

From urban jungle to rainforest canopy – how construction cranes are building ecological knowledge

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The humble construction crane could be the key to exploring what ecologists call 'the last biotic frontier' – the forest canopy.

Despite being the lungs of planet Earth, hot spots for biodiversity and the interface between nature and the atmosphere, forest canopies are the ecosystem we know least about because of their inaccessibility.

Speaking at the British Ecological Society's annual meeting in Liverpool this week, Dr Louise Ashton of the Natural History Museum will explain how a growing network of canopy cranes is helping discover new species and answer crucial questions about [climate change](#).

Over the past 30 years, most canopy research has relied on climbing ropes into the tree tops. Although this makes for an exciting branch of ecology, it makes it impossible to conduct large-scale studies across different types of forest in different regions.

As a result, huge gaps exist in our understanding of forest canopies: we do not know how carbon, water and energy are exchanged between the forest and the atmosphere, and many of the insects that inhabit [rainforest canopies](#) have yet to be described by science.

The canopy crane network currently comprises 15 cranes in forests across Europe, Asia, South America and Australia. Eight more are being

built in China, and only Africa and North America now lack canopy cranes.

Instead of moving steel girders and concrete blocks around urban construction sites, canopy cranes enable ecologists to carry out detailed experiments in the tree tops. The crane's moveable arm lets them reach up to 2 hectares of forest.

Dr Ashton is part of an international team of ecologists from China, Australia, the Czech Republic, Germany, Japan and the UK working to raise the profile of canopy science.

"Forests provide essential ecosystem services. However, they are under increasing human pressure from logging, fire and climate change and we know too little about them to understand the likely impact of these threats," she says.

"The international network of canopy cranes – as well as increasingly cheap and accessible technologies such as drones, remote sensing and metagenomics – will be crucial to answering urgent questions about the ecology and dynamics of forest canopies."

Metagenomics is the genetic sequencing of DNA extracted directly from communities in environmental samples. This large scale genomics the different microorganisms present in a specific environment, such as water or soil, to be analysed.

Provided by British Ecological Society

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