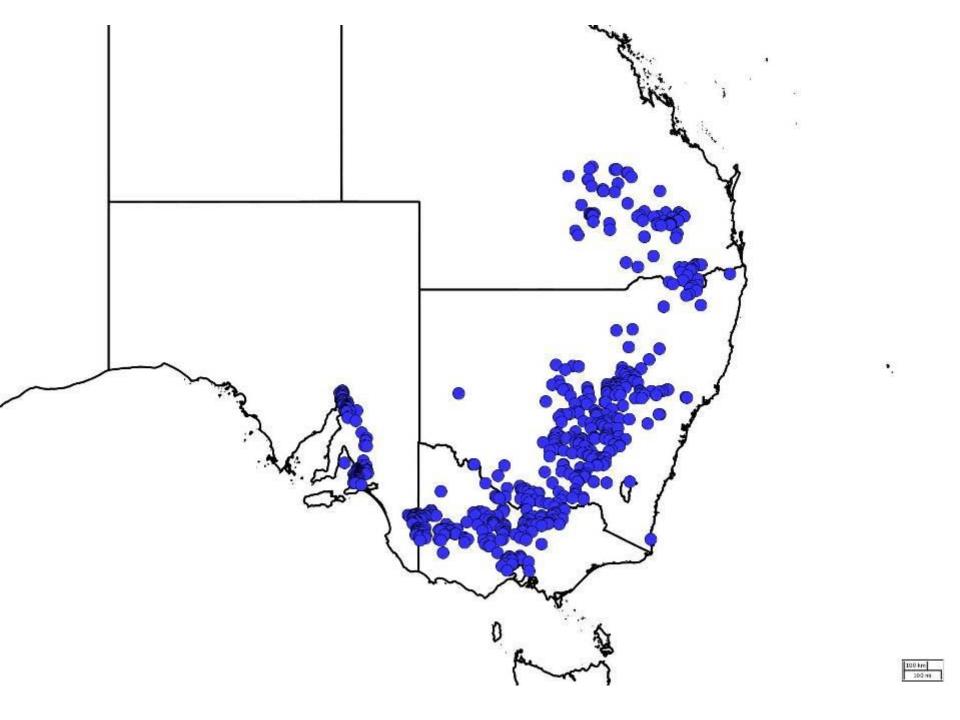
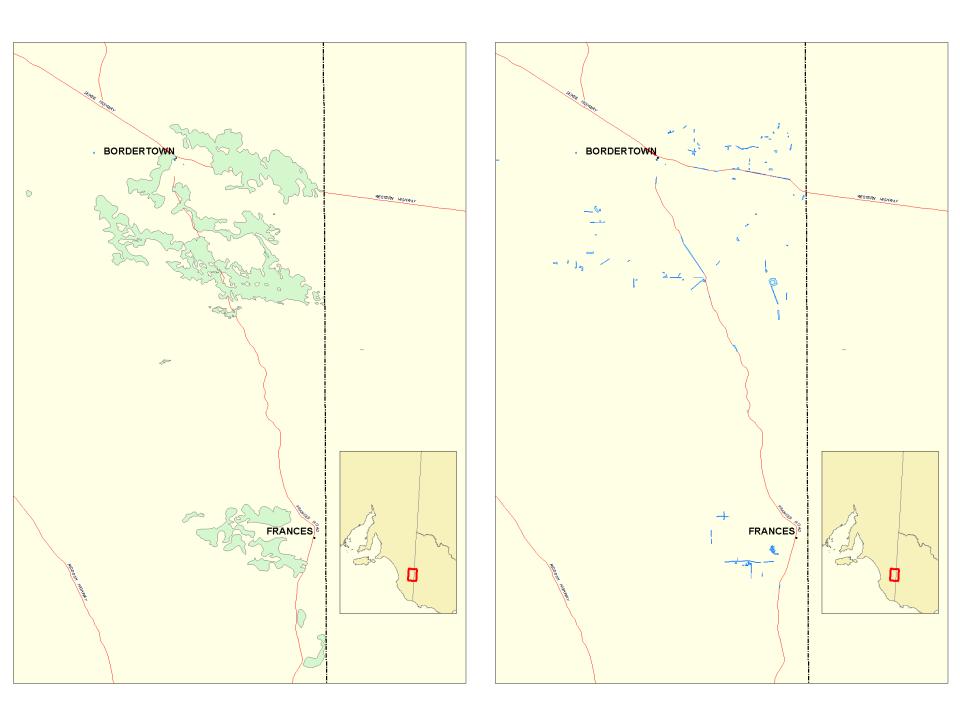
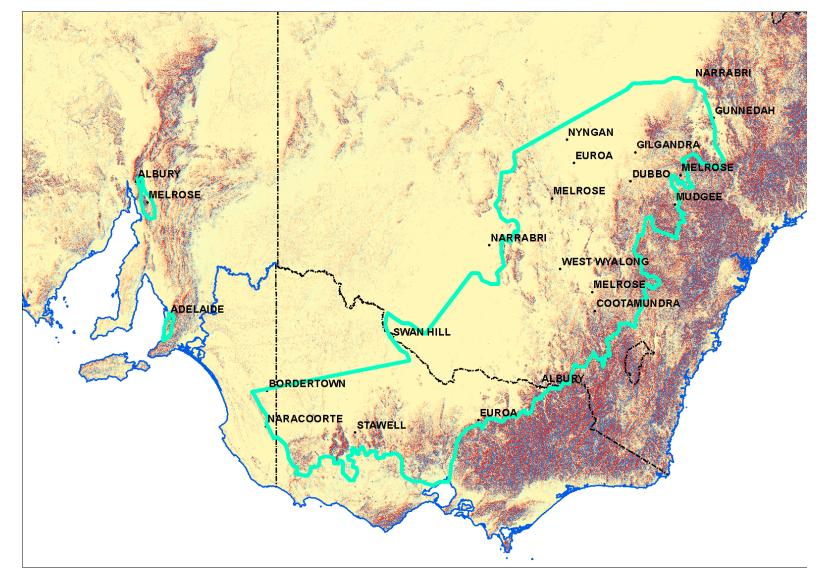
Pros and cons of introducing fire to degraded GBGW and implication for management









