

POLLINATION EFFICIENCY OF A POLLINATION GENERALIST FOLLOWING A HURRICANE IN HAITI

Context

West Indies Gesneriaceae: good model to study generalisation in pollination

Mainland: Specialists



VS

Islands: Specialists & Generalists



Studying pollination generalists in this family could help to understand the advantages provided by generalist strategies following large ecological disasters on islands



The West Indies are frequently affected by hurricanes (Pic Macaya Park after hurricane Matthew 2015)



Being a pollination generalist could be advantageous to ensure reproductive success in habitats affected by frequent natural perturbations.

Materials & Methods

What:

Rhytidophyllum bicolor

Pollination generalist: bats,
hummingbirds and bees

Where:

Pic Macaya Park

Southwest of Haiti



How:

Pollination observations on different populations of *R. bicolor*

- 17h of night observations
- 23h of day observations



Visitation rate measured for
each pollinator type

After each visit, the stigma was removed and placed in a tube
with alcohol.

The pollen grains were counted in the lab, with a
hemacytometer, and the total pollen deposition was estimated.

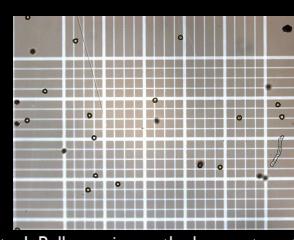


Photo 1. Pollen grains on the hemacytometer

Pollination data

In 10 days, 25 visits were observed. The pollinators were mostly bats, sometimes bees. The pollen deposition was measured for each visit.

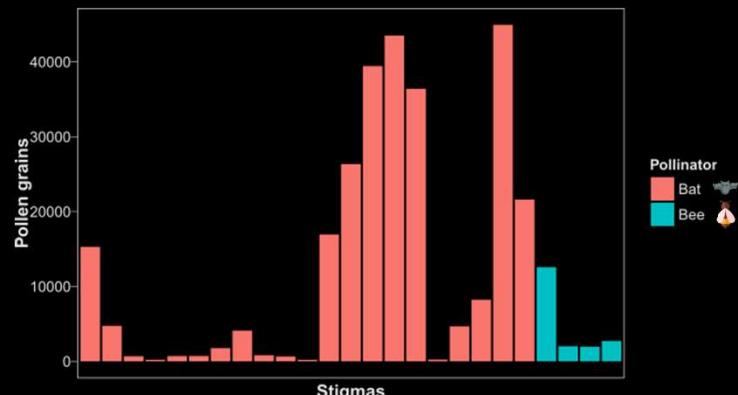


Figure 1. Number of pollen grains deposited on the stigma for a single visit. Each bar represents a different visit. Bats are good pollinator (red), but bees can also deposit a large amount of pollen (blue).

Visitation rate & pollinator efficiency

Based on the index of Freitas (Freitas 2013) :

$$\text{Pollinator efficiency} = \text{visitation rate} \times \text{pollen deposition}$$

Table 1: Visitation rate (pollinator visit per flower per hour), Mean pollen deposition (mean pollen grains deposited per flower) and the Pollinator efficiency (mean pollen grains deposited per flower per hour)

Pollinator	Visitation rate	Mean pollen deposition	Pollinator efficiency
Bat	0.1458	4675.101	681.63
Bee	0.0154	2367.408	36.458
Hummingbird	0	n.a.	0

What's next?

Our results suggest that a pollination generalist strategy could be advantageous to ensure reproductive success even if a pollinator is missing, as it could be the case in habitats affected by frequent natural perturbations. More studies are necessary, in this group but also on other generalist pollination species, to support our results and better understand the generalist strategy advantages.

Sources: Freitas, L. (2013). "Concepts of pollinator performance: is a simple approach necessary to achieve a standardized terminology?" *Brazilian Journal of Botany* 36(1): 3-8.

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