

**Plant – Animal Interactions Seminar:  
Annotated Bibliography on Pollination Syndromes**  
Dawn Adams

**Waser, N.M., L. Chittka, M.V. Price, N.M. Williams, J. Ollerton, 1996. Generalization in pollination systems, and why it matters. Ecology 77 (4) pp. 1043-1060**

The authors use well-known surveys, their own study, a simple plant fitness model and foraging theory to dispute the dichotomy of generalization and specialization in pollination systems. They recognize that dramatic examples are often used to illustrate pollination syndromes but they are likely overgeneralized in the literature. They conclude that humans desire to view nature as well-ordered and that what is posed as a dichotomy is really a continuum between specialized and general pollination systems.

**Lazarus, W. M. 1986. Floral Resource Sharing by Bumblebees and Hummingbirds in *Pedicularis* (*Scrophulariaceae*) Pollination. Bulletin of the Torrey Botanical Club 113 (2) pp. 101-109.**

Lazarus found that in *Pedicularis densiflora*, bumblebees are the pollinators of early flowers when the bees can access the nectar in short-tubed flowers. Older flowers exhibit an ornithophilous syndrome with longer and scarlet corolla tubes and less available pollen than younger flowers and are pollinated by hummingbirds. He suggests that it is an example of a species in transition between two pollination syndromes, which are related to the particular circumstances of the location.

**Weberling, F. 1989. Morphology of flowers and inflorescences. Cambridge University Press, Cambridge, Great Britain.**

The third chapter includes a discussion of self-pollination mechanisms and cross-pollination methods. He describes a comprehensive list of animal pollinators and the characters found in plants pollinated by each taxonomic group of animals. Adaptations by plants to particular methods of pollination are not confined to individual characters but concern total flower organs including shape, size, odor, position, flowering time and duration, etc. Describes common assumptions of “classic” pollination syndromes without a critical analysis of whether syndromes are over-generalized.

**Dicks, L.V., S. A. Corbet, R. F. Pywell. 2002. Compartmentalization in plant–insect flower visitor webs. Journal of Animal Ecology 71 (1) pp. 32-43**

Interactions between entomophilous flowering plants and their insect visitors were recorded at two grassland communities and a diagrammatic quantitative web produced for each community. The systems were analysed for compartmentalization based on trophic similarity between pairs of species. Good evidence was found for compartmentalization at both sites. The compartments reflected classic pollination syndromes to some extent, dividing the invertebrates into a group of butterflies and bees, and a group of flies, at both sites. The compartmentalization was also affected by phenology.

**Robertson, C. 1928. Flowers and insects: lists of visitors to four hundred and fifty-three flowers. C. Robertson, Carlinville, Illinois, USA.**

This survey is often referenced because of Robertson’s comprehensive survey of plant species and their pollinators. He surveyed all the flowering species near Carlinville and noted insect visitors that pollinated from those that didn’t pollinate the plant. He found that 91% of all the plant species were visited by more than a single animal species, and concluded that the plants were somewhat generalized.