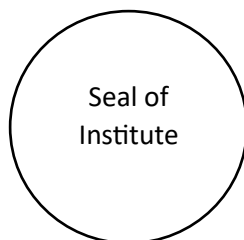
Mrs. S. B. Patil

Head of Institute

Dr. R. K. Patil

Guide

Prof. K. K. Gaikwad



Submitted it to Government Polytechnic Karad.

## ACKNOWLEDGMENT

We take this opportunity to thank all those who have directly and indirectly inspired, directed and assisted us towards successful completion of this project report.

We express our sincere thanks to Prof. R. K. Patil principal of Government Polytechnic Karad and the Head of Department Prof. Patil S.B., for having us allowed to submit this report as a part of our academic learning. We express our sincere thanks to Prof.K.K.Gaikwad, Lecturer in Environmental Studies(22447))”.Department of Computer Engineering, Govt. Polytechnic, Karad for encouragement throughout the project report and guideline in designing and working out this project. We are also grateful to team of Environmental Studies(22447).

**Place:** Government Polytechnic, Karad.

**Your sincerely,**

1217 - Gita Umesh Sutar

2224 – Dipti Sambhaji Khande

2227 – Gayatri Narendra Sawant

# **TITLE: SPECIES DIVERSITY IN DIFFERENT LOCATION**

## **1. RATIONALE:**

In environmental studies, exploring species diversity across various places is really important. Firstly, it helps us understand how ecosystems work and how to protect them. We learn what makes some places rich in different plants animals, and its knowledge helps us save them. Secondly, species diversity shows us how healthy an environment is and hoe its changing because of thing like pollution or people building things. By studying this, we can know if an area is in trouble and needs help. So, looking at species diversity helps us know how t keep nature and our communities in good shape.

## **2. AIM AND BENEFITS:**

- To understand the patterns of species diversity across varied geographical locations.
- To explore the factors driving variations in species diversity.
- To provide insights for enhanced conservation strategies.
- To uncover ecological and societal benefits of species diversity.
- To contribute to informed decision-making for biodiversity preservation
- To foster appreciation for the beauty and complexity of nature's variety.

## **3. COURSE OUTCOMES:**

**Co-a.** Develop public awareness about environment.

**Co-c.** Conserve Ecosystem and Biodiversity.

**Co-e.** Manage social issues and environmental ethics as lifelong learning

## **4. LITERATURE REVIEW:**

Biodiversity, encompassing the variety of life forms on Earth, represents one of the planet's most essential and intricate phenomena. It transcends the confines of species, extending to genetic variations within populations and ecosystems' dynamic interplay. As a global concern, biodiversity holds profound ecological, economic, and cultural significance. Its distribution, however, is far from uniform, exhibiting striking variations across different geographical locations. Understanding the nuances of biodiversity in diverse ecosystems, from tropical rainforests teeming with countless species to the arid deserts that harbor life against all odds, is pivotal to the broader discourse on biodiversity conservation

## WESTERN GHATS:



Older than the Himalaya mountains, the mountain chain of the Western Ghats represents geomorphic features of immense importance with unique biophysical and ecological processes. The site's high montane forest ecosystems influence the Indian monsoon weather pattern. The Western Ghats, a UNESCO World Heritage Site, is one of the eight hottest biodiversity hotspots globally.

It is characterized by lush rainforests, evergreen forests, and high levels of endemism.

Home to thousands of plant and animal species, including the Bengal tiger, lion-tailed macaque, and numerous orchids.

### (ANIMALS)

#### 1. MALABAR GIANT SQUIRREL (RATUFA INDICA):



- This strikingly colorful and large squirrel is endemic to the
- It is known for its vibrant fur colors, ranging from shades of black to orange and cream.
- These agile climbers are true acrobats in the treetops.

## 2. LION-TAILED MACAQUE (MACACA SILENUS):



- An endangered primate found in the Western Ghats, known for its distinctive silver mane.
- It inhabits the high-canopy rainforests and is critically endangered due to habitat loss.
- They live in small groups led by an alpha male and engage in grooming and social interactions within their tight-knit communities.

## 3. NILGIRI TAHR (NILGIRITRAGUS HYLOCRIUS):



- stocky mountain goat species endemic to the Nilgiri Hills of the Western Ghats.
- It is known for its curved horns and adapted hooves for steep, rocky terrain.
- These rugged animals are well-suited for the steep and rocky terrain they call home.

## 4. MALABAR PIT VIPER (TRIMERESURUS MALABARICUS):



- Malabar Trogon (Harpactes fasciatus):
- A brilliantly colored bird with iridescent plumage, found in the dense forests of the Western Ghats.
- It is known for its distinctive call and is often sought after by birdwatchers.

