

Rats and fleas that spread disease

Leptospirosis, the Plague, avian flu, monkeypox, it seems that the propensity for rodents to cause mischief knows no bounds, says **Alex Wade**, a director of Wade Environmental



We all know rats and mice can be pests and one of the key attributes for falling into this category is their well known ability to harbour and transmit diseases specifically zoonotic diseases.

WHAT ARE ZOO NOSES?

It is unlikely that you will give your dog your cold, and equally unlikely that your dog will give you its kennel cough, so why worry about the diseases that other animals, especially rats, carry? We after all, are not rodents, so how can their diseases affect us?

Although the majority of diseases are species-specific, there are certain pathogens that are able to move between hosts of different species and when this happens, it is called zoonosis.

Zoonotic pathogens can have unpredictable behaviours and can have impacts in their secondary hosts in addition to their normal behaviours. When the incidental or secondary host is a human, the pressure on public health can be severe.

This is always a challenge, especially when we consider diseases from apparently unknown sources, such as a hidden population of rodents, as this can reduce the suspicion of illness when symptoms present themselves, increasing the time to detection and therefore a subsequent cure.

There are many pathogens carried by rodents which can harm both humans and animals we care for, with an example of this being the relation between rodents, poultry and avian flu.

Diseases can be transmitted in several ways by intermediaries called vectors. The simplest way this can occur is the direct physical contact between the two host animals. Such simplicity

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affords itself a modicum of control, but the management of the spread of disease becomes increasingly more difficult as the interactions between hosts become less obvious.

Vectors fall into two major categories: biological and mechanical.

Biological vectors are organisms which will harbour a pathogen usually within their own bodies. While there, that pathogen finds itself in an environment where conditions are sufficiently favourable that it has the capacity to grow.

The growth of leptospirosis within the kidneys and its subsequent shedding in the urine can be considered a biological vector, the malaria parasite within *anopheles* mosquito is another example.

Mechanical vectors on the other hand are host organisms which will physically transport a pathogen from location to location, with the key distinction that in this time the pathogen does not grow while this occurs. Such mechanical transportation of pathogens can be tremendously dangerous as it requires no incubations nor favourable climates, simply an animal to move over a contaminated surface on to a previously clean surface.

CHANGING CLIMATES

Climate change is real. Regardless of whether you believe that humans are to blame for it entirely or the speed at which the change is occurring, the inescapable truth is that the climate is changing.

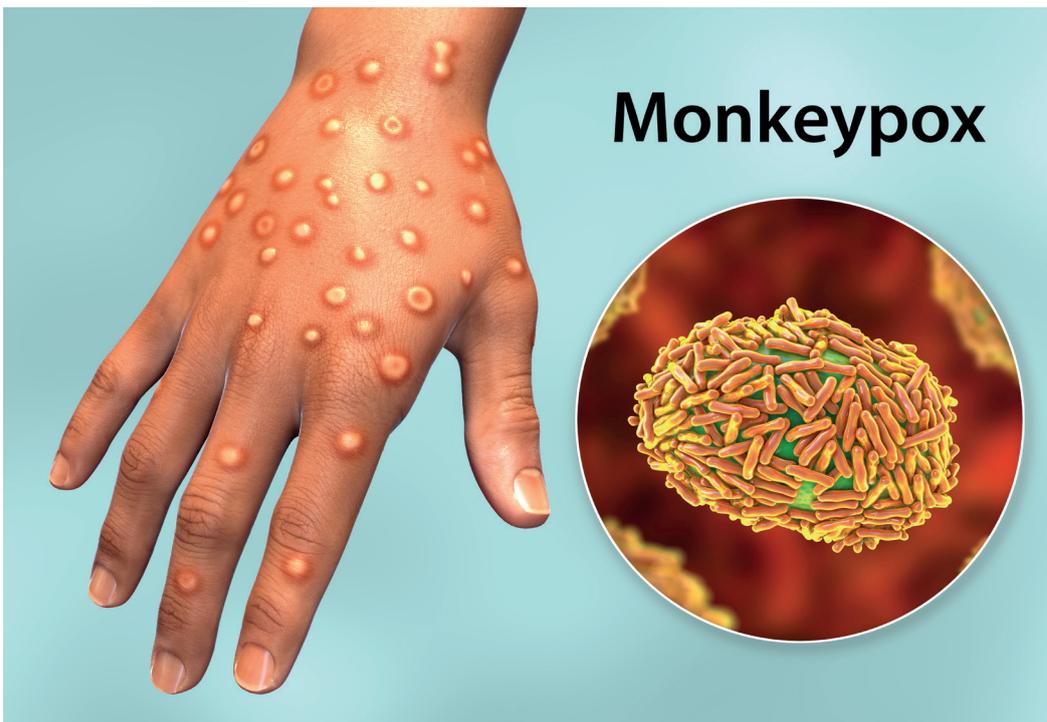
This change in climate is bringing a real and sometimes dramatic shifting of the boundaries that pests observe, sometimes bringing new pests and their diseases across previously untenable borders.

Globalisation has also played a pivotal role within this equation too, not only bringing humans closer together but also allowing plants and animals to cover much greater distances than ever before.

A classic example of this is finding invasive species of crab and other crustacean in harbours around the world after they hitchhike their way across the globe in the bilge tanks of deep-water transit vehicles.

With pests moving into new territories, their parasites and diseases also come hand in hand. The Covid-19 pandemic and its links to its origin in wild animals has been a stark reminder of this. It also reminds us that we are not that far removed from nature as we in our cities may like to think.

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Monkeypox

