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## Indicatori ad ampia scala per il monitoraggio della diversità forestale per le principali formazioni boschive della Calabria

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**Abstract:** Large-scale indicators for monitoring forest diversity of the main forest types in Calabria (Italy). Recently, the Society's perception of forest resources has gone through significant changes. Forest ecosystems play a multifunctional role and host an important portion of the whole biodiversity, particularly in the Mediterranean area. Remote sensing technologies provide a unique way to obtain spatially extensive information on forest ecosystems, but relatively few studies used such information to evaluate forest habitat and biotic diversity. In this paper we evaluate the effectiveness of remote sensing to predict forest diversity by linking remotely sensed information with diversity metrics obtained from ground measurements of butterfly diversity. The field work was carried out in Calabria in four different forest types (beech, chestnut, black pine and silver fir forests). The sampling of Lepidoptera was carried out by LED light traps. We positioned 9 traps per forest type, for a total of 36 sites chosen to sample the different stages of forest succession in each forest type. Samples were carried out once a month from May to November 2015. Data from *in situ* butterfly measurements were compared with above ground forest biomass estimated from airborne LiDAR with NDVI estimated from Landsat 8. Results indicated that the Geometridae/Noctuidae ratio of lepidopteran communities was significantly correlated with the tree biomass, its distribution among tree size classes and the NDVI. The Geometridae/Noctuidae ratio, therefore, represents an index easy to calculate, which can be employed to integrate data acquired from remote sensing in order to obtain continuous spatial estimates of forest naturalness.

**Keywords:** LiDAR, Moths, Biodiversity, Bioindicators Taxa, Landsat, NDVI

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### Introduzione

Negli ultimi decenni la percezione della società nei confronti del ruolo delle risorse forestali ha subito profondi mutamenti. La gestione forestale, in passato

prevalentemente orientata alla massimizzazione della produzione legnosa, si è andata configurando sulla base di nuove richieste relative alla promozione e alla salvaguardia del ruolo ecologico-ambientale, tu-