

# Flies discovered at Casey station

IN MARCH 1999 A TRAY OF CHICKEN EGGS DELIVERED TO Casey Station, was found to be infested with numerous larvae, pupae, empty puparia and adults of a small fly. The infestation was discovered on 10th March when the container was opened outside the Green Store. There was a noticeable smell of decomposing food. The infested boxes of eggs were therefore immediately moved to the Emergency Vehicle Shed (EVS), to avoid contamination of food already in the Green Shed. Upon opening the boxes in the EVS, some of the eggs were found to be cracked and to have gone bad. Trays with obvious fly infestations were immediately transferred to the incinerator building. A few days later they were all burnt. In order to ensure the EVS was free of any escaped flies, the heating was turned off for seven days. The ambient temperature was between -5 and -13°C during this period. Following incineration of the eggs, the incinerator building was subjected to the same treatment.

The flies were identified as Phoridae and a sample was eventually handed to Henry Disney, who identified them as *Megaselia scalaris* (Loew). This fly is primarily a species of warm climates; but it is best known as an infamous tramp species that has been transported around the world by man, mainly in ship cargoes. Adults have also been reported being carried 800 km in an aeroplane and being transported from North Africa to Spain in the plumage of a migrating bird.

The larvae of this species have been frequently reported contaminating foods such as pastas, dates, soya flour, cheese, dried fish and rotting potatoes. The species is noted for its catholicity in the choice of suitable food for breeding. Decaying plants and fungi, dead arthropods and molluscs are typical; but human faeces and corpses, shoe polish and even a tin of blue paint (the phthalocyanine blue being the most likely energy source) are also recorded being exploited by the larvae. Females, attracted by the smell of decay, can insert their eggs through the smallest openings and first instar larvae have even been reported entering turtle eggs through the larger pores of the shell.

Exposed foods may attract egg-laying flies. The subsequent accidental ingestion of eggs can then cause intestinal myiasis, with third instar larvae being passed in the patient's stools. There are also rarer reports of larvae infesting wounds, the urogenital tract and the nasal sinuses.

The duration of the development of the fly varies with temperature (see figure). There are no authenticated records of the eggs and first instar larvae withstanding temperatures below 0°C. However, adults successfully emerged from contaminated food in a Hong Kong freezer compartment at -2 to -3°C. The lack of records

of breeding outdoors in higher latitudes is the principal basis of the inference that the eggs and/or the first instar larvae cannot withstand freezing. Furthermore some data indicate a reduced fecundity at lower temperatures. Typically a female will lay about 30 eggs (range 12-77) in each ovarian cycle. Up to sixteen cycles have been recorded in the laboratory, giving a total fecundity of around 400 eggs per female. However, in one experiment the mean number at 15°C was reported to be only 146.7 eggs, compared with 591 at 20°C and 664.8 at 25°C. The inference that the eggs and/or first instar larvae cannot withstand freezing needs testing before we place too much reliance on freezing as a method of control.

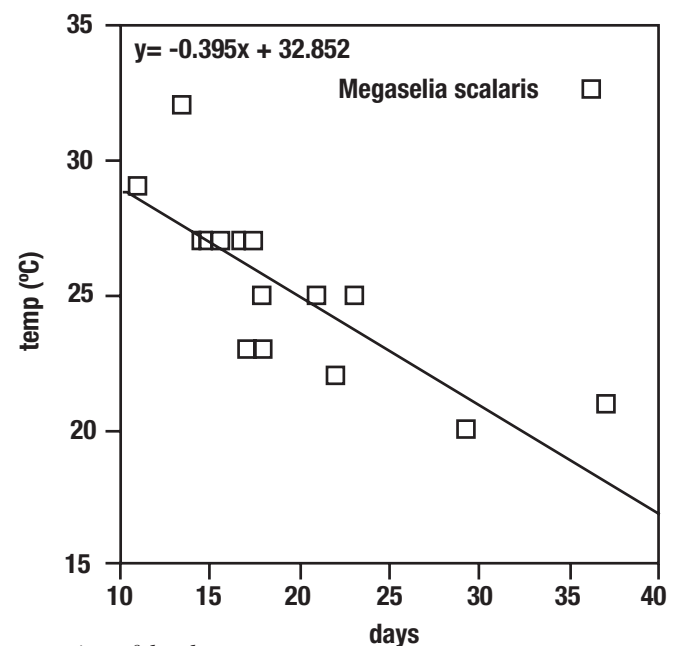
If only the second instar larvae and subsequent stages can withstand frost, then we can speculate as to the origin of the Casey infestation. The chicken eggs had been procured in Perth, but the ship caught fire 10 hours after leaving and had to return to port, where the container was offloaded and left on the wharf for several days. The container was then sent on to Capetown, where it arrived and was transferred to a polar ship on 18 February. The ship arrived at Casey on 8 March.

The scenario with the fewest assumptions is that some cracked eggs went bad while the container was on the wharf at Perth and that flies then oviposited in the container while it was in Capetown, where the species is common in summer. The hatching of the new generation would then be around the time of arrival at Casey.

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Reference:

Disney, R. H. L. (1994) *Scuttle Flies: The Phoridae*. London, Chapman & Hall.



Duration of development  
(egg to adult) varies with temperature