

WSU ecologist warns of bamboo fueling spread of hantavirus

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Washington State University researchers say the popularity of bamboo landscaping could increase the spread of hantavirus, with the plant's prolific seed production creating a population boom among seed-eating deer mice that carry the disease.

Richard Mack, an ecologist in WSU's School of Biological Sciences, details how an outbreak could happen in a recent issue of the online journal *PLOS One*.

Bamboo plants are growing in popularity, judging by the increased number of species listed by the American Bamboo Society. Some grow in relatively self-contained clumps, while other so-called "running bamboos" can spread rapidly by underground stems called rhizomes, making them difficult to contain.

They have extremely intermittent flowering cycles but when they flower, or mast, they produce huge amounts of seed over as many as 18 months. During that time, deer mice can undergo several reproductive cycles. When the seed is gone, they will go looking for new food sources in and around human homes and other dwellings.

More than one in 10 deer mice carry hantavirus, which is spread through contact with their urine, droppings or contaminated dust. People who catch the disease typically have a few days of flu-like symptoms followed by respiratory and pulmonary complications. Roughly one in three cases is fatal, according to the state Department of Health.

As part of his study, Mack imported bamboo seed from China and fed it to dozens of laboratory-reared deer mice, known scientifically as *Peromyscus maniculatus*.

"They loved it," he said. "Generally, they preferred it to rat chow."

Subsequent reproduction trials and population modeling suggested the mice could have population booms similar to those seen in Asian and South American rodents during bamboo masting events.

"We contend that a substantial risk of a similar sequence could arise in North America due to the rapid proliferation and expansion of non-native running bamboos within the range of *P. maniculatus*," Mack wrote with co-authors Richard Gomulkiewicz, WSU professor, and Melissa Smith, former Mack doctoral student now at the U.S. Department of Agriculture-ARS Invasive Plant Research Laboratory in Fort Lauderdale, Florida.

Mack stresses that a bamboo-mouse-hantavirus outbreak is only a possibility but notes that such a rapid spread and increase in abundance of a non-native plant bears similarities to other biological invasions. Some imported bamboos would do well in the Northwest's coniferous forests, and [deer mice](#) in the bamboos' naturalized range can breed year-round.

As a precaution, Mack is recommending a change in U.S. and Canadian plant quarantine policies to eradicate aggressively spreading non-native bamboo on public lands, as is already the practice in U.S. national parks. He also suggests that regulators consider evaluating [bamboo](#) plants' flowering intervals and seed palatability before letting them into the U.S.

More information: *PLOS One*, journals.plos.org/plosone/article?id=10.1371/journal.pone.0124419

Provided by Washington State University

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