

final report

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Sustaining land for beef production in the Gladstone / Bororen coastal lowlands area

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Introduction

This report contains management guidelines for a beef property typical of the Gladstone/Bororen area. The guidelines are for sustainable beef production. Sustainable production is defined as production which optimises profit with minimal degradation of the natural resources.

The Gladstone/Bororen area is located south of Gladstone which is in the Calliope Shire, Central Queensland (see map page 3).

This document contains a description of land-types in the Gladstone/Bororen area, their vegetation, topography, soils, pastures, production capacity and condition. The report also describes suitable enterprises, cattle management and grazing-land management. Stocking rates and property sizes are suggested as guidelines for sustainable beef production. A list of common and scientific plant names is included as Addendum 1 to ensure accurate plant identification.

This information was provided in 1992 by a group of 10 producers each of whom had at least 10 years experience of beef property management in the Gladstone/Bororen area.

These guidelines were developed by using a process called the Local Consensus Data (LCD) technique. This process involved discussing the best management practices for a hypothetical property typical of the Gladstone/Bororen area.

Participating producers agree that this report contains a range of practical, first hand information that contributes to identifying current best practices for local property management.

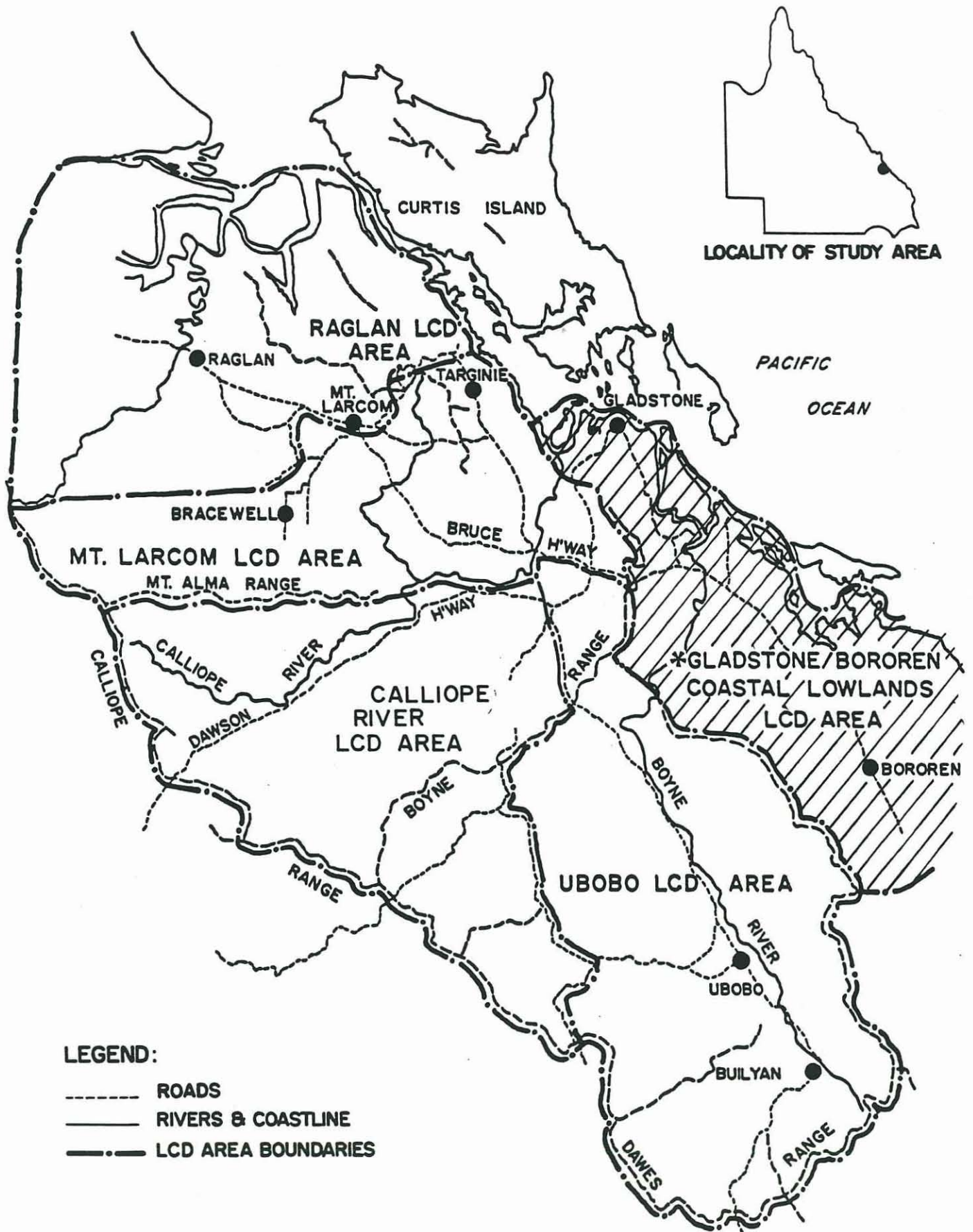
Similar reports are available for other areas in the different pasture communities of Queensland (see Native Pasture Communities map, Addendum 2).

