

Study finds insects play important role in dealing with garbage on NYC streets

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In the city that never sleeps, it's easy to overlook the insects underfoot. But that doesn't mean they're not working hard. A new study from North Carolina State University shows that insects and other arthropods play a significant role in disposing of garbage on the streets of Manhattan.

"We calculate that the [arthropods](#) on medians down the Broadway/West St. corridor alone could consume more than 2,100 pounds of discarded [junk food](#), the equivalent of 60,000 hot dogs, every year - assuming they take a break in the winter," says Dr. Elsa Youngsteadt, a research associate at NC State and lead author of a paper on the work.

"This isn't just a silly fact," Youngsteadt explains. "This highlights a very real service that these arthropods provide. They effectively dispose of our trash for us."

The researchers were in the midst of a long-term study of urban insects when Hurricane Sandy struck NYC in 2012. In spring 2013, they expanded their study to look at whether Sandy had affected the behavior of these [insect populations](#).

The research team sampled arthropods - such as insects and millipedes - in street medians and parks in Manhattan to measure the biodiversity at those sites. The researchers also wanted to see how much garbage those arthropods consumed and whether they consumed more in some places than in others. One hypothesis was that in areas with more biodiversity, insects would consume more garbage.

To see how much the arthropods ate, the researchers put out carefully measured amounts of junk food - potato chips, cookies and [hot dogs](#) - at sites in street medians and city parks. Researchers placed two sets of food at each site. One set was placed in a cage, so only arthropods could reach the food; the second set was placed in the open, where other animals could also eat it. After 24 hours, the scientists collected the food to see how much was eaten.

The researchers found that Hurricane Sandy had no measurable impact on [food consumption](#) by arthropod populations in New York, which was somewhat surprising since many of the study sites had been flooded with brackish water.

The bigger surprise was that arthropod populations in medians ate two to three times more junk food than those in parks - even though there was less biodiversity in the medians.

"We think this is because one of the most common species in the medians was the pavement ant (*Tetramorium* species), which is a particularly efficient forager in urban environments," Youngsteadt says.

In addition, by comparing food consumption inside and outside of the sample cages, the researchers showed that other animals - such as rats and pigeons - were also eating the junk food.

"This means that ants and rats are competing to eat human garbage, and whatever the ants eat isn't available for the rats," Youngsteadt explains.

"The ants aren't just helping to clean up our cities, but to limit populations of rats and other pests."

More information: The paper, "Habitat and species identity, not diversity, predict the extent of refuse consumption by urban arthropods," was published online Dec. 2 in the journal *Global Change Biology*

Provided by North Carolina State University

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