

Quantifying massive outbreaks of the defoliator moth *Ormiscodes amphimone* in deciduous *Nothofagus*-dominated southern forests using remote sensing time series analysis

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Forest insect outbreaks are one of the major biotic disturbances on natural and artificial landscapes. Although abundant literature of insect outbreaks exists in the Northern Hemisphere, studies for the Southern Hemisphere are rare. Recently, massive outbreaks of the native moth *Ormiscodes amphimone* (Fabricius) (Lepidoptera: Hemileucinae) have been reported in the southern cone of South America. These *O. amphimone* outbreaks have defoliated large areas of temperate forests, raising great concern among local inhabitants, but yet the spatio-temporal patterns of these events have not been evaluated. Here, we quantify the extension of the massive *O. amphimone* outbreaks occurred in the Aysén region (southern Chile) in the period 2000–2015 using a novel remote sensing approach and field data. Remote sensing detections were strongly in agreement with field observations and showed that massive outbreaks of *O. amphimone* are among the largest biotic disturbances in the forests of the Southern Hemisphere. Considering only field-confirmed outbreaks, the defoliated area reached 164,000 hectares in total between 2000 and 2015. The estimation of the spatial impact of *O. amphimone*, and its recurrence, represents the first step for the search of management alternatives of this massive disturbance.