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Editorial of the part 1: Studies in Functional Pollination Ecology

Reproductive mechanisms are decisive for the evolution and continuation of lineages of organisms, as they are the main processes for genetic exchange between individuals and / or populations (Tremblay *et al.* 2005; Dennis *et al.* 2007; Godefroid *et al.* 2014). Especially for the plants, given their sessile condition, interactions with vectors in the dispersal of pollen or seeds constitute important episodes for gene flow and thus have direct implications on the generated offspring and on the trajectory of the phylogenetic lineages (Crepet & Niklas 2009). It is estimated that about 87% of the angiosperms depend on animals for pollination (Ollerton *et al.* 2011), while the production of fleshy fruits (indirect indicator of animal dispersion) can occur in more than 90% of the species in certain tropical forests (Herrera & Pellmyr 2002). These estimates, however, do not consider that many species, although largely dependent on animals, may present mixed pollination or dispersal strategies that contribute to guarantee their reproduction (Levin 2011; Friedman & Barrett 2009).

Throughout the construction of the theoretical framework of pollination biology, significant amount of attention was given to the documentation of occurring patterns in interactions between plants and their pollinators (Rech & Westerkamp 2014). It has been documented, for example, that the prevalence of visits by birds to flowers with red and tubular corolla increase autogamy in marginal populations in species distribution, the decrease in visitation rate by bees with increasing altitude, and many other patterns related to pollination mutualism (Rech *et al.* 2014). In contrast, much less is known about the processes underlying the patterns described, especially from empirical studies in natural conditions. As an example, in the case of interaction between birds and flowers with red and tubular corolla, detrimental to possible preference of birds of these flowers due to intrinsic cognitive characteristics, there is a growing support for the hypothesis that the birds would face less competition with bees (Bergamo *et al.* 2016). In this sense, the pattern found in nature would be more related to environmental factors than to particular characteristics of the interactors. Studies like this show the potential and the need for focused investigations on possible processes underlying the patterns observed in nature. As a result of this demand shared with many other fields of biology and functional ecology (Hodson & Bryant 2012), we present here this special issue on "Functional Ecology Pollination".

The purpose of this special volume left us with the perception that there would be a demand in Brazil for the promotion of research related to the functioning of interactions between plants and pollinators. From the publication of the book "Biologia da Polinização", in 2014, it became clear that one of the directions of further research in the area would be to focus in the functioning of interactions. At the same time, it is also clear that still very little is known about the existing patterns between the plants and pollinators occurring in Brazil. In this sense, this special volume was expanded to include work involving case studies with species without any previous information concerning their pollination processes. Thus, part 1 of this volume is organized starting from general articles with theoretical approaches aiming to strengthen the Brazilian school of pollination biology, followed by studies addressing functional issues and concluding with articles that present new information for species hitherto unknown from the perspective of their reproductive process.

We hope that this publication will stimulate the continuation of pollination biology studies in Brazil and strengthen the research developed in this country. We would like to thank all the authors, editors and others involved in the preparation of this work that will undoubtedly contribute to further studies on Brazilian pollination biology and the consolidation of this research field in the country. We also thank the journal Rodriguésia from the Instituto de Pesquisas Jardim Botânico do Rio de Janeiro in understanding the importance of this type of study and open space to include studies on functional ecology of pollination in this volume.

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