

Breaking a fence-breaking habit: maintaining the fences that reduce human-elephant conflict

2 June 2017 / [Sue Palminteri](#)

A creative combination of everyday materials has helped reduce fence-breaking by elephants within large enclosures.

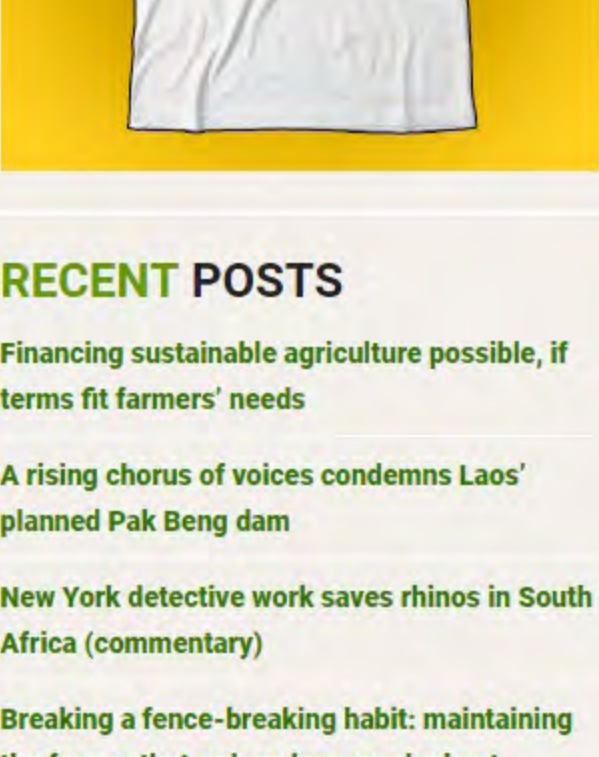
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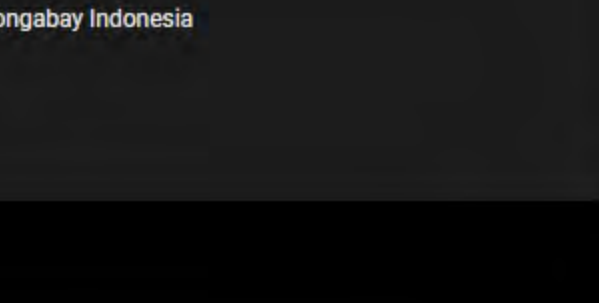
