

24 April 2012

**Course Proposal:  
Systematics and Diversity of Scorpions,  
with Introduction to the Israeli Fauna**

Dr Lorenzo Prendini, Division of Invertebrate Zoology,  
American Museum of Natural History, New York, U.S.A.

**Course on Systematics and Diversity of Scorpions, with Introduction to the Israeli Fauna:** 26–29 August, 2013, Jacob Blaustein Institutes for Desert Research, Ben-Gurion University (BGU), Sede Boqer Campus. See course outline for details.

**Course Description:** The scorpion fauna of the Middle East in general, and Israel in particular, remains poorly known. This one-week course at the Sede Boqer Campus of Ben-Gurion University of the Negev focuses on the systematics and biology of scorpions, with emphasis on the Israeli fauna. The classwork will include introductions to scorpion systematics, phylogenetic relationships, ecology and biogeography. Fieldwork in the Negev, which has a diverse scorpion fauna, will provide hands-on training in how to collect, preserve, document and identify scorpions for morphological and genetic study. Fieldwork will be conducted in rocky slopes and wadis, loessial plains and sand dunes, exposing students to the diversity and ecomorphological adaptations of scorpions in three different habitats. The course has been arranged for the week preceding New Moon, when scorpions are active on the surface at night, to ensure the successful collection and observation of diverse species in their natural habitats. This course will interest graduate students in ecology, arachnology, entomology, and conservation biology. Participants will include BGU students and students from other universities. If space is available, 3rd year undergraduates and researchers from government labs (e.g., Volcani, Ministry of Agriculture) can also participate. We propose to have 12–20 students (20 will be an upper limit for the labs and field excursions).

**Course Outline:**

**Instructor:** Dr Lorenzo Prendini, Division of Invertebrate Zoology, American Museum of Natural History, Central Park West at 79<sup>th</sup> St., New York ,NY 10024-5192, U.S.A. Lorenzo Prendini is a Curator at the American Museum of Natural History (AMNH) with more than 15 years' research experience on the systematics and biology of scorpions.

**BGU Host:** Prof Yael Lubin, Blaustein Institute for Desert Research, Ben-Gurion University of the Negev, Sede Boqer Campus; with participation of Dr. Eran Gefen, University of Haifa, Oranim

**Location & dates:** Jacob Blaustein Institutes for Desert Research, Ben-Gurion University (BGU) of the Negev, Sede Boqer Campus, 26–29 August, 2013

**Hours:** 10 AM–12 PM (lecture, days 1–4); 2–5 PM (field/lab, days 1–2; lab, days 3–4); 7–11 PM (field/lab, days 1–3). 32 hours total.

**Prerequisites:** None; background in arachnology/entomology and/or systematics helpful.

**Grading:** Participation in fieldwork, lab work, and discussions. Oral exam based on review of identifications.

**Equipment & supplies:** The following will be provided: dissecting microscopes with light source; collecting equipment and supplies: ultraviolet lamps, forceps, spades/shovels, pitfall traps, collecting bottles/vials, ethanol, syringes.

**References:**

- Coddington, J.A., Giribet, G., Harvey, M.S., Prendini, L., and Walter, D.E. 2004. Arachnida. Pp. 296–318 In: Cracraft, J. and Donoghue, M. (Eds.) *Assembling the Tree of Life*. Oxford University Press, Oxford.
- Fet, V., Hendrixson, B. E., Sissom, W. D., and Levy, G. 2000. First record for the genus *Mesobuthus* Vachon, 1950 in Israel: *Mesobuthus nigrocinctus* (Ehrenberg, 1828), n. comb. (Scorpiones: Buthidae) from Mt. Hermon. *Israel Journal of Zoology* **46**(4): 287–295.
- Levy, G. 2007. The first troglobite scorpion from Israel and a new chactoid family (Arachnida: Scorpiones). *Zoology in the Middle East* **40**: 91–96.
- Levy, G. & Amitai, P. 1980. *Fauna Palaestina. Arachnida. I. Scorpiones*. Israel Academy of Sciences and Humanities, Jerusalem.
- Lourenço, W.R. 2002. Further morphological considerations on the genus *Birulatus* Vachon (Scorpiones, Buthidae), with the description of a new species from Israel. *Revista Ibérica de Aracnología* **6**: 141–145.
- Prendini, L. and Wheeler, W.C. 2005. Scorpion higher phylogeny and classification, taxonomic anarchy, and standards for peer review in online publishing. *Cladistics* **21**(5): 446–494.

**Course Program:**

**Day 1 (26 August):**

- 10 AM–12 PM: Lecture: Introduction to Scorpions 1. Phylogenetic position of scorpions within Chelicerata; monophyly and synapomorphies of scorpions; scorpion

- paleontology; morphology, biology, and medical importance of extant scorpions.
- 2–5 PM: Practical: Field trip to wadi and rocky slopes habitat (Halukim ridge): turn stones (2 hours); return to lab for processing and labeling (1 hour).
  - 7–11 PM: Practical: Field trip to wadi and rocky slopes habitat (Halukim ridge): ultraviolet detection (3 hours); return to lab for processing and labeling (1 hour).

**Day 2 (27 August):**

- 10 AM–12 PM: Lecture: Introduction to Scorpions 2: Phylogeny and higher classification of scorpions; scorpion families and their geographical distribution; Israeli scorpion taxa in context.
- 2–5 PM: Practical: Field trip to loessial plains habitat (Sede Zin): excavate burrows, set pitfall traps (2 hours); return to lab for processing and labeling (1 hour).
- 7–11 PM: Practical: Field trip to Zin canyon and loessial plains habitat (Sede Zin): ultraviolet detection, check pitfall traps (3 hours); return to lab for processing and labeling (1 hour).

**Day 3 (28 August):**

- 10 AM–12 PM: Lecture: Systematics of Israeli Scorpions 1: Family Buthidae: Identification, Distribution and Biology.
- 2–4 PM: Practical: Examination and identification of material collected during days 1–2.
- 6–7 PM: Practical: Drive to Mashabbim sand dunes for field trip.
- 7–11 PM: Practical: Field trip at sand dune habitat (Mashabbim sand dunes): ultraviolet detection (3 hours); return to lab for processing and labeling (1 hour).

**Day 4 (29 August):**

- 10 AM–12 PM: Lecture: Systematics of Israeli Scorpions 2: Families Akravidae, Diplocentridae and Scorpionidae: Identification, Distribution and Biology.
- 2–5 PM: Practical: Examination and identification of material collected during days 1–3.