BIODIVERSITY

BIOGEOGRAPHIC CLASSIFICATION OF INDIA

Lecture by
G.SRINIVAS.
Asst.Professor.
RGUKT Basar. TS

BIOGEOGRAPHIC CLASSIFICATION OF INDIA

- Based on the geography, climate and pattern of vegetation, India is divided in to 10 major regions.
- Each region has varied ecosystems & specific plant and animal species.
- 1). The cold mountainous snow covered Trans Himalayan *region of Ladakh.*
- 2). The Himalayan ranges and valleys of Kashmir, Himachal Pradesh, Uttarakhand, Assam and other North Eastern States.
- 3). The Terai, the lowland where the Himalayan rivers flow into the plains

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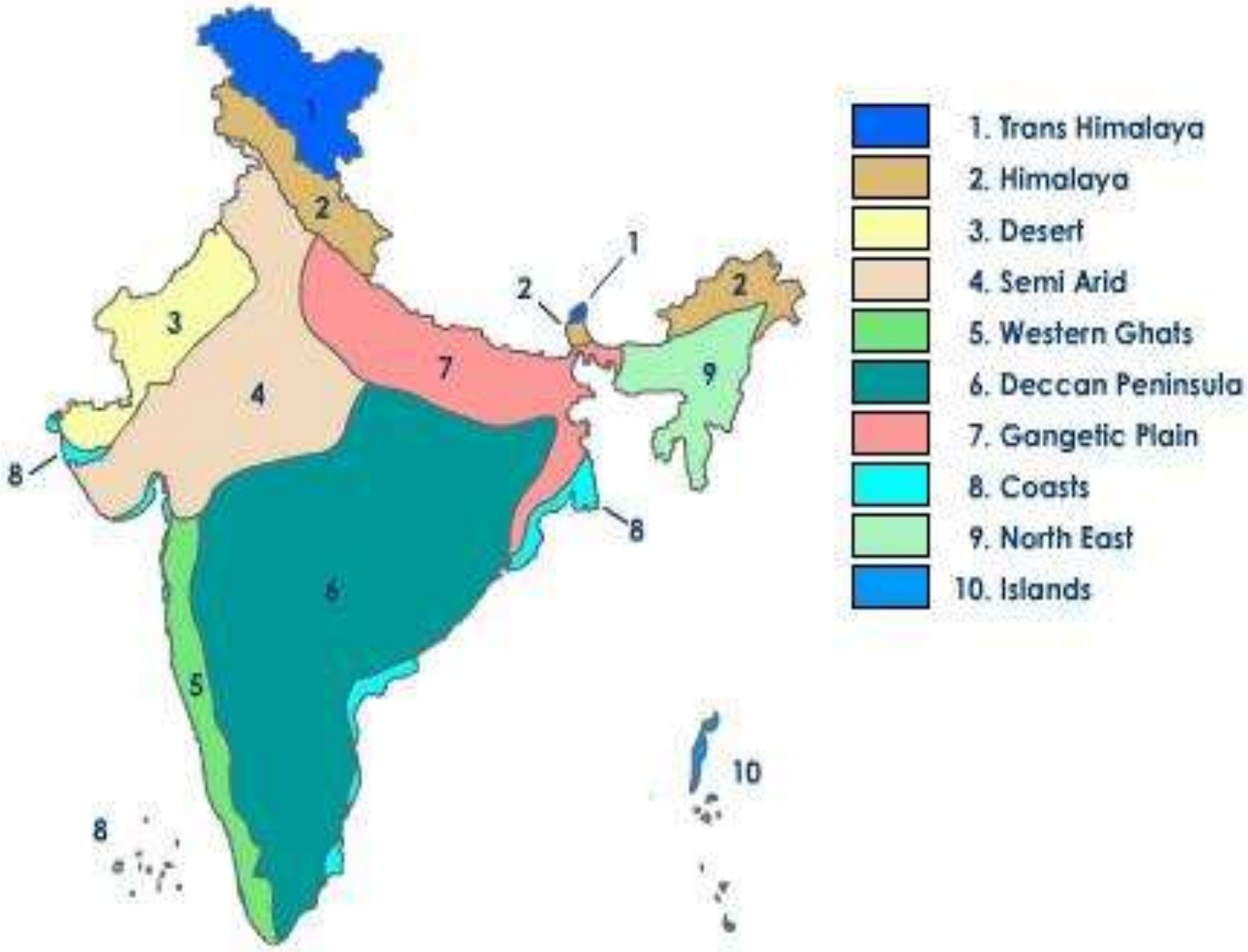
Ten Bio geographic zones of India

- 4). The Gangetic and Bhramaputra plains.
- 5). The Thar Desert of Rajasthan.
- 6). The semi arid grassland region of the Deccan plateau Gujarat, Maharashtra,Andra Pradesh, Karnataka and Tamil Nadu.
- 7). The Northeast States of India.
- 8). The Western Ghats in Maharashtra, Karnataka and Kerala.
- 9). The Andaman and Nicobar Islands.
- 10). The long western and eastern coastal belt with sandy beaches, forests and mangroves.

