Breathing life back into iconic forests

HOW will we conserve species diversity?

Forest are home to many plant and animal species. Their continued destruction risks the permanent loss of important ecosystems – and people who depend on them.

The loss of forests is slowing because of reduced clearing and conservation programs.

Massive damage, however, already has been done. We must find the best way to restore cleared or degraded forests.

Restoring requires replanting key species but finding good-quality seeds for new trees is a major challenge. Good-quality seeds are those that give rise to seedlings that have a good chance of surviving into adulthood and reproducing.

Collecting seeds is harder than it sounds as forest destruction can drastically reduce seed quality.

Generally it is easiest to collect seeds from those damaged forests but relying on poor seed stock can result in weak trees that will not survive.

Restoration with bad-quality seeds increases the risk of failure and preventable extinctions.

Aside from being one of the world’s most-prized timbers, every mahogany tree provides habitat for hundreds of animals and plants.

Ecologically, they are very important. Mahogany is under threat from unsustainable logging and clearing.

We found trees from cleared areas suffered from too much self-fertilisation and low-pollen diversity, leading to less competitive seedlings.

By ensuring seeds are collected from healthy populations, we can improve our chances of protecting not only mahogany but also hundreds of other species and communities that rely on it.

It is vital to protect areas of high-conservation value.

Areas where large populations of species have existed longest (genetic refugia) and undamaged areas where extraordinary species diversity occurs (biodiversity hotspots) should all be priorities for conservation.

Preserving these areas not only assures the future of those iconic sites but also provides insurance for entire species beyond.

DID YOU KNOW?

Ⅰ Big leaf mahogany (Swietenia macrophylla) is the most prized mahogany timber around the world.

Ⅱ It is at risk of extinction in its native habitats because of the timber trade, particularly in Central and South America.

Ⅲ Pollen is extremely important for the fertilisation and reproduction of flowers, fruits, vegetables and trees.

Ⅳ We found trees from cleared areas suffered from too much self-fertilisation and low-pollen diversity, leading to less competitive seedlings.

Ⅴ By ensuring seeds are collected from healthy populations, we can improve our chances of protecting not only mahogany but also hundreds of other species and communities that rely on it.

It is vital to protect areas of high-conservation value.

Areas where large populations of species have existed longest (genetic refugia) and undamaged areas where extraordinary species diversity occurs (biodiversity hotspots) should all be priorities for conservation.

Preserving these areas not only assures the future of those iconic sites but also provides insurance for entire species beyond.

Ⅵ Martin Breed is a PhD student in the Environment Institute and School of Earth & Environmental Sciences, University of Adelaide.

To find out more about the 10 Big Questions, visit the website ua.edu.au/sciences/10big

Keeping tabs on river salinity

KINGSTON on Murray Primary School has a total of 20 students but that does not stop them from making waves in the Riverland.

The students at the primary school, located on the River Murray, use sound waves via the ABC radio in Renmark to report their water test findings from the river.

The school's only teacher, Jo Bevan, has implemented the water-focused classes into weekly learning activities.

Students from reception to Year 7 learn about the wellbeing of the river, which she said was their livelihood. Ms Bevan said most of the students’ parents work on the land as farmers, so a sustainable, healthy river was vital for the future. The students conduct basic salinity tests once a week. They then present the findings on radio every Friday.

Once a term the students check the river's pH, phosphate and nitrate levels. "They also write a weekly 100-word article about the river for the Loxton newspaper," Ms Bevan said. She said the hands-on exercise not only taught the students about the wellbeing of the river, but helped with their communication and writing skills too.

Year 6 student Sharni said she enjoyed the weekly water testing activities.

"Recording the test results helps us understand why the water is so dirty," she said. "Too much salt in the water isn't good for your crops."