

Atrazine alters the sex ratio in Blanchard's cricket frogs

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Blanchard's cricket frogs (*Acris blanchardi*) in amplexus. Credit: Tyler D. Hoskins

A study published recently in *Environmental Toxicology and Chemistry* found that Blanchard's cricket frogs are highly sensitive to atrazine. When exposed, there were up to 55% fewer males than females compared with the control group, indicating that atrazine can affect the sex ratio. However, cricket frog populations do persist in areas with widespread atrazine application, despite reports of range contractions for enigmatic reasons.

Controversy has long surrounded atrazine and the effects its application has on amphibians in the wild, particularly given that amphibians are facing rapid, global population declines. Atrazine is the second most commonly used herbicide in the United States and evidence suggests that when amphibians are exposed to it gonadal development may be altered, males may develop testicular ova, or they may reverse sexes completely. It has also been traced to disrupting [sex ratio](#), which is a critical parameter that impacts both ecological and evolutionary trajectories of populations.

Blanchard's cricket frogs were selected for this study because their habitat overlaps the Corn Belt of the Midwest, where atrazine use is intense. Atrazine enters surface and groundwater through spray drift, runoff, or atmospheric deposition (rain, fog or snow). Tyler Hoskins and Michelle Boone of Miami University found that the sex ratio was male-biased when the frogs were not exposed to atrazine, but significantly more feminized upon exposure, suggesting that these frogs are the most sensitive species for which data are available. However, the study by Hoskins and Boone did not find evidence of gonadal abnormalities, such as testicular ova.

This study adds to a corpus of work that has demonstrated that endocrine disrupting chemicals, like [atrazine](#), have altered the sex ratio. The authors now see a need to "translate these impacts to their population-level, ecological, and evolutionary consequences in ways that can ultimately generate predictions for risks faced by untested species."

More information: Tyler D. Hoskins et al, Atrazine feminizes sex ratio in Blanchard's cricket frogs (*Acris blanchardi*) at concentrations as low as 0.1 µg/L, *Environmental Toxicology and Chemistry* (2017). [DOI: 10.1002/etc.3962](https://doi.org/10.1002/etc.3962)

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