

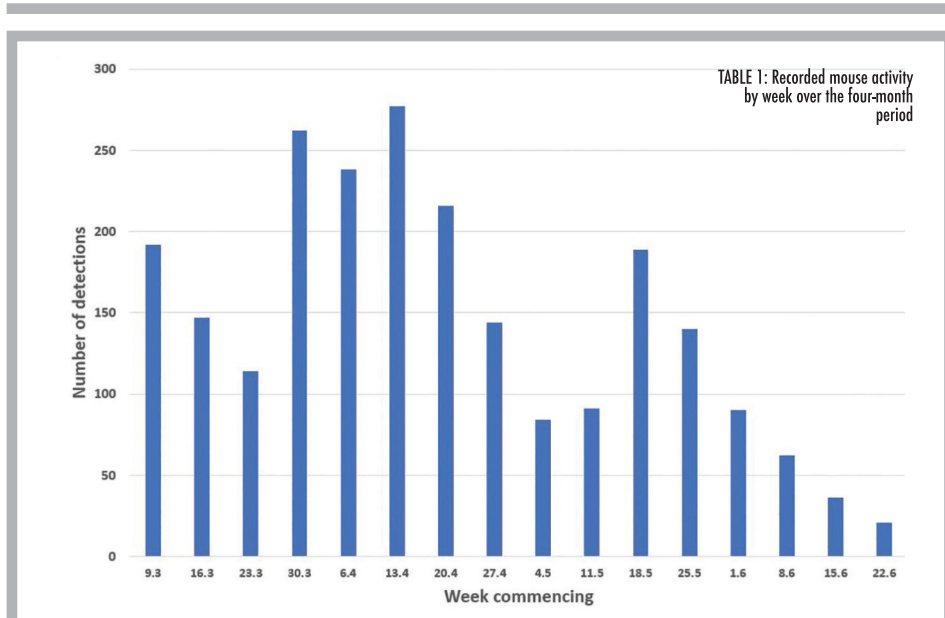


Remote monitoring sensor mounted on upturned gutter. Chocolate button attractants and tracking dust added to verify genuine activations.

# Remote monitoring records lockdown mouse activity

For the Acheta Pest Management Consultancy, now part of Kiwa, what started out as a routine remote monitoring mouse programme turned out to be something of an unplanned experiment once lockdown was announced, with human activity removed. **Dr John Simmons**, Acheta Business Unit director, and also a member of the Pest Technical Advisory Board, relates how activity fared over this period

There has been widespread publicity about the rise of rodents during lockdown. With restaurants, pubs and clubs closed, the primary food source for rats and mice out on the streets and in many properties disappeared almost overnight. Cities such as New York and London experienced a dramatic increase in rat sightings as they were forced to forage more widely and during the day.



*Mice movement and body heat triggered detection*

In March of this year, Acheta installed a remote monitoring system into a retail mall in the Midlands comprising a mix of food and non-food retail premises, restaurants and cafés.

The remote monitoring system only required the mice to move around, as the movement and body heat triggered detection. This approach is superior to the traps that most remote monitoring systems are built around. Experience has shown that mice often avoid baits and traps, as discussed in a previous article (see Pest 33: May & June 2014).

When setting up this work, little did we know

## REMOTE MONITORING: MICE NUMBERS

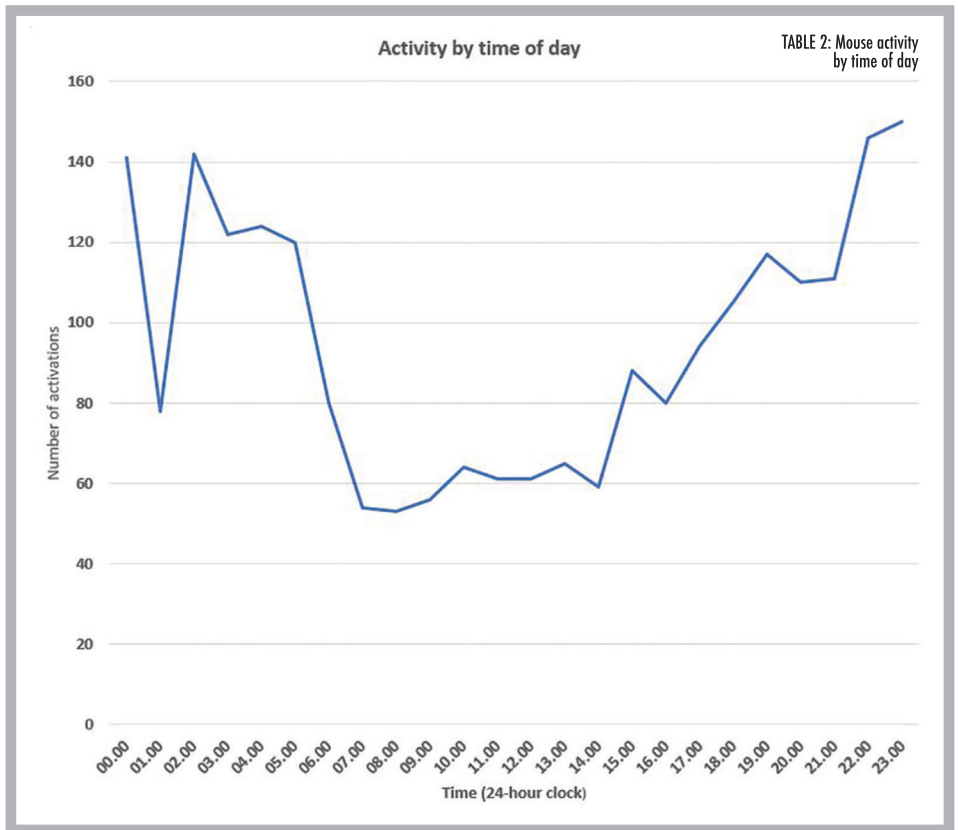
▷ that just a few weeks later the world would change so dramatically, and that we would be plunged into lockdown. This period of time with a global slowing of modern human activities, notably travel, has in a paper that appeared in the renowned journal *Nature*, been christened as ‘anthropause’. It has provided a unique set of circumstances to gain an unprecedented mechanistic insight into how human activity affects wildlife, or in this case house mice (*Mus domesticus*).