Ten Biogeographic zones



4.4 BIODIVERSITY AT GLOBAL, NATIONAL AND LOCAL LEVELS

- At present 1.8 million species are known and documented by scientists in the world.
- Scientists have estimated that No. of species of plants and animals on earth could vary from **1.5 to 20 billion**! Thus the majority of species are yet to be discovered.
- Most of the world's **bio-rich nations are in the South**, which are the **developing nations.**
- In contrast, the majority of the countries capable of exploiting biodiversity are **Northern nations,** in the economically developed world. - have low levels of biodiversity.
- Thus the developed world has come to support the concept that *biodiversity must be considered to be a 'global resource'.*

Why there is diversity in each kind ?

4.2 BIODIVERSITY AT GLOBAL, NATIONAL AND LOCAL LEVELS

- Biodiversity Countries with diversities higher than India are located in South America such as **Brazil,** and South East Asian countries such as **Malaysia** and **Indonesia.**

- Few of the other 'megabiodiversity nations' have developed the technology to exploit their species for bio technology and genetic engineering.

- International agreements such as the **World Heritage Convention** attempt to protect and support biologically rich natural areas.

BIODIVERSITY AT GLOBAL, NATIONAL AND LOCAL LEVELS

- India has included several protected Areas as World Heritage sites. These include
  - **Manas** on the border between Bhutan and India, Kaziranga National park in Assam,
  - Bharatpur Bird sanctuary in U.P.,
  - Nandadevi in the Himalayas, and
  - The Sunderbans in the Ganges delta in West Bengal.
- India signed the Convention in the Trade of Endangered Species (CITES) which is intended to reduce the utilization of endangered plants and Animals by controlling trade in their products and in the pet Trade.

4.5 INDIA AS A MEGA DIVERSITY NATION

- Geological events in the landmass of India have provided conditions for high levels of biological diversity.
- A split in the single giant continent around 70 million years ago, led to the formation of northern and southern continents, with India a part of Gondwanaland - the southern landmass, together with Africa, Australia and the Antarctic.
- Later tectonic movements shifted India northward across the equator to join the Northern Eurasian continent.