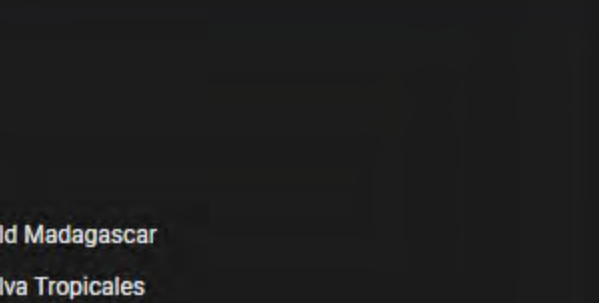
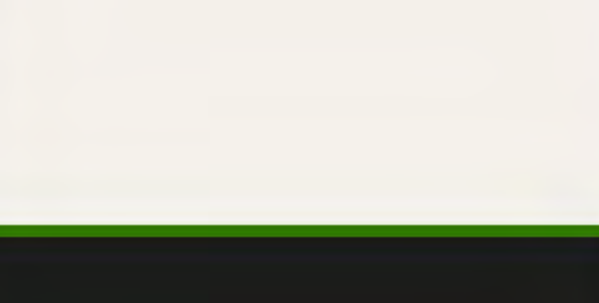
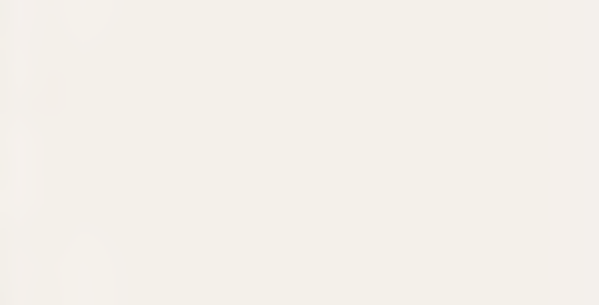
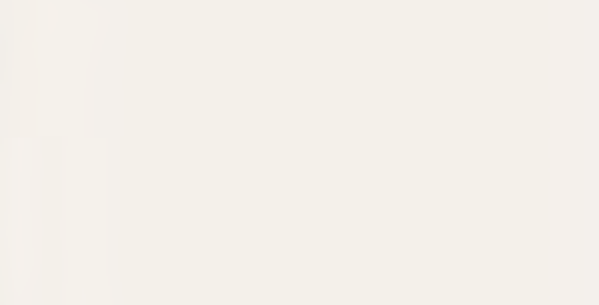
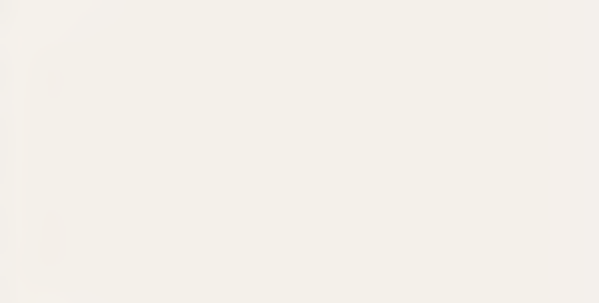
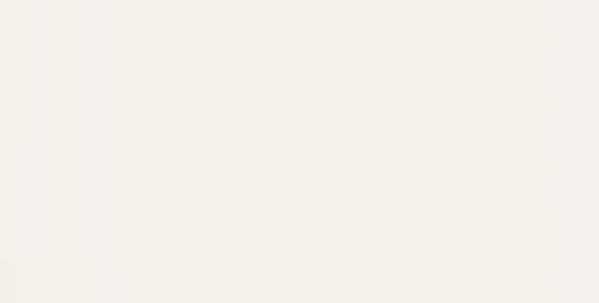
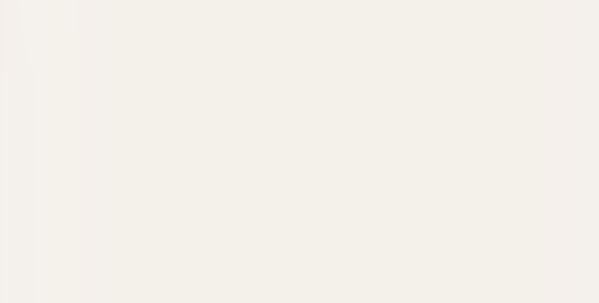
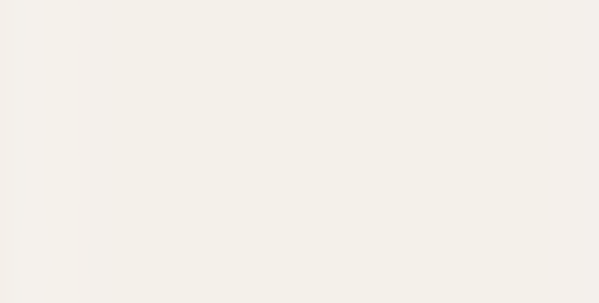
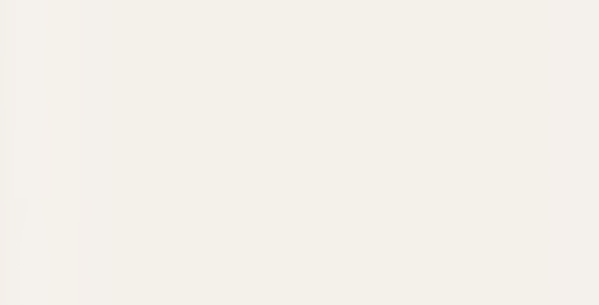
