



Buffelgrass Reduces Native Plant Recruitment

Introduction

Invasive grasses are changing ecosystems and threatening native species across many National Parks. In Saguaro National Park, buffelgrass (*Pennisetum ciliare*) has been spreading into open desert scrub in which iconic species like saguaros and palo verdes grow. Buffelgrass is native to Africa and parts of Asia, and was planted in Arizona for cattle forage and erosion control.

A previous study found that saguaros and other native perennial plants are more sparse in areas with buffelgrass. However, it was difficult to determine whether buffelgrass excluded the native plants, or if buffelgrass grew only where native plants were already sparse.

The survival of plant seedlings from germination until the next rainfall is a critical stage for saguaros and other long-lived Sonoran Desert plants. University of Arizona researchers studied whether survival of saguaro and palo verde seedlings was negatively affected by buffelgrass presence, and whether seedling survival appeared to be caused by competition for resources (i.e., nutrients, light, and water) from buffelgrass, or if small mammals were eating the seedlings. Both interactions have implications for how buffelgrass is managed at the park.

Methods

To determine if the native seedlings were not surviving due to competition for resources, recently germinated seedlings in areas with and without buffelgrass removed were monitored for survival. In addition, palo verde seeds were established in a greenhouse study in the presence or absence of buffelgrass to determine if buffelgrass affected their growth. To determine if small mammals were consuming the seedlings, wildlife cameras were positioned to monitor the study areas.



Sensitive palo verde seedlings survived longer and grew larger under native shrubs or in the open than under the buffelgrass.



Saguaros and other native plants have a hard time reproducing in patches of dense buffelgrass because it competes with native seedlings for scarce resources like water.

Results

The researchers found that native perennial seedlings died more quickly in the presence of buffelgrass. The wildlife cameras detected the same number and kinds of small mammals regardless of the presence or absence of buffelgrass. This suggests that resource competition is the likely cause of declining seedling survival. The greenhouse study found that palo verde seedlings also died sooner under buffelgrass than under a native shrub or in bare ground.

Conclusions

If adult native plants can persist with buffelgrass present, but are unable to successfully reproduce, the decrease in native plants' establishment in buffelgrass infestations is expected to worsen with time.

The results suggest that continued management (manual removal and herbicide control) will favor germination and establishment of native plants like palo verde trees and saguaros.

More Information

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