



Ben-Gurion University of the Negev
Jacob Blaustein Institutes for Desert Research
The Swiss Institute for Dryland Environmental and Energy Research
Mitrani Department of Desert Ecology

Seminar

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MDDE

Tuesday, June 5, 2017, 12:00

Seminar Room, Old Administration Building

This is Gilad's Ph.D. summary seminar and refreshments will be served at 11:40.



Choosing or Losing Your Partner:

Differential Effectiveness of Dispersal Interactions at Range Margin

Dispersal is a key life-history trait, and as such varying dispersal strategies are expected to evolve that will suit the demands and ecological conditions of species and populations. In plant-animal dispersal interactions there could be potential dispersal agents of differential effectiveness, and evolved dispersal strategy in such case is manifested as partner choice, expressed in a set of traits that attracts specifically the more effective disperser. However, effectiveness of a dispersal interaction can be equally determined by the distribution of the dispersal agents both spatially and temporally, especially when the effective partner is mismatched with the dispersed plant and thus lost. At static species range margins, and in areas outside the geographic hotspots of an interaction type, Dispersal is thus predicted to be less efficient. This may occur either through choice of the less effective partner due to increased cost of dispersal, or a loss of the effective partner through such a mismatch. I worked on myrmecochory (ant-plant dispersal interaction) in Israel. In this interaction type, the plant, through a fatty seed appendage called elaiosome, attracts ants that take the seed to their nest, remove the elaiosome for consumption and discard the seed. The keystone dispersers in this interaction type are large scavenging ants. Myrmecochory is well-studied in its global hotspots, but understudied in Israel. I thus studied the dispersal services of two ant guilds reported to interact with elaiosomes in Israel: scavengers (*Cataglyphis spp.*) and granivores (*Messor spp.*). The main plant species I studied was *Sternbergia clusiana*, a myrmecochore geophyte reaching its southern range margin in the Negev. I compared dispersal, elaiosome traits and ant community composition in six of its Israeli populations. Finally, I examined the traits and interactions of additional plant species. Through a mixture of cafeteria experiments and measurements of elaiosome traits, I examined three main research questions:

- A. Is there differential effectiveness in the dispersal services provided by the two ant guilds?
- B. Is dispersal effectiveness really reduced at *S. clusiana* range margin populations?
- C. Who is the main ant guild interacting with Israeli myrmecochore plants in general? Is it the same scavenger guild dispersing seeds at myrmecochory hotspots?

For B+C I examined whether the trends found relate to elaiosome traits (partner choice) or ant community composition (partner loss/mismatch).