

Bamboo influence on natural regeneration – a case study in a Araucaria Forest fragment in Brazil

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Although bamboos (Bambusoideae) are a natural component of various forest types around the world, they can also occur in almost exclusive populations. In areas of intense forest disturbance, bamboos can take advantage of their inherent fast-growing and efficient dispersion characteristics and influence the natural regeneration of forests. In such situations bamboos act as invasive species that reduce species diversity and restrict landowners' economic options. The assessment of natural regeneration can be used as an indicator in forest management as it reflects tendencies in forest dynamics that are used in forest management planning. Specifically in forests in which bamboos occur as invasive species, the evaluation of natural regeneration is a powerful tool for determining if the presence of bamboos is undermining the establishment of forest species in the long-term. In this paper we analyze the natural regeneration in Embrapa's Caçador Research Station (Santa Catarina, Brazil) in order to determine if the presence of bamboos is affecting forest dynamics. We analyze the natural regeneration dynamics from 2007 to 2010 using 200 plots (1.5 m x 1.5 m) evenly distributed between two subtypes of forest: *Araucária* – near pristine, conifer-dominated forest with minor presence of bamboos; *Taquaral* – areas dominated by concentrated clumps of bamboos (*Merostachys skvortzovii*). During this three year period we monitored 1,506 trees representing 74 forest species (44.6% occurring in both forest subtypes) belonging to 29 botanical families. Of the 64 species found in the *Araucária* subtype, the majority were climax or secondary forest species whereas of the 43 species within the *Taquaral* subtype most were pioneer or early secondary forest species. The results also show significant difference for the Shannon-Wiener diversity index between forest subtypes but not between years for each subtype. Additionally, the results show a significant reduction in terms of number of individuals over time for *Taquaral*. The presence of *Merostachys skvortzovii* is apparently influencing the dynamics of the *Taquaral* forest subtype as it is having an impact on the number and diversity of species. As such, only pioneer species were found in areas of significant bamboos clumping which indicates an impoverishment of the seed bank. Finally, bamboos occurring in dense clumps dramatically reduce light availability which thus hinders the development of most species. We conclude that the presence of bamboos may require action in order to guarantee the long-term conservation of the studied fragment and our results may represent a common situation found in other Araucaria Forest fragments.