Our installation, of just over 100 detectors, focused on the numerous large and small plant rooms, risers and voids within the building. We didn’t monitor within the retail or foodservice premises as we didn’t have permission. They have their own pest control contractors (who typically spend much of their time blaming each other for the mouse activity), and we would have had no control over their interfering with our detectors.

We reasoned that the main building structure would be a ‘reservoir’ for mouse activity. Obtaining quantitative data for mouse activity would provide a good indicator to the actual level of activity on the ‘shop floor’.

In the four months the system was installed, we have gained a fascinating insight into the dynamics of the house mouse population at this site.

Experience has shown that mice often avoid baits and traps



### MOUSE ACTIVITY

The number of activations recorded each week is shown in Table 1 (on page 22).

This provides a direct measure of the level of mouse activity over the four months.

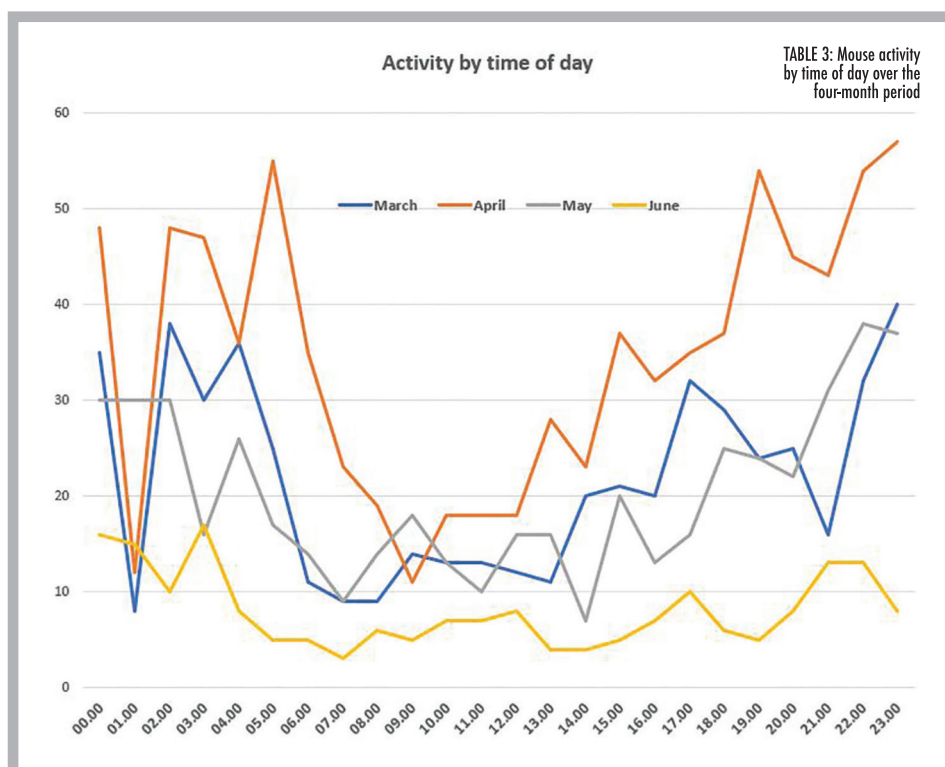
Interesting points to note from this activity are:

◊ The sharp jump in activity at the end of

March. We surmised that this was due primarily to decreasing food availability as the premises gradually shut down.

