

## EVOLUTION OF POLLINATOR TRAPS IN *GONIOTHALAMUS* AND *DASYMASCHALON* FLOWERS (ANNONACEAE), ASSOCIATED WITH SHORT FLORAL RECEPTIVE PERIODS

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Annonaceae flowers are protogynous and mostly have loosely enclosed pollination chambers that are often associated with beetle pollination. Unlike many other species having a receptive period of several days, field studies of the genera *Goniothalamus*, *Dasymaschalon* and *Desmos* reveal that they have short receptive periods of 23–26 hours. Trapping mechanisms have evolved independently in *Goniothalamus* and *Dasymaschalon*. Beetles are unable to leave the flowers until the end of staminate phase, which coincides with the onset of the pistillate phase of other flowers. *Desmos chinensis*, which is closely related to *Dasymaschalon* and which also has a short receptive period, does not show an equivalent trapping mechanism, however.

The evolution of pollinator trapping is hypothesized to be an adaption to the bimodal daily activity pattern of beetles associated with flowers with short anthesis period, enhancing pollination efficiency. The morning opening of the pollination chamber in *Goniothalamus* species presumably encourages the entry of the beetle pollinators, whilst the evening closure of the chambers prolongs their visit, preventing the beetles from leaving until the pollen is shed and pistillate-phase flowers are available in the population. *Desmos chinensis* is likely to be adapted to pollination by beetles with a unimodal daily activity pattern, and hence has no need for a trapping mechanism. We are investigating the daily activity pattern of the pollinators by using Drosophila Activity Monitor (DAMs) from TriKinetics.