VAST–2 - Site-based recording of use and land management and their effects on native vegetation over time

Citation: Thackway, R (2012). Taroom Shire, Brigalow Belt South bioregion Queensland. Ver. 1. VAST–2: tracking the transformation of vegetated landscapes. Australian Centre for Ecological Analysis and Synthesis, University of Queensland, Brisbane.

1. Name of the site/area

Taroom Shire, Brigalow Belt South bioregion, site 1 – cropping

2. Last modified (version no. 1)

July 2013

3. Location of site

State: QLD

IBRAv7 Classification:

Co-ordinates: 25 51'32.05"S, 149 41'17.63"E

4. Area of site

n/a

5. Brief description of the natural undisturbed ecosystem of the site/area

6. Current purpose (2011) of site/area

Cropping. Source: Sarah Butler (PhD)

7. Reference or benchmark vegetation description: pre-clearing or pre-European community

Brigalow, *Acacia harpophylla*, mixed community associated with overstorey several species, including *Eucalyptus coolabah*, *E. cambageana*, *Casuarina cristata*, and a range of understorey species. Grassy woodlands and open forests.

Source description: Sarah Butler (PhD)

8. Brief history of the site/area

1860	Area used for sheep grazing by shepherds.
1870	Permanent fences established
1875	Start of continuous or set stocking with sheep

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1880	Incursion of Prickly pear started
1935	Prickly pear had been destroyed
1929–1932	Land clearance through ringbarking
1929–1932	Gradual increase in cattle numbers decline in sheep
1940-1955	Manual clearing of brigalow with axes issues with regrowth
1960-62	Brigalow pulled mechanically and soil ploughed
1962	Soil ploughed and sown to Buffel grass pasture
1962-65	Continuous grazing with cattle on Buffel grass pasture
1966-75	Soil ploughed and sown to wheat annually – cattle graze stubble
1976	Soil ploughed and sown to Buffel grass pasture
1976-2000	Continuous grazing with cattle on Buffel grass pasture
2001-10	Soil ploughed and sown to wheat annually – cattle graze stubble

9. Proximity to large area of intact and largely intact and unmodified remnant

10. Sources of data and information used to complete description of use and management and their effects on native vegetation over time

A. Nix H.A. (1994) The Brigalow. pp. 198–233 In *Australian Environmental History: Essays and Cases* (Ed. S. Dovers) Oxford University Press, Melbourne.

B. Butler, S. (2013) Exotic pasture grass invasion of fragmented ecosystem: a Brigalow case study. Unpublished PhD thesis, University of Queensland. Field data for the property (Wanaringa)

C. Inferred by Richard Thackway

D. Seabrook L., McAlpine C. and Fensham R. (2006) Cattle, crops and clearing: Regional drivers of landscape change in the Brigalow Belt, Queensland, Australia, 1840–2004. *Landscape and Urban Planning* 78(4): 373-385.

E. Johnson R.W. (1968) Brigalow clearing and the control of regrowth. *Tropical Grasslands* 2:115-118

F. Anderson E.R. (1984) The native woody weed problem following Brigalow development pp.183-192 In *The Brigalow Belt of Australia* (Ed. A. Bailey). Published for the Royal Society of Queensland by the Queensland Department of Primary Industries, Brisbane (DPI Conference & Workshop Series QC84003).

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Description of use and management and their effects on native vegetation over time

Approx. Year	Source	Land use (ALUM[1])	List of LU[2] and LMP[3]	Source LMP	Observed effects and consequences on ecological function and native vegetation structure, composition and regeneration	Source Effects
1788	C	Managed resource protection 1.2.0	Indigenous land management	A	Regenerative capacity maintained. Land surface soft, spongy, absorbent nature A fire regime	A
1840	A	Managed resource protection 1.2.0	Indigenous land management	A	Regenerative capacity maintained. Land surface soft, spongy, absorbent nature	A
1860	A	Managed resource protection 1.2.0	Sheep grazing with shepherds. A fire regime ceased Sheep kept on unfenced properties often over 100,000 ha in size	A		
1870	D	Grazing native vegetation 2.1.0	Permanent fences established	D		
1875	B	Grazing native vegetation 2.1.0	Start of set stocking with sheep Decline in sheep numbers probably due to overgrazing of palatable grass (Seabrook et al (2006)	D	Palatable grassed overgrazed	D
1880	A	Grazing native vegetation 2.1.0	Incursion of Prickly pear started	A	Soils had become compacted, broad drainage floors were cut with gullies, soft native grasses were replaced with harsh, wiry native grasses, waterholes and lagoons were lost to silting, woody shrubs and trees were encroaching in the grassy woodlands and open forests, and exotic /weeds were invading. (Nix, 1994). soft native grasses were replaced with harsh, wiry native grasses woody shrubs and trees were encroaching in the grassy woodlands and open forests Prickly pear rapidly became dominant strata	A