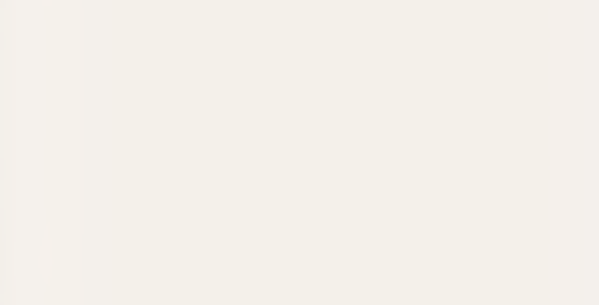
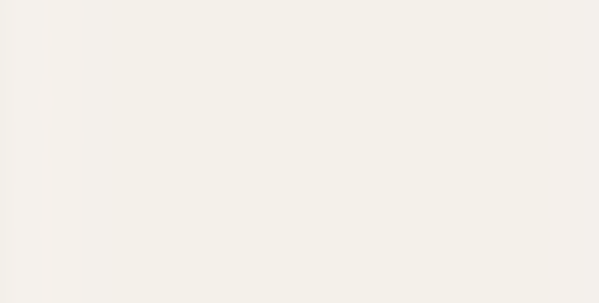
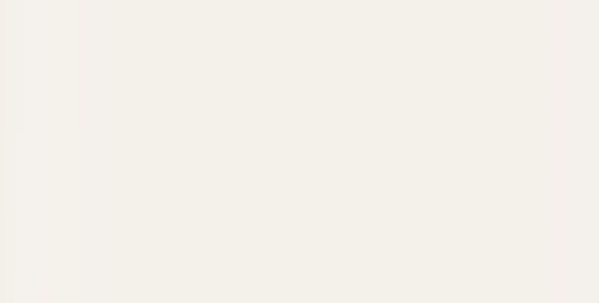
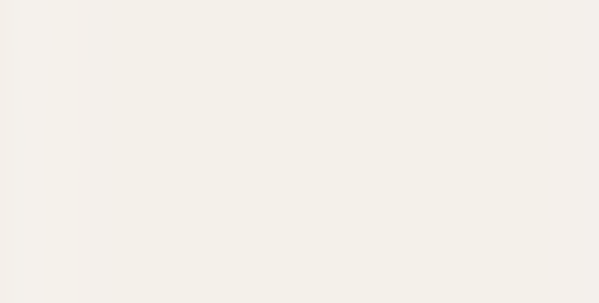
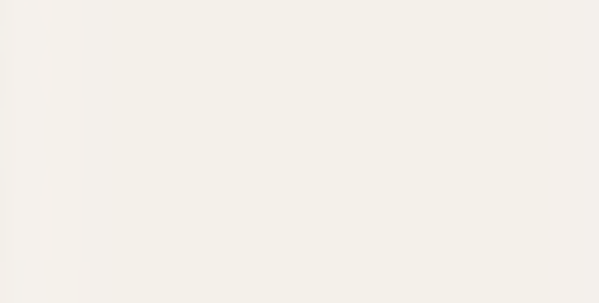
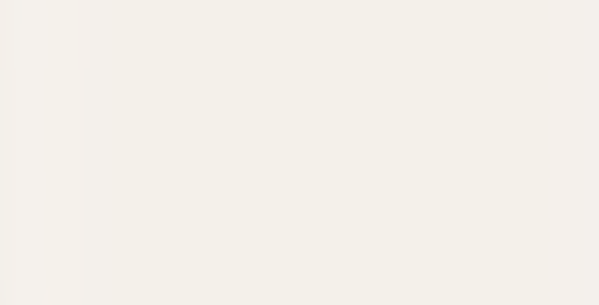
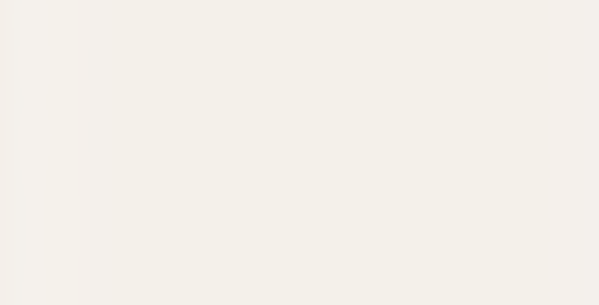
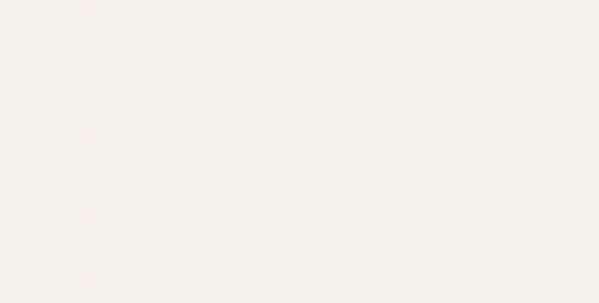
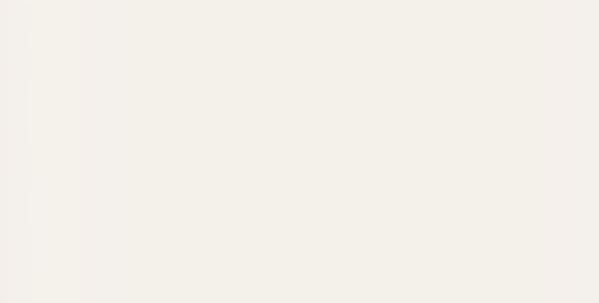
