CB9 · Part A

Ecology and fieldwork

Ecology

1 2

Levels

Organism → population → community + environment = ecosystem

Conditions

Abiotic: non-living; biotic: living; adaptations affect distribution

Competition

Shared limited resources; within / between species

Food webs

Food → consumer transfers energy; producers start chains

Predator-prey

Prey rise may precede predator rise; other factors matter

Associations

Parasite harms host; mutualism benefits both, e.g. pollination

Fieldwork

1

Random quadrats

Representative coordinates; known area; fixed counting rules

Population estimate

Count ÷ sampled area × habitat area; 40 ÷ 2.5 × 100 = 1,600

Reliability

Enough representative samples; patchiness / ID errors affect estimate

Belt transect

Systematic quadrats across gradient; measure abiotic factor

Patterns

Repeat transects; graph distribution; correlation ≠ cause

Frequency

Occupied quadrats ÷ total × 100; 6 / 10 = 60%, not cover

Biodiversity

2

Value

Variety of life; interdependence, useful resources, ecosystem services

Conservation

Habitats, reforestation, captive breeding; diversity and threats matter

Introduced species

Some become invasive; indirect food-web effects; assess control

Fish farming

Food supply; density, disease, waste, escapes and medicine risks

Eutrophication

Nutrients → algae → shade / death → aerobic decay → low O_2

Prevention

Reduce fertiliser / sewage nutrients; low-O_2 tolerance varies

1. Ecology → Fieldwork: Sampling measures abundance and distribution.
2. Ecology → Biodiversity: Population changes affect interdependent species.