of many enzymes are much lower in these cell lines. Using 2 dimensional gel electrophoresis, the β and γ forms of actin were found to be expressed in nonfused L-6 cells as well as in nonmuscle cells, but the muscle-specific form of α actin was only found in fused cells[13]. This result could indicate that the lack of detectable B-CK expression could be a quantitative effect and not necessarily a loss of B-CK, as the ubiquitous forms of actin, β-actin and γ-actin could be found in unfused cells of similar cell lines. The expression of the M-CK however clearly indicates that the fused cells express another feature of terminally differentiated muscle cells and corroborates some results of activity measurements in these cells[14].

While this manuscript was being prepared, Cohen et al.[8] found similar results, obtained with a method using an inhibitor of myokinase to demonstrate the presence of M-CK in rat myogenic cell lines.

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Seasonal fluctuations of population densities of the fish-mite *Seudacia medanensis* independent of atmospheric temperature and humidity

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Summary. Seudacia medanensis is a species of mite which reaches pest proportions on dried stored fishery products in the warm conditions of the tropics. Studies extending for a period of 2 years have shown that the seasonal variation in the population intensity of the mite is not influenced by atmospheric humidity or temperature.

Even though the fish-mites can cause considerable damage and qualitative deterioration of dried, stored fishery products, there is, except for few taxonomic descriptions of some species, hardly any work on the biology of these mites.

The present paper discusses the results of a 2-year study conducted to discover the influence of atmospheric temperature and humidity on the seasonal density of *Seudacia medanensis,* which reaches pest proportions on dried fishery products stored in the warm conditions of the tropics.

Material and method. Several healthy cultures of *S. medanensis* were maintained in the laboratory for routine observations. 3 of these cultures were maintained under identical conditions of feeding and atmospheric humidity and room temperature. For feeding, fresh specimens of dried anchovy (*Anchoviella commersonii*) were added to each culture at the middle of every month.

For assessing the seasonal density of the mites, approximately 10 g of the feeding material was withdrawn from each culture in the 1st week of every month, and the number of the adult mites present on the material counted, after immobilizing the mites by dipping the substrative material in killing fluid, viz. 10% formalin. Subsequent to the counting of the mites, the feeding material withdrawn from each culture was thoroughly washed and separately dried to constant weights. From the weights of the material thus obtained, and respective counts of mites that were present on them, the number of mites on a unit weight of 10 g in the 3 cultures was calculated. The figures given in the tables, in respect to the density of the mites for each month, is the average of the 3 counts obtained for a unit weight of 10 g for each culture. The experiment was started in January 1975 and terminated in December 1976. The average relative humidity and temperature for each month was computed from daily readings of the same obtained from the government meteorological department.

Results and discussion. The average counts of the adult mite from the 3 cultures (in relation to the unit weight) and the relative humidity and temperature of the atmosphere for

Table 1. Density of adult *S. madanensis* on unit weight of anchovy and atmospheric humidity and temperature during 1975

	Density y	Relative humidity x	Temperature z
January	1,040	65	26.6
February	1,000	72	27.45
March	925	74.5	28.10
April	3,322	80.0	28.6
May	0	79.0	27.7
June	0	87.0	25.75
July	0	88.0	26.0
August	1,250	86.5	25.75
September	5,050	86.5	26.10
October	5,148	85.5	25.9
November	15,450	83.5	25.9
December	8,005	73.0	26.25

Table 2. Density of adult *S. madanensis* on unit weight of anchovy and atmospheric humidity and temperature during 1976

	Density y	Relative humidity x	Temperature z
January	0	63.0	26.3
February	0	64.0	26.65
March	1,850	69.5	28.10
April	6,450	75.5	28.55
May	5,975	77.0	28.35
June	7,175	74.5	27.75
July	5,800	84.0	26.50
August	10,450	82.0	26.50
September	11,925	79.0	26.90
October	11,850	83.0	26.75
November	12,350	87.0	26.40
December	15,625	74.0	26.90

