

Drone Imagery Enables Fine-Scale Detection of Sagebrush Dieback During a Summer Heatwave

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Transcript

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MODERATOR

Up next, we have Valorie Marie from Biological Science with, “Drone Imagery Enables Fine-Scale Detection of Sagebrush Dieback During a Summer Heatwave.” Valorie, take it away.

VALORIE MARIE

Thank you. So, sagebrush species are an essential part of the western desert ecosystem. It has many influences on local recreation and employment. These shrubs help to prevent erosion, capture water, sustain wild animal populations, and more.

Climate change imposes a large threat to these populations, as we see a climbing number of wildfires, less precipitation, and more high-heat summer days. This project focuses on the latter issue by comparing imagery taken at Castle Rock State Park over the summer of 2021, when an unprecedented heatwave went over that area.

We used drones to gather imagery overhead in June and September. Then, I used software to stitch these images together into one large image with high resolution. You can see that on my slide, in the top two photos. By outlining individual shrubs, I was able to extract the green band of the color images and collect the Green Leaf Index inside that perimeter.

You can see that in my bottom two photos. Greenness directly corresponds to photosynthetic activity and the wellbeing of a plant. The Green Leaf Index gives me a number for how much green there is between zero and one. After comparing the two time steps, I found that 72% of the shrubs had lost green, and 28% had gained green.

Of the shrubs that lost their greenness, there was an average loss of 10.8%, and of the shrubs that gained their greenness, there was an average gain of 5%. This location is one site out of four, along an elevation gradient with several different shrub species.

The next step is to run this same Green Leaf Index on all four of the Castle Rock sites from June and September. This will give us a wider range of data analyses over that same 2021 heatwave.

These methods allow us to identify resilient shrubs that have retained their greenness during this heat wave, and we can target those shrubs to collect seeds for restoration pursuits. The advantage of drone data is to have a map that spans hundreds or thousands of individual shrubs, which is more data than we could collect on the ground.

This research brings vital information to the conversation of where and how to allocate tight budget funds on conservation of the sagebrush steppe that so many of us depend on. It also shows that one hot and dry summer can have on this slow growing plant. If you have any questions for me, my project number is 95 in group B. Thank you.

MODERATOR

Thanks so much, Valorie.

END OF TRANSCRIPT.