Quadrant II – Transcript and Related Materials

Programme: Bachelor of Science (Third Year)

Subject: Botany

Course Code: BOC 110

Course Title: Plant Ecology and Phytogeography

Unit: Phytogeography

Module Name: Endemism

Module No: 50

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Notes

Outline: **Endemism in plants**

Types of endemism and its implications in phytogeography

Cosmopolitan species

Species which are spread over a wide area or in different ecological conditions in appropriate habitats

Ex. A pantropical ("all tropics") distribution is one which covers tropical regions of both hemispheres.

The extreme opposite of this is 'Endemism'

Endemics

- A taxon whose distribution is confined to a given area is said to be endemic to that area
- The taxon may be of any rank, although it is usually at a family level or below
- Its range of distribution may be wide, spanning an entire continent, or very narrow covering only a few square metres
- Examples of endemic plants of Western Ghats region are *Saraca asoca*, *Cinnamomum malabatrum*

Types of Endemics

- Among endemics, some species exhibit very localised distribution and are called local endemics Ex. *Dipcadi concanense* and *Dipcadi goaense*

- Sometimes mutants appear and vanish without being able to compete with parental species, and are called pseudo-endemics
- Some species may show a restricted distribution but cover large areas in course of time. This is called expanding or progressive endemics
- Some old species may be restricted to a small region because of a severe decline in their population, a phenomenon called contracting or retrogressive endemics.

Following are two more types of endemics based on scale of time:

1. Palaeoendemic or epibiotic or relics - These endemics are supposed to have been the remnants of a once widely distributed taxon in the past. Ex. *Gingko biloba*, *Sequoia semipervirens*, *Trapa natans*
2. Neoendemics or microendemics - These endemic taxa are supposed to have evolved only during the recent times and did not have sufficient time to extend their ranges of distribution

There are multiple causes of rarity and endemism.

Three primary factors describe the distribution of endemics:

- Geographical area
- Ecological role of species. Ex. Flowers of various types and peculiar insect pollinators.
- Isolation

Stebbins (1980) has given gene pool/ niche interaction theory to explain origin of rarity and endemism.

According to this theory, 'the primary cause of localized or endemic distribution patterns is adaptation to a combination of ecological factors that are themselves localized'

Ex. Soil texture, moisture, temperature variations

Following concept are different than endemism

Some species may show 'Discontinuous distribution:

- When plants occur at two or more distant places of the world which are separated by overland's or oceans hundreds or thousands of kilometres apart. Such a distribution is called discontinuous or disjunct distribution.

Ex. *Magnolia* species, *Nothofagus*

Origin of cultivated plants:

- It is believed that for every cultivated species, there is one region where it evolved and came in to existence

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