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Windy conditions: effects on mates' vocal communication at the nest in zebra finches, *Taeniopygia guttata*.

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CONFERENCE ABSTRACT BOOK

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University of Groningen; s.verhulst@rug.nl; ISBE2014 Talk.

Vijendravarma RK*, Narasimha S, Kawecki TJ: Life history and behavioral adaptations to chronic malnutrition in *Drosophila*.

Many animal populations face chronic nutritional stress (quantity or quality) periodically during development, and are thus expected to evolve adaptations that reduce the fitness consequences of malnutrition. To understand the life history and behavioral traits that mediate such evolutionary adaptations to chronic malnutrition, we use *Drosophila* populations experimentally evolved for over 150 generations to tolerate extremely poor larval food. Our malnutrition tolerant populations have evolved changes in several a) life history traits, for example in body size and growth rates, and b) behavioral traits such as foraging, predation and pupation. Additionally, we also address the costs of this adaptation. Here, we will summarize the changes associated with adaptation to these extreme conditions.

University of Lausanne, Department of Ecology and Evolution; roshan.vijendravarma@unil.ch; ISBE2014 Symposium Talk.

Villain ASM*, Vignal C: Windy conditions: effects on mates' vocal communication at the nest in zebra finches, *Taeniopygia guttata*.

Environmental noise can constrain acoustic communication and adaptations evolved to counteract its masking effect. Birds are known to adapt vocal amplitude, signal duration, signal redundancy as well as emission posture in response to background noise. Most studies investigated adaptations of long-distance communications, and less is known on the impact of environmental noise on more private, short-range communications. In zebra finches, *Taeniopygia guttata*, mates relay each other at the nest during egg incubation. Nest relay is thus a time of reunion during which the pair performs a discrete call duet. Living in semi-arid regions of Australia, zebra finches experience unexpected, discontinuous and powerful wind that can have strong masking effect on vocalizations. In this study, we tested the effect of wind noise on mates' vocal communication at the nest in domesticated zebra finches breeding in a large aviary. Using playbacks of wind noise recorded in the natural environment of wild zebra finches, we subjected pairs to an increase in background noise levels inside the nest box, during incubation period, and looked at whether the call duets between mates were affected. Using a within-pair design, each pair was monitored on one control day and one experimental day in random order. Each day, we recorded the call duets of two successive nest-relays and videotaped the behaviors of both partners inside and outside of the nest box. The impact of wind noise on mates' vocal communication is measured using a structural analysis of the duets (amplitude, repertoire, duration, call rate, male-female alternation).

Université de Saint-Etienne; avelyne.villain@univ-st-etienne.fr; ISBE2014 Poster.

Vitikainen E*, Cant MA, Blount JD: Oxidative shielding and life-history trade-offs in the banded mongoose.

The causes of variation in lifespan across individuals and taxa is a major question in evolutionary biology. Life-history theory predicts a trade-off between investment in reproduction and cellular maintenance, with oxidative stress being a candidate mechanism to mediate this trade-off. According to oxidative stress theory of aging (OSTA), energy-expensive functions, such as reproduction, impede survival through the effects of oxidative damage, or the cost of curbing it. To test this theory, longitudinal studies in natural populations are required to tease apart the effects of selective disappearance and individual quality in animals exposed to natural stressors. We tested the predictions of oxidative stress theory through a longitudinal study of survival and oxidative stress in wild banded mongooses (*Mungos mungo*). Unusually for a mammal, banded mongoose males live longer than females. Moreover, females start reproducing early, whereas males form a queue to inherit breeding status later in life. We show that an early start of reproduction results in reduced longevity of both sexes. Consistent with OSTA, lipid damage predicted survival, with overall levels being higher in females than in males. Strikingly, however, lipid damage was lower in females during pregnancy. We propose that females invest in oxidative shielding during pregnancy to protect offspring during sensitive developmental periods, and that strategic allocation to oxidative defences underlies life history variation within and between sexes in this species.

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