

Biodiversity and Organisms Indices

By: Fars Zedan

Email: faris.Jarjees@su.edu.krd

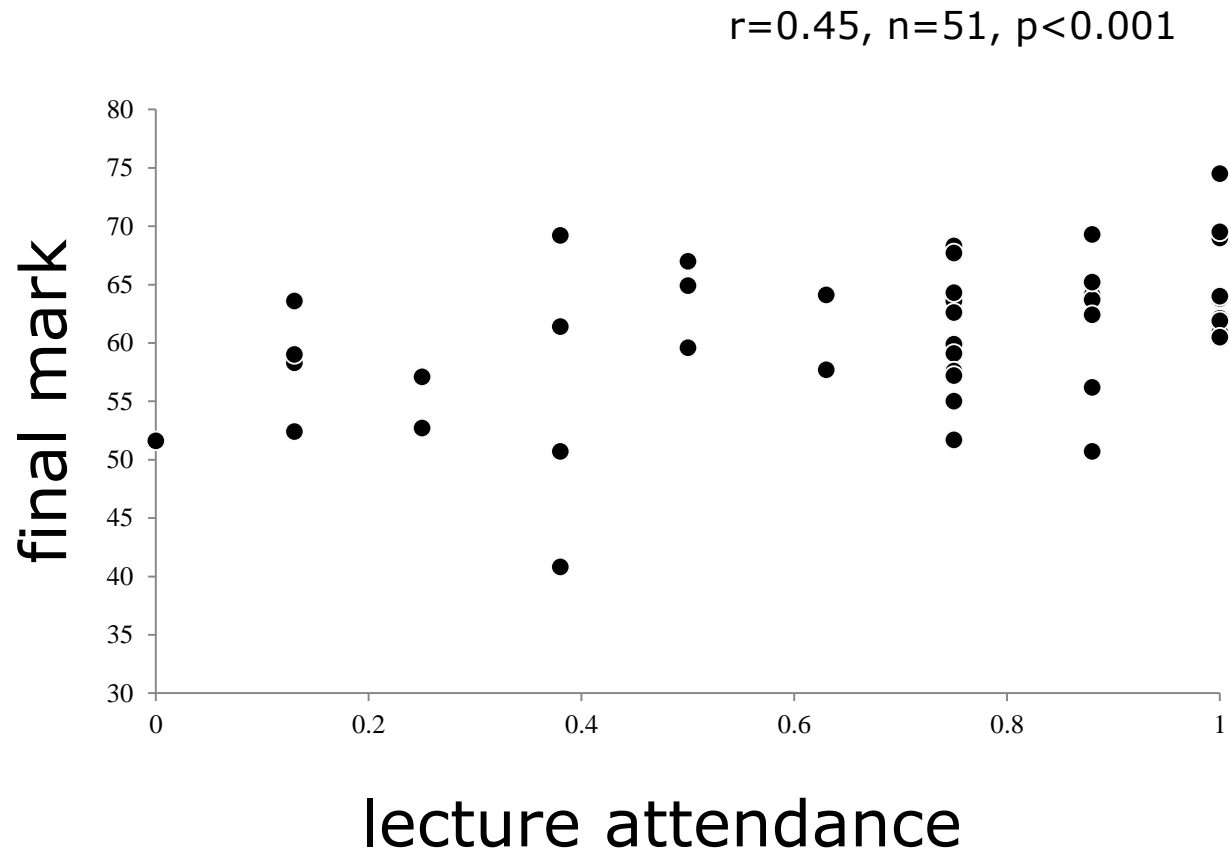
22 September 2019

components

- lectures Sunday 10.30 am, Hall 23
 - 15% of module mark (one exam)

what is expected of you

- attend the lectures



what is expected of you

- attend the lectures
- read the literature (pdfs on Moodle: all cited refs + a few interesting others)

Don't believe everything you read! The literature is full of people on the make (careers!) trying to invent something new ('there is nothing new under the sun')

- 1 hr exam: 4 to 5 questions, mixing
- don't do the course just for the marks; training for a job!

opportunities

Jobs, opportunities & advice:-

Biodiversity Lecture 1

what is biodiversity?