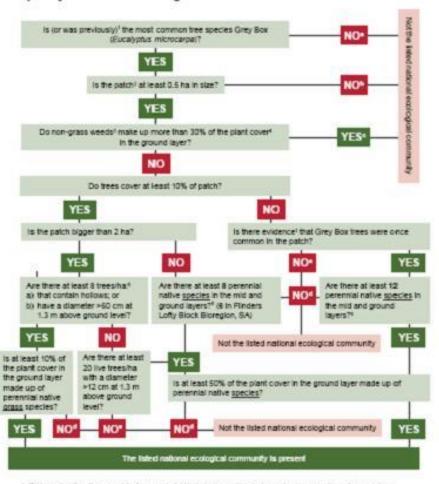


'An ecologically discrete entity'





Flowchart 2: Is the patch of potential Grey Box (*E. microcarpa*) Grassy Woodlands or derived native grasslands of sufficient quality for national listing?



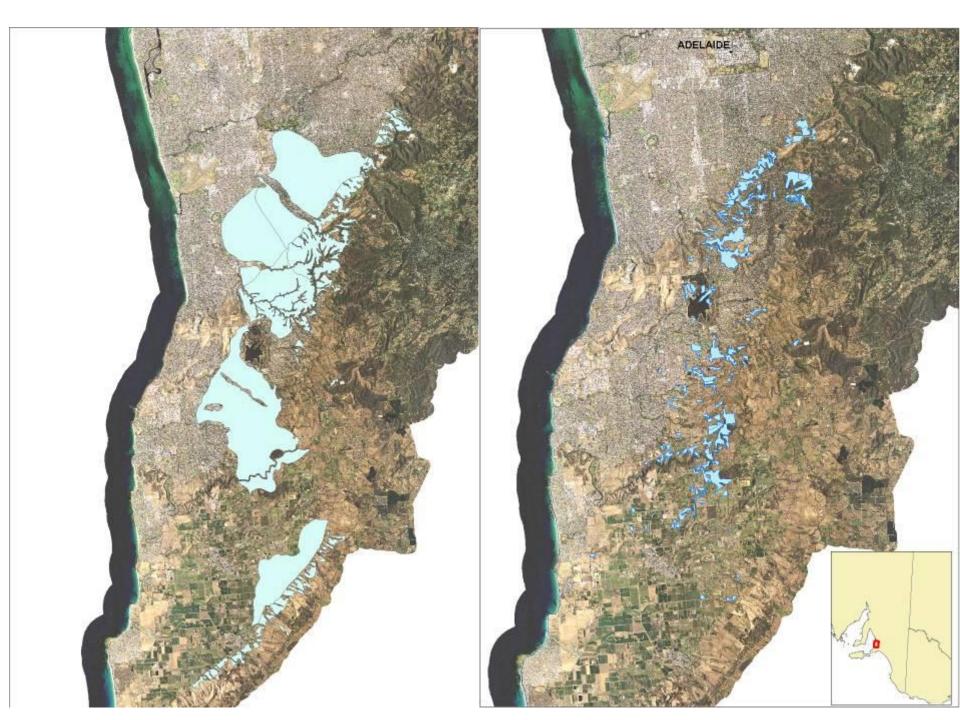
- Evidence Test Crey Box was originally present night include stumps, historical records or presence in nearby vegetation.
- 2. When considering a patch it is important to note that a patch may extend beyond as property or development sits boundary. For this purposes of ordermining whether or insit a patch meets the internum patch size of the condition thresholds for the ecological community, the order patch should be considered, not just the exes occurring on a property or development also.
- 3 A weed to defined here as a pient species, that is not not ve to Australia and the species has entablished viable self-sustaining propulations in a region.
- 4. Pfant cover endudes masses and lichens. Patches of tiere ground or leaf little are also not included.
- 5. Dead tracs are included if present, up to 50% of the total trac count.
- 6 Relevant growth-forms to include one, grainers, other grammolds, forbs and strubs less than 4 metres tell. Shrubs that are 4 metres or more in height and non-vascular plants (mostes and futhers) are not included.

Why does my patch not belong to the batted national ecological community? a Patch belongs to a different ecological community, is Patch belongs to a different ecological community, is Patch in too small, a Degraded by patch is too weakly of Degrades be interested by the patch by the patch of the three And insufficient readies cover in ground layer. Pointabilitation work may be able to readors degraded patches enough to qualify as the lated community.









