ANIMAL DISTRIBUTION

By

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Introduction

- The spreading out of animals in the biosphere is called animal distribution

Methods of distribution

- Basically two theories explain the spreading out of animals in the biosphere
  1. Continental Drift hypothesis
  2. Centre of Origin hypothesis

1.Continental Drift hypothesis

This hypothesis was proposed by *Wagner.* According to this hypothesis, the earth was one whole mass when it originated. But about 135 million years ago (during Cretaceous period), the land mass became fragmented to the present day continents. Then the different continents were carried by currents leading to the present position of the continents. Accordingly, animals were also distributed and isolated in different continents.

- The continental drift is clearly visualized by seeing the world map. If America and Africa are brought closer, they fit into each other
- Again a dinosaur fossil Mesosaurus is found on the eastern side of America and the western side of Africa
- All these facts, clearly show that the two continent remained together in the past. They became separated later

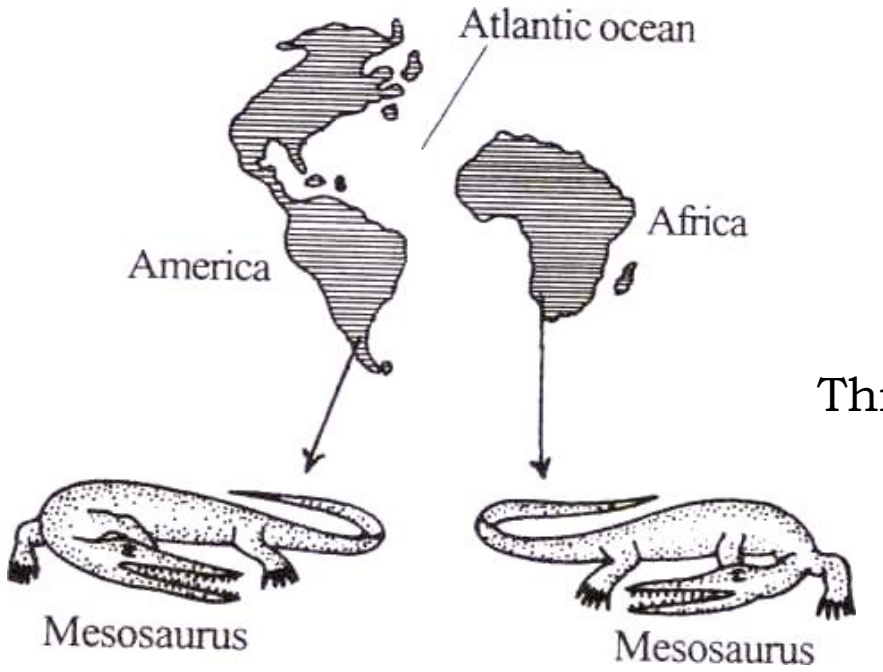

Fig.: Continental drift:
America can beautifully fit into Africa.
This means that the two continents remained together in the past

2. Centre of Origin hypothesis

According to this hypothesis, the individuals of a species spread out from the centre of their origin because of their high reproductive capacity

Classification of Animal Distribution

- There are three aspects of distribution of animals on earth, two of which are distributed in space (land and water) and one in time.
- **In space**
  - **Geographical Distribution :** This is the horizontal distribution of animals on land and water. This is the distribution in space. Geographical distribution of animals is called *zoogeography*
  - **Bathymetric Distribution :** This is the vertical distribution of animals on land and water. It is further divided into three types. They are
    - **Halobiotic:** It refers to the distribution of animals in the sea
    - **Limnobiotic:** It refers to the distribution of animals in freshwater
    - **Geobiotic:** It refers to the distribution of animals on land
- **In Time**
  - **Geological Distribution :** It refers to the distribution of animals in the past on the earth. It is the distribution in time. It is otherwise called *palaeontology*

Patterns of Distribution

- On the basis of the occurrence of animals in the different parts of the biosphere, the distribution is grouped into four types. They are as follows:
  1. Cosmopolitan or Continuous distribution
  2. Discontinuous distribution
  3. Bipolar distribution
  4. Isolated distribution

CONTINUOUS DISTRIBUTION

- When a species is found throughout the world, the distribution is called *cosmopolitan* or *continuous* distribution.
  Eg. *Artemia salina, mytilus, rats, bats, crows,* etc.

Continuous distribution has following types –

- **Cosmopolitan Distribution:** Animals or Species occurring in all climatic zone. Ex- *Falco pereginus (Hawk)*
- **Circumpolar Distribution :** Animals or species found in a particular pole of the globe. Ex- Polar Bear
- **Circumboreal and Circumanstral Distribution:** Animal or species which are distributed in a near continuous belt in the temperature region of northern or southern hemisphere are said to have **circumboreal*** and **circumanstral*** distribution respectively
- ***Circumboreal – Throughout Northern Hemisphere**
- ***Circumanstral - Throughout Southern Hemisphere**

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DISCONTINUOUS DISTRIBUTION

The animals of the same species or related species may inhabit widely separated areas of the world. There is no individual in the intermediate areas. Such a distribution is called *discontinuous distribution.* A few examples are given below

Notodrilus: It is an earthworm found in New Zealand, Australia, South America, Central America and South Africa

Peripatus: It is a living connecting link between Annelida and Arthropoda. It is found in America, Africa, India, Malaya and New Zealand

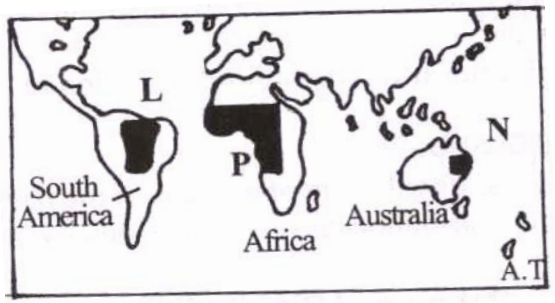
Belostoma: It is a giant water-bug living in America, Africa, Australia and Southern Asia

Dipnoi: These are lung fishes

Protopterus: It lives in Africa

Lepidosiren: It is found in South America

Neoceratodus: It lives in Australia



L-Lepidosiren,
P-Protopterus,
N- Neoceratodus

Fig.:Discontinuous distribution of dipnoi

- **Apoda:** It is a limbless amphibian living in Africa, America, Southern Asia and East Indies
- **Flightless birds (Ratitae):**
  - **Ostriches:** These are found in Africa and Arabia
  - **Emu:** It lives in Australia
  - **Kiwi:** It lives in New Zealand
- **Camels:** They are distributed in Asia and South America
- **Elephants** :They are found in India, Burma and Africa

Reasons for Discontinuous Distribution

- **Extinction:**
  - It is believed that animals which are discontinuously distributed now, might have had a continuous distribution in the remote past.
  - The continuous distribution became discontinuous by the extinction of the animals in the intervening areas

- **Submergence of Land Bridges:**
  - The distant places which have the same type of animals were connected by land bridges.
  - But, in course of time, the intermediate land bridges got submerged leading to the separation of land masses having similar type of animals

Factors Affecting Distribution

- Animals spread out in the biosphere through migration. Migration and dispersal of animals are controlled by many factors or barriers
- **Physical Barrier:**
  - It includes mountains, rivers, lakes, saes, vegetations or forests and long distance
- **Climatic Barrier:**
  - Temperature, moisture, light and pH
- **Biological Barrier:**
  - Food, predators and enemies


THANK YOU!