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Diurnal Variations in Abundance of the Housefly *Musca Domestica* in a Tropical Village

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## FORUM

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Most ecologists work in the field from time to time. A fair number of them sooner or later visit the subtropical or tropical parts of the world. One feature common to most such areas is the enormous density of flying insects, in built-up areas mostly houseflies. The occasional nuisance felt by the visitor is of course a trifle compared to the constant irritation caused to the resident population. In addition to the houseflies causing much inconvenience, their concentration at places with poor sanitary conditions may be a potential hygienic risk.

Not only do the houseflies seem to be everywhere simultaneously, but the visitor will also experience the inevitable increase in abundance during meals and rainy spells. That this is really a fact, and not only a subjective impression, has now been shown by Dr M. V. Reddy and his wife. For two years they collected houseflies at two locations: a thatched earthen kitchen with poor sanitary conditions, and a concrete building with comparatively better sanitary conditions. The study was conducted during the monsoon months June–August. The following is an excerpt from the report by Dr Reddy.

P. H. Enckell

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## Diurnal variations in abundance of the housefly *Musca domestica* in a tropical village

M. Vikram Reddy

Reddy, M. V. 1981. Diurnal variations in abundance of the housefly *Musca domestica* in a tropical village. – *Oikos* 36: 374–375.

The diurnal variations in abundance of the housefly *Musca domestica* L. were studied in two contrasting environments in a tropical village in southern Orissa, India: a thatched earthen kitchen with poor sanitary conditions and a cemented concrete building with better sanitary conditions. The housefly was six times more abundant in the thatched earthen kitchen than in the concrete building, and the variations in the diurnal abundance were smaller. There were two slight peaks, at about 1000–1100 and 1500–1600 hours, and a minimum at 1800–1900 hours, in the thatched earthen kitchen. In the concrete building the abundance of the housefly increased gradually from 0600 hours (with a slight decrease at 0900–1000) to a peak at 1200–1300 hours.

The abundance of the housefly had a strong positively significant relationship with rainfall ( $P < 0.01$ ) of the same day and with the relative humidity of the previous day ( $P < 0.05$ ).

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## Introduction

*Musca domestica* is common in tropical villages. During the day it presents unbearable inconvenience to the people by its abundance and activity, falling into their food, and disturbing them while resting, besides spreading various diseases (Anon. 1980). Control of the housefly is needed. The control measures would be more effective if the pattern of activity were known. Little is documented, however, of the diurnal variations in abundance and activity of the housefly. This study reports on these matters in a village in southern Orissa, India.

## Materials and methods

The study was carried out in a village 2 km from Berhampur University (19°16'N, 84°53'E, ca. 24 m a.s.l.) in southern Orissa, India, during the monsoon months (June–August) 1979 and 1980, which is the period of maximum abundance of the housefly (Anon. 1980, unpubl. data). Traps were arranged as described by Reddy and Alfred (1980), and catches were counted every hour from 0600 to 1900. Traps were placed in a thatched earthen kitchen (which was very unhygienic since various food materials were left exposed during the day – such as rice, vegetable curries and sorghum payasam – and also because cleaning seldom occurred), and in a cemented concrete building, where the sanitary conditions were comparatively better.

Maximum and minimum temperatures, relative humidity, and rainfall were measured during the time of study.

## Results and discussion

Variations in the number of houseflies caught per hour are shown in Fig. 1 for both localities. Six times more flies were caught in the thatched earthen kitchen than in the concrete building. This was probably due to the fact that the food materials were kept uncovered in the kitchen, and thus served as food for the flies. It is known that food acts as a major attractant for houseflies (Gawaad et al. 1977). That the number of houseflies caught in the concrete building was so much lower than in the earthen kitchen indicates the importance of better sanitary conditions for hygiene.

The food materials in the earthen kitchen were kept exposed from 0800 to 1500 hours. The flies were active feeding during this time, and variations in abundance were not large. When the food utensils were washed at 1500 hours, the abundance of houseflies started to de-

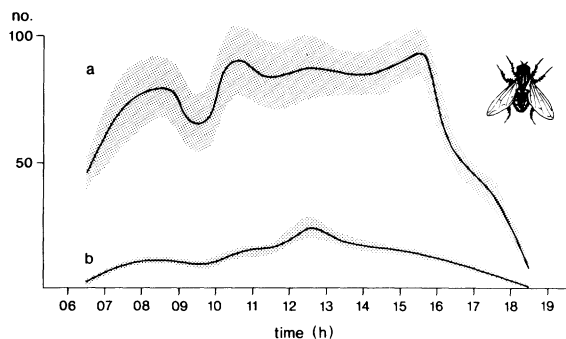


Fig. 1. Diurnal variation in the number of houseflies caught in a thatched earthen kitchen (a) and a concrete building (b) during the monsoon months June–August in 1979 and 1980. Mean  $\pm$  SE is given.

crease. In the concrete building a maximum in fly abundance was reached at 1200–1300 hours, which can probably be explained by the fact that food was brought to the house at that time, and was exposed for some time.

That more flies were caught during the second half of the day could probably be explained by the rain falling during the afternoons most of the days of the study. The flies' natural habitats may have been disturbed by the rain (cf. Reddy and Alfred 1980). The same phenomenon occurs when the natural habitats of the flies – the street garbage dumps – are disturbed during the weekly cleaning.

During the study period rainfall and relative humidity increased. An increase in number of flies could be explained by these factors (a positive and highly significant relationship with rainfall of the same day, and with relative humidity of the previous day). This is in accordance with Reddy and Alfred (1980) who studied the relations between the abundance of the housefly and various abiotic factors in the area.

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