Grey Box Grassy Woodlands in AMLR

- Approximately 10% of estimated pre-European extent remaining
- Much of what remains is in a degraded state
- Highly fragmented
- Variable and somewhat atypical compared to main SE Australian distribution





- Much of the current AMLR extent occurs in a peri-urban setting
- Implications for fuel management
- All of the burns discussed were fuel management burns
- Implications of introducing fire in GBGW poorly understood



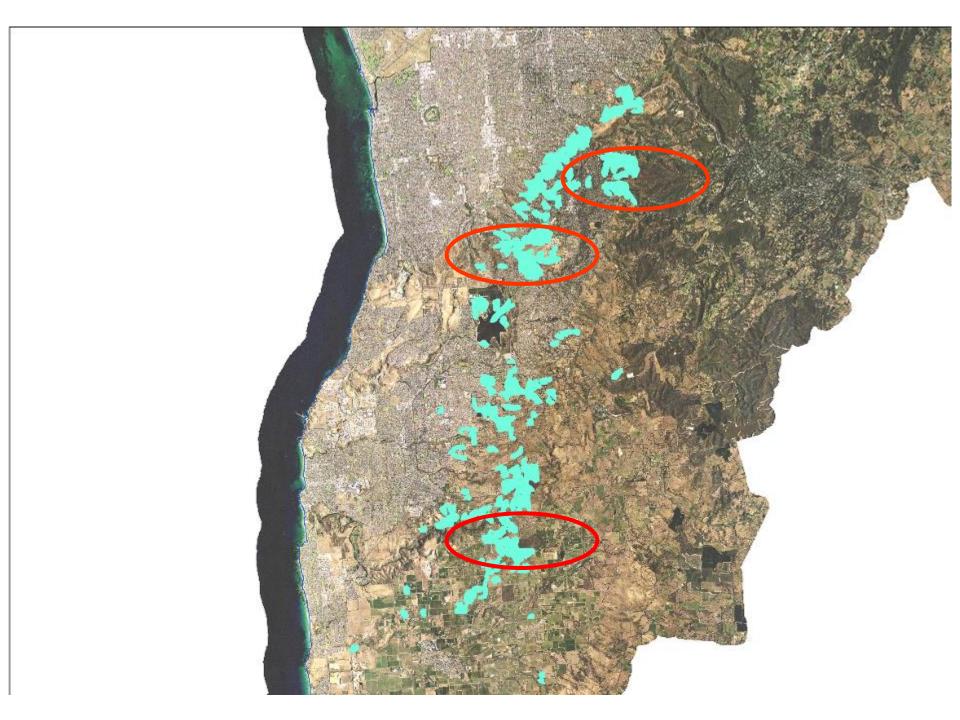


Perceptions

- Prober et al.
- Basalt Plains Themeda



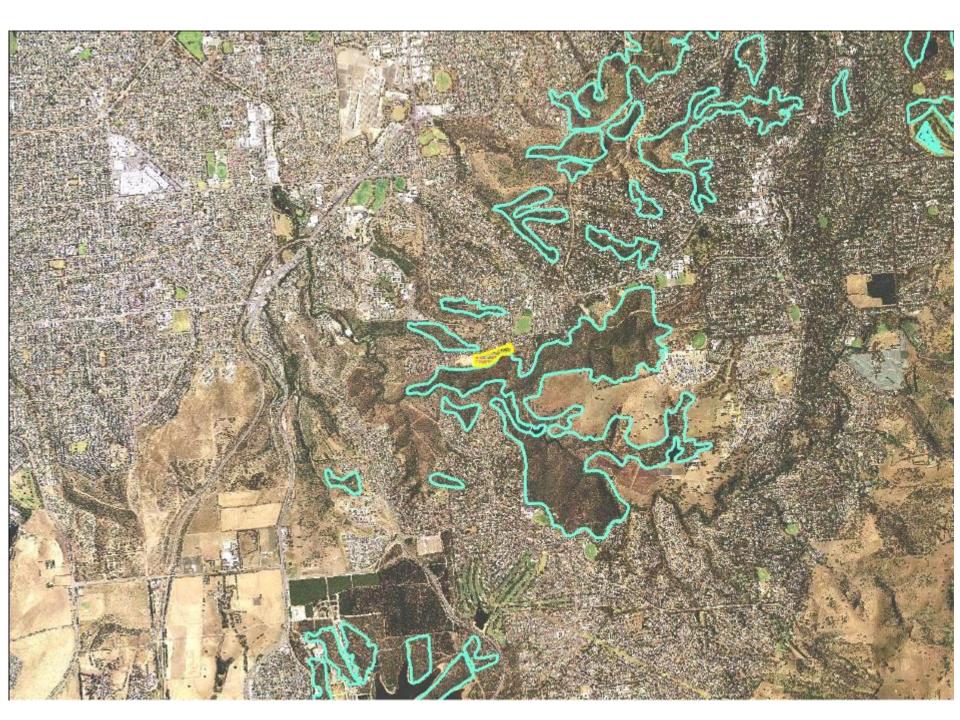


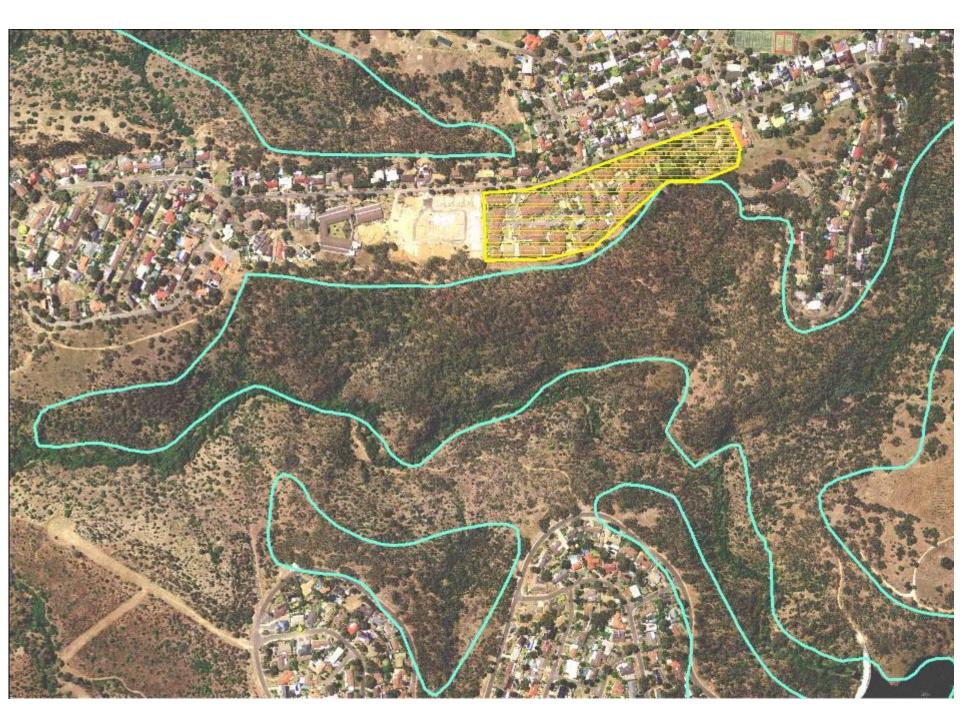










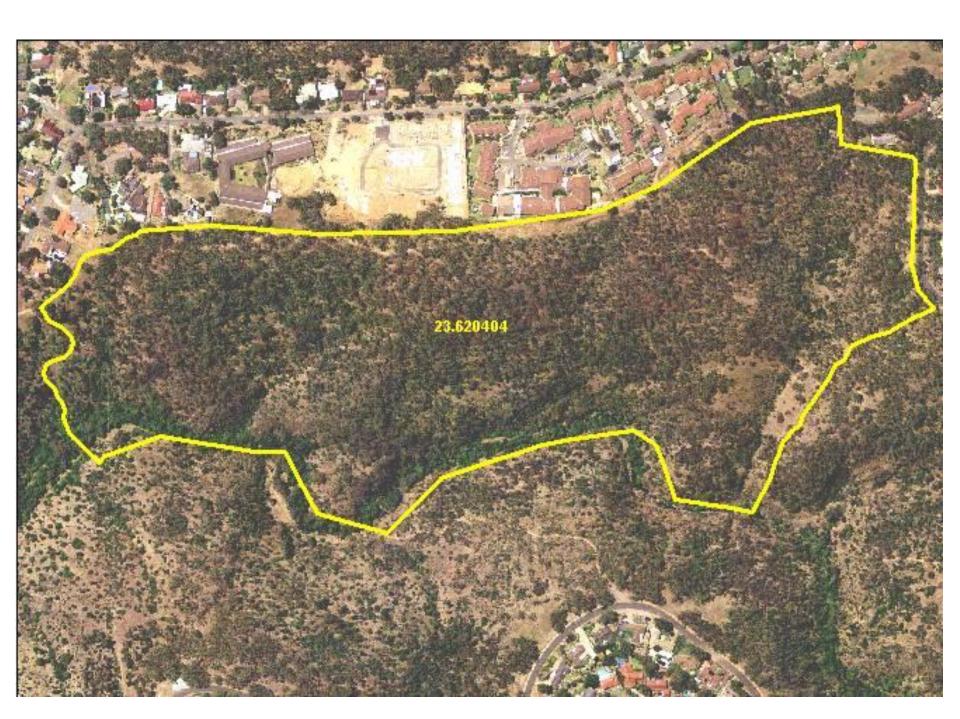


Resthaven Bellevue Heights

- 55 high care and 44 low care residents
