BIOGEOGRAPHY of PLANTS

THE DISTRIBUTION OF PLANTS AROUND THE WORLD.

CLIMATIC ZONES: Arctic, Temperate, Tropical. Hardiness Zones - S.American, New Zealand, S.African, Himnalayan plants often pre-adapted to the Irish climate. Dry & Wet zones. Continentality/Island climates.

BIODIVERSITY HOT-SPOTS: Cape floral region - 8,000 species. Western Australia 12,500 spp.

RELICS: **Taxodiaceae**, very ancient family, 150 million years old, now just relics. *Sequoia*, *Sequoiadendron*, *Metasequoia* (described from fossil in 1941, 'discovered' in the wild (China) in 1942.), Taxodium (Swamp cypress). A total of 10 genera but just 14 species.
Cycads ditto. Many confined to small relic populations, one only known by a single clone - *Encephalartos woodii* (in Palm House).

CONTINENTAL DRIFT: Aruacariaceae, Proteaceae, *Nothofagus* Restionaceae = All found in Southern hemisphere only, Gondwanaland (S.America, Antarctica, Australia, Africa, Madagascar) relics. Continents drifted apart, now plants distributed through the Southern hemisphere, but NOT by long-distance dispersal.

GLACIATION: *Hammamelis*, *Liriodendron*, *Nelumbo*, are found in N.America & China, but NOT in Europe, except as cultivated plants. Once distributed throughout N.Hemisphere (fossils), European populations lost during last glaciation 100,000 - 15,000 years ago.

ISLAND BIODIVERSITY

Diversity is stable when Immigration rate = Extinction rate

AREA EFFECT : i.e. Where immigration rates are ca. equal.
Small island => small populations => high extinction rate => low spp. No.
THEREFORE: **Bigger islands have bigger stable diversity**

DISTANCE EFFECT i.e. Where extinction rates are ca. equal.
Greater distance => low immigration => stability at low diversity
THEREFORE: **Nearer islands have bigger stable diversity**

Reducing any land area reduces overall species diversity. Log scale. i.e. a 50% reduction leads to a ca. 15% loss in total species number. This applies to physical islands and islands of vegetation - Sand dunes, Woodland, Grassland.