



Biodiversity of Sand Dunes

With University of Haifa-Oranim and AIES

Prof. Uri Shanas,
Assistant: Ms. Yael Olek, TBN

3 academic credits, Undergraduate

Grade components:

20% Participation

80% Final report

Prerequisites:

Ecology, Experimental statistics, Conservation Biology

The aim of this course is to provide the students with a hands-on experience in biodiversity. The world-wide sharp decline in biodiversity is a human made crisis that ecologists are trying to solve. Some of the important questions are: "What and how many species exist?"; "How do we evaluate the abundance and the richness of species?"; "How do we set priority regions for conservation based on biodiversity?" We will deal with these questions and others before, during and after sampling several taxonomic groups in the research area of the Arava institute. The students of this course will take part in a long-term monitoring research of a specific landscape unit in the Arava valley. Among the topic that will be covered are:

- What is biodiversity?
- Why diversity is important?
- How do we evaluate biodiversity?
- Measuring species abundance
- Measures of species richness
- Surrogate species
- Sampling methods
- Measurement and indices of biodiversity
- Diversity in space and time
- Taxonomic diversity
- Functional diversity

The students will practice sampling in a research plot (Samar sand dunes), by setting rodent traps, and pitfall traps for reptiles and invertebrates. The students will practice collection, handling, identification and recording wildlife. Every day after

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the morning and evening sessions, the students will work on sorting and analyzing the collected data.

Data collection will be performed collectively. Previous collected data will be handed. Each student will analyze the data and prepare a report in a format of a scientific paper.

Literature:

1. Principles of Conservation Biology. Gary K. Meffe, C. Ronald Carroll and Contributors, 2nd edition. 1997. Sinauer Associates, Inc. Chapter 4 : Global Biodiversity
2. Yoccoz et al. (2001). Monitoring of biological diversity in space and time. TREE 16 (8): 446-452.
3. Magurran, A. E. (2003). Measuring biological diversity. Blackwell Science Ltd. Malden. pp.256.
4. Recommended reading: The Diversity of Life. E. O. Wilson. New edition 1999. W.W. Norton & Company, Inc. N.Y., USA.

Introduction lecture: Sand dunes

Topics: Geomorphology, biodiversity, conservation and campaigns of sand dunes in the Arava. Evolution of life, biodiversity.
Dr Elli Groner

Outline for Biodiversity expedition

Day #1

13:00-14:00 Introduction, The design of the research plan. Assigning students to tasks, preparing the gear.

15:30-16:00: Travel to the site

16:00-18:00: Construction of pitfalls and traps.

18:00-18:30: Travel back

18:30: Dinner

20:00-22:00 Lecture: The biodiversity concept, methods in biodiversity studies, indices of biodiversity

Day #2

05:00-05:30: Travel to the site

05:30- Collecting rodents, reptiles, beetles and spiders.

All rodents and reptiles will be weighed, measured, and marked. Beetles and spiders will be brought to the institute and sorted to species.

08:00-08:30: Travel back to the Kibbutz

08:30-09:00: Breakfast

09:00-10:30: Sorting the collected beetles and spiders

10:30-11:00: Sum up

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15:00-15:30: Travel to the site
15:30-18:30: Laying down the pitfalls, drift fences, and Sherman traps.
18:00-18:30: Travel back
18:30: Dinner
20:00-21:00 Sorting, discussions and lectures.

Day #3

05:00-05:30: Travel to the site
05:30- Collecting rodents, reptiles, beetles and spiders.
All rodents and reptiles will be weighed, measured, and marked (?). Beetles and spiders will be sorted on site. All captured creatures will be released.
08:00-08:30: Travel back
08:30-09:00: Breakfast
09:00-10:30: Sorting the collected beetles and spiders
10:30-11:00: Cleaning and storing the gear.
11:00-14:00: Break including lunch
14:00-15:00 Presentation of the Arava biodiversity study
15:00-16:00 Instructions for writing the report.
16:00-20:00 : Analyzing the results
20:00-21:00: Night Safari, Samar dunes

Day #4

07:00-08:00: Breakfast
08:00-08:30: Room checkout
08:00-11:00: Writing the paper
11:00-Departure

Submit Final report