

Title: Mapping of the leaf biomass of *Avicennia germinans* for assessment of growth potential of the butterfly *Hylesia metabus*

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Abstract :

The phenomenon known as the “papillonite” was present in September 2011 in the municipalities of Sinnamary and Iracoubo of French Guyana. Its vector is *Hylesia metabus* (by its common names Yellowtail moth or Ashen moth), which lives mainly in monospecific stands of *Avicennia germinans*. The moth in its caterpillar stage develops large colonies, which consume nearly all the leaves of the white mangrove trees. At dusk, adults move in flight to the bright areas and release highly allergenic micro-arrow setae. These phenomena of proliferation generate periodic nuisances for people living near mangrove areas.

To assess the importance of colonies *Hylesia metabus* present as well as their growth and nuisance potential, a mapping of impacts related to foliar leaf consumption by caterpillars has been developed. This method is based on the processing of aerial images with very high resolution acquired specifically for a test zone. Automatic classification methods have proved unreliable because of the very diffuse and three-dimensional consumption of caterpillars. The use of classical photo-interpretation techniques based on components in the near-infrared images was finally adopted.

The treatment was carried out by the interpretation of quadratic sectors and assignment of a rating index of local impact.

The results have confirmed the widespread impact across the mangrove forest of *Hylesia metabus*, but with spatially variable intensities. Observations must be strengthened by more detailed analyzes of the forest stand and its recovery capabilities conditioning the probability of a new episode of caterpillar. Moreover, the existence of possible extrapolations will be sought to use satellite imagery for routine surveillance of the extension and intensity of outbreaks *Hylesia metabus* and their potential future proliferation.

Keywords : Vegetation, mangroves, French Guiana, Papillonite, *Hylesia metabus*, Lepidopterism, Nuisance control, Remote sensing