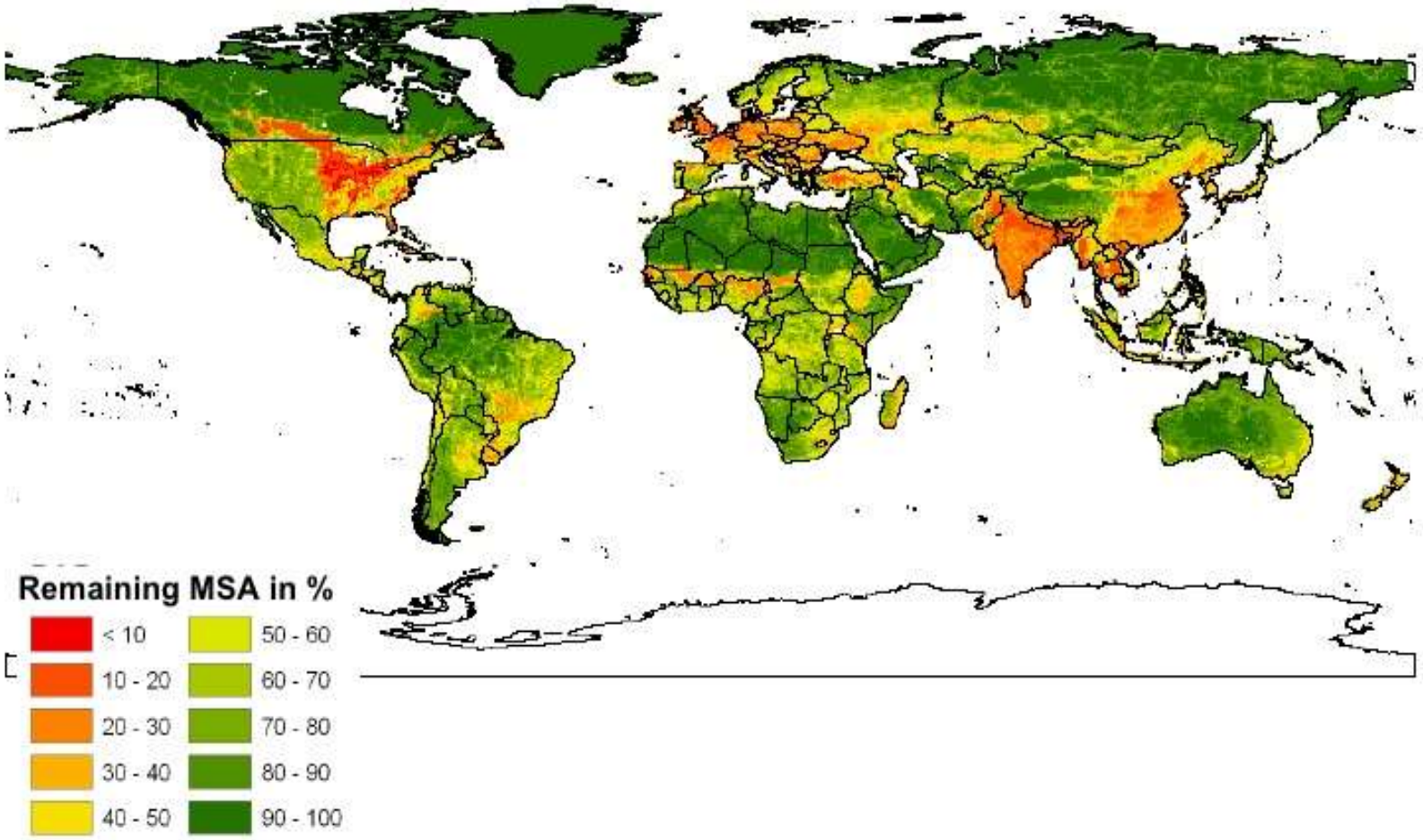
TECTONIC MOVEMENTS

• As the intervening shallow Tethis Sea closed down, plants and animals that had evolved both in Europe and in the Far East migrated into India before the Himalayas had formed.

• A final influx came from Africa with Ethiopian species, which, were adapted to the Savannas and semi-arid regions.

•Thus India's special geographical position between three distinctive centres of biological evolution and radiation of species is responsible for our rich and varied biodiversity

Level of Biodiversity in the World in 2050
One Scenario of the future : OECD/Globio



Source: Ben ten Brink (MNP) presentation at the Workshop: ***The Economics of the Global Loss of Biological Diversity 5-6 March 2008, Brussels, Belgium.***

INDIA- a rich biodiversity country

- India stands among the top 10 or 15 countries for its great variety of plants and animals, many of which are not found elsewhere. Has -
  - 350 different mammals (rated eight highest in the world),
  - 1,200 species of birds (eighth in the world),
  - 453 species of reptiles (fifth in the world) and
  - 45,000 plant species, of which most are angiosperms, (fifteenth in the world).
  - These include especially high species diversity of ferns (1022 species) and orchids (1082 species).
- India has 50,000 known species of insects,
  - 13,000 butterflies and moths.
  - It is estimated that the number of unknown species could be several times higher.

INDIA biodiversity

- 18% of Indian plants are endemic to the ountry and found nowhere else in the world.
- Among the plant species the flowering plants have a much higher degree of endemism.
- Among *amphibians* found in India, 62% are unique to this country.
- Among *lizards*, of the 153 species recorded, 50% are endemic.
- High endemism in various groups of insects, marine worms, centipedes, mayflies and fresh water sponges.

Diversity in crops

- There is also a great diversity of cultivated crops and breeds of domestic livestock.
- The traditional ***cultivars*** included 30,000 to 50,000 varieties of rice and a number of cereals, vegetables and fruit.
- The highest diversity of cultivars is concentrated in the high rainfall areas of the Western Ghats, Eastern Ghats, Northern Himalayas and the North-Eastern hills.

Diversity of crops & Livestock – India

- Gene-banks have collected:
  - over 34,000 cereals and
  - 22,000 pulses grown in India.
  - India has 27 breeds of cattle,
  - 40 breeds of sheep,
  - 22 breeds of goats and
  - 8 breeds of buffaloes.

BIODIVERSITY HOT SPOTS

- A **biodiversity hotspot** is a bio geographic region with a significant reservoir of biodiversity that is under threat from humans.
- There are over a thousand major eco regions in the world. Of these, 200 are the richest, ***rarest and most distinctive*** natural areas. These areas are called as the Global 200.
- It is estimated that 50,000 endemic plants which comprise 20% of global plant life, probably occur in only 18 'hot spots' in the world.
- Countries which have a relatively large proportion of these hot spots of diversity are referred to as ***'megadiversity nations .***

BIODIVERSITY HOT SPOTS

- North east & western Ghats are Hot spots.
- The Andaman and Nicobar Islands are extremely rich in species. It has-
  - – 2200 species of flowering plants and
  - –120 species of ferns.

. Out of 135 genera of land mammals in India, 85 (63%) are found in the Northeast.

- The Northeast States have 1,500 endemic plant species.
- A major proportion of amphibian and reptile species, especially snakes, are concentrated in the Western Ghats, which is also a habitat for 1,500 endemic plant species.

Why there is diversity in each kind ?

- Then God said: “Let the earth cause grass to sprout, seed-bearing plants and fruit trees according to their kinds, yielding fruit along with seed on the earth.” And it was so.
- 12 And the earth began to produce grass, seed-bearing plants and trees yielding fruit along with seed, according to their kinds. Then God saw that it was good.

- **Genesis 1: 11, 12**

Thank you..