# Microplastics found in 12% of UK terrestrial invertebrates, raising food chain concerns



Recent research has revealed a troubling truth about the extent of plastic pollution infiltrating the UK's land ecosystems, impacting even the smallest and most vital creatures. A study conducted by scientists at Sussex and Exeter universities has found that more than 10% of analysed invertebrates—slugs, beetles, snails, and earthworms—contain microplastic particles within their bodies. This alarming discovery raises concerns that plastic contamination is permeating the broader food chain, endangering biodiversity and the health of various species, including those that feed on these invertebrates.

The researchers surveyed over 580 bug samples from 51 different sites throughout Sussex, identifying microplastics in nearly 12% of the specimens. Notably, earthworms showed the highest levels of contamination, with 30% testing positive for microplastics. Slugs and snails followed closely behind, with 24% affected. The study highlighted polyester as the predominant type of plastic found, likely originating from everyday clothing washed and subsequently released into the environment.

Another notable finding from the research indicated that particulates of microplastic were being ingested by a common garden black beetle—one specimen was found to have a piece of nylon that measured 4.5mm, making up a quarter of its body length. The researchers hypothesised that these plastics likely entered the ecosystem through agricultural practices, particularly through the use of dried human sewage sludge as fertiliser, which may carry fibres from domestic washing machines.

These findings echo earlier research that documented microplastics in various species, compounding concerns about their impact on animal health. Previous studies have established that ingesting microplastics can lead to detrimental health effects in insects, including reduced fertility, stunted growth, and adverse changes to liver and kidney function. Furthermore, a 2020 study published in the journal *Global Change Biology* revealed that small birds, such as dippers, could ingest up to 200 microplastic particles daily due to their diet of contaminated insects, with many fragments measuring less than 0.5mm in size yet capable of being several millimetres long.

Professor Fiona Mathews, an environmental biologist at the University of Sussex, remarked on the breadth of the issue, stating, “Attention is currently focused on litter as the main source of contamination, but these findings suggest multiple sources ranging from clothing to paint.” Her comments underline the urgent need for a comprehensive understanding of the sources and impacts of microplastics across various levels of the food chain.

Interestingly, the problem is not limited to terrestrial insects. Research has shown that microplastics can also infiltrate the diets of flying insects, such as mosquitoes, which ingest these particles in their larval stages. As these mosquitoes mature into adults, they retain microplastics, making them potential vectors through which pollution can spread to larger predators, thus complicating the dynamics of food chains in terrestrial and aquatic environments alike.

Widespread presence in both land and freshwater ecosystems raises critical questions regarding the long-term ecological impacts of microplastics. According to additional findings, approximately half of all freshwater insects surveyed have shown signs of microplastic contamination, a trend that is worrying for the integrity of these delicate ecosystems.

The researchers advocating for this latest study stress that it serves as an urgent call for more intensive research into how microplastics are disrupting ecological systems and affecting species from the ground up. With these pervasive contaminants now being detected at every level of the food chain, immediate action to mitigate pollution is needed to preserve the health of our ecosystems and protect the biodiversity that underpins them.

## Reference Map:

* Paragraph 1 – [[1]](https://www.independent.co.uk/news/uk/home-news/microplastics-found-insects-bugs-food-chain-b2759754.html)
* Paragraph 2 – [[1]](https://www.independent.co.uk/news/uk/home-news/microplastics-found-insects-bugs-food-chain-b2759754.html), [[2]](https://www.theguardian.com/environment/2018/sep/19/microplastics-can-spread-via-flying-insects-research-shows)
* Paragraph 3 – [[1]](https://www.independent.co.uk/news/uk/home-news/microplastics-found-insects-bugs-food-chain-b2759754.html), [[3]](https://www.forbes.com/sites/grrlscientist/2018/09/29/microplastics-contaminate-half-of-all-freshwater-insects-study-shows/)
* Paragraph 4 – [[1]](https://www.independent.co.uk/news/uk/home-news/microplastics-found-insects-bugs-food-chain-b2759754.html), [[5]](https://www.theguardian.com/environment/2018/sep/19/microplastics-can-spread-via-flying-insects-research-shows)
* Paragraph 5 – [[1]](https://www.independent.co.uk/news/uk/home-news/microplastics-found-insects-bugs-food-chain-b2759754.html), [[6]](https://www.forbes.com/sites/grrlscientist/2018/09/29/microplastics-contaminate-half-of-all-freshwater-insects-study-shows/)
* Paragraph 6 – [[4]](https://www.smithsonianmag.com/smart-news/mosquitoes-are-passing-microplastics-up-food-chain-180970373/), [[7]](https://www.smithsonianmag.com/smart-news/mosquitoes-are-passing-microplastics-up-food-chain-180970373/)

Source: [Noah Wire Services](https://www.noahwire.com)

## Bibliography

1. <https://www.independent.co.uk/news/uk/home-news/microplastics-found-insects-bugs-food-chain-b2759754.html> - Please view link - unable to able to access data
2. <https://www.theguardian.com/environment/2018/sep/19/microplastics-can-spread-via-flying-insects-research-shows> - A study published in Biology Letters found that mosquitoes, such as Culex pipiens, ingest microplastic particles during their larval stage. These particles remain in the mosquitoes as they mature into adults, indicating that microplastics can enter the food chain through flying insects. The research suggests that other flying insects with aquatic larval stages may also ingest and retain microplastics, potentially affecting various predators that consume these insects.
3. <https://www.forbes.com/sites/grrlscientist/2018/09/29/microplastics-contaminate-half-of-all-freshwater-insects-study-shows/> - A study found that microplastics contaminate half of all freshwater insects. Researchers discovered that microplastic particles were ingested by 50% of the insects surveyed across various species and habitats. This widespread contamination raises concerns about the impact of microplastics on freshwater ecosystems and the potential transfer of these pollutants through the food chain.
4. <https://www.smithsonianmag.com/smart-news/mosquitoes-are-passing-microplastics-up-food-chain-180970373/> - Research indicates that mosquitoes ingest microplastic particles during their larval stage, which remain in their bodies as they mature into adults. This suggests that microplastics can enter the food chain through flying insects, potentially affecting various predators that consume these insects. The study highlights the need to understand the broader ecological impacts of microplastic contamination.
5. <https://www.theguardian.com/environment/2018/sep/19/microplastics-can-spread-via-flying-insects-research-shows> - A study published in Biology Letters found that mosquitoes, such as Culex pipiens, ingest microplastic particles during their larval stage. These particles remain in the mosquitoes as they mature into adults, indicating that microplastics can enter the food chain through flying insects. The research suggests that other flying insects with aquatic larval stages may also ingest and retain microplastics, potentially affecting various predators that consume these insects.
6. <https://www.forbes.com/sites/grrlscientist/2018/09/29/microplastics-contaminate-half-of-all-freshwater-insects-study-shows/> - A study found that microplastics contaminate half of all freshwater insects. Researchers discovered that microplastic particles were ingested by 50% of the insects surveyed across various species and habitats. This widespread contamination raises concerns about the impact of microplastics on freshwater ecosystems and the potential transfer of these pollutants through the food chain.
7. <https://www.smithsonianmag.com/smart-news/mosquitoes-are-passing-microplastics-up-food-chain-180970373/> - Research indicates that mosquitoes ingest microplastic particles during their larval stage, which remain in their bodies as they mature into adults. This suggests that microplastics can enter the food chain through flying insects, potentially affecting various predators that consume these insects. The study highlights the need to understand the broader ecological impacts of microplastic contamination.