Insects as mini-cattle

On the moral distinction between a cow and a cricket

Do insects have consciousness? Do they feel pain? Can they think? And what does that mean for insect farming? These are some of the questions animal ethics specialist Bernice Bovenkerk considers.

Text Tessa Louwerens

It is dark and sweltering in the barn, with the animals packed in tightly. Some are sick. They will never grow old or leave the barn. They exist purely because they are food. Distressing? Unacceptable? What if we tell you the animals are mealworms?

It is a topic you may not ever have thought about but it has been on Bernice Bovenkerk's research wish list for years. Bovenkerk is an associate professor of Animal Ethics. Now her wish now being fulfilled: she will be investigating the ethical side of insect farming together with PhD candidate Martijn van Loon in the Insectfeed programme headed by entomologist Marcel Dicke.

Sustainable

Insects are nutritious and need relatively little food to grow fast. They eat waste products, use little land and water and don't produce much CO_2. Yet insects are not necessarily the holy grail in the protein transition, says Bovenkerk. 'I have doubts whether they will ever replace other animal protein. In countries that do have insects on the menu, they are usually eaten as snacks. Bolivians for example eat deep-fried grasshoppers rather than popcorn in the cinema. That is as a substitute for sweetcorn, not meat.'

Bovenkerk expects insects to mainly end up in animal feed. 'That produces interesting ethical dilemmas. Because that gives livestock farming a more sustainable image, which in turn allows it to be scaled up. But that is not good for animal welfare and the environment. However, if people don't reduce their meat consumption, it is better to make it more sustainable. Insects can also increase animal welfare: chickens like to peck at insects, and you might be able to encourage less intensive farming by feeding animals insects.'

According to Bovenkerk, it is difficult to determine the precise benefits of insects. 'It depends on what you compare them with. Do you weigh them up against cows, chickens or pigs? Or do you compare them with plant protein sources such as pulses? Insects aren't

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Animal ethicist Bernice Bovenkerk: 'If you rear animals in production systems, you turn them into objects that exist to serve us rather than their own interests. That is morally problematic, regardless of whether it's a cow, pig or mealworm.' Photo Duncan de Fey

necessarily an improvement on pulses. You have to keep the insects warm and feed them, which costs energy. You could also invest that energy in growing plant food for people. There is also a risk that insects escape and become a plague that damages the environment and biodiversity.'

Moral status

Aside from these practical aspects, Bovenkerk wonders how ethical it is to farm and kill insects on a large scale. 'I was surprised to find insect burgers in the vegetarian section a few years ago. They are animals too! Can you assume vegetarians are willing to eat them?'

Perhaps people think: 'What difference does it make? They're only insects. We swat mosquitoes mercilessly, don't we?' As a specialist in animal ethics, Bovenkerk sees things differently. 'Ethics is about when our acts as humans are "right". Animal ethicists say we should assign a moral status to certain animals and take account of their interests in how we treat them.'

But how do you decide which animals get that moral status? Bovenkerk: 'An important question is whether the animal consciously experiences pain and pleasure. We don't know much about that for insects. But absence of evidence is not the same as evidence of absence. We find it hard to imagine insects feel pain because they are so small and different. But we used to think that of fish, whereas now we know they do feel pain and our treatment of them is horrific.'

Most animal ethicists assume you are only aware of pain when signals are sent to the brain via pain receptors and the spinal cord. Bovenkerk: 'That is why they assume that invertebrates such as insects don't consciously feel pain and therefore don't need a moral status.'

But there may be other ways of experiencing pain. Like most insects, fruit flies don't have a spinal cord, for example, but they do have a ventral cord that runs across the abdomen and fulfils the same function as a spinal cord. If they get close to something hot, they fly away. Bovenkerk: 'A reaction to a painful stimulus doesn't necessarily mean the animal consciously feels pain; it could be a reflex. Pain prevents damage as it makes the animal avoid the painful stimuli. But the animal has to learn and remember this. Most insects have short lifecycles so the trade-off – the energy required to maintain all those extra structures – probably isn't worth it from an evolutionary perspective.'

Yet Bovenkerk warns against drawing conclusions too soon. A simple nervous

system doesn't mean the animal is 'simple'. Research shows that other invertebrates exhibit pain behaviour that is more than just a reflex. A hermit crab may have a favourite shell that it chooses in preference to other shells. If the crab is given an electric pulse every time it tries to get into its favourite shell, it makes do with an inferior shell. So a central nervous system does not seem to be a precondition for feeling pain. Bovenkerk: 'The question is whether this also applies to insects. Invertebrates are a diverse collection of creatures and there are about a million species of insects, which you can't just lump together. Male praying mantises carry on mating while they are being eaten by the female.' Don't they feel that? It is not clear, says Bovenkerk. 'A painful stimulus doesn't necessarily lead to pain behaviour. Perhaps the pain is suppressed to give priority to another behaviour, such as mating.'

Photo Duncan de Fey

Mini-cattle

Even if insects feel nothing and we can farm them without affecting their welfare, Bovenkerk still sees other objections. 'For example, we know that certain insects such as bees can be very intelligent despite their small brains.' A bumblebee that is allowed to choose between green and blue flowers will always go for the blue ones after researchers train it by repeatedly placing a sugar solution in the blue flowers. It has also proved possible to use rewards to teach bees to do sums and recognize faces. 'Perhaps insects don't experience life the same way we do,' says Bovenkerk. 'How does it feel to be a bee? No idea. That is hard enough to imagine with another human. But researchers can look for similarities, for example in brain structures. We know that the prefrontal cortex in humans is used in learning, setting goals and planning. Birds, fish and insects have similar brain structures that could serve the same functions.'

According to Bovenkerk, animals, possibly including insects, have goals and desires, consciously or otherwise. 'They probably don't have expectations for the future, although we don't know that for certain. But they definitely want to eat, mate and survive. Animals have just as much right to life as us. Most of the insects we eat are larvae. That deprives them of the opportunity to become adults and live to their full potential. If you rear animals in large production systems, you are also turning them into objects that exist to serve us rather than having interests of their own. That is morally problematic, regardless of whether the object is a cow, pig or mealworm.'

Perhaps the image sketched at the start of this article isn't remotely distressing for insects because they live at close quarters in nature too. But insects deserve at least the benefit of the doubt, believes Bovenkerk. 'Let's try to study their consciousness properly before we introduce factory farming for these mini-cattle. Insect farming is in its infancy and that offers scope for innovations that make the sector more sustainable and ethical. Now we have an opportunity to get it right from the start and avoid the mistakes of intensive farming in terms of animal welfare and the environment, because it's hard to undo the damage afterwards.' ■

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