## **(BIRDS)**

### **1. MALABAR TROGON (HARPACTES FASCIATUS):**



- A venomous snake species found in the dense forests of the Western Ghats.
- It displays striking color variations, ranging from green to brown or yellow, making it challenging to spot.

### **2. GREAT INDIAN HORNBILL (BUCEROS BICORNIS):**



- One of the largest hornbill species with a striking casque on its bill.
- It inhabits the evergreen forests of the Western Ghats and plays a vital role in seed dispersal.

## **(PLANTS)**

### **1. NEELAKURINJI (STROBILANTHES KUNTHIANA):**



- A unique flowering plant that blooms once every 12 years.
- It covers the hills of the Western Ghats in a spectacular carpet of blue-purple flowers during its flowering year.

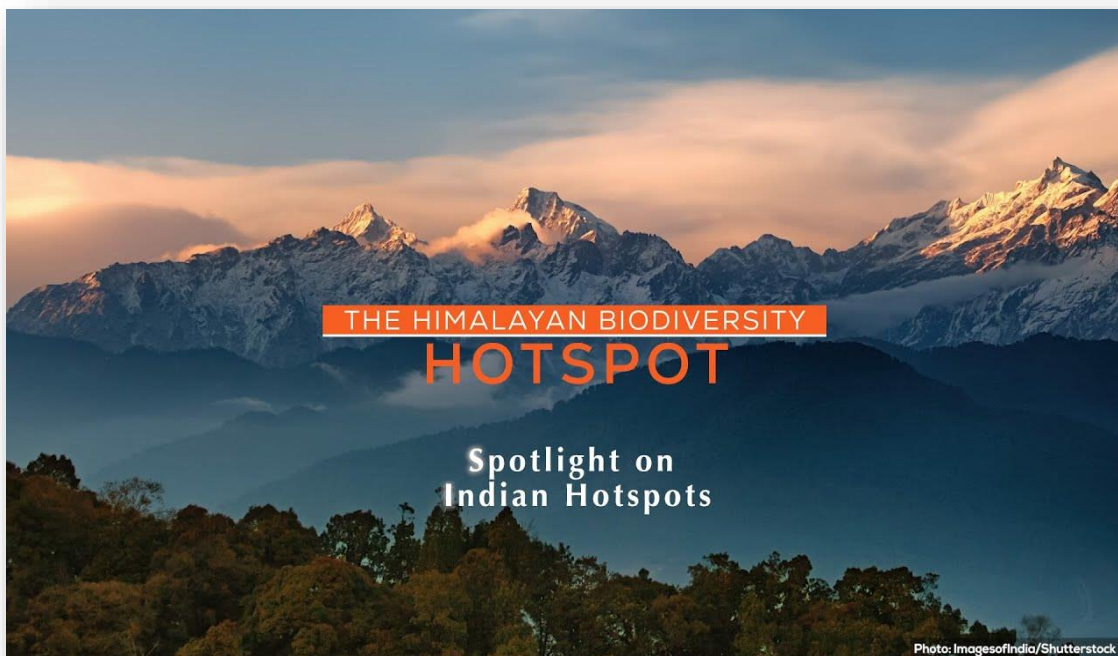
### **2. PITCHER PLANTS (NEPENTHES SPP.):**



- Carnivorous plants found in the Western Ghats' wetlands and bogs.
- They have specialized pitcher-shaped leaves that trap and digest insects.



## **EASTERN HIMALAYAS:**



The Eastern Himalayas is a mountain range situated in the northeastern part of India. It spans across several states, including Arunachal Pradesh, Sikkim, Assam, Meghalaya, and parts of West Bengal.

The Eastern Himalayas are another critical biodiversity hotspot in India, particularly in northeastern states.

This region houses a wide range of ecosystems, from subtropical forests to alpine meadows.

It is known for iconic species like the red panda, Bengal tiger, and various pheasants.

The Western Ghats, often referred to as the "Sahyadri" in India, is recognized as one of the world's 36 biodiversity hotspots.

It is considered a hotspot due to its exceptional concentration of endemic species, meaning these species are found nowhere else on Earth.

## **(ANIMALS)**

### **1. RED PANDA (AILURUS FULGENS):**



- The red panda is a small arboreal mammal native to the Eastern Himalayas.
- It's known for its distinctive red fur, white face markings, and bushy tail.
- Red pandas primarily feed on bamboo, but they also consume fruits, insects, and small mammals.
- They are solitary animals and are mostly crepuscular (active during dawn and dusk).
- Red pandas are classified as vulnerable due to habitat loss and poaching.

### **2. HIMALAYAN BLACK BEAR (URSUS THIBETANUS):**



- The Himalayan black bear is a large mammal found in the forests of the Himalayas.
- It has a shiny black coat with a V-shaped white chest mark.
- These bears are omnivores, feeding on a diet that includes fruits, berries, insects, and small mammals.
- They are known for their tree-climbing abilities.
- Himalayan black bears are often found in hilly and mountainous terrain.

