

Evolution and effects of sex ratio in pollen coupled monoecy trees

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Resource-based models [1, 2] that include non-linear resource allocation and pollen exchange successfully explain some characteristics of masting phenomena. However, these models assume that cost for seed crop is proportional to the cost of male flowers. This is not always the case of *Quercus* because *Quercus* produces male flowers even in crop failure years [3]. Here we introduce an evolutionary game model that considers evolution of sex ratio based on an extension of Satake & Iwasa's spatial model [2]. The model suggests that the sex ratio branches and fluctuates together with population dynamics (i.e. constant, periodic, desynchronized and synchronized in the population) on a time scale of thousand years. We will discuss the reason why there are many individuals producing male flowers in crop failure year.

References

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