

**PROCEEDINGS OF THE
FORTY-SIXTH ANNUAL MEETING OF THE
ZOOLOGICAL SOCIETY OF ISRAEL**

HELD AT
UNIVERSITY OF HAIFA
13 December 2009

Greetings: Prof. Gal Richter-Levin, Dean of the Faculty of Science and Science
Education, University of Haifa

Greetings: Prof. A. Haim, Head of Organizing Committee, University of Haifa

SCIENTIFIC SESSIONS CHAIRHOLDERS

Animal Behavior:	O. Ovadia (Ben-Gurion University of the Negev) A. Barnea (Open University of Israel) S. Markman (University of Haifa at Oranim)
Conservation:	R. Ben-Shlomo (University of Haifa at Oranim) Y. Ziv (Ben-Gurion University of the Negev)
Ecology:	I. Izhaki (University of Haifa)
Faunistics and Behavior:	M. Inbar (University of Haifa)
Marine Biology:	E. Spanier (University of Haifa)
Physiology:	R. Reshef (Technion—Israel Institute of Technology) M. Horowitz (The Hebrew University of Jerusalem)
Posters:	Z. Arad (Technion, Israel Institute of Technology)

GENERAL MEETING OF THE SOCIETY AND CLOSING CEREMONY

Chair of General Meeting: I. Izhaki, University of Haifa

Chair of Closing Session: Prof. A. Haim, Head of Organizing Committee, University
of Haifa

The Nami Bouskila Award for best student paper published in the *Israel Journal of Ecology & Evolution* was awarded to Uri Roll, a Ph.D. Student at Tel Aviv University, for his paper entitled “Hot-Spot Facts and Artifacts—Questioning Israel’s Great Biodiversity.”

After a festive lighting of the Chanukah candles, the meeting was adjourned.

Wise Faculty of Sciences, Tel Aviv University, Tel Aviv 69978, Israel; ^bDepartment of Ecology and Evolutionary Biology, College of arts and Sciences, University of Colorado at Boulder, Colorado 80309, USA. talirein@post.tau.ac.il

The barn swallow (*Hirundo rustica*) species complex provides a model for the study of sexual selection and speciation. In Israel, the resident sub-species (*H. r. transitiva*) and the migratory European sub-species (*H. r. rustica*) interact and share roosts during spring and fall. The resident sub-species has darker ventral colorations, which may be sexually attractive to females (Vortman et al. in prep.). Yet, the two sub-species are genetically very similar, with genetic evidence of gene flow after divergence. As such, we were interested in whether sub-species recognition occurs and, if so, promotes pre-mating isolation between the two sub-species. We tested the response of resident breeding pairs to taxidermically prepared models of *transitiva* and *rustica* males, sand martin (another same-sized member of the *Hirundinidae* family), and house sparrows, a known nest competitor. While females did not show clear responses to the models, males displayed clear sexual behavior that included singing and repeated mounting attempts toward both sub-species of *H. rustica* and the sand martin, but not toward the sparrow (that was occasionally mobbed). These results suggest that male swallows would mate indiscriminately with almost any receptive swallow and their behavior may promote gene flow rather than population divergence.

The Sandy Islands of West Negev*

I. RENAN,^a A. FREIDBERG,^b and P. BAR KUTIEL.^a ^aDepartment of Geography and Environmental Development, Ben-Gurion University of the Negev, P.O. Box 653, Be'er Sheva 84105, Israel; ^bDepartment of Zoology, George S. Wise Faculty of Sciences, Tel Aviv University, Tel Aviv 69978, Israel. Renan@bgu.ac.il

The northwestern Negev sand dunes, the largest sandy area in Israel, are characterized by a high number of endemic species. In recent decades, a rapid stabilization process of the dunes has occurred in the area, expressed by intense coverage by biogenic crusts. Today, only 7% of the bare sand, which characterized the area 50 years ago, remains, and only at the crests of a few isolated dunes. In order to examine the impact of the sand stabilization on the ground-dwelling arthropod community, we sampled them in various landscape units (stabilized and semi-stabilized dunes, bare sand and slopes on semi-stabilized dunes, and inter-dune depressions). The samplings were conducted in the spring (March–April) during two years, using dry pitfalls traps. The results indicate that different dune types and habitats are characterized by different arthropod communities. The shifting crest dunes are characterized by psammophilic species that appear almost exclusively in this habitat. In the crusted stabilized inter-dune habitat we found mainly loess-dwelling species, which are common in most of the Negev loess plains. Active management is required in order to prevent a complete loss of the bare sand habitat and its endemic species and unique assemblage.