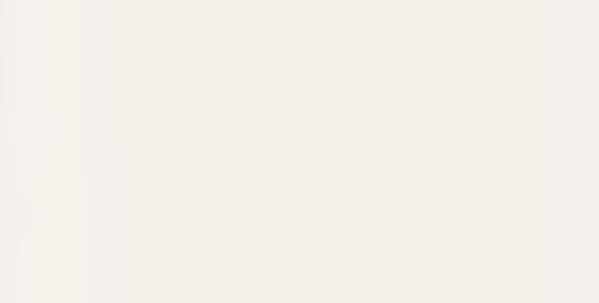
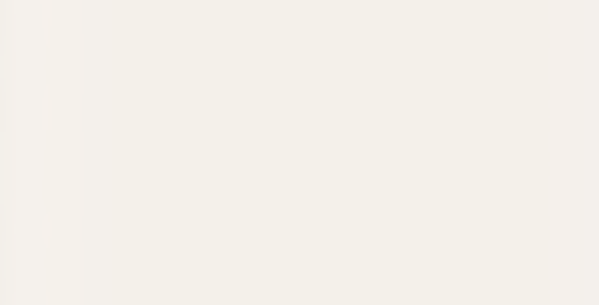
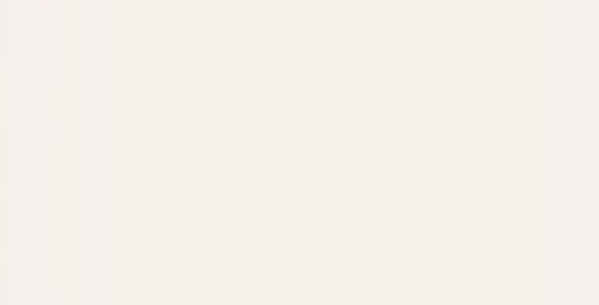
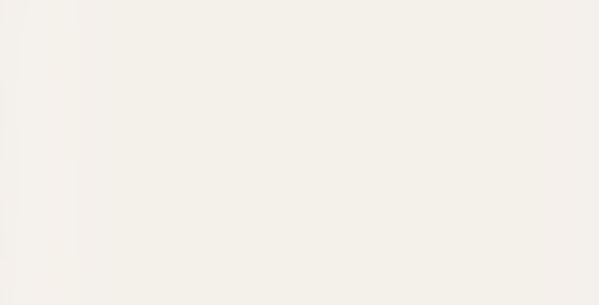
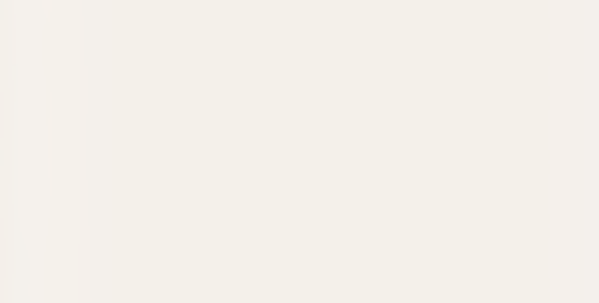
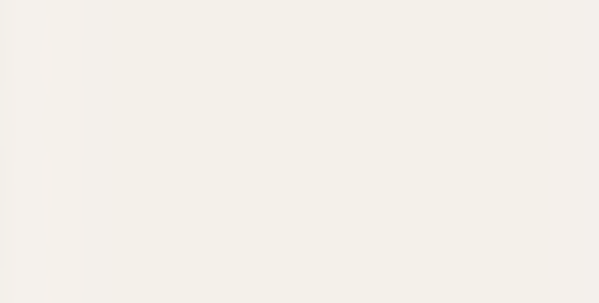
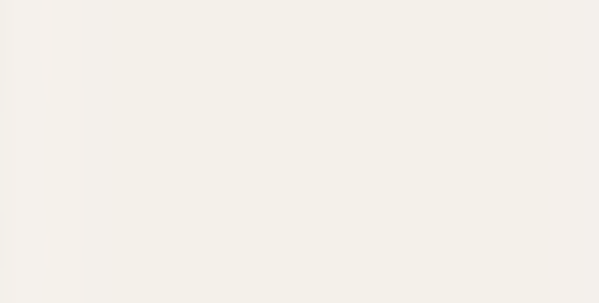
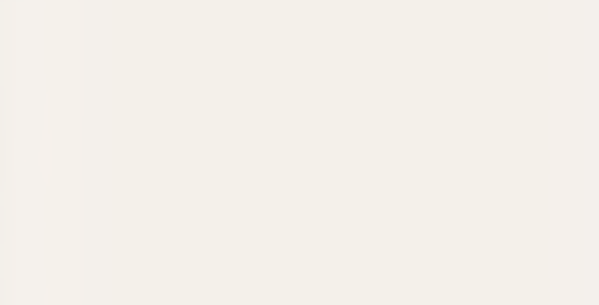
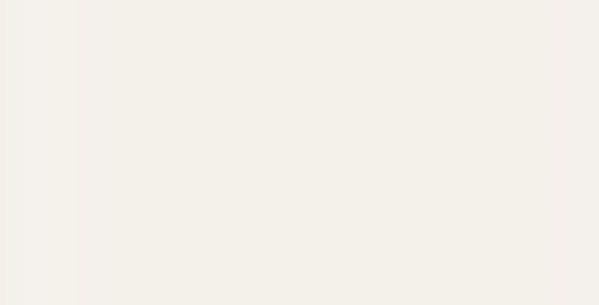