- 65 independent retirement living units
- High care residents present challenges in event of evacuation







Hypotheses

- The condition of degraded GBGW will not deteriorate as a result of single fire
 - Native understorey cover will not decrease relative to weed cover
 - > Native species diversity will not decrease
 - Weed species diversity will not increase





Hypotheses cont....

 The pre- and post-fire difference in native understorey cover and diversity will not differ between sites in 'good' condition compared to those in a more degraded condition



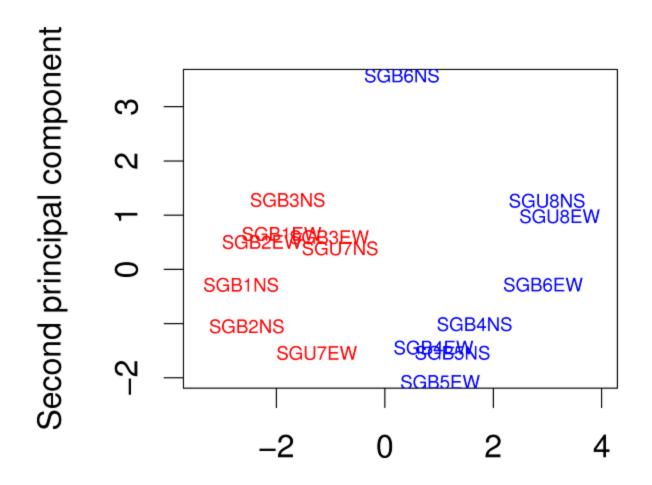


Design

- Before After Control Impact
- Eight sites in total
- Three 'good' and three 'poor' burnt sites
- Two control (unburnt) sites; one 'good' and one 'poor'











