

Damage from invasive species 'trebling every decade'

Mosquitoes, rats and termites among species that have hitched ride on trade routes, causing at least \$1.3tn of damage



The fall armyworm arrived in Africa in 2016 and has now invaded dozens of countries. Photograph: Grant Heilman Photography/Alamy

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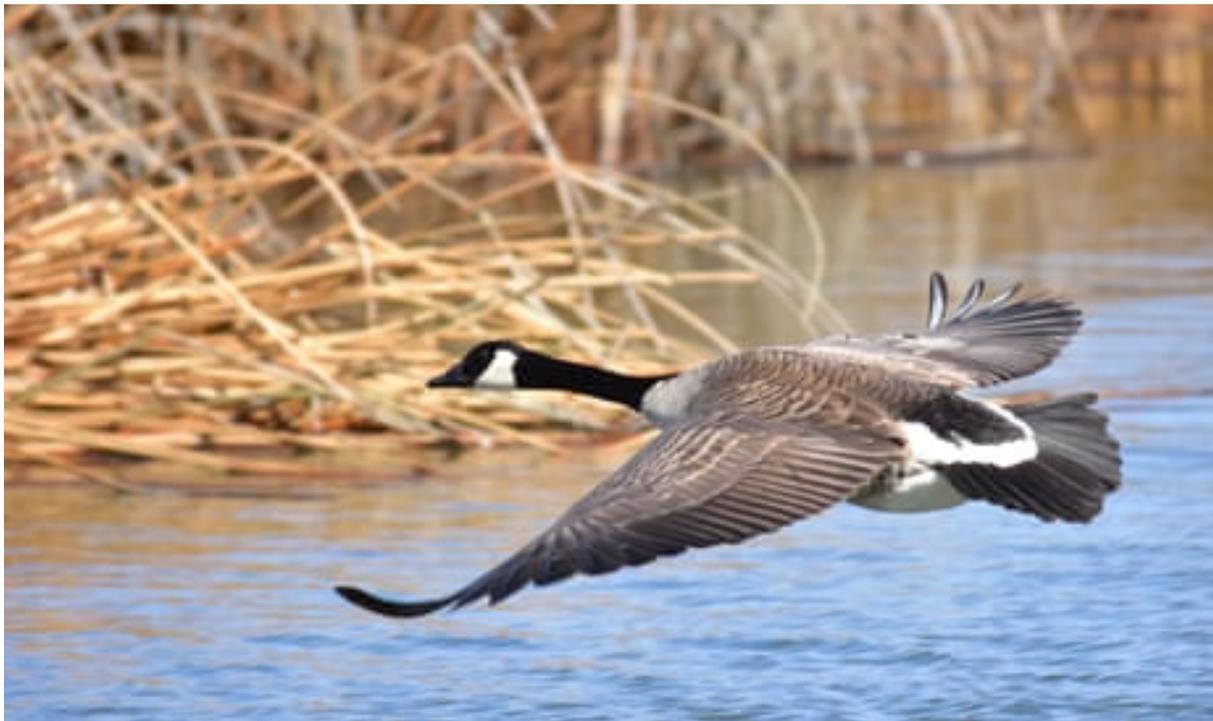
The costs of damage caused by invasions of alien species across the world is trebling every decade, research has found.

Mosquitoes, rats, ragweeds and termites are among the species that have hitched a ride on globalised trade routes, bringing disease, crop destruction and damage to buildings. The scientists calculated the costs at \$1.3tn (£944bn) since 1970, and said even this “staggering sum” was likely to be a big underestimate as much damage is unreported.

The rapidly growing costs show no sign of slowing down, the researchers said, and are more than 10 times higher than the funding for preventing or dealing with these biological invasions. They said global action to combat invasive

species remained limited, mostly because the “profound” impacts are poorly understood by the public and politicians.

Mosquitoes from the *Aedes* genus, such as the tiger mosquito, spread Zika, dengue, yellow fever and other viruses, and were responsible for the biggest recorded costs. Invasive rodents such as the black rat, grey squirrel, coypu and house mouse also cause severe damage to human health, crops and food stores and to **native wildlife**.



Increase in invasive species poses dramatic threat to biodiversity – report

Formosan termites, voracious consumers of wood, are a particular problem in the US, while the red fire ant has spread from its South American home to Australia, New Zealand, several Asian and Caribbean countries and the US. The fall armyworm, which can destroy many crops, arrived in Africa in 2016 and has now invaded dozens of countries.

“The economic costs of invasive alien species since 1970 are tremendous, steadily increasing, but still massively underestimated,” said Christophe Diagne, at the Université Paris-Saclay, France, and who led the research. He said the

rising damage mirrored the growth of international trade and the expanding area of farmland and settlements that the invaders can damage.

Prof Corey Bradshaw, of Flinders University in Australia, who was part of the study team, said: “The quicker you detect invasive species and the quicker you act, the cheaper it is in the long run. So really good detection at ports and airports and then rapid responses are going to cost you orders of magnitude less money than the damage.”

He said consumers ended up paying for the damage via increased prices for food and other products, and higher healthcare costs.

The research, **published in the journal Nature**, analysed more than 1,300 estimates of damage by invasive animals and plants. Costs were highest in the US, India, China and Brazil, but this probably reflects where the problems have been most reported. There is little or no data in many other parts of the world.

Some earlier cost estimates indicated much higher damages – **as much as \$1.4tn a year** – but Bradshaw said these were largely based on poor or speculative assessments. “Some were not even ‘back of the envelope’ – there was no envelope,” he said.

The new analysis was deliberately conservative, using only estimates based on observed data. “But there are so many unquantifiables from a monetary perspective, like ecosystem damage and lost productivity, so it’s still the tip of the iceberg,” said Bradshaw. The true costs could be 10 times higher, he said.



Alien species invasions and global warming a 'deadly duo', warn scientists

Biological invasions are known to be increasing and so the rising cost estimates are unlikely to be solely the result of increased reporting of damage. Either way, the scientists said, “they robustly show staggering amounts” and “a huge economic burden”.

Prof Helen Roy, of the UK Centre for Ecology & Hydrology, who was not part of the research team, said: “The most important aspect of this research is showing the rising costs, regardless of the exact figure. Overall it is a very useful paper and has some excellent recommendations. It also gives some cause for optimism – there are ways to prevent arrival or manage invasive alien species that become established.”

Bradshaw said cinnamon fungus, which rots the roots of plants including grape vines, was one of Australia’s most damaging invasive species. “I have a little farm and it’s killed all of my chestnuts. So we’re slowly replacing those with trees that are resistant.”