

[UGA](#) [OVPR](#) [NEWS](#) [S](#)

Research
magazine

Search :

CONTENTS
SEARCH
BROWSE
ARCHIVE
ABOUT US

Research Magazine > Archive > Summer 01 > Article



Summer 01
Index

Life Underground

by Judy Purdy

They may be blind and virtually defenseless, but it doesn't pay to ignore them.

Despite these weaknesses, millions of tunneling termites tear their way through American homes, offices and outbuildings, causing an estimated \$1 billion worth of structural damage each year.

When it comes to understanding the subterranean pests, though, entomologists barely have scratched the surface.

"Termites are complex socially, and we don't know much about the organization of their society. They pick up and move all the time, locating and then inhabiting a food source," said Brian Forschler, an associate professor of entomology who directs UGA's Household and Structural Entomology research program.

In a decade of termite research, nearly a third of the colonies in Forschler's studies disappeared of their own volition — making these elusive insects something of an entomological enigma.

"They move away or die out without any treatment, and we can't always tell why using the currently available termite detection technology," Forschler said. "Urban entomology is about 50 years behind agricultural entomology."

In fact, entomologists don't even agree on the number of subterranean termite species found in the southeastern United States. Many set the number at three. However, after studying termites from Georgia, California, Texas, Maine, Maryland, Louisiana and Canada, Forschler has found evidence for six to eight species. And in a paper scheduled to be published later this year, he reports evidence that some French and American termites actually are the same species.

Forschler and a team of faculty, postdoctoral fellows and students are rewriting much of what is known about termites: their genetics, geographical movement, social structure and behavior. The research team also is uncovering new environmentally friendly ways to manage the bugs.

Their findings even call into question the basic definition of a termite colony. Unlike ants that share a central nest, termites create vast networks of tunnels. Many scientists believe that termites that aggregate and feed at the same bait station belong to the same colony. Forschler isn't so sure.

"Nobody knows what a colony is. It's blurry," he said. His working definition is



Research shows that subterranean termites ("marked" termites) soil treatments, or termite baits.
Photo by Terry Allen

"a group of insects that cooperate in rearing young and share resources like food and shelter."

With funding from federal, state and private agencies, Forschler's research team has found that termites visiting the same feeding station sometimes fight and sometimes don't. Those that fight are not from the same colony, but those that don't fight may or may not be.

The researchers lure termites to underground bait so they can mark, release and attempt to recapture them later to collect more data. Markers include fluorescent "glow-in-the-dark" paints or blue pigmented food that becomes blue fat and shows through a termite's transparent skin.

The team also tracks individuals genetically by comparing two genes found in DNA that is inherited only from the mother. Their hypothesis is that termites collected from the same bait station should carry the same mother markers, being offspring of one queen and, therefore, the same colony. But it doesn't hold up during actual experiments.

"At one site, termites had a different mother line present each month," he said. "At other sites, we released marked termites and six months later found them in four to five other locations each displaying a different mother line. It's a convoluted story."

It is indeed. Consider:

- Sometimes the same termites were recaptured a distance from the original site only to show up months later at the original site.
- Termites sharing the same feeding site sometimes had different mother markers.
- Termites from inspection ports 15 feet apart were related more closely to termites collected in Canada than to each other.
- Termites bearing the same mother lines have been found at the same feeding site for three consecutive years.
- Other ports had different species every year or different mother lines each month.

Sorting through all these conflicting signals is important as researchers seek improved pest-management techniques. Take, for example, their findings on termite eating habits. Forschler's team discovered that some termites don't eat for two weeks while others eat daily. In one study, only a third to half the termites had food in their digestive tracts for seven consecutive days. Termites aren't random foragers; they follow chemical and physical signals. They recruit fellow termites to a food source instead of carrying food to the colony the way ants do. A colony may have several feeding locations at one time. And termites from one colony will visit food sites that have been used by other colonies and other termite species.

This means toxic baits must work slowly, giving termites a chance to recruit large numbers to the bait. Forschler's studies also show that good termite control involves several tactics: baits, wood and soil treatments, and moisture control.

And a better understanding of the termites' habits also may reduce the amount of pest control needed in the first place.

“Just because you find termites in an urban landscape,” he said, “doesn’t mean they pose an economic threat to nearby structures.”

For more information, access <http://www.uga.edu/caes/insectlab>.

Return to the Summer 2001 Index

[CONTENTS](#) | [SEARCH](#) | [BROWSE](#) | [ARCHIVE](#) | [ABOUT US](#)
[UGA](#) | [OVPR](#) | [NEWS](#) | [SITEMAP](#) | [CONTACT](#)

Research Communications, Office of the VP for Research, UGA
For comments or for information please e-mail the editor: rcomm@ovpr.uga.edu
To contact the webmaster please email: cdr@ovpr.uga.edu