Aggressive Argentine ants are wiping out native ants annoying households, farmers and disrupting ecology

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In a classic ground war, hordes of Argentine ants are now on the march, from coastal California citrus groves to city kitchens, through suburban backyards and into nearby natural habitats.

Along the way, the invaders not only are annoying humans--who by their calls to exterminators have now elevated ants to the state's leading pest--they're also wiping out large populations of less aggressive and socially acceptable native ants, according to studies by biologists at the University of California, San Diego.

Many of these home-grown ants are known to disperse native seeds; some also represent a food source for small mammals and lizards, including the coastal horned lizard, who dine almost exclusively on native ants.

"When you lose these native ant species, which are responsible for dispersing seeds and they are food sources for other animal species such as horned lizards, the impact could be far more than losing just a few ant species," said Andrew Suarez, a doctoral student in conservation biology at UCSD.

"The results could be disastrous to an entire ecosystem."

Suarez, who along with UCSD biologist Ted Case has been studying the invasion and impact of the Argentines, is presenting results of that research to the Ecology Society of America, meeting this week in Albuquerque, New Mexico.

"Ants have risen from being a big urban pest to being a much bigger urban pest," said Case. "They've surpassed fleas and roaches in terms of calls to pest control agents. And, specifically, the Argentine ant has surpassed all these other pests."

Nationally, in regions that are hot and dry, the Argentines do not appear to be a problem. Nor are they particularly threatening in colder, northern climes such as in Oregon or Washington.

However, they've firmly established beachheads in California--from the San Francisco Bay area to the rivers and streams near Sacramento, and along the coast down to San Diego. The ants also are stirring up hostilities in some of the humid southeastern states, particularly Louisiana and Georgia.

"As a pest the Argentine ant is much worse than native ants ever were," said Suarez.

Historically, the Argentine ant--formally known as Linepithema humile--first appeared in this country late last century in New Orleans. Researchers trace the ants' entry to California near Ontario in western San Bernardino County, where they then fanned out through the citrus groves of southern California and the San Francisco Bay area.

Generally small (even for ants), the Argentines nevertheless are quite prolific. Their colonies produce anywhere from 20 to 100 queens, each pumping out vast numbers of eggs that keep the colony growing and expanding.

Throughout San Diego county, only two vast supercolonies of Argentines have been identified, each colony likened to a country with multiple entrances or cities.

"It's not thousands of colonies," said Suarez. "It's one colony, with thousands of entrances."

Though Argentines from competing supercolonies will do battle, within individual colonies these ants work in relative harmony, displaying little, if any, aggression toward each other. Argentine colonies, linked by underground tunnels, are highly mobile and organized, and can shift location throughout the year in response to environmental conditions, such as an increase or decrease in moisture.

By comparison, native colonies of ants are small and isolated, with individuals often seen squabbling and fighting among each other over food.

The combination of large numbers, organization and discipline within the ranks has given the Argentines a competitive edge in their war with the natives. Some species are particularly vulnerable, particularly the harvester ant. Armies of Argentines have been seen storming other ant hills, overwhelming their ineffectual enemies in vicious assaults that generally leave the vanquished in little pieces.

"We can actually see them fighting," said Case. "And we've documented that when the Argentines move in, the native ants disappear."

In their studies, the UCSD biologists have traced the spread of the Argentines among 40 study sites, islands of natural habitat isolated from each other by various forms of urban development along coastal Southern California.

In general, the researchers found that the invading ants are particularly widespread throughout these habitats, particularly in those closest to human activities, such as farmland or moist backyards. In these areas, several species of native ants have been virtually wiped out, creating what the researchers call "local extinctions."

The decimation of the natives could spell trouble for other species further up the food chain, including small mammals and lizards. The coastal horned lizard, for example, which thrives on harvester ants, finds Argentines particularly unappetizing and will either move away or switch their diets to beetles if native ants aren't on the menu.

To document their response to the invading Argentines, the UCSD biologists have tagged these lizards with radio monitors to follow their movements. In fields invaded by Argentines, the results show that the lizards will crowd into pockets where native ants remain. In areas dominated by Argentines, the lizards have left.

"The lizards will eat beetles and other things, but we don't know what that does to their growth rates," said Suarez. "Just the fact that we don't see the two overlapping suggests they don't do well there."

Local farmers also are worried. Aside from wiping out native ants, including the harvesters who are known as excellent seed spreaders, the Argentines are known to cultivate another garden pest, the aphid. These insects, which suck the sap from the stems and leaves of plants, can create havoc with are variety of cash crops such as the tomato, citrus fruit, honeydew, and the avocado.

"Whenever Argentine ants are around, the aphid population grows, disrupting other biological programs designed to chase off these insects," said Suarez.

Suarez and Case said their future studies will include new surveys to track the movement of the Argentines, morphological and genetic studies to determine differences between competing supercolonies of the invaders and the natives, and potential ways to control the Argentines without using standard pesticides.

"Pesticides are being used now," said Suarez. "But in natural areas that's not a good alternate, because pesticide's don't discriminate between native and exotic species. To find an alternative to pesticides, that's one of our goals."

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