

# Two complementary methods measure recovery of a degraded landscape in central Australia

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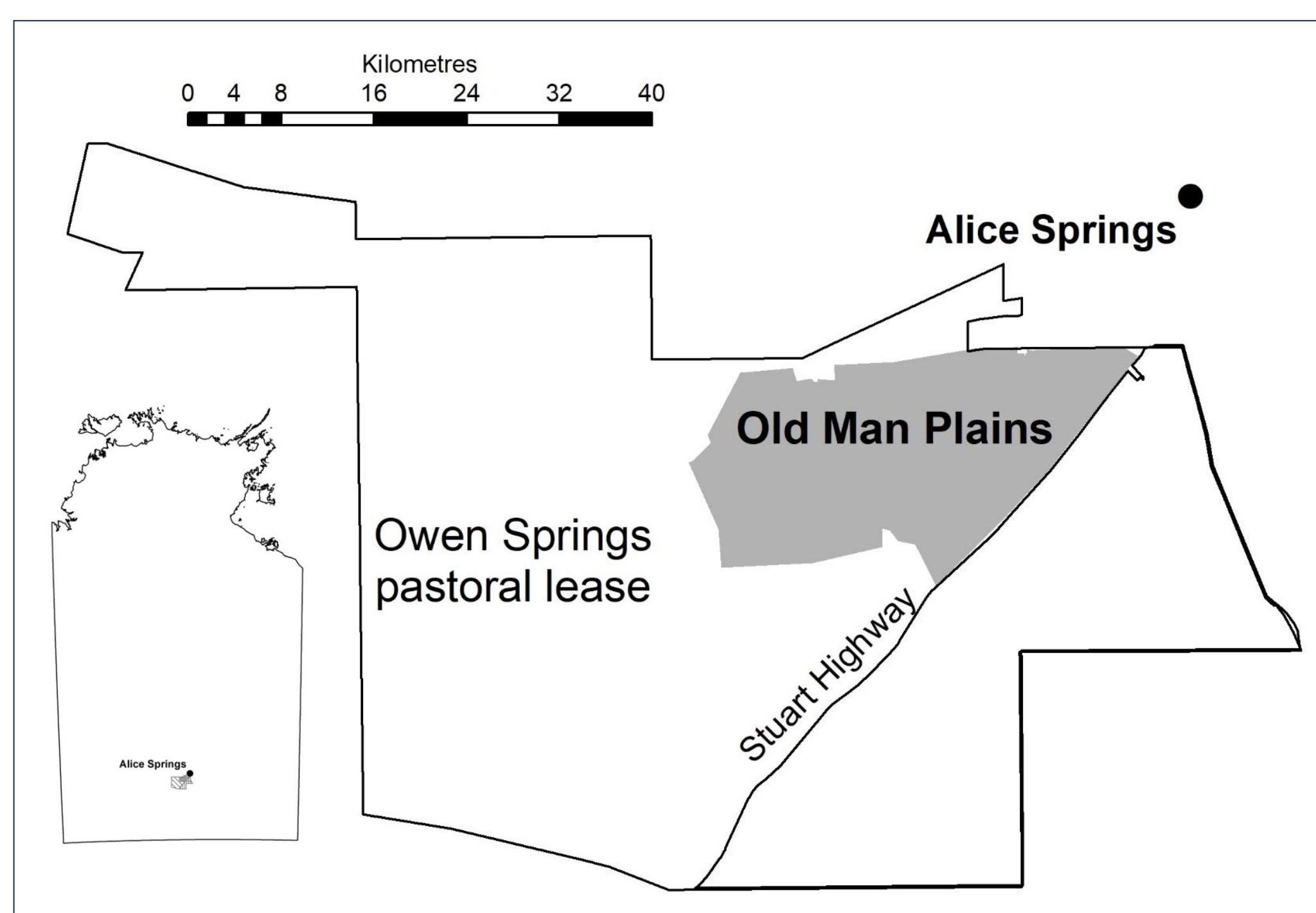
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## Summary