Table 3. Correlation coefficient between the population density and relative humidity and atmospheric temperature during the 2 years

	1975	1976
εy	41,190	89,450
εy^2	169,661,610	8,001,302,500
εx (rel. hum.)	9,605	912.5
εx^2	922,560.25	832,656.25
εz (temperature)	320.1	325.65
εz^2	102,464.01	106,047.9225
εxy	3,333,816.5	7,110,587.5
εzy	1,083,727.65	2,419,377.5
Correlation coefficient between density of mite and relative humidity	0.0032 (not significant)	0.0041 (not significant)
Correlation coefficient between density of mite and atmospheric temperature	−0.0039 (not significant)	−0.0003 (not significant)

each month are given in tables 1 and 2. The correlation coefficient values between the density of the mites and the known variables of atmospheric temperature and humidity are given in table 3.

The correlation coefficient values obtained for both the years in respect of the seasonal density of the mites and the atmospheric factors humidity and temperature indicate that these variables and the seasonal fluctuation in the population intensity of the mite are not correlated. Fluctuations in the population density of the mite evidenced in nature can then be attributed to the influence these atmospheric factors may have on the developing stages of the mite, absence of predators etc. The results of the present study are also suggestive that a prediction on the magnitude of population of this obnoxious mite, that may be present from season to season or from place to place, is not possible based on parameters like atmospheric humidity and temperature.

Specific differences in tsetse fly sounds and their behavioural significance

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Summary. Differences in the sounds of 4 species of tsetse flies have been demonstrated. It has also been shown that tsetse flies perceive and react to sounds made by other members of the species.

Sex differences in the mating, pre- and postfeeding sounds of *Glossina morsitans* have been demonstrated and shown to have characteristic spectrograms for the frequencies 0–100 kHz[1]. The present authors have made recordings of the premating, pre- and postfeeding sounds of *G. morsitans orientalis* (Vander.), *G. palpalis* (R-D), *G. tachinoides* Westwood and *G. austeni* Newstead, in the University of Salford Recording studio, using a 'Shure' microphone type SM76 and a 'Uher' Tape Recorder type 4200, at a recording speed of 19 cm/sec. The frequency response of the tape recorder within ±3 dB was 4 Hz to 20 kHz.

The prefeeding sounds are made as the proboscis is driven into the host and is a short song with bursts of about 0.25 sec duration. The postfeeding sounds were produced as and after the proboscis was withdrawn when the fly was gorged with blood. Semigorged flies seldom produced sounds. The bursts of postfeeding sounds are of 2–30 sec duration and show slight variations in pitch and tone. They may be produced for up to 30 min after feeding has finished, especially if the flies are disturbed by vibration. The sounds are produced by the rapid contraction of the flight muscles of the pterothorax and are not produced if the axillary wing sclerites are damaged or coated with wax. Removal of the wings and/or halteres and coating of the spiracles with wax does not inhibit sound production. Stereoscan photographs show that when the wings are flexed over the abdomen, the relative positions of the axillary sclerites are changed and the wing bases disengaged from the click mechanism.

The sound recordings obtained were analyzed with the aid of an oscillograph to give the wave form and with a real

Records of number of speciments of *G. austeni* producing sounds under the conditions indicated

No. of flies present in cage	No. of experiments	Males: No. of flies producing sounds	Males: Mean No. producing sound per fly	Females: No. of flies producing sounds	Females: Mean No. producing sound per fly present
1	30	25	0.83	27	0.90
2	30	45	0.75	44	0.70
3	20	32	0.53	40	0.50
4	20	38	0.48	46	0.57

The difference between the results for the experiments with 1 and 4 flies per cage are statistically significant. For males: $\chi^2_{(1)} = 4.6$ for which $0.05 > p > 0.02$. For females: $\chi^2_{(1)} = 8.0$ and $0.01 > p > 0.001$.