# The implant that helps paraplegics walk

In a breakthrough that offers hope to paraplegics, three people paralyzed from the waist down have regained the ability to walk after having electrodes implanted in their spinal cords. Paralysis often occurs after a spinal injury because signals sent from the brain can no longer reach the nerves that activate muscles, or because those signals are too weak to stimulate movement. But scientists believe that the spinal cord can act as an amplifier and boost those signals when electrically stimulated. To test this theory, researchers implanted tiny electrodes between patients' vertebrae, below the level of the injury, and delivered a weak electrical current directly into the spinal cord. The results from two separate U.S. studies have been spectacular, reports the Associated Press. One patient, Jered Chinnock, could move his leg muscles within two weeks; after months of intensive physical therapy, he could walk the length of a football field with assistance. "It feels like science fiction," said Chinnock, 29. "The first day they turned it on, it was almost mind-blowing." The treatment doesn't repair the damage—the patients cannot move their legs when the electrodes are off—and two other paraplegics weren't able to take

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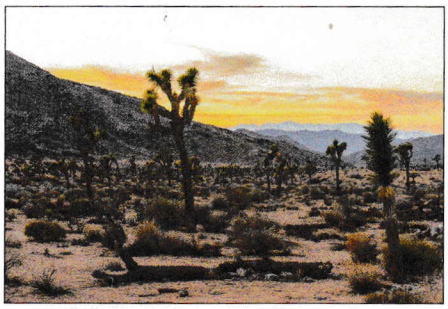


*Joshua Tree: Doomed by climate change?*

## Our overheating national parks

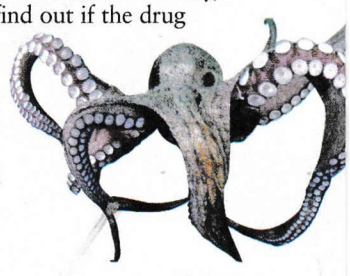
America's national parks could soon be unrecognizable because of climate change. That's the conclusion of a new study that found average annual temperatures in the country's 417 national parks increased twice as fast from 1895 to 2010 as they did in the rest of the U.S., and that precipitation levels in those protected wildernesses sharply dropped. If carbon emissions that cause climate change aren't curbed, the study says, temperatures could rise 16 degrees in certain areas by 2100. That would kill most of the spiky yucca palms that give California's Joshua Tree National Park its name, melt Glacier National Park's most iconic features, and cause raging wildfires that could turn Yellowstone's conifer forests into grassland. Parks are particularly vulnerable because of where they are located: More than half the country's national park area is in Alaska—which has been severely affected by climate change—and many other parks are in the arid Southwest. "The key is to take action now," lead author Patrick Gonzalez, from the University of California, Berkeley, tells *OutsideOnline.com*. "The later we head down that road, the less chance we have of saving the parks."

## Eliminating mosquitoes

Scientists have used gene-editing techniques to completely wipe out a population of mosquitoes in the lab, raising hopes that the experiment could be replicated on a wider scale to help eradicate malaria. Gene editing involves the alteration of a specific gene to create changes in the organism's offspring. In this case, researchers from Imperial College London tweaked the doublesex gene, which determines whether a mosquito develops into a male or female. They then introduced these genetically modified insects into a caged population of *Anopheles gambiae*, the type of mosquito that spreads malaria in sub-Saharan Africa. The mutation blocked female reproduction but allowed males to keep spreading the alteration; the population collapsed within seven to 11 generations. More experiments are needed to find out if the method will work on larger populations, or with other types of mosquitoes; eliminating an entire species would also be fraught with bioethical and environmental concerns. But they're nonetheless excited. "This is a game changer," study leader Andrea Crisanti tells *NPR.org*. "This is a completely new era in genetics."

## Octopuses on ecstasy

Does the drug ecstasy make octopuses more friendly? That, strangely enough, is a question to which scientists now have an answer, reports *The New York Times*. The eight-tentacled invertebrates are notoriously smart—they can navigate mazes and unscrew jars to get food—and are also deeply antisocial. So when Gul Dolen, a neuroscientist at Johns Hopkins University, discovered that octopuses and people share the genes for a protein targeted by MDMA, the psychoactive substance in ecstasy, she decided to find out if the drug might change the animals' behavior. She put an octopus in a tank with three connected



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