

Can we save our sequoias and fire lilies from climate change?

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Credit: Unsplash/CC0 Public Domain

Standing in a sunlit grove of stately giant sequoias is a simultaneously humbling and uplifting experience. Dwarfed by the world's largest living organisms, some of which have stood since the fall of ancient Egypt and

the onset of the Iron Age, we are reminded of our own insignificance in the grand scheme of our planet's history.

Evergreen and ever-present, these colossal conifers have witnessed the passing seasons—and the awestruck expressions of human admirers—for what seems like eternity. They are such an integral part of their mountain landscape that it's hard to imagine life without them.

Protected from the chainsaws that have felled so many of their tropical hardwood counterparts, these magnificent trees exude an aura of indestructibility and permanence.

How shattering then, to hear that even these giant trees are not immune to the ravages of human-induced climate change. Slowly and silently, they are also succumbing to the same insidious threat.

Am I the only person who thought they heard the voice of Sir David Attenborough, vice-president of Fauna & Flora International (FFI), crack as he described the plight of these majestic trees during that piece to camera on *The Green Planet*?

How big is a giant sequoia?

The largest life forms on the planet, [giant sequoias](#) can attain a height of almost 100 meters and measure over 10 meters across. Often confused with giant redwoods—the world's tallest tree, which can grow well over 100 meters—giant sequoias are notable as much for their girth as their height. The big daddy of them all, nicknamed General Sherman (main photo), has a 31-meter circumference and tips the scales at 1,200 tons. For context, that's ten times the weight of a blue whale.

Reptiles enthusiasts will appreciate the parallels with the serpent realm, where the record-breaking reticulated python (world's longest snake) and

green anaconda (world's biggest snake) vie for supremacy.

How long do giant sequoias live?

Giant sequoias are among the longest lived of all [plant species](#). They may not measure up to the 10,000-year-old colony of seagrass in the Spanish Mediterranean, or even match their close California neighbor, the ancient bristlecone pine—affectionately known as Methuselah—that is well on course to reach the ripe old age of 5,000. But the oldest [sequoia](#) on record did survive for over 3,500 years.

Where are giant sequoias found?

Once widely distributed across the northern hemisphere, sequoias are now confined to the western slopes of the Sierra Nevada mountain range in northern California. They grow at elevations from 5,000 to 7,000 feet, where the combination of dry mountain air, snow melt and well-drained soil provides them with the conditions they need in order to thrive and reproduce.

Why are giant sequoias endangered?

Giant sequoias guzzle an astonishing 4,000 liters of water per day. Historically, there has been a plentiful supply of that precious resource, thanks to the ready availability of melting snow. As the climate heats up, however, seasonal snowfalls are becoming lighter and less frequent, leaving the trees increasingly vulnerable to drought during the hot summer months that follow.

There is growing evidence that these gargantuan trees are resorting to shedding their needles and branches in order to conserve water. But even these drastic measures cannot guarantee their survival. Disturbingly,

10% of California's giant sequoias have been lost in the last few years.

These climate-driven crises are by no means confined to the northern hemisphere. On the other side of the tropics, at the southernmost tip of Africa, flaming fire lilies may soon be facing a different but equally intractable problem.

Where are fire lilies found?

The fire lily is found only in the fynbos region of South Africa. This botanical paradise boasts literally thousands of plant species, all competing for the attentions of the insects, birds and other pollinators on which they depend for reproduction. Many of these plants are adapted to cope with or rely on fire to complete their life cycle, but as its name suggests the fire lily has taken this relationship to a new level.

No fire lily without smoke

Fire lilies lay dormant and out of sight while the rest of the fynbos flora display their brilliant blooms. Not until fire has swept through the landscape and left behind an apparently barren wasteland will they make an appearance. The emergence of the fire lily is triggered by smoke, and their fiery-red flowers—blazing brightly against a background of blackened scenery—enjoy the undivided attention of sunbirds and other pollinators.

What is fynbos?

Fynbos is the local name given to the vegetation type that dominates South Africa's Cape Floral Kingdom. As well as the fire lily, it harbours myriad other flower types from freesias to lobelias and every single one of the world's 350-plus protea species. One of the most biologically rich

landscapes on the planet, and among the most threatened, it contains more species of native plant, relative to its size, than even the richest tropical rainforest. Of the 8,500 plant species found there, a staggering 5,800 occur nowhere else in the world.

What are the main threats to fynbos?

Fynbos is threatened by invasive alien tree species, urban expansion, agricultural encroachment and unsustainable exploitation of wild flowers. FFI was instrumental in saving a crucial area of fynbos from destruction and has since supported our local partners in safeguarding well over 50,000 hectares of this unique botanical paradise.

Ironically, one [natural phenomenon](#) that has been a friend of the fynbos may now pose one of the most serious threats to its long-term survival. Even for species that have evolved to thrive in a habitat that is periodically ravaged by fire, there is a limit to what they can endure.

In recent years, extreme wildfires—the result of extended periods of drought that turn the landscape into a tinderbox—have become a disconcertingly regular occurrence across the fynbos landscape. Scorched earth may stimulate seed growth, but if the flames continually penetrate too deeply, burning the soil and incinerating the seeds beneath, even the fire lily will struggle to recover.

Too darn hot

Wildfires of increasing frequency and intensity; droughts of increasing duration and severity; biblical floods in midsummer; melting ice caps in midwinter; seasons that no longer conform to type. The rules are being rewritten by climate change, threatening the survival of a broad spectrum of plant species from [fire](#) lilies to sequoias, undermining the stability of

the ecosystems on which we all ultimately depend and, in turn, reducing their effectiveness as our natural allies in the fight against global heating.

The actions we take between last year's COP26 climate conference in Glasgow and this year's COP27 follow-up in Egypt, scheduled for November, will be crucial in dictating whether we curb climate change or continue to exacerbate the crisis by sitting on our hands. We would do well to heed the wise words of Sir David Attenborough: "Only if we can [tackle [climate change](#)] will the future of seasonal plants, including these magnificent trees, be assured."

Provided by Fauna & Flora International

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