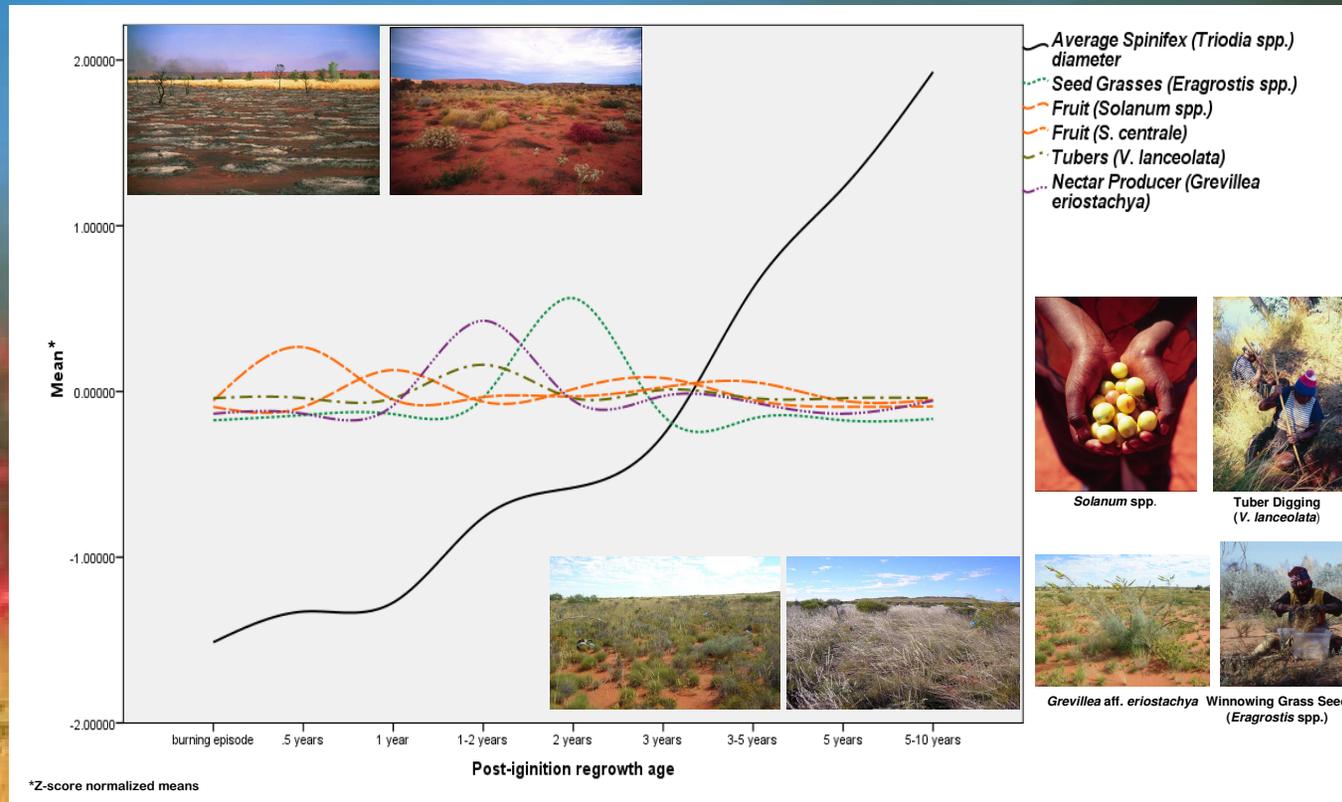


# Fire As Cultivator: The Ethnoarchaeology of Aboriginal Burning, Patch Creation, and Plant Use

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## Introduction

Human foragers frequently interact with their environment through the controlled application of fire. This can shape habitats, influence resource availability, and potentially transform entire ecosystems. Here we present initial results from a long-term research project among the Mardu Aborigines of Australia's Western Desert that examines the effects of anthropogenic burning on traditional plant food populations. We provide quantitative evidence showing that Mardu burning practices reduce search and promote the growth of economically important plant resources in the spinifex savannahs of Mardu homelands.

## Methods

- A GPS waypoint record of ignition points for fires lit by Mardu on both "day hunts" and extended foraging trips was compiled during extended periods of ethnographic fieldwork in 2000, 2001, and 2002.
- The number and species of plants traditionally exploited by Mardu foragers (e.g., tubers, fruits, seed grasses, and nectar-producers) and all changes in burn/regrowth age were recorded in 10 km long ecological survey transects centered on the known ignition points in 2003 and 2004. Spinifex diameter measurements and stem counts for all plants were also conducted in 5x5 meter quadrats placed systematically along each transect.

## Results

- Burning positively affects populations of fruit, seed grasses, tubers, and nectar producers, and dramatically increases general plant diversity.
- Food plant populations peak differentially depending on regrowth age and species (e.g., fruits=0-1.5 years, tubers & nectar producers=1-2 years, and seed grasses=2 years).
- Food plants are effectively absent from landscapes that remain unburned after 5 years of post-ignition regrowth.

## Discussion

Explaining the link between anthropogenic burning and foraging behavior is vital for understanding human evolutionary history. The degree to which fire is used to increase specific plant populations speaks directly to how concepts such as "domestication" and "resource intensification" are ultimately defined in an anthropological context. Our data indicate that using fire to create spatially and temporally predictable resource patches is a *production* strategy no less ecologically manipulative than those typically associated with farming.

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