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When native species become invasive: The case of bamboos in fragmented forests of Southern Brazil

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Background/Question/Methods

Bamboos are natural to various forest types around the world and in some situations they can occur in almost exclusive populations. In areas of intense forest disturbance commonly related to human intervention, such as unregulated logging, bamboos can take advantage of its inherent fast-growing and efficient dispersion characteristics, effectively taking over an area and influencing forest productivity and biodiversity. 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. 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 2012 using 200 plots (1.5 m x 1.5 m) evenly distributed between two subtypes of forest: *Araucaria* – near pristine, conifer-dominated forest with minor presence of bamboos; *Taquaral* – areas dominated by concentrated clumps of bamboos (*Merostachys skvortzovii*).

Results/Conclusions

During the five-year period we monitored 1,506 trees representing 74 forest species (29 botanical families). Of the 64 species found in the *Araucaria* 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. Additionally, the results show a significant reduction in terms of number of individuals over time for *Taquaral* which seems to reflect stagnation in terms of productivity and carbon sequestration. 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 bamboo clumping which indicates an impoverishment of the seed bank. Finally, bamboos occurring in dense clumps dramatically reduce light availability which further 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.