



# SELF - ORGANIZATION IN PRIMITIVE SOCIETIES: QUEENS DO NOT START ACTIVITY PERIODS IN A NEOTROPICAL SOCIAL WASP

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## INTRODUÇÃO

In social wasps colonies like *Polistes*, two kinds of periods can be identified: pause periods, where no individual moves by more than 10 sec and activity periods, beginning when a wasp performs an abrupt action, which promotes movement of all individuals in the colony (Jha *et al.*, 006). During activity periods, wasps forage, feed larvae and interact with each other, highlighting the work done during this period. Individuals who start these activity periods could act as pacemakers that regulate colony's work. Queens of *Polistes versicolor* has been described as the most active individuals (Oliveira *et al.*, 006). The hypothesis that queens of this species act as pacemakers, starting activity periods was tested.

## OBJETIVOS

The hypothesis that queens of this species act as pacemakers, starting activity periods was tested.

## MATERIAL E MÉTODOS

Observations were conducted in 11 colonies in the municipality of Juiz de Fora, Minas Gerais State, between November/2009 and march/2010. Each colony was recorded for  $6 \pm 2$  (4 - 10) h, performing a total of 70 h. The proportion of activity periods started by the queen and all workers were recorded for each colony. This arrangement (Queen Vs other individuals) is required to test whether queens monopolize the initiation

of activity periods. These proportions were compared using T test with significance level of 5%. In addition, the specific behaviors that triggered the colony activity were recorded.

## RESULTADOS

Both queens and workers started activity periods. While queens began  $19.77 \pm 21$  (0 - 54) % of these periods, the contribution of the workers was significantly higher,  $80.23 \pm 20.1$  (50 - 100) % (T test:  $t = -7,0631$ ;  $p < 0,0001$ ). In all colonies, foragers returning to the nest was the action that most often initiated activity periods (in 42.61 % of cases,  $n = 96$ ). In conclusion, at least with respect to the initiation of activity periods, queens do not act as pacemakers. Regulation of these periods seems to be closer to a self - organized system, where returning foragers seem to be the main stimulus for the occurrence of such periods. Similar results were found by Jha *et al.*, (2006) for *Polistes dominulus*, a primitively eusocial wasp. These results demonstrate that even in primitive societies, some aspects of social life may be regulated by self - organized systems.

## CONCLUSÃO

These results demonstrate that even in primitive societies, some aspects of social life may be regulated by self - organized systems.

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