[1] ALUM = Australian Land Use and Management classification
[2] LU = Land use
[3] LMP = Land or vegetation Management Practice

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Approx. Year	Source	Land use (ALUM[1])	List of LU[2] and LMP[3]	Source LMP	Observed effects and consequences on ecological function and native vegetation structure, composition and regeneration	Source Effects
1885	A	Grazing native vegetation 2.1.0	Attempts to control spread of Prickly pear	A	Prickly pear dominant strata Prickly pear … was spreading through scrubs the southern half. This did cause some apprehension but it would be fair to say that initial concerns were muted because the invasion was very largely confined to Brigalow and related scrubs that had limited grazing value anyway.	A
1901	A	Grazing native vegetation 2.1.0	Living with Prickly pear	A	Prickly pear the dominant strata There has been a gradual deterioration of the country caused by stock which has transformed the land from its original soft, spongy, absorbent nature to a hard clayey, smooth surface (more especially on the ridges) which, instead of absorbing the rain, runs it off in a sheet as fast as it falls, carrying with it the surface mould, seeds of all kinds of plants, sheep manure, sand etc., to enrich the lower lying country and plant it with pine, box and other noxious shrubs. Soil surface changed from its original soft, spongy, absorbent nature to a hard clayey, smooth surface (more especially on the ridges) Surface run off and little infiltration a major problem .	A
1901	D	Grazing native vegetation 2.1.0	Federation drought started	D		
1902	D	Grazing native vegetation 2.1.0	Federation drought ended - effectively halved livestock numbers (Queensland Government, 1902)	D		
1930	C	Grazing native vegetation 2.1.	Visual impacts of Cactoblastis moth on Prickly pear first observed	C		
1932	D	Grazing native vegetation 2.1.0	Gradual increase in cattle numbers (Land Administration Commission, 1968)	D	Impacts of cattle grazing on native vegetation structure and composition compared to sheep?	C
1934	D	Grazing native vegetation 2.1.0	Massive death of Prickly pear caused by Cactoblastis moth. Prickly pear destroyed	D		
1935	D	Grazing native vegetation 2.1.0	Commenced manual land clearance started using ringbarking with an axe – to open up understorey and promote growth of native grasses for cattle grazing Cattle grazing –continuous or set stocking	D	Cover of large trees dramatically reduced. Stimulated a moderate Brigalow sucker regrowth problem.	C