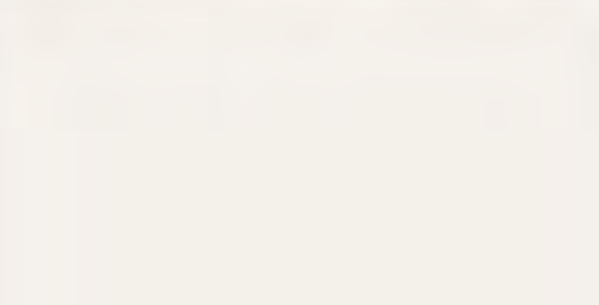
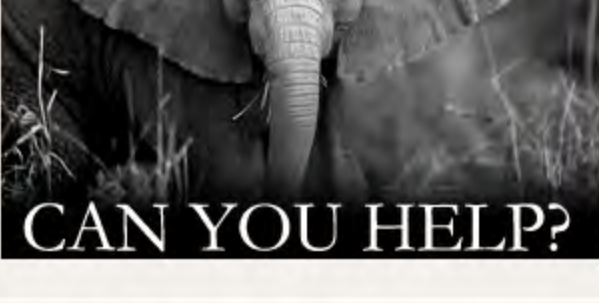
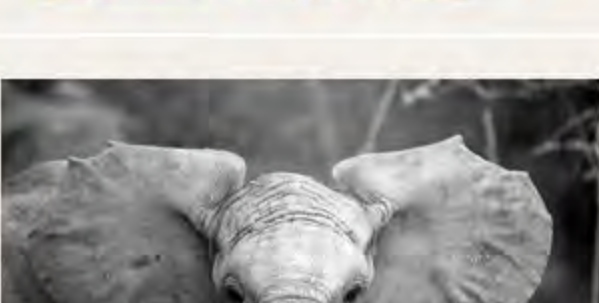
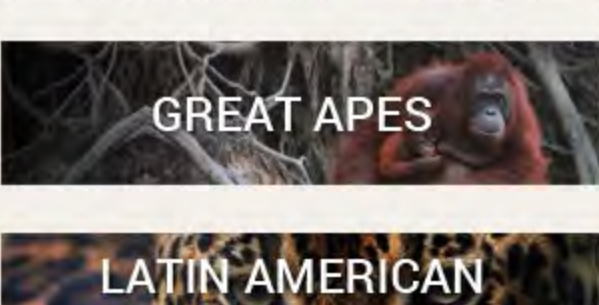
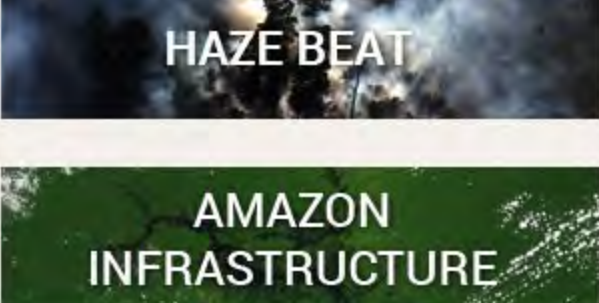
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Former fence-breaker Harry and a female colleague – he is big even among elephants. Photo credit: George Powell

