

Comparative effects of rainfall, flooding and grazing exclusion on regeneration of semi-arid riparian and floodplain vegetation.

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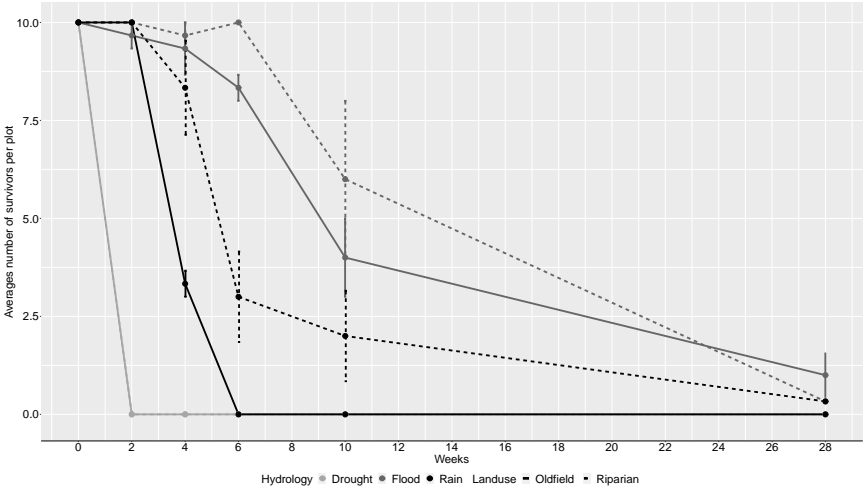
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Abstract

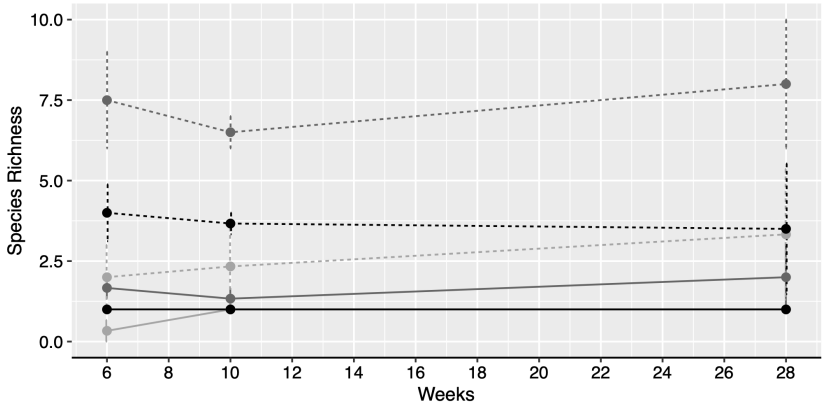
In semi-arid landscapes, water regimes play a critical role in shaping patterns of vegetation regeneration. In riparian and floodplain habitats, however, the importance of flooding versus rainfall is poorly established for many species and habitats. Here, we present the results of a field experiment designed to investigate the establishment responses of both *Eucalyptus camaldulensis* (river red gum) seedlings and understory vegetation to different hydrological conditions within two contrasting habitat types. We ran a field experiment in these habitats along the Condamine River in the northern Murray-Darling Basin in eastern inland Australia. We imposed flooding, rainfall, and drought treatments on 180 seedlings of *E. camaldulensis* and extant understory vegetation in 18 experimental plots to examine seedling survival and the establishment and dynamics of understory plant assemblages over nine months. Although there was very high seedling mortality overall, our results were consistent with findings from elsewhere in the Murray-Darling Basin indicating that flooding is a critical factor driving the survival of *E. camaldulensis* seedlings and the resilience of understory vegetation cover and diversity. Although the chance of seedling survival up until ten weeks was higher in the riparian habitat than in the floodplain old-field, the effect of habitat type was reduced under flooded conditions. Despite the low numbers of surviving *E. camaldulensis* seedlings, the value of a few successfully established trees on old-fields should not be underestimated, nor the potential effects of flooding on restoring the understory. This research highlights that rainfall is unlikely to provide sufficient watering in these habitats for vegetation regeneration.

