

Rewild the soil: The largest urban rewilding project is going underground

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Allestree park is on the edge of Derby and surrounded by houses, making it the largest urban rewilding project in the UK. Credit: The Trustees of the Natural History Museum, London

The largest urban rewilding project in the U.K. is happening on an old golf course.

But decades of intensive management of the parkland has taken its toll

on soil life. The team looking after the park are now not only thinking about how best to manage what is above the ground, but the critical importance of the complex world that lives beneath it too.

Standing in an open expanse of scrubby grass surrounded by patches of woodland on the outskirts of Derby city, and something feels slightly off.

There is a grand, old looking building to one side, while the areas of the grass are still kept neatly trimmed. The tree line also looks a bit too orderly, and there are some curious patches of sand which are slowly being encroached on.

That's because if you were stood in Allestree Park three years ago, you'd have been more likely to spot a golfing albatross and an eagle rather than dog walkers and bird watchers. What was once a municipal golf course is now the U.K.'s largest urban rewilding project.

"To look at this area now, you'd think you were in the middle of the countryside," explains David Winslow, the Community Parks Officer for Derby City Council. "But in actual fact we're right on the edge of Derby City."

"If you put a pin in the center of Allestree Park within a mile radius you're talking 50,000 people, two miles 100,000, and within three miles a quarter of a million. So the park is quite intensively used with a constant flow of people."

That means we've got to not only manage the natural side, but the community side of this project too."

The first stage of this project has already started. The team have allowed large parts of the once manicured greens to grow long and shaggy, while

the hollows of the old bunkers are beginning to provide protection for the plants able to grow in the sand.

But things are not progressing quite as expected. For example, even though there are some incursions, the tree line has remained relatively intact.

"In my experience, in other sites where we've allowed fringes to naturalize the woodlands have started to walk in relatively quickly," explains Winslow. "Whereas at Allestree Park, we're three seasons in and it's been slow."

Winslow suspects that this could be to do with how intensively the golf course was managed. In order to maintain such pristine greens takes a lot of herbicides and pesticides, which have likely soaked into the soil beneath.

To understand how these chemicals might have slowed the rewilding process, we first need to understand a little more about soil itself.

The complexity of soil

The soil beneath our feet is a thriving, vibrant ecosystem.

Soil formation, known more technically as pedogenesis, takes thousands of years. It starts with the breakdown of rocks through either physical or [chemical processes](#), such as the freezing and thawing of the rocks or the action of acid rain. This material is then combined with the organic matter, called humus, that breaks down on the surface.

This process of mixing is helped by the action of innumerable animals and microorganisms which continuously churn the soil. This also helps the other two critical ingredients of soil—water and gas—to get properly

incorporated into the matter.

The life that lives in soil is an extraordinarily diverse community. One teaspoon of soil can hold up to 400 species of fungi and contain more microbes than there are people on the planet. It is an active, teeming ecosystem that includes earthworms creating highways beneath the surface, soil mites hunting down their prey, plants shuttling nutrients and information along their roots and nematodes feasting on single-celled amoeba.

This dizzying collective of life is one of the most species-rich environments on Earth. But the health of soil is faltering.

In the U.K. alone it is thought that we have lost up to 40% of all earthworms over the last 25 years. At the same time, around 2.2 million tons of topsoil are being lost every year with one study suggesting that topsoil is disappearing 10 times faster than it is being replaced.

"The two big threats to soil at the minute are compaction and erosion," explains Katy Ross, a researcher at the Natural History Museum who is looking at the health of peat bogs. "So currently we have more [heavy machinery](#) on the landscape and we've increased grazing pressure, and that's compacted the soil."

"When we get these compacted soils, we lose the space for water to fill the gaps."

This means that when there are heavy rainfall events, the ground simply cannot absorb much of the water and it runs off the surface. This eventually makes its way into the streams and rivers, increasing the amount of water flowing further downstream and potentially contributing to flooding.

But on the reverse, it also means that there is less water being held in the ground and so counterintuitively the same issue makes droughts worse during the warmer months when this water reserve would typically be released.

"And as well as that, when we get compaction it's much harder for plants to grow and for these nutrients to cycle around," says Ross. This can then contribute to the other major problem facing soil, erosion.

"As we reduce the vegetation cover on our soil—so potentially through overgrazing or leaving fields empty over winter—we're increasing the susceptibility to wind and rain erosion," Ross continues. "Soil normally takes about a thousand years for one centimeter to form, so at the minute we're losing that top layer of soil far quicker than it can accumulate.

"With the majority of our crops being grown in the top 30 centimeters of soil, we have been taking this ecosystem for granted. But it is not only our food systems that rely on healthy soil. Our environment and atmosphere do too."

Kickstarting natural soil processes

It is possible that the build-up of chemicals in the soil is slowing down the rewilding process at Allestree. This could be because the pesticides have killed off or reduced the vital animals that live in the soil, or that the herbicides have removed key plants that fix essential nutrients.

To try and figure out if this is the case, Winslow is keen to conduct more research to get a better picture of the health of the soil.

"We've noticed in the two and a half years that we've allowed the grass to start growing long it is changing," says Winslow. "But one of the studies we want to find out is about what's going on underneath the

ground—what changes are happening there?"

"So as well as an interesting project above ground it's the research going on underground as to how the land responds that will be really interesting and provide lots of healthy results hopefully."

But the soil is not the only aspects that need to be understood to restore a healthy environment at Allestree.

"Another example is the hydrology," explains Rachel Bennett, who is the Head of Wilder Landscapes for the [Derbyshire Wildlife Trust](#), which is helping to manage the park. "In the past we know Allestree Park had significant land drainage, so one of the things that we're trying to do is find out where all those drains are and remove them or block them.

"We'll then start to see ephemeral pools start to form and those kinds of things. It's basically working with the landscape to let the water run where it would naturally."

It is hoped that this will create a more natural patchwork of habitats, which in turn will encourage a wider range of species to return to the park.

There are some processes, however, that might need a bit of a kickstart such as the reintroduction of key animals currently missing from the ecosystem. But [local residents](#) need not worry about the potential for boar or bison suddenly appearing on the rewilded greens of Derby, as these plans are a lot more modest.

"What we're thinking about is possibly something quite small scale, like [dung beetles](#) or larger invertebrates like crickets that will support a range of other larger animals that will benefit from them being here," says Bennett. "The foundations of the ecosystems."

The addition of missing invertebrates could also help improve the overall health of the soil. Over the next few years, Winslow and the team are planning on doing more work to figure out exactly what is going on in the soil that will hopefully inform them as to what needs to be done to help everything else.

"It's not just what we can see," says Winslow. "It's everything that we can't see that we're also trying to better understand."

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