Together, LCD reports offer a pool of practical ideas for sustainable beef production. The reports also identify industry constraints within and across pasture communities together with problems and gaps in information for further research.

These guidelines are based upon experience up to July 1992. Changes in knowledge, technology and market forces may alter the suitability of this information in the future. Producers and organisations involved in the preparation of this report accept no responsibility for adverse effects resulting from the use of this information. Some conclusions may not be endorsed by the Department of Primary Industries (DPI) or the Meat Research Corporation (MRC).

The production of LCD reports is the first step in a process which will include workshops to give all beef producers (in local areas in Central Queensland) an opportunity to participate in developing improved production systems. The process is sponsored by the MRC and the DPI. In the Calliope Shire the process was initiated and managed by the Calliope Soil Conservation Society (CSCA).

Readers should consult appropriate representatives of the CSCA or the DPI for further information or clarification.



* Location of the Gladstone/Bororen area.

Land-types

There are seven different land-types in this area. This section of the report provides a description of each land-type. Problems with each land-type and opportunities for improved management are also discussed.

Blue gum flats

This land-type makes up about 5% of the area (Table 1). Blue gum is the dominant tree type. Soils are either black cracking clays or sandy loams over heavy clays. These soils are comparatively more fertile than soils in other land-types in the area. In past years much of the millable timber was taken from these flats, leaving about 80% of the land-type without many trees.

Producers (participants at the meetings) agreed that these flats should not be over-cleared because this can result in gully erosion and salinity problems. However, this land-type is usually free of degradation

Retaining some trees is considered beneficial, providing shade and shelter for stock. Participants usually 'thin' thick stands of regrowth by killing crooked and stunted trees. ('Thinning' is where some trees are treated with herbicide or ring-barked and clearing is where all trees are killed by using herbicides or by bulldozing.)

Paspalum grass has naturalised on many flats.

Cattle tend not to graze flats during the wet season but do graze them extensively during drier periods.

Scrub

The area contains small areas of scrub country, most of the area is cleared (Table 1). Scrub country is usually expensive to clear. Scrub country produces well for 7-10 years after clearing then productivity declines and weeds invade the pastures. Considerable regrowth occurs on this land-type.

Participants agreed that the smaller pockets (1.2 ha or <3 acres) of scrub should not be cleared especially if they contain cabinet timber trees.

Vine scrub with good deep soils, found along creeks and creek flats, contain poison peach and bitter bark. These poisonous plants are a problem, especially on cleared country where they proliferate. Introduced cattle are particularly at risk when grazing these areas.

Noogoora burr also can be a problem as it germinates quickly after rain and is often the only green pick available.

Tea tree flats

This country makes up about 10% of the area (Table 1). Soils are light and sandy and can turn to white 'bulldust'. They are often too boggy to use during the wet season (for about four months of the year). Pastures provide useful grazing for the rest of the year particularly during the winter and spring. Clearing can cause a serious regrowth problem and is not recommended. Fire is used to control suckers (seedlings).

Bull oak country

Bull oak country covers about 10% of the area (Table 1). Soils have a shallow sandy surface over a clay base. Little clearing has been undertaken. Cleared areas have resulted in a regrowth problem. Participants agreed that clearing is not usually recommended. Conservative stocking and/or spelling allows good hot fires to control seedling regrowth that has grown up to 2 m high. Spelling is where cattle are removed from a pasture for a period of time.

Tree density has increased on this land-type over the last 50 years reducing natural productivity.

Gum-topped box country

This land-type covers only a small proportion of the area (Table 1). The most common tree is gum-topped box on country that is usually flat with shallow soils (Dams often fail in this type of country).

This land-type has low productivity in its natural state and requires timber treatment to improve its productivity. Stem injection with Tordon® does not usually cause regrowth problems, but be careful not to over-clear because the country is prone to gully erosion. Some cleared areas have been sown to improved grasses and legumes.

Ironbark/bloodwood forest country

The land-type covers 75% of the area and may or may not have a wattle understorey (Table 1). Soils are usually 7.5-10 cm (3-4 inches) of sandy loam over clay, although this land-type also includes areas with black soil. Narrow-leaved ironbark is highly valued for fence posts, yard timber and sleepers.

The country had most of its good timber removed years ago. Regrowth of eucalypts and wattles (silver-leaved wattle and black wattle) is a problem. Corkwood wattle can flourish after clearing. A control method used by participants involves ploughing and planting an inexpensive grass or forage crop. This process is then repeated the following year.

Participants considered it is a good idea to retain trees as strips of timber, 40-60 m (2-3 chain) wide, for cattle camps and as timber reserves. However, few producers have used this method of retaining trees.

Over-clearing and over-grazing can lead to erosion and, in some cases, saline seepage.

Spotted gum country

This hinterland country covers a small area and has poor, shallow, stony soils on varying slopes (Table 1). Sloping country will erode (gully erosion) very easily and producers should not clear to any great extent. Spotted gum timber is used for yard rails, sleepers, poles and sawn timber. Although commonly called spotted gum, most of these trees are lemon scented gums.

