02-09 Poster

ADAPTATION TO MULTIPLE STRESSORS THROUGH STRESS-SPECIFIC MECHANISMS IN NATURAL POPULATIONS

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Natural populations are often affected by multiple stressors, however little is known about their evolutionary responses in such environments. One of the most relevant questions is whether adaptations to multiple stressors arise through universal mechanisms promoting resistance for many stressors or are the consequence of stress-specific mechanisms. In our previous study, we showed that natural populations of the parthenogenetic nematode *Acrobeloides nanus* underwent adaptive divergence of life-history traits during 20 years of exposure to multiple-stress- (low pH, high copper concentration) and control treatments in an evolution experiment in the field. The populations from the multiple-stress treatment showed a higher resistance to both stresses. In this study, we investigated whether this pattern can be attributed to a general stress-resistance mechanism. For that purpose, we analysed evolutionary responses of the populations originating from the same experimental field from two single-stress treatments, namely, the low pH treatment and the high copper treatment. A reaction norm experiment indicated life-history adaptation of the nematodes from the high copper treatment to high copper concentrations. The increased copper tolerance in these populations was, however, not accompanied by the increased tolerance to low pH levels, as indicated by pH-response experiment. In a similar manner, the populations from the low pH treatment showed an adaptive response to low pH levels. Also in this case, the increased tolerance to low pH did not result in higher resistance to copper. These results indicate no apparent correlation between the resistance to copper and to low pH in *A. nanus*. Moreover, they suggest that the adaptation to the combination of stressors cannot be attributed to a single general stress resistance mechanism, but rather arose through two unrelated stress-specific mechanisms.

02-10 Poster

ANTHROPOGENIC ACTIVITIES AFFECT COLONY GENETIC STRUCTURE OF A SOIL-FEEDING TERMITE, LABIOTERMES LABRALIS (ISOPTERA : TERMITIDAE) FROM FRENCH GUIANA

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In tropical ecosystem, soil-feeding termites act as ecosystem-engineers, playing a fundamental role in soil structure and fertility. Because of their sensitivity to anthropogenic activities, soil-feeders may be used as bio-indicator of forest disturbance. One of the key determinants of genetic structure within social insect populations is the breeding system of social groups which defines the degree of relatedness between nestmates. Knowledge about breeding strategy in these species is thus fundamental to interpret modifications in population genetic structure in association with human activities. Breeding systems in termites may be of three kinds: monogamy, punctual polygamy and obligatory polygamy. Here, we used six microsatellite markers and parentage assignment method to investigate breeding mechanisms in colonies of the soil-feeding termite *Labiotermes labralis* (Termitidae), one of the most abundant termites in the Amazonian primary forest. Three sites from French Guiana presenting variable degree of forest degradation were studied. Parentage analysis revealed that the totality of the 18 nest (N = 20±1) showed pattern of genotypic frequencies consistent with their origin from a single mated pair indicating that monogamy is the general trend in *Labiotermes labralis*. In addition, a larger mean relatedness between nestmates was observed in colonies from the most disturbed habitat suggesting that human activities affect *L. labralis* colony genetic structure.