## **(BIRDS)**

### **1. HIMALAYAN MONAL (LOPHOPHORUS IMPEJANUS):**



- The Himalayan monal is a strikingly colorful pheasant species found in the high-altitude forests of the Eastern Himalayas.
- Males are known for their iridescent plumage, with bright and vibrant colors.
- Himalayan monals are omnivorous, feeding on a variety of plant matter, insects, and small vertebrates.

### **2. SATYR TRAGOPAN (TRAGOPAN SATYRA):**



- Satyr tragopans are another pheasant species known for their vibrant plumage.
- They inhabit the dense forests of the Eastern Himalayas.
- Males have strikingly colorful plumage and perform elaborate courtship displays.
- These birds are known for their distinctive "kee-yah" call.

### **3. BLOOD PHEASANT (ITHAGINIS CRUENTUS):**



- Blood pheasants are named for their strikingly bright red plumage.
- They are found in the high-altitude forests of the Eastern Himalayas.
- Males have unique blood-red markings on their plumage.

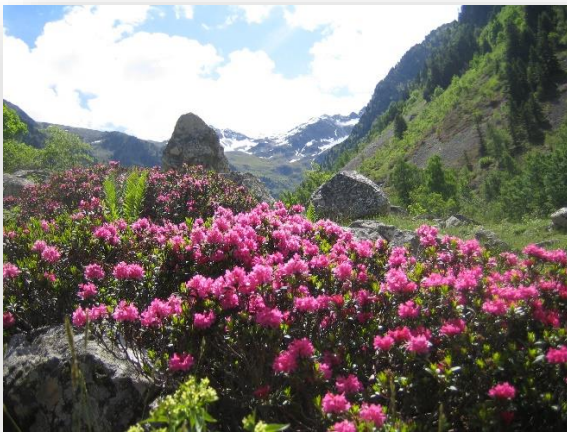
## **(PLANTS)**

### **1. BLUE POPPY (MECONOPSIS SPP.):**



- Blue poppies are rare and iconic flowers found in the Eastern Himalayas.
- They are known for their stunning blue petals, which are a rare sight in the plant kingdom.
- Blue poppies thrive in high-altitude regions, especially during the spring when they bloom.
- The blue poppy is the national flower of Bhutan.

### **2. HIMALAYAN RHODODENDRON (RHODODENDRON SPP.):**



- The Eastern Himalayas are home to diverse species of rhododendrons.
- These flowering plants are known for their vibrant and colorful blossoms.
- Rhododendrons are a highlight of the region's springtime landscapes.
- They can be found at various altitudes, creating a spectacular floral display.



## **SOUTH INDIA - KERALA BACKWATERS:**



The Kerala Backwaters, a unique and intricate network of lagoons, lakes, and canals in South India, host a remarkable biodiversity. These waterways are teeming with diverse aquatic life, including fish species such as the prized karimeen (pearl spot) and various crabs and prawns. The wetlands attract an array of avian species, making it a haven for birdwatchers who can spot kingfishers, herons, egrets, and migratory birds. Reptiles like turtles and various snake species thrive in this ecosystem, along with amphibians like frogs and toads. The mangroves lining the shores serve as critical breeding grounds for fish and provide shelter for numerous crustaceans and mollusks. Beyond its ecological significance, the Kerala Backwaters are deeply intertwined with local culture, supporting the livelihoods of fishing communities and serving as a backdrop for vibrant festivals. Conservation efforts are underway to protect this unique and fragile ecosystem, ensuring its sustainability for future generations."

## **(ANIMALS)**

### **1. PEARL SPOT (KARIMEEN) (ETROPLUS SURATENSIS):**



- The pearl spot is a popular and delicious fish species native to the brackish waters of the Kerala backwaters.
- It is a staple in Kerala's cuisine and is known for its delicate flavor and tender flesh.
- Pearl spots are often prepared as a traditional dish called "Karimeen Pollichathu."

### **2. INDIAN MUDSKIPPER (PERIOPHTHALMUS NOVEMRADIATUS):**



- Indian mudskippers are unique fish that can breathe air and move on land.
- They are adapted to intertidal zones, including mangrove forests.
- Mudskippers use their pectoral fins to "walk" on mudflats and can climb vegetation.
- They are a fascinating example of amphibious fish adapted to both water and land.

## **(BIRDS)**

### **1. INDIAN CORMORANT (PHALACROCORAX FUSCICOLLIS):**



- The Indian cormorant is a water bird commonly seen in wetlands, rivers, and coastal areas of India.
- It's known for its distinctive habit of perching on trees, rocks, or poles with its wings outstretched to dry after fishing.
- They are social birds and are often seen in colonies during the breeding season.

