

The Fungus that Ate Michigan

It is huge—truly a humongous fungus. This single individual weaves through 38 acres of forest floor and is estimated to weigh at least 100 tons! Located at the western end of Michigan's Upper Peninsula, an enormous example of *Armillaria bulbosa* is estimated to be at least 1500 years old. It is surrounded by neighbors of the same species.

The fungus consists of an underground network of long, connecting bundles of mycelia that give rise to occasional mushrooms. The mushrooms produce and spread spores. Thus, the bulk of the organism is hidden in the soil and, except for the reproductive structures of the mushrooms, it is seldom noticed.

Identity check If the fungus is buried and the mycelia can't be seen, how do we know this is one individual? To answer this question, researchers at the University of Toronto and Michigan Technological University conducted several experiments.



In one experiment, they gathered many specimens from a 75-acre study area, and then analyzed the DNA of 16 genes from each specimen. They found that the DNA in all the specimens from a 38 acre area was identical, but different from surrounding specimens of *A. bulbosa*. This was strong evidence that these specimens were from the same individual.

Even bigger? The Michigan fungus is certainly not the largest of its kind. Two forest pathologists from the state of Washington may have identified an even larger *Armillaria*. About 20 years ago, these scientists found one they believe traverses 1500 acres. They have not performed DNA tests to confirm that it is one individual. Instead, they depended on observations of the organism. One property of this fungus is that the hyphae of an individual will not intermingle with the hyphae of other individuals of the same species. The mycelia of this Washington fungus seemed to be well intermingled, leading the researchers to conclude that all the mycelia were from the same fungus.