

# Happy flies look for a place like home

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Fruit flies. Credit: Ted Morrow

(PhysOrg.com) -- A happy youth can influence where a fruit fly chooses to live as an adult, according to new research in *The American Naturalist*. The study, led by Judy Stamps from the University of California at Davis, provides new insight into how animals choose places to live and raise their young.

Like humans who move out of their parents' houses in young adulthood, most animals leave their birthplaces before they start to raise families of their own, a phenomenon known as natal dispersal. Scientists have noticed that dispersers tend to settle down in new habitats that are similar to where they were born—even when they have several habitat options to choose from. Studies have documented the behavior in a wide

range of animals, including insects, reptiles and mammals. Stamps and her colleagues coined a term for it: natal habitat preference induction.

But why animals choose a new home that is like their birthplace is a mystery. Are they genetically hard-wired to do this, or is it a conditioned response that depends on an animal's experience in youth?

To answer that question, the researchers set up an experiment designed to give [fruit flies](#) either a “good” or “bad” experience in their youths. They set up two fruit fly habitats containing different types of [food](#) and shelter, and placed flies in the pupa stage—just before they become full-fledge flies—into those habitats. Some young flies were given the happy experience of having full access to tasty food and safe hiding places after they emerged from their pupae. But others were given a less positive experience. They could smell the food and see the shelter, but were unable to eat or hide. After the flies reached maturity, the food and shelters were removed, and the flies were provided with a choice of two new habitats in which to live. The flies that had the good experience in youth tended to choose habitats that contained the same type of food and shelter as where they grew up, the researchers found. The flies that had the negative experience showed no preference for habitats similar to their birth habitats.

The results, Stamps says, suggest that “associative learning” is involved when young fruit flies choose a new habitat. Flies are apparently able to connect cues from their birthplaces with the experiences they had there. Flies that associated the smell of food and the sight of shelter with a nice meal and a safe hiding place sought a new habitat with the same sort of food and hiding places. But if those same cues were not associated with feeding and safety, the flies were not inordinately drawn to that habitat type.

Whether other animals would react the same way is still an open

question, Stamps says.

“It would be fun to see whether humans with happy childhoods also prefer to settle in areas that are similar to those in which they were born and raised,” she said. “Are we more likely to choose a new habitat like a large city versus a small town versus countryside based on where we were raised and what happened to us there?”

More information: Judy A. Stamps, V. V. Krishnan, Neil H. Willits, “How Different Types of Natal Experience Affect [Habitat](#) Preference.” *The [American Naturalist](#)* 174:5 (November 2009)

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