



# BIODIVERSITY



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# UNIT V.BIO DIVERSITY

## 2. SIGNIFICANCE OF BIODIVERSITY





ALL FORMS OF LIFE ON THE EARTH ARE IMPORTANT



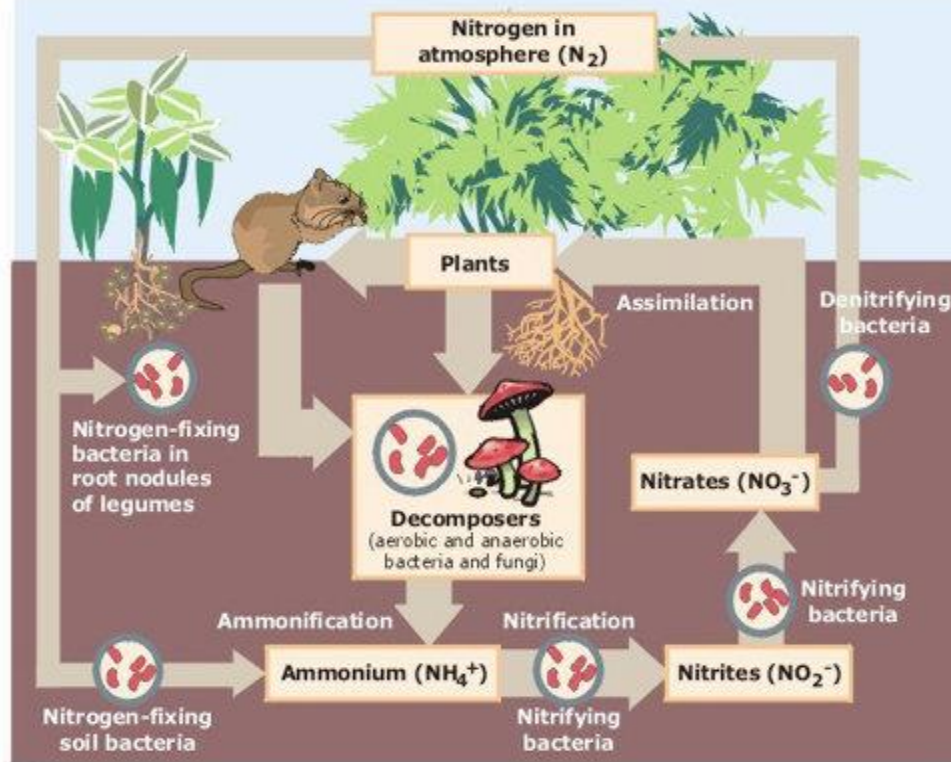
# Importance OF Biodiversity TO HUMANKIND....



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## 2. SIGNIFICANCE OF BIODIVERSITY

- Biodiversity provides many goods & services for the man.
  - Essentials to the health – **clean air, water, food.**
  - Our **clothes, medicine, fuels & homes**
- If ecosystems are intact, all the ecological processes like – **nutrient & water cycles, photosynthesis, food chains, food webs & ecological pyramids** are preserve – needed for sustenance of life.
- The more the plants, animals, microbes in an area ***the greater will be the diversity*** & healthier are the ecosystems.
- ***Loss of biodiversity leads to loss of all form of life.***



# SIGNIFICANCE / BENEFITS OF BIODIVERSITY

## 1. Consumptive use value:

- It is the value of the natural products that are directly used for *food, fodder, timber, fuel woods* etc.
- Food : (**About 80,000 edible plant species** have been reported from the wild).
- **consumed in small quantities to meet our daily needs.**
- many people around the world still depend on the wild species to fulfill their food, shelter & clothing.
- **EX: Forest products, vegetables, & fruits are consumed by many tribes.**