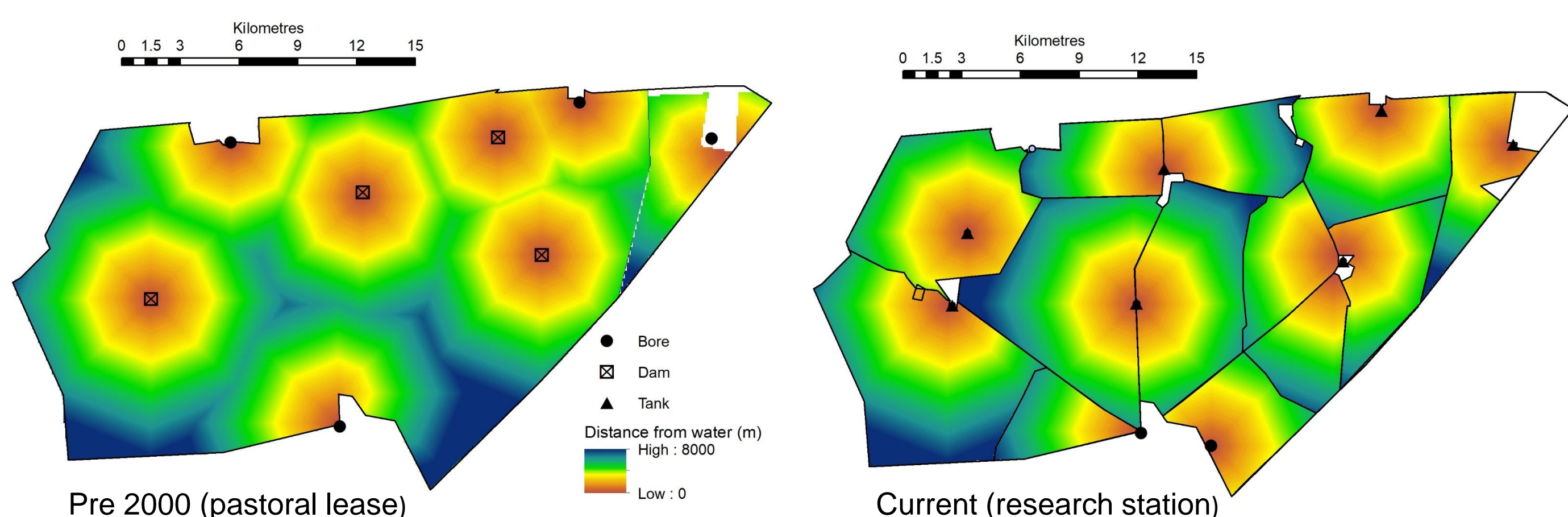
Retrospectively analysing vegetation dynamics in the driest and wettest years increases our ability to quantify grazing impact. Two remote sensing methods developed by CSIRO in Alice Springs have quantified grazing-related improvement in land condition on Old Man Plains Research Station in the southern NT.

## Old Man Plains

Owen Springs pastoral lease established in the 1870s. The lease resumed by NT Govt in 2000 and destocked. Old Man Plains restocked between 2004 and 2006.



### Distance from water



### Calcareous shrubby grasslands

Pre 2000, heavily grazed by cattle, rabbits and, at times, feral horses. Rabbit haemorrhagic disease arrived in 1996.

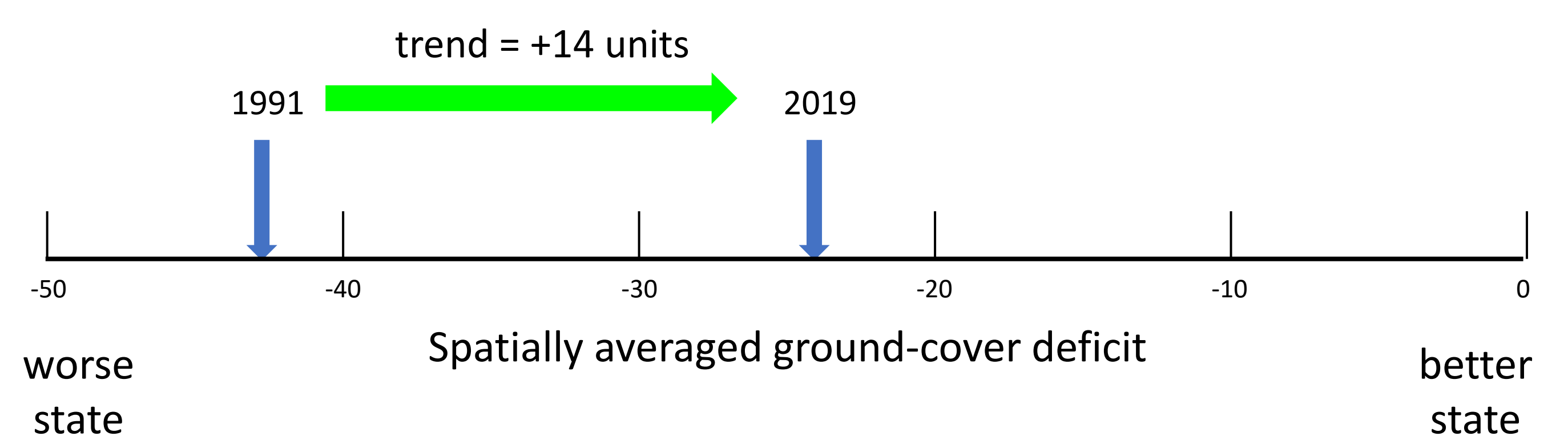
Cattle numbers (animal equivalents) in research paddocks now about one third of the estimated former stocking rate.



