

Once-in-a-century flowering and seeding of dwarf bamboo boosts mice populations

September 7 2022



Credit: Reiko Matsushita

A research group from Nagoya University in Japan has found that an event that occurs only once every 120 years—the large-scale flowering, seeding, and dying of dwarf bamboo (*Sasa borealis*)—provides ideal breeding conditions for Japanese field mice.

The large-scale flowering and seeding of dwarf bamboo is a rare event. This plant phenomenon is called masting, and the next one is not expected for more than 100 years. During such events, which occur in "mast years", some plants will produce heavy seed crops. Plants that coordinate their flowering and fruiting in mast years do so simultaneously and over a wide area.

Rodent outbreaks are believed to be associated with feeding on bamboo seeds in these mast years. This has received a lot of attention because of the agricultural and forest damage that occurs, as well as the risk of diseases spread by these rodents. There have been previous reports of large-scale tree mortality during such events due to rodent outbreaks.

In the 2010s, the masting of dwarf bamboo, a *Sasa* species with a 120-year masting cycle, began to be observed on forest floors throughout Japan. A team of researchers from Nagoya University led by Associate Professor Hisashi Kajimura and doctoral student Hanami Suzuki, both from the Graduate School of Bioagricultural Sciences, investigated the effects of this simultaneous seeding of dwarf bamboo on local rodent populations in Aichi Prefecture, Japan. Comparing data from before and after the masting, the researchers found an increase in the populations of both the large and small Japanese field mouse, but no similar effect was seen on Smith's voles in the same area. Their results were published in *Ecological Processes*.

"The interesting biological phenomenon that masting of bamboo and dwarf bamboo can cause an outbreak of forest rodents has long been something of a legend," says Kajimura. "This research is important because it clarifies this long-suspected phenomenon by comparing rodent populations before and after masting."

"What was interesting was that the increased populations of both species of [rodent](#) that we studied remained even two years after the masting, even though the dwarf bamboo itself had died." explains Suzuki. "There was also a high proportion of female juveniles in the [population](#), suggesting that the simultaneous fruiting resulted in good conditions for reproductive females. These findings clearly show for the first time how the field mouse population responds to the seeds of Sasa, such as dwarf [bamboo](#), especially those that have a longer cycle and larger supply."

The team is excited about the implications of their study. "This research is expected to provide important clues for understanding the realities of sudden environmental changes in forest ecosystems and the interactions among the organisms that live there," they said.

More information: Hanami Suzuki et al, How does the 120-year cycle mast seeding of dwarf bamboo affect the rodent population?, *Ecological Processes* (2022). [DOI: 10.1186/s13717-022-00385-x](https://doi.org/10.1186/s13717-022-00385-x)

Provided by Nagoya University

Citation: Once-in-a-century flowering and seeding of dwarf bamboo boosts mice populations (2022, September 7) retrieved 27 April 2024 from <https://phys.org/news/2022-09-once-in-a-century-seeding-dwarf-bamboo-boosts.html>

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