O112.03 - Toward a phytometer approach in restoration ecology: How to use plants as indicators of restoration success?

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As stated by the SER Primer, a key attribute of successfully restored ecosystems is their capacity to sustain viable populations of target species. Common monitoring programs based on habitat surveys detect whether or not this goal is met by stating the presence of certain species. In case of missing species, however, the surveys fail to explain the underlying site or dispersal limitation. The use of phytometers is an alternative method capable of verifying these processes. As it is a relatively new approach, standards for its application remain to be defined. Thus, we aim at improving this method with respect to the choice of species and plant traits. We planted three target and two non-target species in restored montane peatlands in Germany, and exposed the plants to two water levels with different peat quality in a greenhouse experiment. Many plant traits were measured and statistically related to each other as well as to light, water and soil conditions. Plant biomass and flower number were the most variable traits and therefore could be useful to assess a wide range of abiotic conditions. There was a high correlation between diameter, height and biomass of the phytometers as well as between growth and reproduction. We conclude that the most straightforward and accurate traits should be chosen. As species show different responses to habitat conditions, a careful selection is necessary, while the use of several phytometers, including non-target species, increases the explanatory power of the restoration monitoring.

O112.04 - Application of scientific knowledge and São Paulo State policies in the assessment and monitoring of large-scale ecological restoration in the Atlantic Rainforest and Cerrado, Brazil

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Committed to comply with environmental requirements, Suzano Papel e Celulose proposed to carry out the environmental regularization of 4,234.80 hectares of Permanent Preservation Areas (PPA) subdivided into 3,329 polygons (sizes mean 1.28 ± 1.54 Ha) belonging to 101 properties located in São Paulo, Brazil. Distributed within a radius of 200 km, these areas cover different phytophysiognomies of Atlantic Rainforest and Cerrado biomes, in several states of environmental degradation and conversion of areas with eucalyptus plantations to native vegetation. Given this complex panorama, this study presents a large-scale evaluation carried out over two years with the purpose of assessing the PPAs and suggest management recommendations aiming at the ecological restoration. The assessment consisted in remote landscape pre-classification and field verification, both qualitative and quantitative of almost all polygons (80.3%). In areas whose eucalyptus has already been removed (2,382.95 Ha), passive restoration was the most indicated technique (92.0%). These areas present high richness and abundance of native species, possibly due to favorable forest matrix and high resilience. Other areas require more intensive managements: reforestation (21.71 Ha), partial reforestation (89.58 Ha), "rework" (77.99 Ha). Based on São Paulo State legal policies (Resolução SMA 32/2014, Portaria CBRN 01/2015), a restoration areas monitoring plan was proposed through the definition of 93 homogeneous groups of polygons. Results indicate that large-scale restoration demands the use of different techniques suitable for each environmental situation. In addition, monitor discontinuous areas requires a thorough evaluation in how to group them preserving an ecological sense, but also economical and logistic feasibility.