Biodiversity of Sand Dunes

Teachers: Prof. Uri Shanas, Dr. Elli Groner
3 academic credits, undergraduate

This course is aimed in providing students with the experience of doing field work and learning how to assess nature into meaningful results and discussion. The expedition of this course will be over 5 days together with 3rd year Biology students from Haifa University.

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.

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

Duties:

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

Grade components:

Participation and attendance in class: 15%
Activity during expedition: 15%
Assignments and Quizzes 10%
Final paper: 60%

Literature:

1. Shanas U, Galyun Y, Alshamlih M, Cnaani J, Guscio D, Khoury F, Mittlera S, Nassar K, Shapira I, Simon D, Sultan H, Topel E and Ziv Y 2006. Reptile diversity and rodent community structure across a political border Biological conservation 132: 292 –299
2. Shanas U, Galyun Y, Alshamlih M, Cnaani J, Guscio D, Khoury F, Mittlera S, Nassar K, Shapira I, Simon D, Sultan H, Topel E and Ziv Y 2011 Landscape and a political border determine desert arthropods distribution Journal of Arid Environments 75: 284-289

Recommended reading:

1. The Diversity of Life. E. O. Wilson. New edition 1999. W.W. Norton & Company, Inc. N.Y., USA.
2. Yoccoz et al. (2001). Monitoring of biological diversity in space and time. TREE 16 (8): 446-452.

Course schedule:

Lesson	topic	Lecturer
L1	Introduction	Dr Groner
L2	Evolution and taxonomy of animals	Dr Groner
L3	Analysing data and excel	Dr Groner
L4	Natural history of vertebrates, animal conservation	Oded Kainan
L5	Alpha and beta diversity and adaptation to sand	Dr Groner
	Expedition	Prof. Uri Shanas, Dr Elli Groner
L6	Data processing	Dr Groner
L7	How to write a paper	Dr Groner

Outline for Biodiversity expedition

Day 1
Meeting at the lab
14:00-15:30 Introduction, The design of the research plan. Assigning students to tasks, and 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: Talk

Day 2
05:30-05:50: Travel to the site

05:50- 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 by 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
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
05:30-05:50: Travel to the site
05:50- 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 by 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
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 4
05:30-05:50: Travel to the site
05:50- Collecting rodents, reptiles, beetles and spiders.
All rodents and reptiles will be weighed and measured. 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.
11:00-13:00: Break including lunch
13:00-16:00: Forum dialogue
16:00-18:00: identification demonstration, Analyzing the results
18:00-22:00: Night Safari, Samar dunes, optional dinner at the dunes.

Day 5
07:00-08:00: Breakfast
08:30-11:00: Write the paper and sum up and conclusions.
11:00-Departure for UoH-Oranim students.