**Bamboo mat**



**Honey**



**Fruits of Mallotus**

# **MINOR FOREST PRODUCTS**



**Olive oil**



**Opium Poppy**



**Flowers of Palash**



**Cardamom**



**Shellac**

# Consumptive use Values:

- The most important point of consumptive use is that some rural communities closest to the forests or other natural areas can prosper through the sustainable harvesting of wildlife species.
- Hunting, direct-consumption (e.g. collection of berries, mushrooms, herbs, plants) are all “consumptive uses”





# SIGNIFICANCE / BENEFITS OF BIODIVERSITY

## 2. Productive use Values:

- It is the value that can be assigned to commercially harvested & marketed produce of plants & animals.
- Present day agricultural crops were originated from wild varieties.
- Wild species of plants & animals are used to develop new, better yielding varieties of plants which are cultivated on commercial scale.
- **Ex: *Large scale cultivation & marketing*** of – rice, wheat, maize, vegetables, & fruits.
- **Milk, meat, eggs** – food production on large scale.
- **Wool – sheep, silk** – silkworms produced in large scale.
- **Tusks of elephants** used for decorative purposes

## MILK, EGGS & MEAT SOURCES.



Animal products like

- tusks of elephants,
- musk from musk deer,
- silk from silk-worm,
- wool from sheep,
- fur of many animals,
- lac from lac insects etc, all of which are traded in the market





# SIGNIFICANCE / BENEFITS OF BIODIVERSITY

## 3. Economic value :

- Plants & animals are useful not only for food but also in several other ways., they have economic value.
- Many industries like *paper, textile, leather, pearl industries* are dependent on the commercial value of plants, animals & marine life.
- Coal, oils, natural gas – origins due to biodiversity.
- Chemicals & dyes - extracted from various plants & animals
- Medicinal value : **QUININE**, **OPIUM**, **CODEINE**, & **CORTISONE** are extracted from plants, animals & its by products.
- **MARIJUANA** – Recreational drugs.

# SIGNIFICANCE / BENEFITS OF BIODIVERSITY

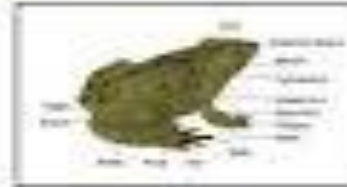
## 4. Educational & Scientific value:

- Our understanding of life is greatly enhanced by the study of living organism & their interactions.
- We have gained much insight on the various human systems & their functions by studying the other organisms- *in vivo & In vitro*.
- Fruit flies, mice , worms, frogs, dogs, monkeys, rabbits & microbes like – *E. Coli*, Yeasts are used in biological experiments.
- GUNIEA PIGS have replaced by Mice, but still used in diabetic experiments, TB, & scurvy.



## EXPERIMENTAL ANIMALS

Used in Pharmacology laboratory



For detail about experimental animals visit [Nobelprize.org](http://Nobelprize.org) library. For detail about experimental animal visit [Nobelprize.org](http://Nobelprize.org) library.

