

# Evolution Can Occur Quickly, Change Population Interaction

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Biologists generally accept that evolutionary change can take from decades to millennia, while ecological change can occur over mere days or seasons. However, a new Cornell study shows that evolution and ecology can operate on the same time scale.

When evolution occurs so quickly, the researchers conclude, it can change how populations of various species interact. Ecologists need to consider such evolutionary dynamics in their studies because evolution could affect populations being studied. This insight is critical to predicting the recovery time needed for threatened populations or for predicting disease dynamics, says Justin Meyer '04, who conducted the study as an undergraduate student with Cornell ecologists Stephen Ellner, Nelson Hairston and colleagues.

To observe ecological and evolutionary changes together, the researchers monitored the ecological fluctuations in a model predator-prey laboratory system: a microscopic organism called a rotifer that eats a single-celled algae.

Meyer developed a method to track genetic changes, and the researchers found that as the prey population fluctuated, the algae "evolved" from a type that grows quickly to a type that resists being eaten. The frequency of the algal-genotype changes in response to rotifer population flux clearly demonstrated the synchronicity of ecological and evolutionary time.

The study is published in the July 11 issue of *Proceedings of the National Academy of Sciences*.

Source: Cornell University

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