

Theses Summaries

Studies in the ecology and control of green turkey bush (*Eremophila gilesii* F. Muell.) in south-west Queensland¹

William H. Burrows

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In the semi-arid mulga (*Acacia aneura*) shrublands of south-west Queensland the presence of unpalatable or little utilised woody weeds over considerable areas of potentially useful grazing land poses a serious threat to land productivity. Chief among these is green turkey bush. This thesis examines some aspects of *E. gilesii* ecology as a contribution to the understanding of shrub dynamics, and as a guide to judicious land use of the region. Ecological aspects which may suggest avenues of control are examined in detail. Some standard chemical and mechanical control techniques are also evaluated.

Population studies over a 5 year period have shown that *E. gilesii* is increasing in density under both light grazing pressure and where stock are excluded. The evidence suggests that the plant is favoured (relative to most grasses) by cool season (March-September) rainfall. Pattern analysis of the vegetation at one site indicated that *E. gilesii* forms mono-specific stands in *A. aneura* scrub. *E. gilesii* was negatively associated with other woody plants, apart from mature *A. aneura* trees and this suggests that after *E. gilesii* is controlled other woody weeds will not necessarily recolonise such habitats.

Ploughing out stands of *E. gilesii* or slashing to ground level were found to be effective means of killing the plant. Many of the common herbicides applied as high volume sprays will also kill this shrub. A 1% a.i. 2,45-T ester-diesel distillate combination is particularly effective.

Grazing management techniques are also suggested to control *E. gilesii* through heavy stocking following cool season rains in excess of 40 mm.

Autecology of annuals in an arid region of Western Australia¹

John J. Mott

Botany Department, University of Western Australia, 1972, pp. 346 Awarded Ph.D.

Growth of the annual plant communities in the arid Murchison region of Western Australia was studied for the years 1969-71. Measurements were made to determine both the population response to environmental changes, and the individual species reaction to habitat in terms of survival and production.

The bi-modal nature of the rainfall in the region produces two distinct annual floras, consisting of predominantly monocotyledons after summer rainfall and mainly dicotyledons after winter falls. A marked spatial distribution was found in the productivity of the annual floras, the run-on areas being more productive than the run-off plains. This was due to higher mortality and lower individual dry matter production in the run-off plains. A small scale patterning of vegetation was also found to occur.

Germination requirements and dormancy effects were studied. Three species, *Helipterum* sp., *Aristida* sp. and *Helichrysum* sp. were selected for more detailed study on germination, establishment, phenology and productivity.

¹This is not the author's summary of his thesis. The reader is referred to the original work for a more complete resume.