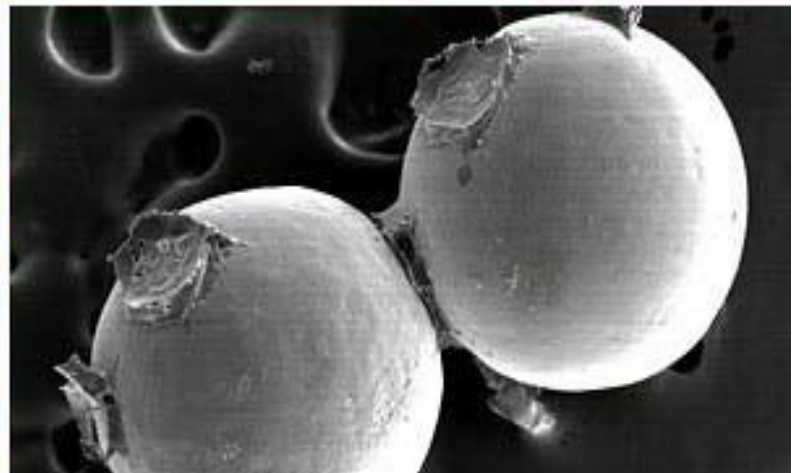


# SIGNIFICANCE / BENEFITS OF BIODIVERSITY

## 5. INSPIRATION FOR SCIENTIFIC INVENTIONS / BIOMIMICRY.

- Living organisms provide inspiration for engineers seeking better and more efficient products, such field of study is called *biomimicry*.
- *Biomimicry involves the design & production of materials & systems that are modeled on biological processes.*
- Examples:
  - 1). **Shark skin** – provide the model for preparation of Hydrodynamic swimming suits.
  - 2). **SAND CASTLE WORM** (*Phragmatopoma californica*)  
Glue used by it to cement together sand particle shells is the inspiration for a glue that mends fractured bones in aqueous internal environment of the body.

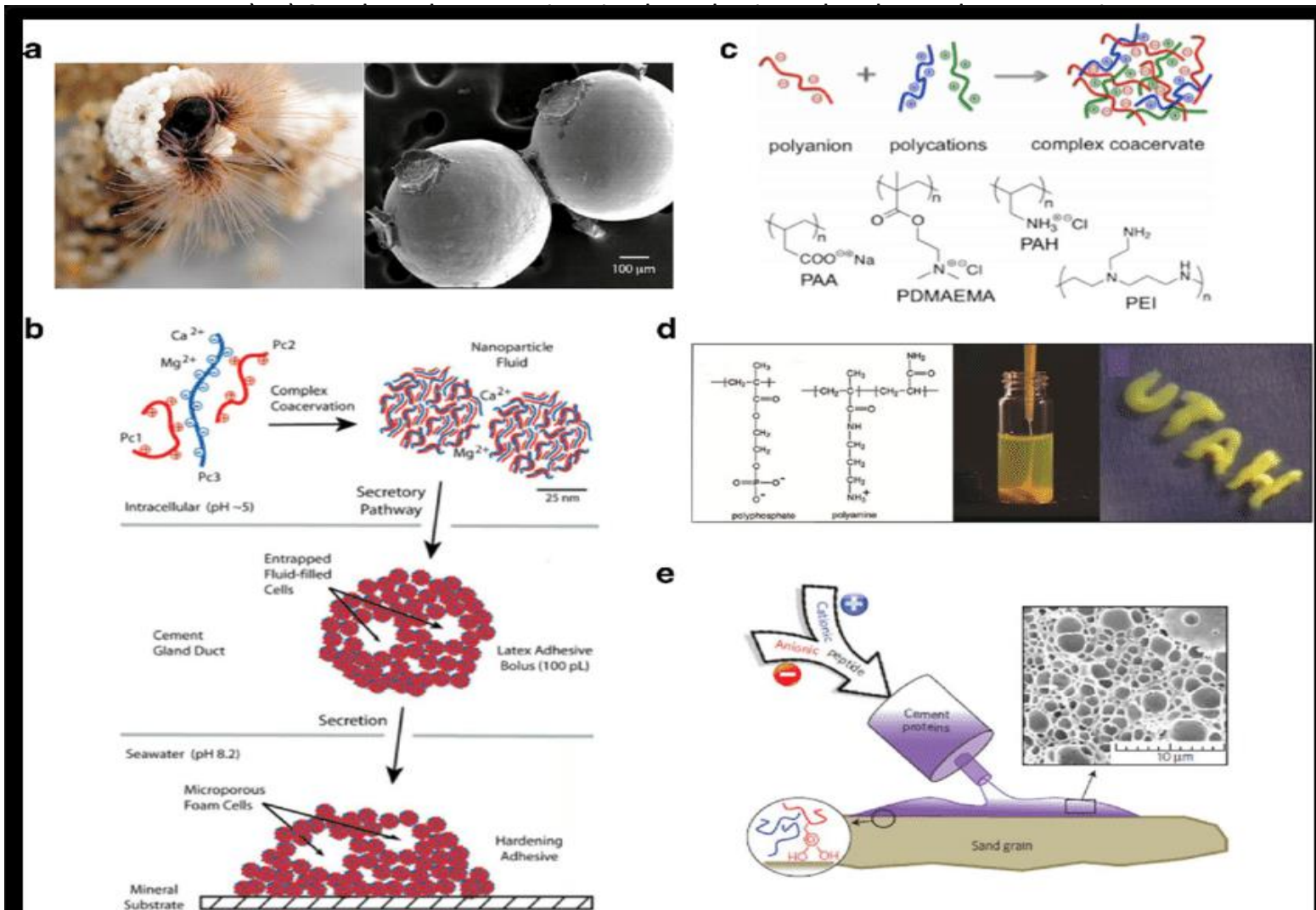
**Sand castle worm:** Clockwise from top left, the sandcastle worm builds its home by using tentacles to grab sand and shell bits and glues them with adhesive from an organ on its head; its tube-shaped dwelling; two beads of a worm's home, microscopically enlarged; a section of a sandcastle worm colony.



