

Scientists discover environmental factors linked to sex ratio of plants

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Environmental factors can transform the ratio of females to males in plant populations according to new research out of the University of Toronto.

The study conducted by Ivana Stehlik, a lecturer, Jannice Friedman, a PhD candidate, and Spencer Barrett, a professor, involved a novel approach using genetic markers (known DNA sequences) to identify the sex of seeds.

The team investigated six natural populations of the wind-pollinated herb *Rumex nivalis* in the Swiss Alps and mapped the distance between females and neighbouring males. They then measured the amount of pollen captured by female flowers and collected seeds from the plants when they were mature.

"The plant has strongly female-biased flowering sex ratios in these populations. We wanted to find out the mechanism causing the bias," said Barrett. "We found that where there were more males surrounding females, females captured more pollen, matured more seed and produced more strongly female-biased offspring."

The authors suggest that when females capture large amounts of pollen, female-determining pollen tubes out-compete male-determining pollen tubes to fertilize the single ovule in each flower.

Barrett leads a world-renowned research group working on the genetics

and evolution of plant reproduction. His pioneering work has had a profound influence on the understanding of biological invasions, weed management strategies and conservation biology. "Our results demonstrate for the first time that demographic aspects of the mating environment of plants can influence the sex ratios of plants females produce," added Barrett.

Source: University of Toronto

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