# PhD Research: Using remote sensing to improve vegetation monitoring in the rangelands

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## Project details

In a project supported by Bush Heritage Australia, Angus is exploring the use of remote sensing for assessing changes in vegetation in the rangelands. The main part of his work has been based at Bon Bon Station Reserve and has looked at improving the use of remote sensing (drones and satellite) for vegetation monitoring in a conservation context. This included assessing the use of drones for monitoring, particularly species that can be easily detected from drone imagery, such as Pearl Bluebush.

The next component of Angus’ research will try to identify the key drivers of change that are observed from satellite imagery. This will involve assessing the change in vegetation cover (green and non-green fractions) using mathematical modelling with climatic variables (e.g. rainfall) and other factors such as details on available water points, counts of wild herbivores (DEW aerial surveys), information on stocking rates (where available). The models will identify which factors explain the variation in vegetation change observed from satellite data. Properties such as Bon Bon, that have been managed for conservation and de-stocked since 2008, can be used to assess vegetation change in the absence of stock grazing and provide a useful comparison for validation of the satellite imagery.

## What is needed for this research?

It is clear that the majority of change in vegetation cover through time is due to climatic effects (i.e. rainfall). A smaller amount of variation will be due to other variables, with land management being of particular interest to BHA. To improve the accuracy of these models and understand why vegetation is changing (beyond climatic effects), we need reliable information from the ground.

The data that we would like to access is stocking rates (such as number of stock on each property per calendar year) and any information on water points that are open or closed. These numbers can be used to help us understand the relationship between vegetation cover and land management.

## Desired outcomes

Using this information, we are interested in understanding how the management efforts of BHA at Bon Bon Station Reserve have influenced vegetation cover since the lease was acquired in 2008. Stocking rates from stations nearby to Bon Bon are important in diversifying the extent of our data across various land systems to gain a more complete understanding of these relationships.

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| Comparison of total vegetation cover from satellite images between February 2019 (left) and June 2022 (right). | |