Changes in the foraging mode of the lizard *Acanthodactylus schreiberi* at Caesarea and Nizzanim sand dunes

S. RENAN and A. BOUSKILA. Department of Life Sciences, Faculty of Natural Sciences, Ben-Gurion University of the Negev, Be'er Sheva 84105, Israel. pazsh@bgu.ac.il

Lizards forage actively or from ambush and anywhere between these extremes. Little is known about the ultimate factors that determine the tendency towards one of these two foraging modes (FM). Many studies correlate species FM with environmental conditions, but species may be constrained to a FM by their taxonomy-dictated morphology. As an alternative, we studied ulti-

mate factors that determine lizards' FM by looking at a single species with flexible FM in diverse environments. We examined whether the FM of the lacertid *Acanthodactylus schreiberi* differs with age and among habitats. We conducted the study at Caesarea and Nizzanim in stabilized, semi-stabilized, and shifting dunes, and, in Nizzanim, also in dunes whose vegetation was partially removed. We measured moves per minute (MPM) and percent of time spent moving (PTM) in 15-min-long observations. We found that juveniles are significantly more active (higher PTM) than adults. *A. schreiberi* modifies its foraging, so that it is more active (higher MPM and PTM) in shifting than in semi-stabilized and stabilized dunes. In addition, MPM and PTM values on manipulated dunes were intermediate between stabilized and semi-stabilized dunes, thus the removal manipulation created a habitat that is treated by the lizards only partially as the target dunes.

Hydrodynamics of hovering near the bottom while feeding, in diving ducks

G. RIBAK and D.R. JONES. *Department of Zoology, Faculty of Science, University of British Columbia, 2370-6270 University Blvd. Vancouver, B.C., Canada V6T124, Canada. gal.ribak@gmail.com*

Diving ducks swim from the water surface to the seabed to feed on benthic food. In the process they must overcome their buoyancy, which pushes them back towards the surface, thus increasing the energetic cost of diving. Similarly, at the bottom the ducks paddle constantly against buoyancy to remain next to the bottom. We filmed captive ducks (*Bucephala islandica*) in vertical dive tanks and analyzed the motion of their feet during paddling near the bottom. Using a simple hydrodynamic model of the forces generated from the motion of the feet through water, we show that the ducks use the hydrodynamic drag of the feet to "hover" over the bottom. Due to the angle of the body (76° below the horizon), 98% of the propulsive force is directed against buoyancy, and is sufficient to overcome it. The estimated energy for moving both feet through water in a paddling cycle was 1.1 J, or $3.9 \pm W$. These values for energetic cost of diving are 2-fold higher than previous estimates that neglected the energy wasted as propulsion inefficiency. Therefore, due to the need to resist buoyancy while feeding, diving is a costly feeding behavior in ducks.

To what extent are eye-stalks a handicap in stalk-eyed flies?

G. RIBAK^{a,b} and J.G. SWALLOW^b. ^a*Technion Autonomous System Program, Technion—Israel Institute of Technology, Haifa 32000, Israel;* ^b*University of South Dakota, Vermillion, SD 57069, USA. gal.ribak@gmail.com*

Stalk-eyed-flies (Diopsidae) have their compound eyes placed on lateral extension of the head ("eye-stalks"). In some species, (1) eye-stalk length in males exceeds that of females, (2) the lateral distance between the eyes can exceed body length, and (3) eye-stalk length is a sexually selected trait. Males with longer eye-stalks are more successful in territorial confrontations with other males, and female mate choice favors males with longer eye-stalks. The objective of the present study was to evaluate to what extent longer eye-stalks handicap flight in stalk-eyed flies. Calculation of the moment of inertia of the flies (*Teleopsis dalmanni*) for aerial yaw turns revealed that male flies need to produce 1.5-fold larger torques with their wings in order to produce the same aerial turn as females. However, analysis of 3D flight trajectories showed that males maneuver as well as females and can even outperform female maneuverability. Morphological study of the flight apparatus suggest that this is through compensatory growth of the wings of males compared to the wings of the females (males having larger wing area). Thus morphological compensation, and not reduced flight performance, appears to characterize the tradeoff between natural and sexual selection in stalk-eyed flies.