Electric fences have had success in minimizing human-elephant conflict, so long as they are maintained, but elephants that destroy fence wire can then also enable other elephants to pass through the fences into neighboring lands and villages. Elephants that destroy crops or property are unfortunately in danger of retaliation from angry farmers.

To protect both people and elephants such as Harry, Vipond wondered how he could possibly get him to stop breaking fences. More specifically, he asked, "How can I make Harry's tusk into a conductor?"

2. How did you come up with the groove in the tusk?

Years before, Vipond had attended the elephant management training course at Riddle's Elephant and Wildlife Sanctuary in Arkansas, USA, which teaches "old-school" elephant care and husbandry and "showed me the basics of what was required to keep an elephant, for lack of a better word, manageable." The facility used a special device when it needed to move elephants from place to place. The device, made with a stainless steel band, like a hose clamp, mounted on the front of the tusks and connected to the floor, kept the elephants from hurting each other with their tusks while in transit.

The bands were more solid than a wire, but his designs with large pipe clamps would loosen over time, as tusks are tapered, rounded, and slick. In brainstorming a method to stop fence-breaking, Vipond wondered, "What if I could put a groove in the tusk from the elephant's lip to the tip of his tusk that could carry the current to where he would feel it?"



Harry's tusk brace with the epoxy adhesive visible. The tusk has grown since the brace was fitted 5 years ago, moving the wire farther from the sensitive portion of the tusk. Photo credit: George Powell

4. How does it help stop fence-breaking?

The bulk of the tusk does not conduct electricity. Fence-breaking elephants have learned this and will pull and push the wires of an electric fence with the tips of their tusks until the wires snap. A wire fitted into a groove along the edge of each tusk can conduct electricity from the end of the tusk, which lacks sensation, to just before it meets the lip, which is more sensitive. While not dangerous, an electric fence meant to control elephant movements gives a strong shock that the animals logically want to avoid.

5. How effective were the braces in discouraging fence breaking? Did the elephants lose the habit?

Of the two elephants that have been fitted with tusk braces by Vipond and his colleagues, both stopped breaking fences. Harry learned that his tusks were no longer effective and stopped breaking fences through to the present.