### **1. MANGROVES (RHIZOPHORA SPP.):**



- Mangroves are salt-tolerant trees that thrive in coastal and brackish water environments.
- They are vital for coastal ecosystems as they protect shorelines from erosion and provide habitat for a variety of marine species.
- Mangrove roots help stabilize the soil and create a buffer against coastal storms and tsunamis.



## 2. TEAK (TECTONA GRANDIS):



- Teak is a large deciduous tree known for its high-quality timber.
- It is native to the Indian subcontinent and is commonly found in regions like the Western Ghats and other forested areas of southern India.
- Teak wood is highly prized for its durability, resistance to decay, and beautiful grain.

## 3. CARDAMOM (Elettaria cardamomum):



- Cardamom is an aromatic spice plant grown primarily in the hill stations of Kerala and Tamil Nadu in southern India.
- It is known for its distinctive and intense flavor, which is both sweet and savory, making it a valuable ingredient in culinary and medicinal applications.
- Cardamom is used in a wide range of dishes, including curries, desserts, and beverages like chai tea.



## ➤ WHY CONSERVE BIODIVERSITY?



Biodiversity, the variety of life on Earth, is fundamental to the health and stability of our planet's ecosystems. Conserving biodiversity is not merely an option; it is an urgent necessity. Here's why:

- **ECOSYSTEM STABILITY:** Biodiversity ensures the resilience and stability of ecosystems. A diverse array of species performs various ecological roles, which helps maintain ecological balance. When one species declines or disappears, it can disrupt the entire ecosystem.
- **ECONOMIC BENEFITS:** Biodiversity plays a crucial role in supporting industries such as agriculture, fisheries, and pharmaceuticals. Many of our food crops, medicines, and industrial products are derived from diverse species. The loss of biodiversity can harm these sectors and have economic repercussions.
- **CLIMATE REGULATION:** Forests, wetlands, and oceans, rich in biodiversity, help regulate the climate by absorbing carbon dioxide (CO<sub>2</sub>) and releasing oxygen. This natural carbon sequestration mitigates climate change.
- **GENETIC RESOURCES:** Biodiversity is a source of genetic diversity, which is critical for breeding programs to develop new crop varieties, livestock breeds, and medical treatments.

## ➤ HOW TO CONSERVE BIODIVERSITY:



Conserving biodiversity requires concerted efforts at various levels, from individuals to governments and international organizations. Here are some key strategies:

- **PROTECTED AREAS:** Establish and effectively manage protected areas, national parks, and wildlife reserves to safeguard critical habitats.
- **SUSTAINABLE LAND USE:** Promote sustainable agriculture, forestry, and urban planning practices to reduce habitat destruction and fragmentation.
- **CLIMATE ACTION:** Address climate change by reducing greenhouse gas emissions, as it can have severe impacts on biodiversity.
- **SUSTAINABLE FISHERIES:** Implement sustainable fisheries management practices to prevent overfishing and protect aquatic biodiversity.
- **LEGISLATION AND ENFORCEMENT:** Enact and enforce strong environmental laws and regulations to combat illegal wildlife trade and habitat destruction.
- **EDUCATION AND AWARENESS:** Raise public awareness about the importance of biodiversity conservation and the consequences of its loss.

## 5. ACTUAL METHODOLOGY FOLLOWED:

- After considering everyone's opinion, the team decided to work on the species diversity in different location as a microproject.
- Conduct research to gather relevant information.
- Prepared and submitted a proposal outlining the project's scope, goals, timeline.
- The team collected the information of species diversity in different location
- Prepared a final report outlining the project's research, analysis, and conclusions, and present it to relevant faculty.

## 6. RESOURCES USED:

Sr. No.	Name of Resources	Specifications	Quantity
1.	Computer Systems	Systems with various specification	1
2.	Software tools	Microsoft Office Software (Word)	1
3.	Websites	<a href="https://www.nature.com/">https://www.nature.com/</a> <a href="https://www.nationalgeographic.org/">https://www.nationalgeographic.org/</a>	1

## 7. SKILL DEVELOPED OUTCOMES OF THE MICROPROJECT:

- Teamwork: Collaboration with fellow researchers has improved our teamwork and collaborative skills.
- Environmental Awareness: Our project has cultivated a heightened environmental awareness, emphasizing the significance of biodiversity conservation.
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## **8. APPLICATION OF THE MICRO-PROJECT:**

- Ecosystem Management: Understanding species diversity helps in managing ecosystems for ecological balance, such as maintaining pollinators in agricultural areas.
- Educational Purposes: Providing valuable information for educational institutions and researchers to study biodiversity patterns and trends.
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## **9. CONCLUSION:**

Our project has shown that preserving biodiversity is not just a matter of science but also of ethics and sustainability. It's about ensuring a stable environment for ourselves and future generations. By respecting and preserving species diversity, we contribute to a more sustainable and harmonious world.