

# Research Briefing Note

Identifying trends in the state of a complex environment - land degradation in non-equilibrium rangelands

**Pickup, G.,** Bastin, G.N. & Chewings, V.H. (1998) *Journal of Applied Ecology* 35: 365-377

## BACKGROUND

Trend is the change over time in the status of the soil and vegetation resource due to factors such as grazing. In the rangelands of arid Australia, trend is very difficult to quantify because of natural variation in rainfall and landscapes. Without a reliable measure of trend, it is difficult to know whether grazed areas are stable, degrading or improving under current management practices.

## AIM

To show how trend in rangeland condition can be identified from changes over time in the pattern of vegetation growth across gradients of differing grazing intensity.

## RESULTS

- A vegetation response ratio was derived by comparing areas less than 4 km from water with benchmark areas further away. Systematic changes in this ratio over time indicated trend.
- Ratio values from test areas suggest decline, improvement and no change in vegetation response consistent with recent management history.
- The method can be applied where the whole area is affected by grazing and relatively pristine benchmarks are unavailable. It could therefore be useful in the semi-arid rangelands where paddocks are smaller than in the arid part of Australia.
- The method is cheaper and more effective than other techniques and increases the capability of grazing gradient-based monitoring schemes for arid and semi-arid areas.

## IMPLICATIONS

A robust and relatively simple procedure is now available to detect trend in the condition of grazed rangelands. The method can be implemented using archived satellite data, meaning that information on trend is immediately available. This is an advantage over monitoring using more traditional ground-based methods where the data need to accumulate over many years before meaningful analyses can be made.

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