

## CASE STUDY REPORT

# FUNGUS GNATS IN A FOOD PACKAGING WAREHOUSE

### Introduction

Food packaging warehouses fall under the same rules as a food plant regarding pest contamination. An insect which falls into an empty container destined for food, it has the same potential result as it would during filling. Food packaging facilities tend to have less pest pressures because of the lack of available food on site. This does not mean that they are without pest pressures. Rodents, ants and psocids are examples of some of the pests which can infest packaging plants despite the less than ideal conditions.

One pest that periodically infests structures regardless of the buildings function is the fungus gnat. Fungus gnats are traditionally thought of as pests of greenhouse crops and office house plants. These insects feed on fungus in the soil and occasionally can also feed on roots of plants. In addition to the soil connection, these pests can be a problem in other areas where organic material has decomposed. Buildings will occasionally see problems with fungus gnats when roof design or deterioration causes structural components to degrade providing food sources for the immature fly stages.

The term fungus gnat actually refers to more than one species but common characteristics are shared for identification purposes. These are small flies, typically 1/16"- 1/8" in length and are dark in color. The wings like the body are dark and the legs are long relative to the body size. They can be confused with phorid flies and small fruit flies but unlike phorid

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flies and *Drosophila* fruit flies, the antennae of fungus gnats are long and pronounced.

### Challenge

A packaging warehouse was receiving multiple returns from a client because small flies were being found in the shrink wrap upon shipment arrival at the food processing plant. These returns were costly in product rework, labor costs and shipping charges. The reputation of the packaging firm was also at risk. The problem was observed during the month of August and pest pressures were at their highest with no immediate hope of reduction. Chemically based space treatments would offer temporary relief but unless the source of the infestation was found and eliminated, the problem would continue.

### Investigation

The warehouse had multiple insect light traps within the facility which were used as part of the analysis of the fly location. The facility was an older rented struc-

ture and was experiencing roof leaks in several areas but also had some water drainage issues along the exterior of the building. The flat roof seemed to be the most logical source but all potential sources needed to be investigated. Insect light trap counts indicated a higher percentage of flies in one corner of the building near the docks. This same area had gaps around a roof vent and this section of roof had not received any roof repairs although other sections of roof had been renovated. Dock doors were relatively well sealed and warehouse staff did a relatively good job of keeping doors closed while not in use. Inspection results showed a strong indication that indeed the flies were coming from the roof. Holes were found in the membrane roof upon a roof inspection caused by age and also rocks that were used on the roof as part of the roof construction.

### Solution

Since the building was under lease, the landlord wanted proof of the infestation prior to making roof repairs. Contractors were called to perform both thermal imaging of the roof and removal of sections of the roof membrane for examination underneath. The wood underneath the roof membrane had deteriorated to such an extent that it was soil like in consistency. Several samples were examined and fly larvae were found in the deteriorating organic material. Roof repairs were recommended along with a treatment of borate based insecticide sprays to help preserve the wood from attack. The repairs and treatments were successful in eliminating the problem.