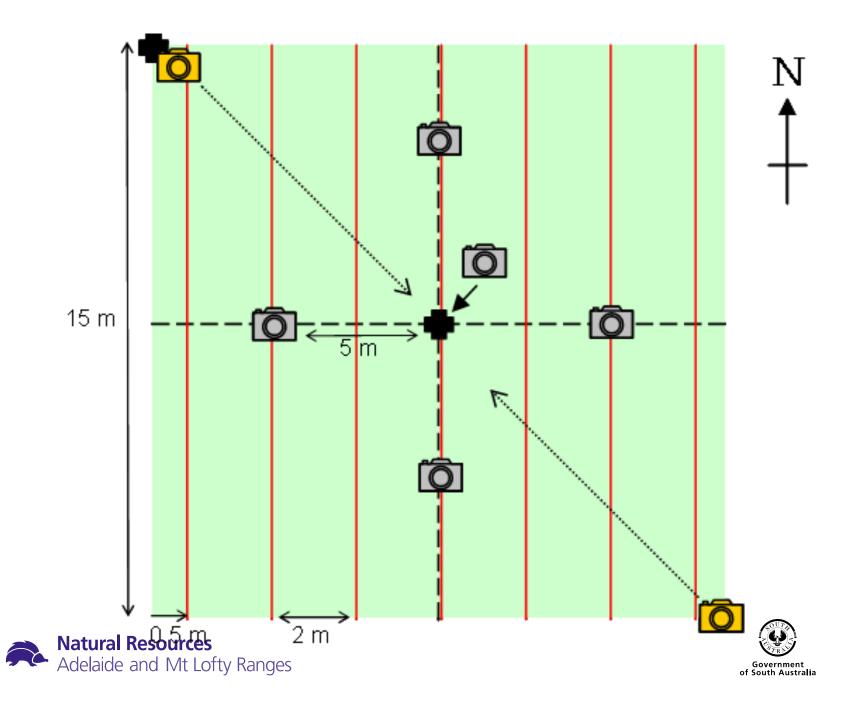


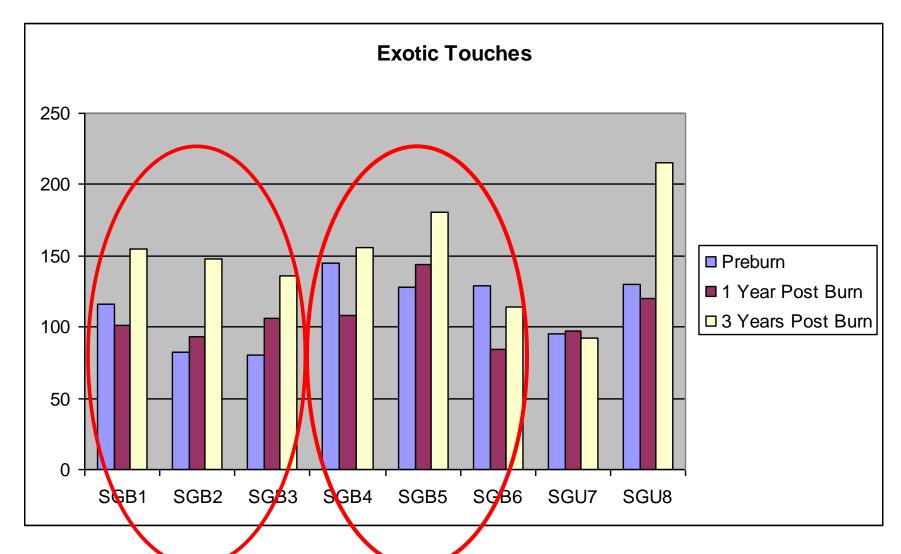
Methods

- 15 x 15 metre quadrats
- Line intercept method to measure native and exotic ground cover
- Two transects at each quadrat
- All species touching a metal 'pin' (2.5 mm diameter) at 25 cm increments along the tape were recorded



