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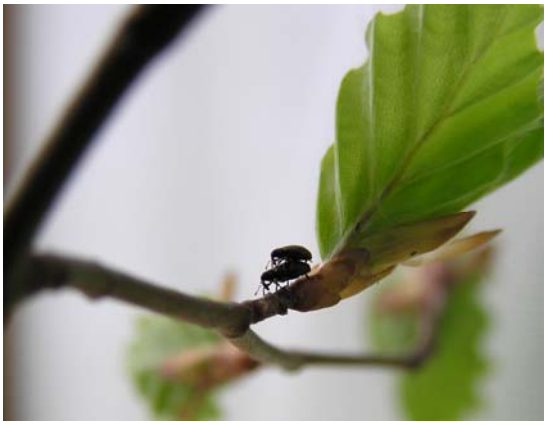
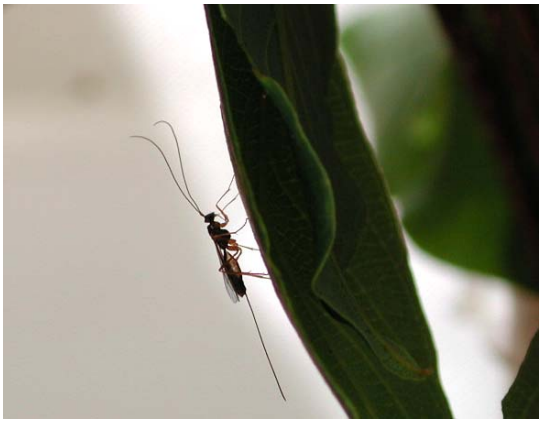


BOOK OF ABSTRACTS

Heated islands and the trade of large trees responsible for long distance jumps of the pine processionary moth beyond its expanding edge

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Climate change is currently affecting the distribution of many species and the underlying mechanism is particularly well understood for the pine processionary moth, *Thaumetopoea pityocampa* (Den. & Schiff.) (Lep., Notodontidae). Increased temperature in winter enhances the larval feeding activity and the colony survival. Therefore, the moth can extent its distribution on new areas at a rate depending on the female flying ability. Although the heated island in Paris vicinity was highly favorable for the species survival, this area was too far from the closest infested area to be colonized.

However, some isolated colonies were recently discovered in this region, far beyond the natural expansion range. This study was intended to track the origin and pathways of these geographically isolated populations through a combined use of genetic markers, measurement of female flight capabilities, and comparative analyses of the natural enemy complexes. In addition, the potential rate of survival of the populations in the past was reconstructed. The effects of the recent winter cold waves were compared between isolated moth populations and naturally expanding populations.

All these approaches provide strong evidence that the pine processionary moth has been accidentally moved to the Paris vicinity. With climate warming, this insect can potentially survive in new areas, and the Paris vicinity is more favorable for winter survival during cold waves. The flight capabilities of females are far lower than the distance between these isolated colonies and the natural distribution, and populations in these isolated colonies are genetically different from the ones at the edge of the distribution, suggesting a human-mediated transportation. Egg parasitoids are absent from isolated populations whereas larval parasitoids are present, suggesting an introduction at the pupal stage, probably along with the trade of large trees.