Species proportion trends on the Richmond Downs post 2019 flood

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Introduction

In 2019, north-west Queensland experienced extreme monsoonal rainfall, with over 800 mm falling in less than a week. This led to widespread flooding across hundreds of thousands of hectares of grazing land, lasting up to 15 days. The recovery of Mitchell Grass Downs has varied across the region. To better understand this recovery, monitoring sites were set up on a property south of Richmond, Queensland.

Methods

Six monitoring sites were chosen based on the severity of flood impact—two each for severe, intermediate, and light impact. At each site, 30 BOTANAL assessments were conducted (Lamacraft, R.R, 1979). For each assessment, the top five pasture species within a quadrat were identified, and their percentage composition was recorded to evaluate species composition.

Results

On 'severe' sites, pasture composition comprised 41% annual grass and 50% Forb species. Preferred species composition declined to as low as 8.15% in 2024 but increased to over 25% in 2025. 'Intermediate'(INTER) sites were dominated by intermediate species such as Eriochloa, Eragrostis, Panicum, and Desmodium. Preferred species, including Mitchell Grasses, fluctuated on 'intermediate' sites throughout the trial, contributing an average of 24% to the pasture composition, with some years, such as 2025, recording as low as 3.65%. In contrast, 'light' sites consistently maintained a high proportion of preferred species, averaging 66% of the pasture composition (Fig. 1).

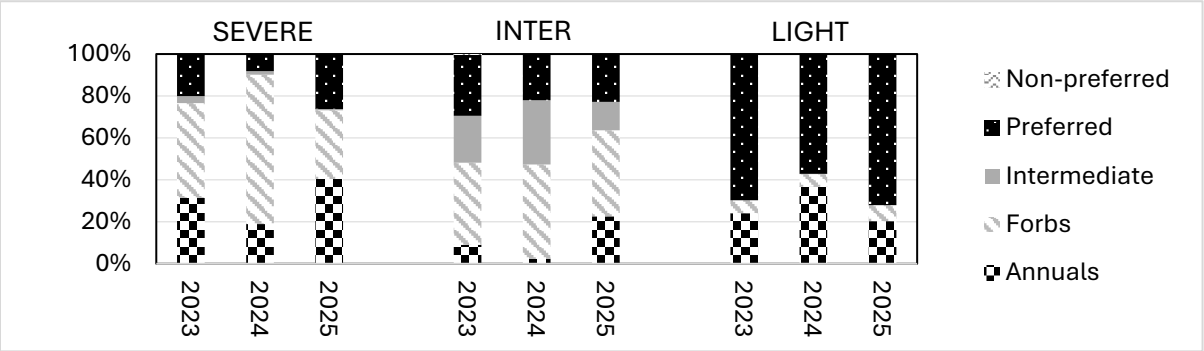

Fig. 4. Proportion of biomass at Rose Downs by pasture type over 3 years on intermediate, severe and lightly effected sites.

Discussion and conclusion

The findings highlight the complexity of pasture recovery, with no clear trends or definitive answers across sites. Although monitoring has covered only a small number of seasons, no consistent trend in pasture improvement is evident. While 'light' sites, experienced fluctuations in forb and preferred pasture proportions, they consistently maintained higher levels of preferred species compared to other sites. 'Severe' sites show subtle changes in pasture composition demonstrating the challenges of Mitchell Grass establishment (preferred pasture). The recovery of Mitchell Grass Downs is a slow process that could take decades, with no clear timeline evident in this study. Where recovery is prolonged, targeted interventions may be warranted to return impacted sites to their previous state.

References

Lamacraft, R.R. (1979) Australian Journal of Ecology. 1979

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