

# They might not have a spine, but invertebrates are the backbone of our ecosystems. Let's help them out

November 23 2022, by Peter Contos and Heloise Gibb

---



Credit: AI-generated image ([disclaimer](#))

Many of Australia's natural places are in a poor state. While important work is being done to protect particular species, we must also take a broader approach to returning entire ecosystems to their [former glory](#)—a strategy known as "rewilding".

Rewilding aims to [restore](#) the [complex interactions](#) that make up a functioning ecosystem. It involves reintroducing long-lost plants and animals to both conserve those species and restore an area's natural processes.

You might imagine this involves an ecologist releasing cute, furry bilbies, or an endangered songbird. This is a logical assumption. Research [shows](#) a marked bias in reintroduction programs towards vertebrates, especially birds and mammals.

Meanwhile, invertebrates are often overlooked. But [our new research](#) shows [rewilding](#) with invertebrates—insects, worms, spiders and the like—can go a long way in bringing our degraded landscapes back to life.

## A shocking decline

Invertebrates [make up 97% of animal life](#) and drive key processes such as pollination and cycling nutrients. But they're the focus of [just 3%](#) of reintroduction projects.

This reflects a [taxonomic bias](#) in conservation. Overseas, this has led to rewilding projects centered on [large keystone mammals](#) that alter ecosystems on a broad scale, such as wolves and bison.

Of course, traditional vertebrate rewilding projects are very important for ecosystem restoration. In Australia, for example, they are [vital in restoring mammal communities](#) decimated by cats and foxes.

But [invertebrate species](#) are [declining at shocking rates](#) around the world, especially as climate change [worsens](#). They also need our help to re-colonize new areas.

## No beetle is an island

Picture an island in the middle of the ocean. The further from shore it is, the more animals on the mainland will struggle to reach it—especially if they're tiny and wingless, like many invertebrates.

My colleagues and I built our study around this analogy.

Instead of islands, our research involved six isolated patches of revegetated land on farms. And instead of an ocean, invertebrates had to cross a sea of pasture which, for many litter-dwelling invertebrates, is a barren, [unsheltered wasteland](#).

The farm sites were "biologically poor". That is, despite the [habitat quality](#) improving following revegetation, they contained lower-than-expected invertebrate biodiversity.



Credit: AI-generated image ([disclaimer](#))

We surmised that invertebrates from surrounding "biologically rich" national parks were struggling to reach and recolonise the isolated revegetation patches.

Our study involved giving invertebrates a hand to find new homes. We moved leaf litter—and more than 300 invertebrates species hiding in it—from national park sites into six revegetated farm sites in central Victoria.

We moved litter samples several times between 2018 and 2020, over different seasons. Sites were "paired", so a national park site was paired with a revegetated one that would have been similar had degradation had not occurred.

The litter community of invertebrates is incredibly complex and can be broken into three groups: macroinvertebrates (more than 5 mm), mesoinvertebrates (less than 5 mm) and microbes. We focused on mesoinvertebrates, which mostly comprise mites, ticks, ants, beetles and springtails (small, wingless arthropods).

We found among this group, beetles were most likely to survive and thrive in their new habitat, which was much drier than the one they left. Rove beetles did particularly well.

Beetles are hardy little things with [strong exoskeletons](#) that protect them from drying out. In fact, as early as seven months after being moved, beetle numbers at the new sites reached levels similar to that in pristine national parks that we sourced leaf litter from.

We did not have the same success with other types of invertebrates. For example, springtails are a massive component of leaf litter communities in national parks. But they're soft-bodied and dry out easily, so were more likely to die when moved to a new, drier environment.

Understanding why some groups are more likely to survive leaf litter transplants than others is a vital step in the development of invertebrate rewilding. Nonetheless, our results show the relatively simple act of moving [leaf litter](#) can lead to comparatively large increases in species richness in a short time.

## Loving our creepy crawlies

[Our study showed](#) how a simple method of rewilding with invertebrates can effectively reintroduce multiple species at once. This is an important finding.

More research into the method is needed across different types of sites and over longer timeframes. However, our method has the potential to be [applied widely](#) in the fight against global invertebrate declines.

The method is cheap and easy. In contrast, rewilding projects involving vertebrates can be hard to execute and [expensive](#), and often require breeding animals for release.

Invertebrates are the bulk of terrestrial diversity and the [backbone](#) for proper ecosystem functioning. We need to start putting them at the center of rewilding projects.

Our results are just one [small piece in the puzzle](#). Many [other invertebrate communities](#) will need safeguarding and restoring in the future.

Recent [research](#) has challenged the assumption that humans naturally find vertebrates more engaging than [invertebrates](#). We might be pleasantly surprised to find the public is as engaged with invertebrate rewilding projects as those focused on cute and cuddly critters.

This article is republished from [The Conversation](#) under a Creative Commons license. Read the [original article](#).

Provided by The Conversation

Citation: They might not have a spine, but invertebrates are the backbone of our ecosystems. Let's help them out (2022, November 23) retrieved 23 April 2024 from <https://phys.org/news/2022-11-spine-invertebrates-backbone-ecosystems.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.