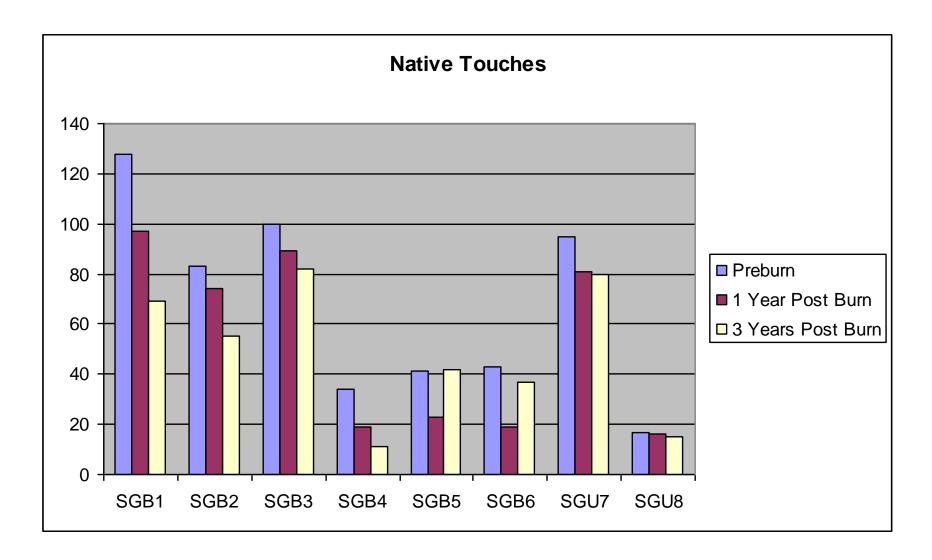








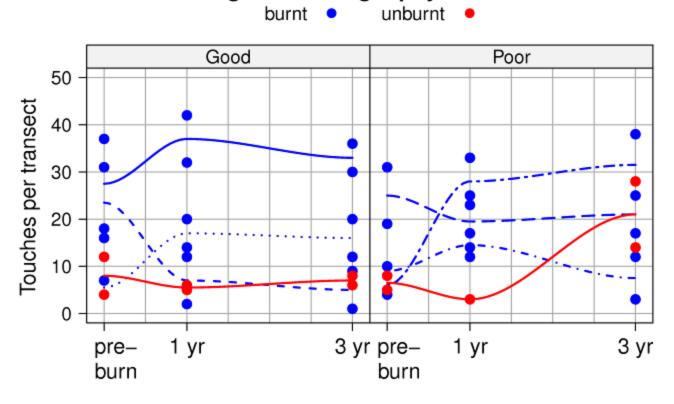








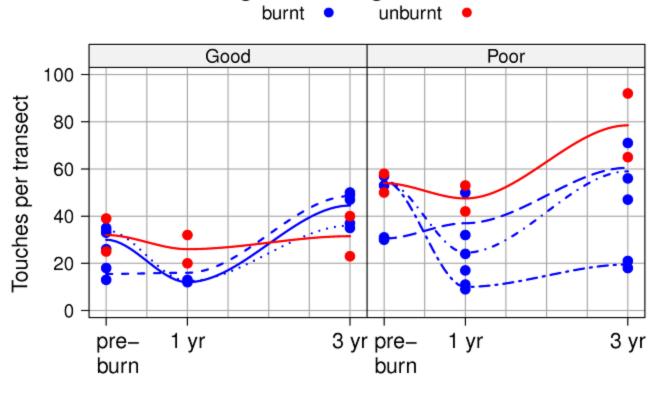
Change in exotic geophyte cover







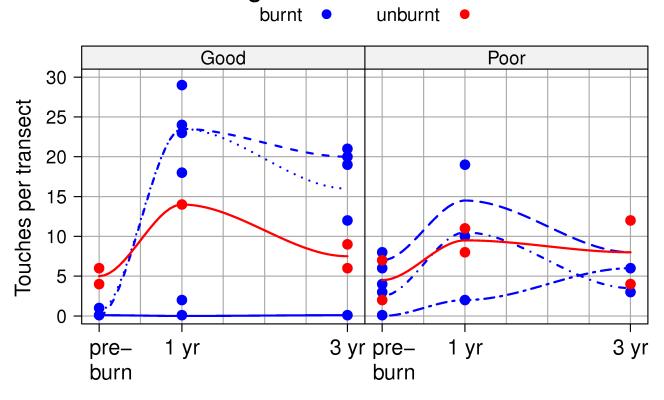
Change in exotic grass cover







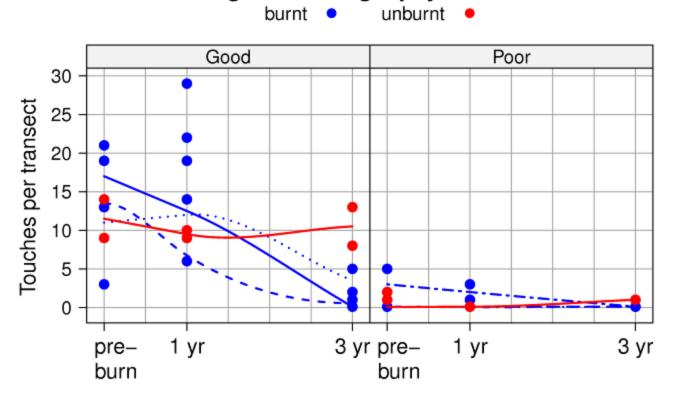
Change in exotic herb cover







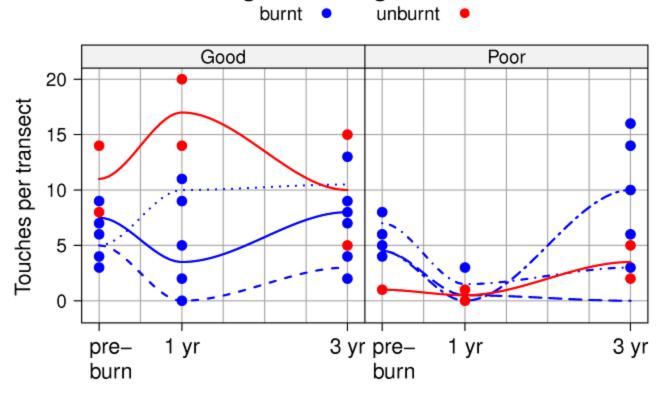
Change in native geophyte cover







Change in native grass cover







Trends against hypotheses

- Native understorey cover will not decrease relative to weed cover?
 - Decreasing trend in native geophytes
 - > Increasing trend in exotic herbs
 - Increasing trend in exotic grass cover





Trends against hypotheses cont...

 The pre- and post-fire difference in native understorey cover will not differ between sites in 'good' condition compared to those in a more degraded condition?





Trends against hypotheses cont...

- Decrease in overall native cover sustained at three years post-fire in 'good' burnt plots
- Increase in overall exotic cover pronounced in 'good' plots



