PHENOLOGY OF ZOOCHORIC SPECIES IN A COMMUNITY OF "BREJO DE ALTITUDE"

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INTRODUCTION

Phenological studies are related to periodic biological events and their relation to the biotic and abiotic environment and contribute to the understanding of regeneration and reproduction of plants these are considered as one the best parameters use to characterize ecosystems (Morellato 1991). The phenological knowledge is based on observations of the stages of plant development called phenophases. Phenological events may vary according to the seasonality of the region and, as a result, species which has occurred in two distinct tropical forests, may have different flowering periods due to seasonal variations (Locatelli & Machado 2004). In tropical regions, the knowledge of these seasonal events of plants has been considered indispensable for the study of ecology, dynamic and evolution of ecosystems (Fournier 1976). Atlantic Forests in mountainous areas under strong influence of Caatinga vegetation are called Brejos de Altitude, these areas are considered as a relic vegetational, with high rate of endemism and floristic and ecological peculiarities (Andrade-Lima 1982). Despite strong anthropogenic pressure exerted on these vegetation types, research about phenological patterns in these Atlantic Forest remnants are scarce. Such research is of utmost importance to increase the knowledge about the biodiversity of Forests of Brejos de Altitude, besides as guide the actions of preservation, conservation and sustainable forest management.

OBJECTIVES

The phenology of zoochoric species was studied in order to characterize the patterns of the vegetative and reproductive cycles of the species in a community of Brejo de Altitude.

MATERIAL AND METHODS

The survey was conducted in the Park Mata Pau do Ferro, Areia / PB. With about 600 ha of Open Ombrophylous Forest, the park is one of the most representative fragments of Brejo de Altitude of Paraíba (Barbosa *et al*. 2004). Were selected and marked 41 individuals of woody strata and in reproductive phase, located on parcels (25x4) previously established in different points of the area and presenting zoochoric dispersion. These individuals were followed every two weeks for the period January/2012 to March/2013. Phenological assessments were performed following the method of Fournier (1974), which estimates the intensity of each phenophase on a semiquantitative interval scale. Species identification was carried out through consultations to the experts, based on APG III (2009). Spearman correlation tests were performed to correlate the phenophases with the precipitation through the Program BioEstat 5.0 (Ayres *et al*. 2007).

RESULTS

The vegetative phenophases (leaf flushing and leaf fall) occurred throughout the year, with variations in intensity and according to precipitation. The leaf flushing stage was positively correlated to precipitation ($r_s = 0.9883$, $p < 0.0001$), with a peak in June (60%), coinciding with the period of highest precipitation in the region. Leaf fall phase was negatively correlated with precipitation ($r = -0.9138$), $p < 0.0001$), with peak coinciding with the month of lowest rainfall, November (70%). The phenophase of flowering was positively correlated to rainfall ($r_s = 0.6461$, $p = 0.0092$) with a peak in June (24.3%), during the rainy season. The fruiting was negatively correlated and not significantly to precipitation ($r_s = -0.3453$, $p = 0.2074$), with peaks in August and September, early dry season, both with 14.6%.

DISCUSSION

The phenophases were observed during the whole period, varying in intensity according to precipitation, which suggests that the phenological patters shown to be strongly correlated with rainfall and this reinforces the influence of abiotic events in the life cycle of the plant species. The flowering peak during the rainy season may be associated with peak insect abundance, representing large supply of pollinators for plants (Kaar 1976). The peaks in the supply of resources for frugivorous at the beginning of the dry season is of utmost importance to supply the demand of animal feed for the remainder of that season, in which the supply of frugivorous resources gradually falls and the demand by the resources collaborates with greater chances of dispersion. This seems to be more predictable in the area studied by the influence of Caatinga vegetation. Thus, when the seeds dispersed start the phases of germination and of seedling establishment, these phases coincide with the beginning of the rainy season in the region. There is a adequate period for flowering and germination to tropical species, which is usually at the beginning of the rainy season and therefore the fruiting must adapt to this (Foster 1982), this collaborates with the reproductive cycles of the plant species. The rainfall, therefore, seems to be the determining factor in the establishment of reproductive rhythms of the community studied. According to Gentry (1983), the greater the precipitation, the greater the proportion of zoochoric species and this may suggest a pattern of rainforests. The knowledge of the phenological cycle of zoochoric species is of great importance, because through it, you can determine in which periods, these frugivorous resources, will be available for the local fauna and if these features are or not experiencing any shortage.

CONCLUSION

Phenological patterns of the zoochoric species of the vegetable formation studied are associated with precipitation, indicating the influence of abiotic factors on its occurrence. The supply of frugivorous resources is maintained primarily during the period of lower precipitation, ensuring the success of the dispersion and the supply of resources for the local fauna.

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