

Climate may keep beautiful killer plant in check

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purple loosestrife - has been heading north since it was first introduced from Europe to the eastern seaboard 150 years ago. This exotic invader chokes out native species and has dramatically altered wetland habitats in North America. But it turns out it may have a vulnerability after all: the northern climate. Canadian scientists have found that adapting to the Great White North carries a severe reproductive penalty that may limit its spread.

Purple loosestrife (*Lythrum salicaria*) destroys wildlife habitats by displacing native vegetation that provides food, shelter, and breeding areas for wildlife. In urban areas, it invades ditches where it can block or disrupt water flow. It has few pests and diseases, resists various control methods, and plants can produce as many as 3 million seeds a year.

But as this invasive plant has spread north it has run into challenges posed by a shorter [growing season](#), according to a study conducted by Robert Colautti, who recently obtained his Ph.D. from the University of Toronto's Department of Ecology and Evolutionary Ecology. The results are published online this week in the *Proceedings of the Royal Society of London, series B* (<https://rspb.royalsocietypublishing.org/content/firstcit>) and featured in *Nature* (<http://www.nature.com/nature/journal/v463/n7284/full/4631002e.html>).

The authors used modeling and experimental studies of 20 purple loosestrife populations along a 1200 km latitudinal gradient from Maryland to Timmins, Ontario, representing a one-month difference in

growing season. They found that northern populations have become locally adapted and flower earlier in response to a shorter growing season. However, early [flowering plants](#) suffer a cost in terms of smaller size and reduced seed production. The reason: a genetic constraint.

"Genes that cause early flowering also reduce plant size, so early flowering and small size evolve together," says Colautti. "Smaller size results in lower seed production, which is likely to limit the spread of purple loosestrife in northern regions."

Provided by University of Toronto

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