Shaka, the other elephant with tusk braces, initially stopped breaking fences but then learned he could still use the bottom of his tusks safely to cut through the fences. Alex described Shaka as "a very busy elephant–pushing trees, debarking trees, digging, etc.–and eventually his wire came off the tip, so the team pulled it out and replaced it with another.



Another view of the fitted wire brace along the top of Harry's tusk. The dark material on the tusks is soil from the day's digging, which elephants do to search for food, water and minerals. Photo credit: George Powell

6. How long do they stay in place? What happens when the tusk grows?

It seems to be a mix. Shaka's wire had to be replaced, and one of Harry's two tusk brace wires also came off. Harry's other wire is still in place, five years after they were first put in.

Tusks are large teeth, with nerve endings in the center of the upper portion. As the tusk grows, however, the inlaid wire moves farther and farther from the end of the tusk, which lacks sensation, to just before it meets the lip, which is more sensitive. Vipond therefore stressed that the wire needs to reach as far up on the tusk as possible.

7. Where else is this technique being used?

He doesn't know if anyone else has used the technology, though a local veterinarian phoned and asked whether there was a way to stop elephants from raiding, so Vipond sent him photos of the tusk braces.

Lewa Wildlife Conservancy in Kenya had a similar problem and trimmed off 2/3 of the tusks of four habitual fence-breakers there. This dramatically slowed fence-breaking, though these four bulls turned to other, less effective ways to get through the fence. However, it prompted critical ethical and ecological questions about an elephant's need for tusks to dig for minerals, strip bark, maintain reproductive status and generally look like a normal elephant.



One of Harry and Shaka's cohorts uses her tusk to strip bark in Krivana Elephant Park, South Africa. Photo credit: Sue Palminteri

8. Do you see any downside? Would you recommend it to other sanctuaries, reserves or other places where elephants break fences?

When asked if he would recommend the setup to other managers, Vipond thought it could be helpful for facilities with domesticated or habituated elephants that can be monitored regularly. Vipond was concerned that if the wire got loose on a wild elephant from digging or stripping bark, it might not be found and could injure the animal. For the same reason, he added that elephants living in open grasslands might be better candidates than those in rougher terrain with denser bushes.



An elephant in Botswana far from people and unlikely to encounter and break fences. Photo credit: Sue Palminteri

No single mitigation strategy has eliminated human-elephant conflict. Relatively few elephants break fences, but some are repeat offenders. The tusk brace is one of several novel strategies aimed to address a large and growing challenge for elephant conservation and human development.

Researchers have developed and tested ideas such as chili fences, beehive fences, and drones to help reduce HEC, and controlling elephant movements through electric fencing is already an unfortunate reality, even in many large landscapes. As more managers must rely on fencing of either reserves or neighboring farms to separate elephants and humans for the safety of both, the need to keep the fences maintained efficiently increasingly greater.

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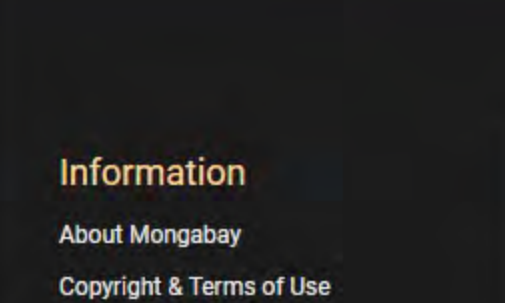
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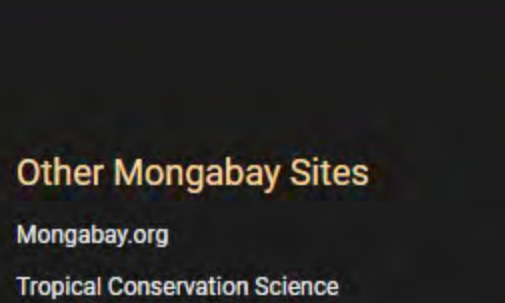
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