◊ Declining activity through to mid-May, at which point a sharp, and I have to confess, unexpected, jump in activity occurred.

◊ The premises had been completely closed for



Remote monitoring not only tells you where they are, but when they are active



## REMOTE MONITORING: MICE NUMBERS

▷ some weeks by this time – could this be in some way linked to mouse reproduction, with a sudden flush of youngsters running around?

The simple truth is that we just don't know.

◇ Since then, and from our client's viewpoint most importantly, the population has suffered a precipitous decline.

We know that mice are nocturnal, but does this mean that they are not active during the day? Remote monitoring not only tells you where they are, but when they are active.

Table 2 (on page 24) highlights that they are certainly more active at night, but with significant daytime activity too. Activity picks up in late afternoon, gradually building to a peak sometime between midnight and very early morning.

The sharp drop at 01.00 has been noted in several weeks' data and is not easily explained. It has not been so pronounced since the premises closed, so may be in some way linked to human shift patterns. We just don't know.

The level of daytime activity may seem surprising, but it should be remembered that our detectors are placed in rooms and areas that are rarely visited by people, so mouse activity will be



*It will be interesting to see if the mouse population recovers as we return to what will be the 'new normal'*

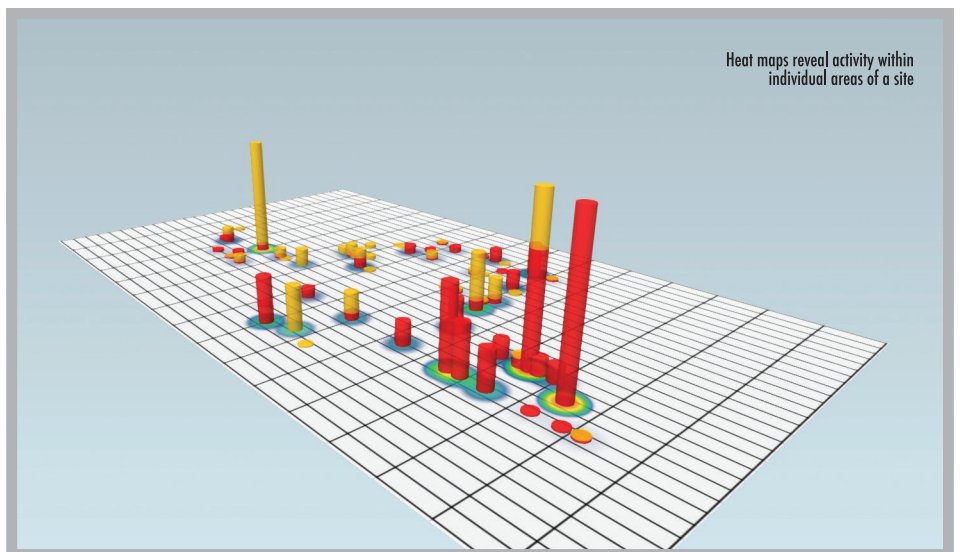
far less influenced by humans than would be the case within shops and restaurants.

To examine whether there was any shift in activity as the site moved from pre-lockdown to complete closure the same 'time of day' data, as shown in table 3 (on page 24), is broken down by month. There is certainly no dramatic change, which is probably unsurprising given that the nocturnal activity pattern will be an inbuilt 'circadian' rhythm.

From the viewpoint of controlling the mouse population, which, after all, was the primary reason our customer asked us to install the system, this approach has allowed us to both quantitatively measure the level of activity, and to build a detailed picture of the spatial distribution of the mouse population.

Locations of activity are displayed on heat maps, like the example in the chart (right). For obvious reasons of confidentiality, this is shown without including the site plan itself. These maps are sent to the client and pest control contractor each week and allow a much more targeted approach to be taken.

Is this targeted control programme the primary reason for the huge decline in the mouse



population that we have seen? That is very much open to debate. I suspect that it is lack of food that has been the main driver for the population crash. Irrespective of the cause, the current infestation status of this site is such that there is now a genuine chance to achieve something that all parties would probably have considered unachievable just four short months ago – complete eradication of the mouse population. That is what we are working towards.

Of course, what will prove equally interesting is to see if the mouse population recovers as we return to what will be the 'new normal' for mankind, but really this is the old normal as far as the house mice are concerned.

### TO CONCLUDE...

A good remote monitoring system is undoubtedly a highly effective and useful tool. However, it cannot fully replace the skill and knowledge of an experienced pest management practitioner. There will always be a need to physically inspect for evidence of activity and to carry out effective treatments. The use of any remote monitoring system should form part of a risk-assessed integrated pest management programme.

Modern technology means that we can now understand mouse population dynamics like never before and can use that information to control them in a far more effective way than we have ever been able to do before. 