BACKGROUND
As habitat loss and fragmentation, urbanization, and global climate change accelerate, conservation of rare ecosystems increasingly relies on human intervention. However, any conservation strategy is vulnerable to unpredictable, catastrophic events. Whether active management increases or decreases a system’s resilience to these events remains unknown.

STUDY SYSTEM
We studied the population dynamics of pineland croton (Crotalaria linearis), the sole host for two endangered butterfly species, Bartram’s scrub-hairstreak (Strymon bartrami) and Florida leafwing (Anaea troglodyte). These three species are found in pine rocklands in south Florida and are highly dependent on frequent fires to maintain their populations. Because of increased development and habitat fragmentation, it has become increasingly difficult to burn where these species exist.

METHODS
We followed the fate of hundreds of tagged croton within a mechanical clearing experiment on Big Pine Key, FL, and in permanent fire-effects plots in Everglades National Park. We estimated vital rates and population growth rate for each treatment before Hurricane Irma and in the year of the storm.

RESULTS
• Both fire and mechanical clearing reduced croton survival and population growth rates in the year of the disturbance.
• Previous management interacted with Hurricane Irma to increase survival and population growth rate in the year of the storm relative to controls.

CONCLUSIONS
As climate change increases the probability and intensity of severe hurricanes, human management of disturbance-adapted landscapes will become increasingly important for maintaining populations of threatened species in a storm’s path. We have shown that appropriately managing landscapes that harbor rare species has the potential to increase species’ resilience to subsequent storm events. With poor management, stronger hurricanes will accelerate extinction.

QUESTIONS
• How do populations respond to multiple disturbances?
• How do different disturbances (prescribed fire, mechanical clearing) affect croton population dynamics?
• How does previous management interact with hurricane disturbance to affect croton population dynamics?

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