- Much **confusion** about what biodiversity is
 - in part because many people assume that everyone shares the same intuitive definition
 - also because there are many different viewpoints about biodiversity

Viewpoints

- Biodiversity as a concept
- Biodiversity as a social/political construct
- Biodiversity as a measurable entity

Inconsistent or inadequate definitions due in part to this range of viewpoints

- usage in the media, political and legal contexts

But the interdisciplinary nature of the subject has led to work on questions of general importance that are too often ignored by specialist fields

Biodiversity as a concept

≈ The variety of life

– US Congress Office of Technology Assessment definition:
“the variety and variability among living organisms & the ecological complexes in which they occur...” (OTA, 1987)

– IUCN definition

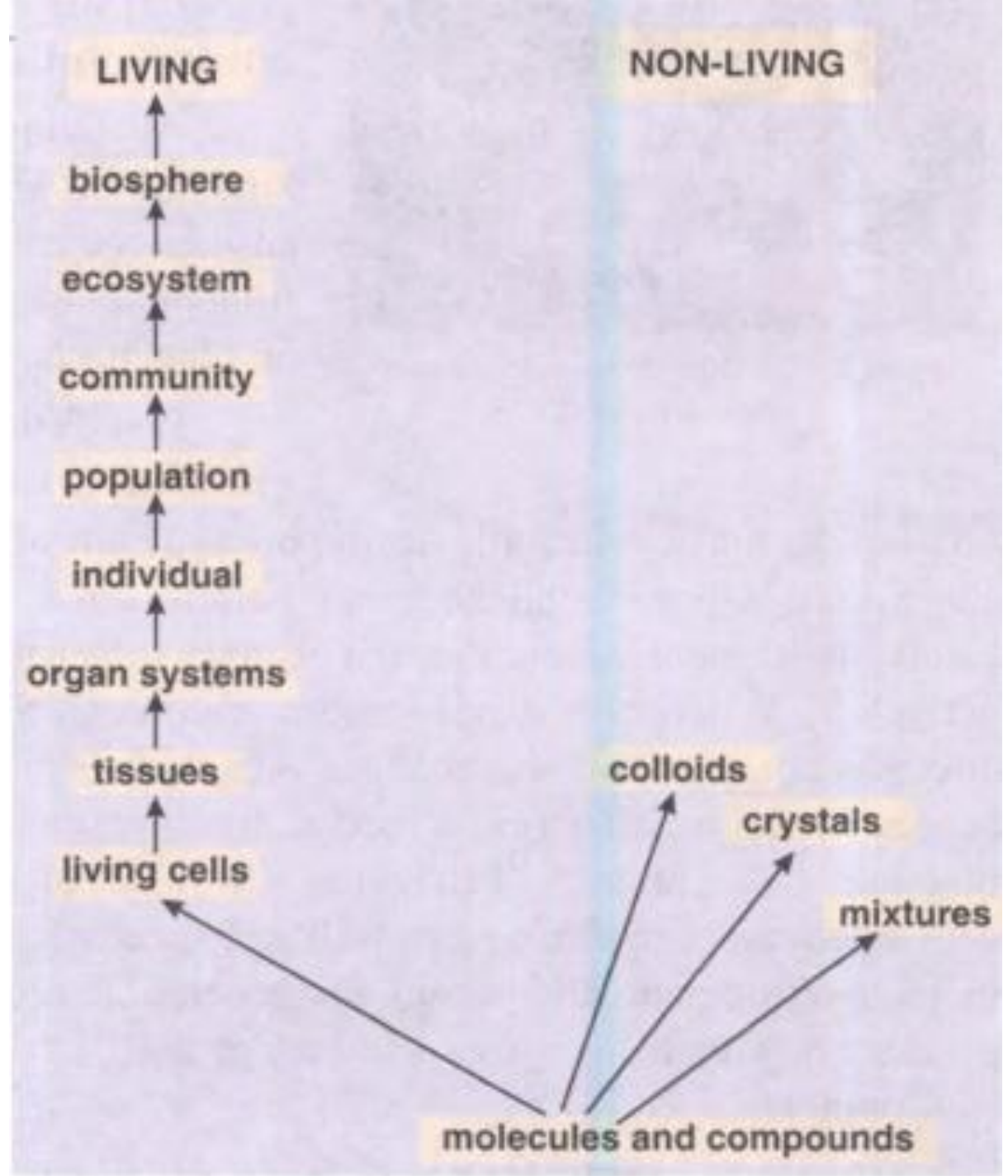
(<http://www.iucn.org/themes/ssc/publications/policy/invasivesEng.htm>) :

"Biological diversity" (biodiversity) means the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are a part; this includes diversity within species, between species and of ecosystems.

1.1 What is Biodiversity?

Biodiversity comes from the term 'biological diversity'. Biodiversity is a term given to the variety of all forms of life on Earth including plants, animals and micro-organisms and their interrelationship ('**Bio**' means life and **Diversity** means variety). Biodiversity includes a variety of ***ecosystems, species*** and ***genes***, and the ecological processes that support them (Figure 1).

