

Patterns of Distribution and Abundance

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Ecology is the study of factors determining the distribution and abundance of living organisms. I.e., what factors are responsible for the pattern of distribution and abundance we see for organism X? A number of different answers can exist, depending on the scale

Spatial Scale - *Cypraea caputserpentis*

- Lives on the outer edge of rock platforms
 - Prefers this location
- Not found in sandy bays
 - Feeds on organisms found on rock platforms
- Only found in some rock platforms but not others
 - Currents affect natural distribution
- Indo-West Pacific distribution
 - Evolved in this area

Temporal Scales - *Larus pacificus* (Pacific Gull)

- Recorded one day, not the next
 - Foraging patterns
- Numbers vary from year to year
 - Depends on reproductive success and behaviour
- Absent from Rottnest Island for 50 years
 - Large population of competitive silver gulls
- Pacific immigrant to Western Australia
 - dispersal

Australia Today

- Terrestrial environments range from tropical to sub-tropical, warm temperate and cool temperate
- The Great Dividing Range causes a wetter eastern side and drier western side
- Climate is greatly affected by ENSO cycles
- Central arid zone is a barrier for many species
 - It is common to find similar but different species on either side of the barrier

Niche Theory

- A niche is defined as all the biotic and abiotic factors that impinge on the survival and reproductive success of a species
- A fundamental niche is the set of conditions in which it is possible to survive
- A realised niche is the set of conditions in which the species actually does survive and reproduce
- Ultimately, species can only survive and reproduce in places where basic requirements are met