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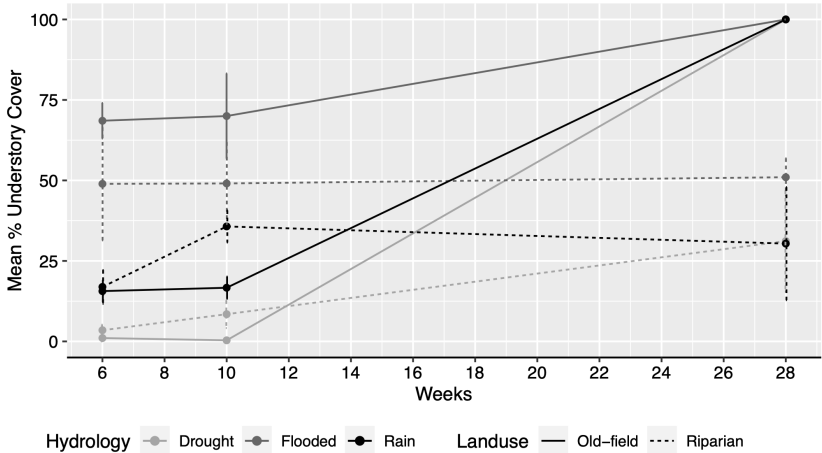
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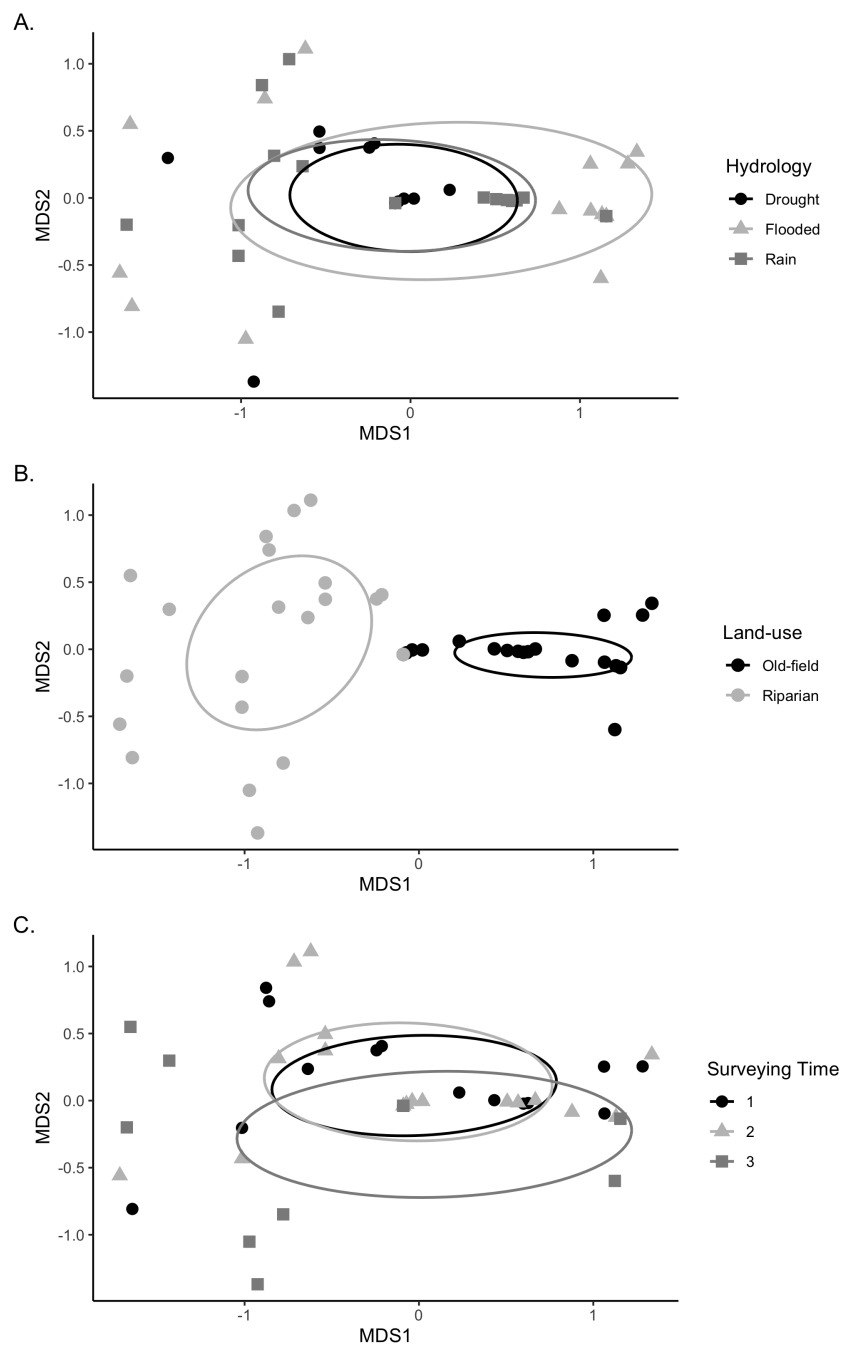


A.



B.





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