Lean & Green

Using British hedgelaying techniques in India, **Dr Debbie Bartlett** and her MSc students create a new use for an invasive species

In the 1960s, *Prosopis juliflora*, a thorny shrub known in some places as 'mesquite', was introduced to northern India to stop the spread of the desert. As with many introductions, the shrub proved successful but had the unintended consequence of spreading rapidly across the countryside, forming scrub thickets in Karchchh district in Gujarat. We were asked for help by ecologists concerned about its spread.

Prosopis is a highly adaptable plant that can out-compete native plants in the dry and increasingly salty soil. Farmers had no problem clearing it from their fields, leaving thickets of bushes on the boundaries and roadsides. The plant is also found as scattered scrub, dense in places, on common land. It is a particular issue on the nationally important grasslands, which are valued not only by nomadic herders who bring their animals in after the monsoon to graze the lush grass, but also as wildlife habitat. The Naliya grassland, for example, contains the Lala Indian sanctuary for bustards. Removing an invasive non-native plant once it has become established is difficult if not impossible. But we were also concerned that in this desert landscape the plant, while considered damaging by the scientists, might have value to the local people.

The British Council awarded a grant for MSc students from the University of Greenwich to go out to India and investigate with the Indian scientists. Studying the landscape change, significantly influenced by the plant spreading, was combined with focus groups in rural villages along the coast. These conversations revealed, as we had suspected, that the *Prosopis* was providing a source of fuel, fodder for livestock, medicinal gum and was considered important for honey production.

Villagers did have significant common concerns: the impact of development, particularly industrial pollution on the mangroves which served as fish breeding grounds, water abstraction increasing soil salinity and free ranging animals, including nilgai (an antelope), wild boar and wild ass, as well as domestic animals, eating their crops. To protect their crops, farmers use dead hedging, but they find it is labour-intensive as it breaks down very quickly in the dry heat, and needs constant replacing.

These issues are complex and difficult to address without political influence, but they were discussed openly at a meeting involving both villagers and local decision makers. During this meeting, we showed a video clip of hedgelaying and suggested that it might be possible to use *Prosopis* to make 'living fences' as it is, after all, a thorny shrub. The villagers and decision-makers greeted this idea with enthusiasm, and British Council asked us to return and see if we could make it work.

What could possibly go wrong?

For a start, we in Britain lay hedges in the winter. When we arrived in May 2016, Northern India was experiencing a heat wave, with temperatures soaring over 40 degrees centigrade. As soon as we arrived, we experimented laying *Prosopis juliflora* on some waste ground. After the plant showed some initial wilting – causing extreme concern – it recovered overnight. So we acquired local tools and used these to lay the roadside boundary of the Vivekanand Research and Training Institute (VRTI), Mandvi. It proved impossible to get stakes into the rock-hard ground, but we found that weaving the long stems together made a robust barrier – painful but effective.

We invited farmers, Forestry Authority officers, and local government officials to a demonstration workshop at VTRI, where we distributed illustrated information sheets, in Gujarati and English. Again, the response was very enthusiastic, as shown in the quotes below:

'In two years this living fence will definitely grow thick and keep out both wild boar and nilgai.'

'I very much like this living fence as dead hedging is not permanent. We will take and distribute the information sheet.'

'People are admiring this living fence like anything and will definitely do it themselves.'

For more information on the project: gala.gre.ac.uk/16221/

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Ben Bower negotiates the purchase of tools.