Levels of organization



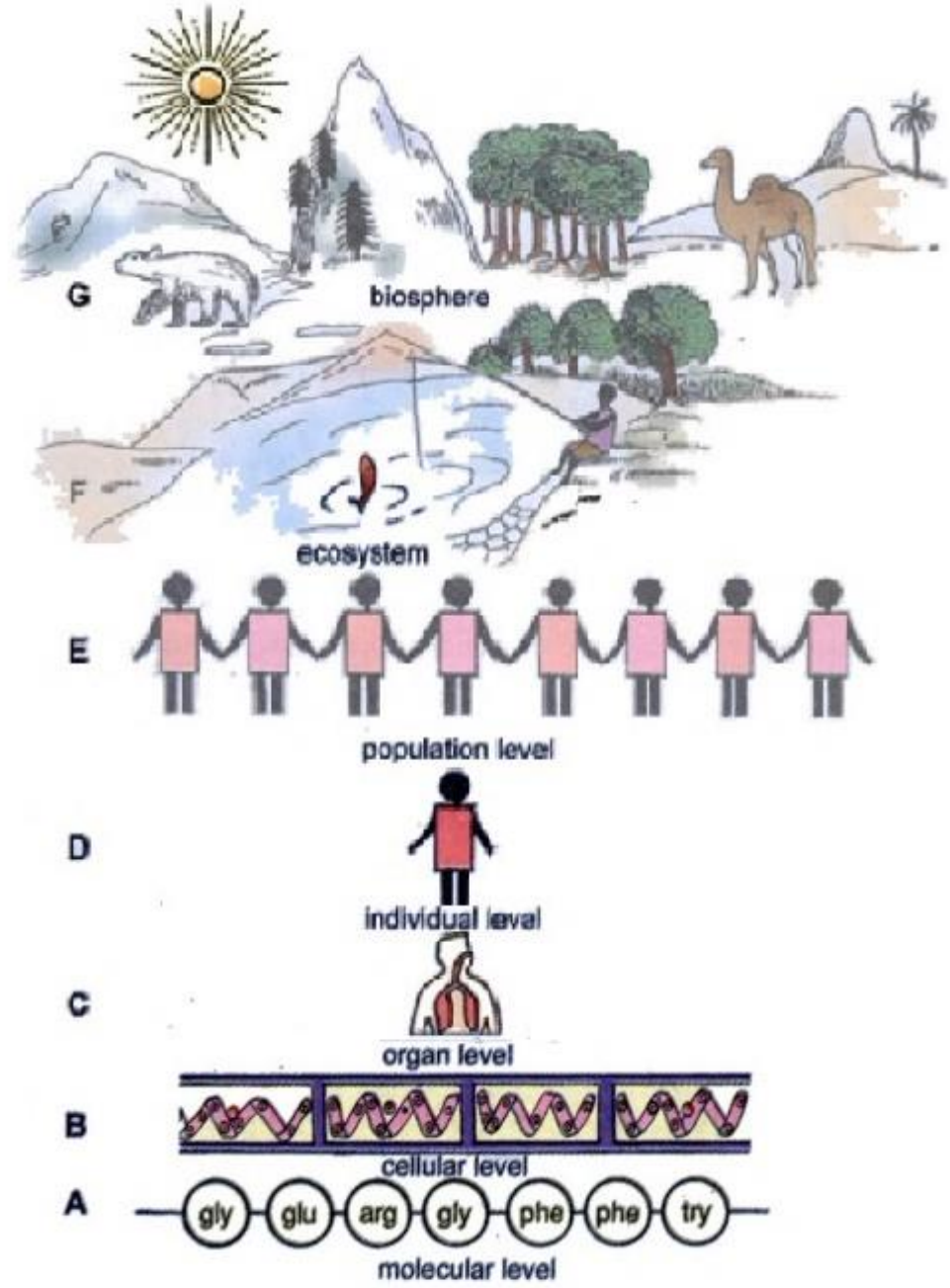


Fig. 1.2. Levels of organization (diagrammatic)

There are three levels of biodiversity namely:-

Genetic diversity: This refers to the variety of genes within a species of plant or animal. Healthy plant and animal populations have a genetic variety, that is, they are not all from the same small number of parents. Genetic diversity serves as a way for populations to adapt to changing environments. Example of genetic variations in dogs is the difference in skin colour, ears, eyes and body shape.

Species diversity: This refers to the variety of types of plants, animals, and micro -organisms.

Ecosystems diversity: This refers to the variety of natural systems which provide the homes or habitats and services for all organisms. Examples of ecosystems diversity are forests, mountains, rivers, lakes, wetlands, oceans and deserts.

Importance of Biodiversity

Biodiversity is vital for supporting all life forms on Earth.

Biodiversity is the foundation of healthy functioning ecosystems upon which all life depends. Biodiversity provides the following ecological services: soil formation; nutrient, nitrogen, oxygen and carbon cycling; energy production; flood and erosion control; clean air; clean water; breaking down pollutants; pest and disease control; food and medicines.

Biodiversity also provides raw materials for construction and industrial production as well as opportunities for recreation, tourism, scientific research and education, and source of cultural identity

Reading material

1. Hunter and Gibbs (2007), *Fundamentals of Conservation Biology*.