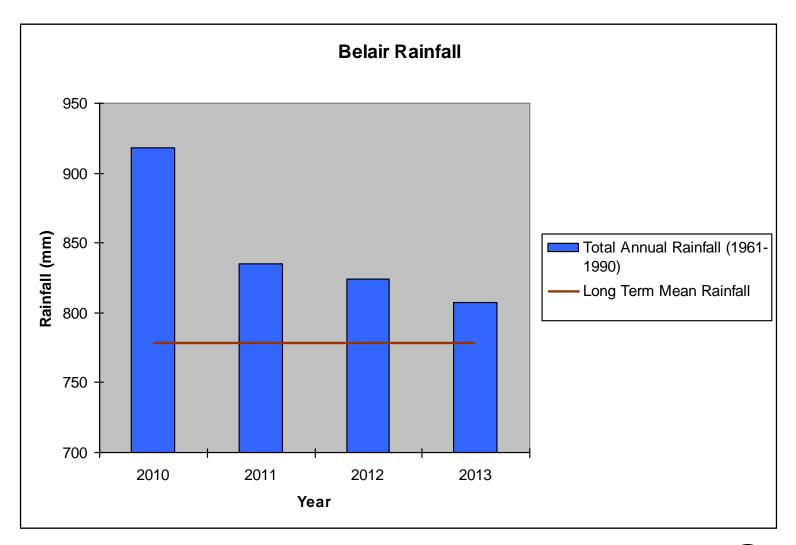


Limitations

- Season pre-burn and first post-burn surveys undertaken in La Niña period (2010 – 2011)
- Unburnt plots show weaker trends but in the same direction for some lifeforms?
 - eg exotic herbs (favourable growth and reproductive conditions?)
 - Marked increase in exotic grasses and exotic geophytes in unburnt 'poor' site?



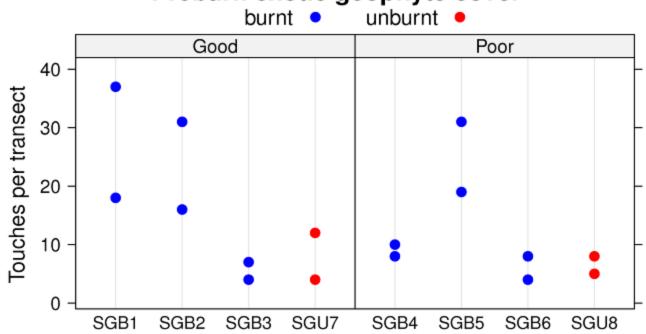








Preburn exotic geophyte cover

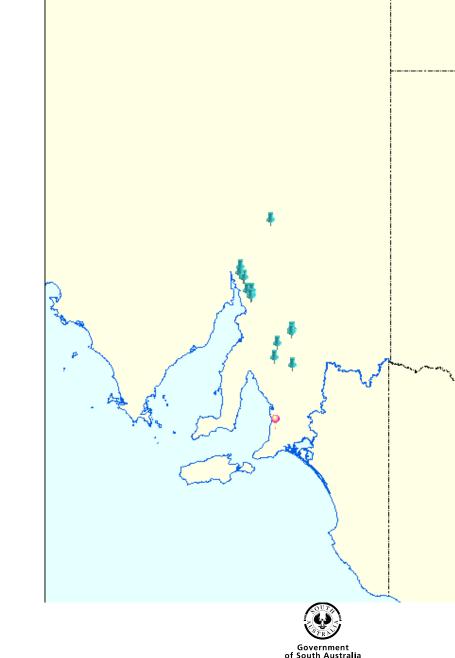






On the side.....

 2013 resulted in the first ADHERB specimen of Festuca benthamiana from Southern Lofty!





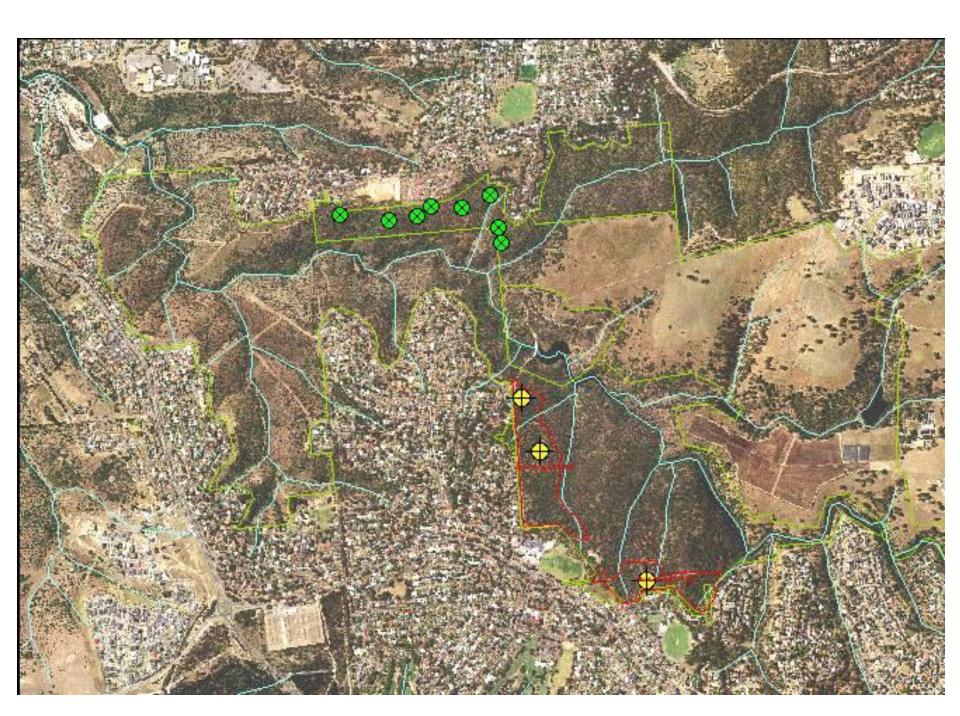
'EPBC Act' monitoring

- Associated with a referral under the EPBC Act
- Designed principally to detect changes against pre-determined condition criteria
- Focused on two prescribed burns in GBGW
 - Belair S11
 - > Sturt Gorge S11 B2









