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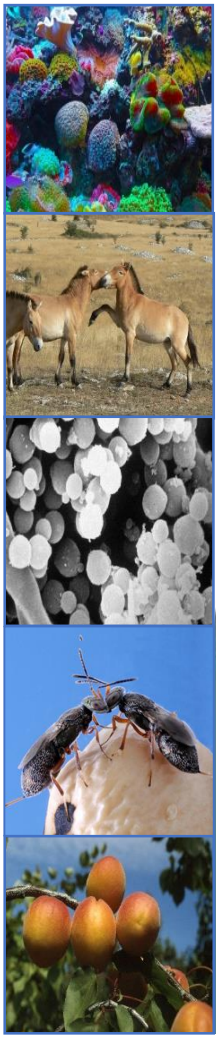
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IRBI Institut de Recherche sur la Biologie de l'Insecte

GENOSCOPE Centre National de Séquençage

Tours métropole Val de Loire

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DNA metabarcoding of passive trap collection media for forest insect biomonitoring

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Abstract

Insect decline has been increasingly reported in the past years due to global change. Large-scale biomonitoring has thus become necessary to better understand the dynamics of insect communities and to preserve their essential role in ecosystem functioning. In that sense, coupling high-throughput sequencing and DNA metabarcoding has exponentially increased our potentiality to monitor insect communities over wider geographic regions and time scales. However, biomonitoring of entomofauna using molecular tools often results in destructive DNA extraction through voucher grinding, impeding primordial morphological back-up. Here, we filter unprocessed collection medium to assess insect communities through environmental DNA metabarcoding. We demonstrate that recovered communities are different yet complementary and that insect response to environmental changes remains similar to homogenate bulk metabarcoding. We also show that insect orders-by their contrasting sclerotization ratio-, and collection medium type, are unequal in yielding metabarcoding results. Overall, we believe it as an efficient alternative for biomonitoring insect response to ecological changes while preserving insect vouchers for identification and description, especially in tropical regions were singletons or undescribed species can be very common in trap samples.

*Speaker