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Plant phenology, resource seasonality and climate change in a Brazilian cerrado savanna

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Plant phenology, the study of recurring events and its relationship to climate, contributes with key information for the understanding of forest dynamics and plant resource availability to the fauna. Plant reproduction and growth are affected by proximate factors such as precipitation, temperature and photoperiod, ecological factors such as plant-animal interaction, for instance pollination and seed dispersal, and by phylogeny. Therefore, phenological changes may have enormous consequences for both, plants and animals depending upon the periodical availability of plant resources. The Brazilian tropical savannas, the cerrado, is a highly diverse vegetation with around 70% of the woody flora relaying on animal vectors for pollination and seed dispersal. We consider the cerrado savanna a good model to investigate shifts on tropical phenology and climate change. This vegetation presents a very seasonal phenology shaped by the climate characterized by the alternation of a hot, wet season and a dry, cooler one. The onset of leafing, flowering and fruiting is defined by the duration and intensity of the dry season, and changes on precipitation patterns and dryness may likely affect the plant species reproductive pattern as well as the resource availability to the fauna. In that context, we are carrying out a long-term project to investigate the phenology of growth and reproduction of a cerrado savanna woody community in Southeastern Brazil. Our aim is to understand the cerrado savanna long-term phenological patterns, its relationship to local climate, and whether phenological shifts over time may occur due to variations on climate. We are collecting data on crop size, species abundance and fruit consumption by birds to understand the fruit-frugivore network. Additionally, analyses are underway to explore the relationship among fruit season, fruit production, color and nutritional contents, and the activity of frugivores. Our final goal is to verify at which extension climate change may induce shifts on plant community phenology, affecting the availability of resource, plant-frugivore interactions and the mutualism network.