

Seeing the Wood for the Trees

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From the towering kapoks of South America to the sprawling banyans of South Asia, from misty cloud forests to ice-covered pines, forests are some of the most diverse and important ecosystems on Earth. However, as conservationists and foresters try to manage, conserve and restore forests across the world, they often rely on scanty and scattered information to inform their decisions, or indeed, no information at all. This could all change.

This week sees the launch of the [Forest Synopsis](#) from [Conservation Evidence](#), a free resource collating global scientific evidence on a wide range of conservation-related actions. These aim to include all interventions that conservationists and foresters are likely to use, such as changing fire regimes, legally protecting forests or encouraging seed-dispersing birds into degraded forests.

Making conservation work

“We hear a lot about how important it is to do evidence-based conservation”, says Professor [Bill Sutherland](#) at the University of Cambridge, UK, “but in reality getting a handle on what works is not easy. That’s why we set up [Conservation Evidence](#), to break down the barriers between conservationists and the scientific evidence that they need to do their jobs.”



Fencing cattle out of a restored riparian corridor, Queensland, Australia, by Claire Wordley

The science-implementation gap has been a hot topic of discussion for several years, mostly in academic circles where scientists feel frustrated and helpless that despite publishing papers that could improve conservation action, the changes that they suggest are not implemented. Recent PhD and Masters theses from the University of Cambridge identified a lack of time to read scientific papers, paywalls to journals and technical language as some of the barriers preventing many conservation decision makers from reading the scientific literature. The [Conservation Evidence](#) project is seeking to address these issues by providing free, easily accessible summaries of scientific papers grouped by the interventions that they seek to test. The summaries follow a standardised format and the synopses explain terms like ‘randomised’, ‘replicated’ and ‘site comparison’, to help conservationists assess the quality of the studies. Key messages summarise the weight of collated evidence for each action; for example, the [farmland synopsis](#) describes that [eight out of twelve studies found benefits of creating beetle banks in fields](#). This helps managers overcome the confusion often felt when reading conflicting results on the same topic. [What Works in Conservation](#) then provides an expert assessment of the effectiveness (or not) of each action, based on the collated evidence.

[Conservation Evidence](#) is working to provide an ambitiously large and comprehensive resource for conservation practitioners and policy makers all over the world. The group tackles each topic as a synopsis on a certain taxon, ecosystem or topic. So far synopses have been produced on the conservation of [bees](#), [birds](#), [bats](#) and [amphibians](#), as well as on [sustainable aquaculture](#), [soil fertility](#), [natural pest control](#) and [farmland conservation](#) (in Western Europe). Over the next couple of years [Conservation Evidence](#) synopses will be published on reptiles, carnivores, primates, wetlands, and biodiversity and ecosystem services in Mediterranean farmland. Following that, the project aims to cover the effectiveness of conservation actions for all remaining major taxa and habitats. The aim is that all of these will be updated every few years as the evidence base grows.



Forest in Abisko, Sweden by Simon Schowanek

“We want *Conservation Evidence* to be the first port of call for people involved in implementing conservation actions”, says Sutherland. “People can check and see what the evidence shows, then assess how applicable it is to the system they work on. The next step is for them to monitor the effects of the intervention that they’ve decided to take, and publish it, feeding into a system where we can do more informed and evidence-based conservation.” The *Conservation Evidence* project also provides a free, open-access [journal](#) where practitioners can publish their work and share it with others.

This feedback loop is slowly starting to happen. In early 2007, the *Conservation Evidence* journal published a paper on Critically Endangered echo parakeets in Mauritius. Chicks were dying after being covered in slime from giant African land snails, so conservationists put copper bands around nest trees, [which appeared to reduce chick deaths](#). Conservationists in the UK read this paper and decided to apply it to a different problem – the herbivory of the Critically Endangered red helleborine in the UK. In May and June 2007 they tested the use of cages with copper bands around the plants – and published their findings in *Conservation Evidence* journal in [late 2007](#). The plants with copper bands were not damaged by slugs and snails.



Ferns in Queensland, Australia by Claire Wordley

Wood you look at that

The forest synopsis will provide another valuable brick in the wall of evidence being built by the *Conservation Evidence* project. It contains evidence collated from temperate, tropical and boreal forests on management techniques for forest habitat. Having all the evidence in one place can help decision makers to weigh up the pros and cons of each action. For example, [most studies showed](#) that thinning trees in a forest increased tree size and increased the density of young trees and understory plants, but decreased the density and diversity of mature trees, and the abundance and richness of epiphytic plants such as orchids and ferns.

Similarly, while reading one study might make the case for an action seem cut-and-dried, seeing all the available evidence together could make conservationists pause before they invest in an

intervention. The synopsis shows that six studies examined the effect of [woody-debris removal on young trees](#). One study found that debris removal increased young tree density, another study found that it decreased young tree density, three studies found mixed effects or no effect on young tree density, and one found no effect of woody-debris removal on young tree survival. Reading one paper alone might lead conservationists to take an action, expecting a certain result; seeing the mixed evidence might make practitioners think carefully about which studies and situations are most applicable to their own.



Artwork by Rohan Chakravarty

Social elements of forest protection are also addressed, although the evidence base for this is surprisingly small. [Two out of three studies](#) found positive elements of forest protection, such as greater tree species richness in legally protected areas. Similarly, [community-protected forests](#) showed benefits over non-protected forests in two out of three studies. These results might provide a starting point for conservationists interested in trying to push for legal protection or community management; while results vary with local and social contexts, so far it appears that both have the potential to benefit forests.

Forest restoration is also covered, with sometimes surprising results. For example, sowing seeds after wildfires might seem like a good idea, [but the three studies on this action from the USA](#) found this to be a poor strategy. One found that this decreased the number and cover of native species, and another found it decreased the density of tree seedlings. All three found no effect of seeding on total plant cover or species richness. This does not, of course, mean that this might not work in other forests, with different ecologies to those studied, but it does offer a warning that results can be counter-intuitive. More promisingly, [a study](#) in degraded forest areas in Brazil found that building bird perches increased the species richness and abundance of new tree seedlings. As the birds sat on the perches, they defecated the seeds from fruits they'd eaten earlier on, thus replanting the forest.



Woody debris in Bedfordshire, UK, by Claire Wordley

The forest synopsis is just one step on the way to integrating evidence into conservation management, but it is an important one. Conservation has, as we all know, limited funds and a huge amount of problems to deal with. [Conservation Evidence](#) hopes that by learning from the experiences of others, the conservation community can become more efficient in spending money on the best possible interventions in each scenario.

For more information see [Conservation Evidence](#). The synopsis can also be [downloaded as a pdf](#).

[Claire Wordley](#)



Forest in Peru, by Andrew Bladon