## Remote sensing methods

### Dynamic Reference Cover Method (DRCM):

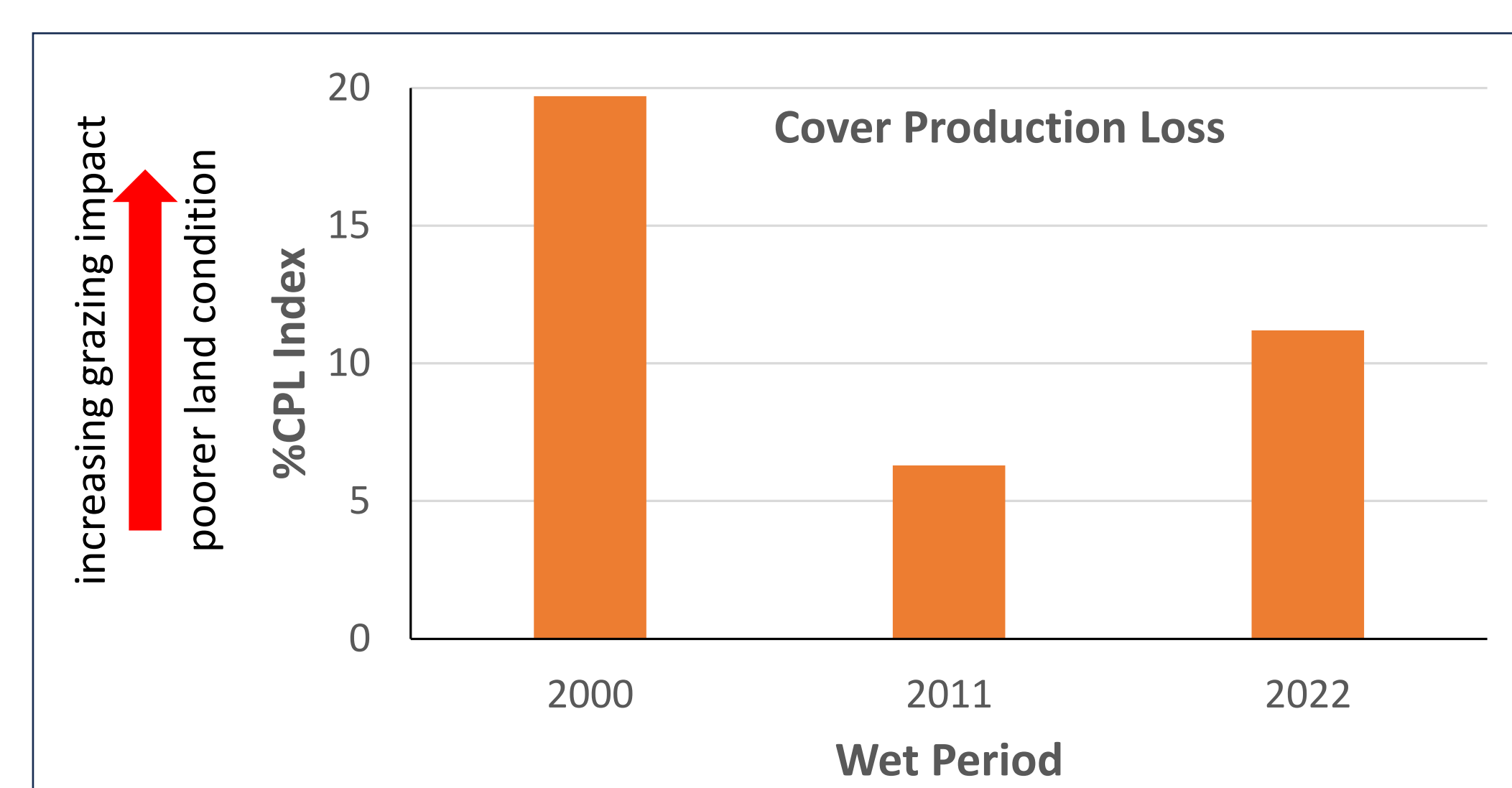
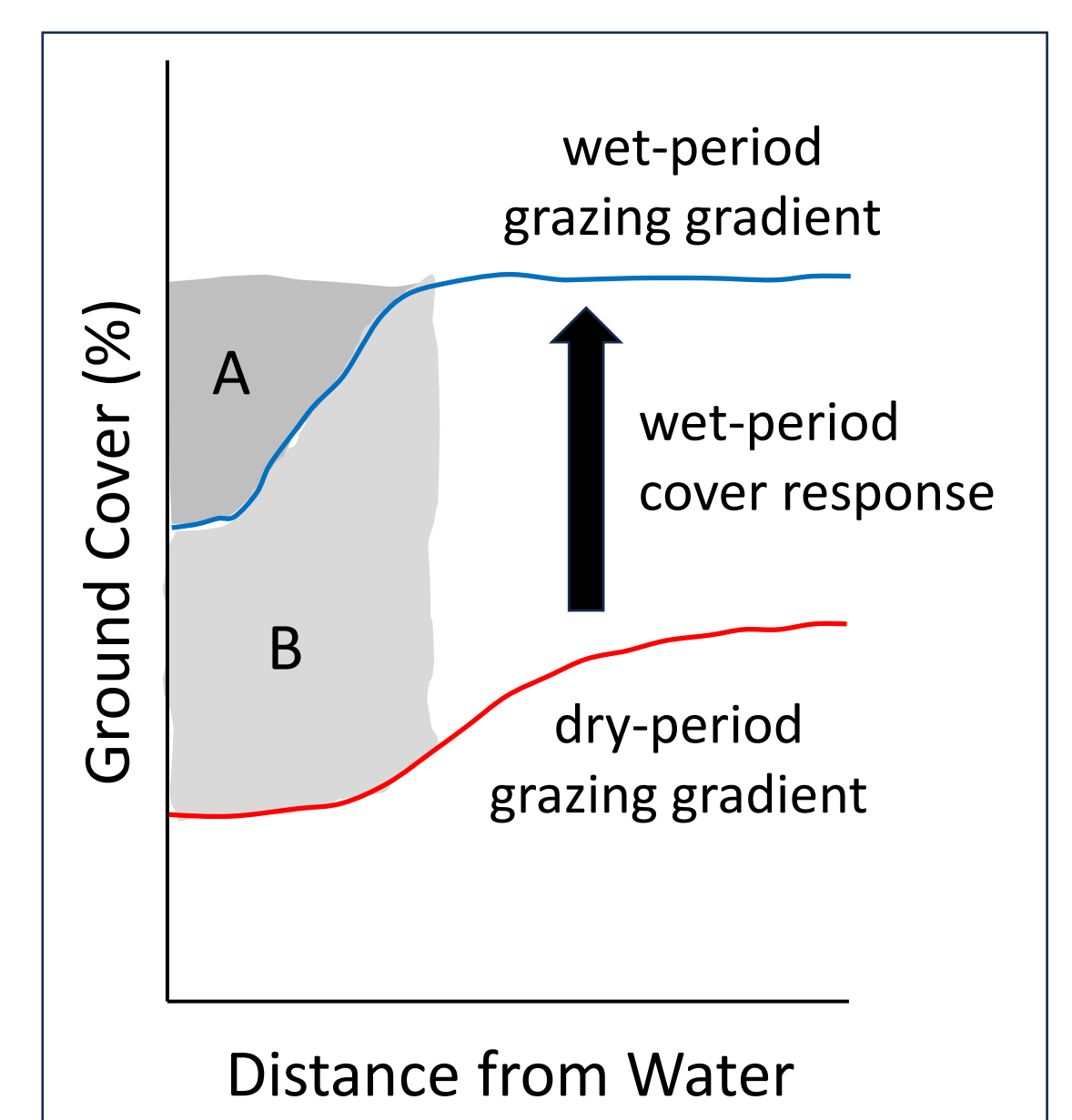
- Apply in dry / drought years.
- Automatically calculates expected (reference) cover. Difference between actual & reference cover is ground-cover deficit.
- Trend due to grazing = change in cover deficit over time.
- Cover deficit potentially confounded by landscape heterogeneity but trend reliably calculated.



### Grazing Gradient Methods & Cover Production Loss (%CPL):

- Apply after very wet years.
- Ground cover response following above-average rainfall.
- Requires large paddocks and stable waterpoint locations.

$$\%CPL = A * 100 / (A + B)$$



## Conclusion

Both methods can assist in objectively judging the long-term sustainability of grazing practices because they can be used in contrasting seasonal conditions.

### Further reading:

Bastin *et al.* (1993) Land degradation assessment in central Australia using a grazing gradient method. *The Rangeland Journal* **15**, 190–216.

Bastin *et al.* (2012) Separating grazing and rainfall effects at regional scale using remote sensing imagery: a dynamic reference-cover method. *Remote Sensing of Environment* **121**, 443–457.

Bastin *et al.* (submitted) Applying two remotely-sensed methods for monitoring grazing impacts in the Australian arid zone. Submitted to *The Rangeland Journal*.