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Approx. Year	Source	Land use (ALUM[1])	List of LU[2] and LMP[3]	Source LMP	Observed effects and consequences on ecological function and native vegetation structure, composition and regeneration	Source Effects
~1940	C	Grazing native vegetation 2.1.0	Continued manual land clearance started using ringbarking with an axe – to open up understorey and promote growth of native grasses for cattle grazing Fire Cattle grazing –continuous or set stocking	C	Sucker density of 1235-2470 /ha will seriously retard pasture production within 5 years of clearing	E
~1950	C	Grazing native vegetation 2.1.0	Continued manual land clearance started using ringbarking with an axe – to open up understorey and promote growth of native grasses for cattle grazing Fire Cattle grazing –continuous or set stocking	C	Numerous woody weeds (invasive native species) observed in regrowth e.g. Brigalow, Cassia spp, Terminalia, Eremophila, Heterodendrum, Eucalyptus,	F
1960	D	Grazing native vegetation 2.1.0	Ceased using ringbarking to clear trees	C	Mature trees ring barked along water courses i.e. alluvial open eucalypt woodlands in Seabrook et al (2006)	D
1961	B	Grazing native vegetation 2.1.0	Brigalow first mechanically cleared – pulled and blade ploughed	B	All trees and shrubs removed	C
1961	A	Grazing native vegetation 2.1.0	Brigalow pulled with bull dozers and ball and chain	A		
1961	A	Grazing native vegetation 2.1.0	Area blade ploughed	A	Roots of most trees and shrubs severed – resulting in death	C
1961	A	Grazing native vegetation 2.1.0	Pulled Brigalow windrowed	A		
1961	A	Grazing native vegetation 2.1.0	Grass fuel allowed to develop	A	Native grasses develop a dense sward	C
1961	A	Grazing native vegetation 2.1.0	Intense fire used to burn paddock	A	Almost all litter and remaining woody debris removed	C
1961	A	Grazing native vegetation 2.1.0	Fire used to burn piles brigalow	A	Impact on soil structure? Impact on soil compaction? Impact on soil biota?	C
1962	C	Grazing native vegetation 2.1.0	Soil prepared for planting Buffel grass	C		
1962	C	Grazing native vegetation 2.1.0	Fertiliser added? Weed killer used? Ploughed to a depth of 20 cm?	C		
1962	B	Grazing modified pastures 3.2.0	Cattle grazing commenced on exotic pasture – Buffel grass Continuous grazing with cattle	B	Native grass species unable to compete with Buffel?	C
1966	C	Cropping 3.3.0	Soil prepared for planting wheat	B		
1966	C	Cropping 3.3.0	Fertiliser added? Weed killer used? Ploughed to a depth of 20 cm?	C		

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1967	B	Cropping 3.3.0	Started annual cereal cropping - wheat Prior to sowing annual wheat: Sprayed for common weeds Soil fertilised due to poor soil magnesium	B		C
1967	C	Cropping 3.3.0	Annual ploughing, fertilising and sowing for wheat crop	C	Isolated and scattered establishment of seedlings of native trees, shrubs and grasses	C
1974	B	Cropping 3.3.0	Cattle observed to grazed around suckers Regrowth pulled and/or blade ploughed to keep Brigalow suckers at bay Regrowth pulled and blade ploughed every 10 years	B	Brigalow regrowth suckers developed	B
1975	B	Cropping 3.3.0	Ceased cereal cropping – wheat	B		
1976	C	Grazing modified pastures 3.2.0	Soil prepared for planting Buffel grass	C		
1977	C	Grazing modified pastures 3.2.0	Cattle grazing recommenced on exotic pasture – Buffel grass Cattle grazing – set stocking	B		
2000	B	Grazing modified pastures 3.2.0	Regrowth pulled and blade plough	B	Presence (structure and composition) of native trees, shrubs and grasses expected to be rare – except for Brigalow?	C
2000	B	Cropping 3.3.0	Recommenced cropping – wheat Soil prepared for planting Fertilised due to poor soil magnesium Common weeds sprayed	B		
2010	B	Cropping 3.3.0	Continued cropping	B		

11. Data Use and Accuracy Disclaimer

12. License

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Attachment 1

Reliability standards used to compile historic and contemporary site-based chronologies.

Reliability level standards	Spatial precision (Scale)	Temporal precision (Year of observation)	Attribute accuracy (Land use, land management practices, effects on condition)
HIGH "Definite"	Reliable direct quantitative data. Examples: Site, plot and transect based records. **Code: 1**	Reliable direct quantitative data. Examples: Day-month-year, season-year and year. **Code: 4**	Reliable direct quantitative data. Examples: Inventory and counts, recorded observations from field survey and monitoring, farm records **Code: 7**
MEDIUM "Probable"	Direct (with qualifications) or strong indirect data. Examples: Land unit and soil-landscape reports. **Code: 2**	Direct (with qualifications) or strong indirect data. Examples: Mid 1850s **Code: 5**	Direct (with qualifications) or strong indirect data. Examples: Reconnaissance surveys, medium and moderate resolution remote sensing, regional mapping **Code: 8**
LOW "Possible"	Limited qualitative and possibly contradictory observations. More data needed. Examples: Land system, sub-bioregion and bioregion reports. **Code: 3**	Limited qualitative and possibly contradictory observations. More data needed. Examples: Early 1800s and first half of 19th century. **Code: 6**	Limited qualitative and possibly contradictory observations. More data needed. Examples: Generalised descriptions and narratives, census-based surveys **Code: 9**

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