Synthetic approaches inspired by sandcastle worm adhesion insights. a Images of sandcastle worms and sandcastle glue.

B). Adhesion model. Within secretory cells of the cement glands, a mixture of the oppositely charged adhesive proteins and divalent cations condense into a nanoparticulate fluid phase through complex coacervation.

C). Schematic illustration of ternary complex coacervate formation.





- **Example : 3).Spider silk :**
  - The chemical nature of spider silk is used to **design strong, lightweight fibre.**
  - & mimicking in architected designs



# Significance of of biodiversity

## 6. Ethical value of biodiversity:

- ❖ Biodiversity must be seen in the light of ethical value.
- ❖ man has prime responsibility & moral obligation to protect other organisms.
- ❖ biodiversity encourages us to Adopt :  
**LIVE & LET LIVE – Right to exist.**
- ❖ Every species of living organism has right to live whether it is useful or not to the human.
- ❖ LAWS, Acts are framed to protect the environment.
  - ❖ The non construction zones, Protected Areas- Wildlife sanctuaries, national parks.

## **7. Aesthetic & Recreational value:** sooth our senses & uplift the spirit-

- The majesty of mountains,
- Refreshing fragrance of flowers,
- The softness of moss,
- Melodious songs of birds, Tasteful fruits etc.
- we derive great joy from the various forms of biodiversity.
- **Botanical gardens & zoological parks – aesthetic.**
- Significant source of leisure, recreational activities through tourism, holiday spots.
  - Jungle safari, sea surfing, Rock climbing, ocean cruises, bird watching.
  - Having pets & keeping aquariums – expression of aesthetic value we get from biodiversity.





Division of V Village Resorts Pvt. Ltd.

# JUNGLE SAFARI

in Pench National Park



# River rafting



# Aquarium





## 8). Ecosystem service value:

- ✓ Biodiversity is indispensable for the *maintenance of ecological balance*.
- ✓ **Ecosystems has many functions**—sustain soil fertility, cycling nutrients, prevent soil erosion, fix Nitrogen, energy flow etc. these are vital for all life.
- ✓ water cycle – without which no rains, no crops, no food would be. Hence crucial.
- ✓ Any disturbance in delicate, fragile biodiversity can leads to drought, famine, floods 7 threaten life.

- 9. Cultural & spiritual value:

- many cultural practices & ceremonies in india are associated with biodiversity.
- Ex: The Tulasi plant & banyan tree are venerated.
- **Mango leaves** –used for decoration
- **mehendi** –applied by ladies on palms & hands
- Animals like – cow & snake, bull & owl – hold special place in Indian socio- cultural life.

# ***Tulasi – anti microbial, antihistamic***







pattaya unlimited





**LIVE & LET LIVE**

**Every living creature  
has right to exist**

**PROTECT NATURE**