

## CYCLES IN PERIODIC MASS FLIGHTS OF *APIS DORSATA*

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*Apis dorsata* bees perform daily periodic mass flights (PMFs), during which they defecate. This phenomenon plays important role in the brood rearing process. We wanted to find the rules governing this phenomenon. The investigations were conducted in Bangalore, India in 2002. Twenty six *A. dorsata* colonies on the polytechnic building were observed during 10 successive days from 8:00 to 19:00 h. Together 542 PMFs were recorded.

Individual colonies performed daily from 0 up to 6 PMFs. It was intriguing that the same colonies did not perform the same or similar number of PMFs in successive days. However, it was noticed that the lowest number of PMFs, usually followed the highest number of PMFs, in the next day. Also the contrary, high number of PMFs succeeded low number of flights the next day. As a result, cycles of 2 or even 3 days were observed in which the total number of PMFs was identical or very similar.

Intensity of PMFs was evaluated in 5-grade scale. Each grade presented a determined number of bees (6-44) flying in a selected area (50 x 40 cm) near the nests. High variation from grade 1 up to 5 was noticed in PMFs performed by particular colonies within one day. However, regularity was observed. PMF flight of the lowest intensity (grade 1) was followed by flight of the highest intensity (grade 5) or vice-versa.

Since each grade intensity of PMFs presented a determined number of bees, the total number of bees (TNB) participating in all flights performed at particular day (0-6, in that area), could be calculated. The TNB in individual colonies varied in successive days. However, a day with low TNB was followed by a day with high TNB, or vice versa. When the 2-day cycles were treated as unity, then equal distribution of the frequency of TNB in successive days occurred in almost all colonies. Thus, the rule is that PMFs activities of *A. dorsata* are performed mostly in 2-day cycles of similar number and intensity.

Surprisingly, no correlation was found between the sizes of the colonies and the number and intensity of PMFs. We explain this by the fact, that although different amount of brood was present in the colonies, the amount of unsealed brood was similar. We found that the activities of PMFs are correlated with the amount of unsealed brood.



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