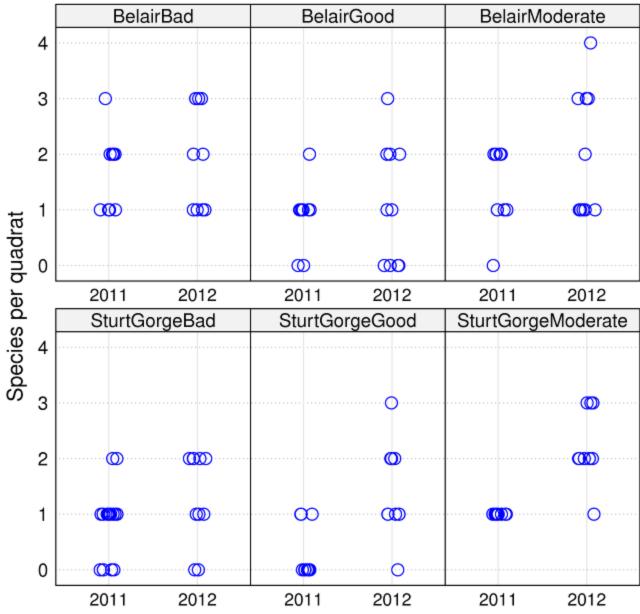
Design and Methods

- Three quadrats in each of the two burns, notionally stratified into 'Good', 'Moderate' and 'Bad' condition
- 20 x 20m quadrats
- Ten (or more) 1 x 1m randomly selected plots within each quadrat
- Species presence recorded within each 1 x
 1m plot, along with visual cover estimates





Exotic geophyte species richness







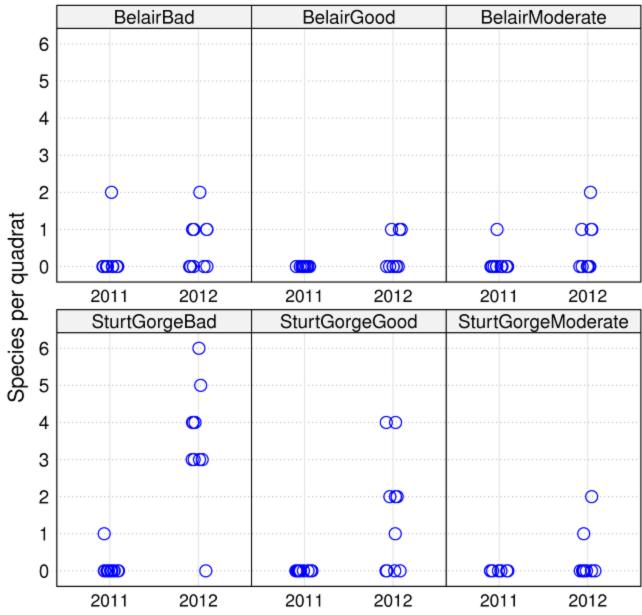
Exotic grass species richness







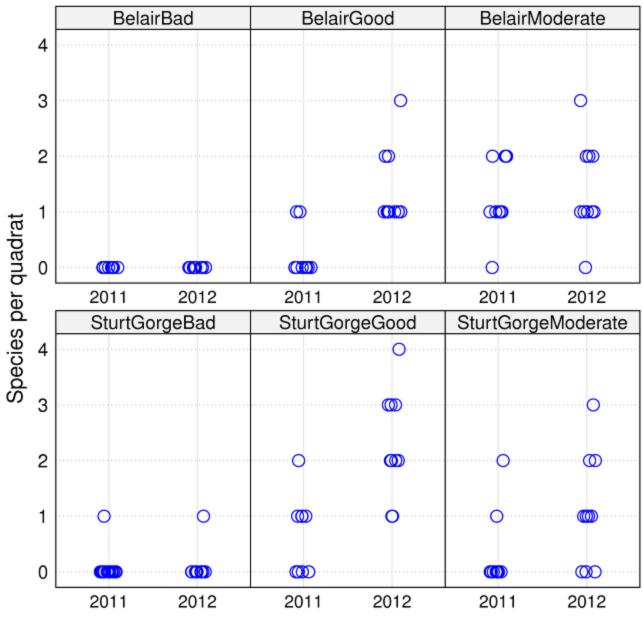
Exotic herb species richness







Native geophyte species richness







General Trends

- Texotic geophyte richness
- Texotic herb richness
- * native geophyte richness





What does this mean?

- There is little evidence of positive trends in native lifeforms and some evidence for increases in key exotic lifeforms
- In better condition sites trends are more pronounced
- Contrary results between the two study methods: a pronounced increase in exotic geophyte richness but little change in cover.













Observations cont...

- 'Curing' in grasslands means that GBGW burns have been undertaken in early summer
- Which means that annual exotic grass seed load has well and truly dropped





Prober et al.

- Found that spring burning led to a substantial decline in annual exotic grasses and an increase in broad-leaf annuals
- Postulated that decrease in annual grass may be due to transient or short-lived seed banks
- Found little evidence for increased native grass cover in unseeded plots
- Some C₃ grasses declined in response to burning





Prober et al.

Burn treatment 3 x 2-m plots

Burnt in mid-October using a gas powered

weed burner













Government of South Australia









Biodiversity gains?

- Winners and losers
- Short-term loss of habitat vs mediumterm recruitment of seeding shrubs?
- Native vs exotic geophytes
- Sturt 'Good' full of Ehrharta etc but still high in native richness?





Management Implications

- Mechanical treatment of woody shrubs, including natives, in A- and B-zones preferred
- Well-timed brushcutting and slashing in Azones to reduce annual grasses and change the fuel arrangement
- Experimenting with burning in early- to midspring?





Acknowledgements

- Kirstin Abley
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- Mandy Slipper
- Marcus Pickett





Natural Resources Adelaide and Mt Lofty Ranges

Thank you for your participation



