Population Monitoring of the Pine Processionary Moth (*Thaumetopoea pityocampa* Schiff, 1775), a Major Threat to Pine and Cedar Forests in Northern Algeria

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Abstract

Pine and cedar forests constitute some of the most valuable forest ecosystems in the Mediterranean region. They provide essential ecological services, including biodiversity conservation, soil stabilization, carbon sequestration, and climate regulation. These forests also play an important economic role by supplying timber and other natural products. Among the major threats affecting these forests is the pine processionary moth (PPM) (*Thaumetopoea pityocampa* Denis & Schiffermüller, 1775), one of the most destructive defoliating insects of conifer forests. This species feeds on needles, causing defoliation that weakens trees, reduces their growth, and increases their vulnerability to drought and secondary pests. In this context, we evaluated the abundance and population dynamics of the PPM in Mila pine forest (Northern Algeria) by assessing winter nests using a standardized counting protocol on 100 trees, with every second row sampled within the same forest corridor from 2020 to 2026. In addition, climatic records covering the period 2017–2026 were obtained from the regional meteorological station. The results showed a gradual decrease in PPM abundance from 2020 to 2024, declining from 1.94 to 0.43 nests per tree. The highest abundances were recorded in 2025 and 2026, with 2.12 and 1.96 nests per tree, respectively.