Enterprises

Beef production is the area's major industry. Breeding and fattening are recommended on the better country with store production on the poorer country (Table 1). Some specialist fattening (buying stores and fattening on pasture) is undertaken on the best country. For example, cattle are fattened on some river flat country where the stocking rate is about one adult beast equivalent (AE) to 3 ha.

Dairying used to be an important industry but has declined and is continuing to decline in importance in the area.

Significant amounts of millable timber have been taken out of the region. Since the mid 1970s, considerable quantities of timber have been harvested as sleepers.

There is no grain produced in the area.

Cattle management

This section describes the type of cattle and their management which best suit local conditions.

Breeding

Cattle with $\frac{1}{2}$ - $\frac{5}{8}$ Brahman content best suit local conditions (Table 2).

Bulls

Participants use bull to cow ratios of 4% for Brahman bulls and 3% for British bulls. Bulls are usually culled at 5-7 years of age (Table 2).

Cows

Some participants run breeders with bulls starting from November or December for four months (Table 2). Calving starts in September and ends in December. Calving can start a little earlier (August) but all calves are usually on the ground by Christmas. Some participants use pregnancy testing to aid management by identifying empty breeders for culling. Cows are usually culled at 7-10 years of age. They are also culled when they miss conception a second time.

Mating

Although the majority of producers in the area use continuous mating practices, participants considered that it would be beneficial to use seasonal mating in some seasons (Table 2). The benefits of a restricted calving period include:

- all calves are weaned before winter to preserve breeder condition
- calves are born in a specific period of the year
- the herd is easier to manage
- bulls are usually in better condition and more fertile.

However, in practice, a restricted mating season can result in fewer calves in some years due to a poor summer or a very late break to the season.

Reproduction rates

Reproduction rates vary from 65-90%, with an average of about 75% (Table 2). However, some producers in the region have a lower branding percentage (approximately 65-70%).

Weaning

Participants wean by the end of April/May, but earlier in a bad season (Table 2). Weaners are locked in yards for 6-10 days to train and quieten them. They are then 'tailed-out' to teach them to work.

Breeders that are in very poor condition at weaning time are given good quality feed.

Marketing

Home bred bullocks will finish before those of similar age bought in from elsewhere. Bullocks are sold direct to meatworks.

Turn-off weights from native pastures are:

3½-4 year old:- 590 kg L.W. (320 kg C.W.)

4½-5 year old:- 610-640 kg L.W. (330-350 kg C.W.).

Turn-off from improved pastures is approximately 12 months earlier (Table 2).

Stores are usually sold before they are two years of age and cows are sold at 380-420 kg liveweight. When participants sell stores, they attempt to present them with clean coats and in reasonable condition so that they appear to be gaining weight. Stores are sold within the area from Rockhampton to Gin Gin.

Herd health

Vaccinations

Three day sickness

Vaccinate bulls and stud cattle.

Botulism

Vaccinate annually where it occurs.

Blackleg

Use 5-in-1 vaccine.

Leptospirosis

Vaccinate if there is a problem.

Vibriosis

Vaccinate all bulls.

Tick Fever

Vaccinate if a problem.

Parasites

Ticks

Ticks are not often a problem when running Brahman. Dip before yard sales and when necessary.

Worms

Drench all cattle especially young cattle when needed.

Buffalo Fly

This is an important parasite. Use back rubbers, spraying only gives 7-10 days of relief.

March Fly

These flies can drive cattle into estuarine areas and cause deaths of pregnant breeders when they become bogged in mud. This is especially so for new stock that are brought onto properties.

Deaths

Few cattle normally die. The death rate is usually 1-2% for growing cattle and 3-5% for breeders during average years (Table 2). An outbreak of botulism can cause a mortality rate of over 5%.

Grazing-land management

This section describes management to sustain the natural resources for long term beef production.

Stocking rates

Stocking rates for different types of country are shown in Table 1. Participants considered an adult equivalent to be a three year old bullock or a cow and calf unit.

Pasture improvement

If a property contains a mixture of wallum (tea tree and bull oak) and black speargrass country, the participants utilise the wallum pasture during the dry season (June to the break). It is often too boggy to use during summer and cattle will do better on speargrass during this period.

Usually native pastures are continuously grazed. Paddocks are spelled in the flush of the season for specific uses, including:

- for weaners in May
- for seed production in run-down paddocks
- to build up fuel for fires to control woody weeds.

Participants have observed that over-grazing black speargrass encourages the establishment of white speargrass and blue couch. Improved pastures also should be spelled in the growing season otherwise they will be eaten out.

Dry season management and supplements

Participants use a urea based supplement in dry seasons, progressing to molasses/urea/cottonseed meal mixes when pastures start running out (Table 2).

Phosphorus deficiency is common and stock require a phosphorus supplement or phosphate fertiliser applied to pastures. Participants find that the acceptance by cattle of commercially prepared blocks is very variable.

Fire

Producers burn pastures in spring to remove the build-up of dead grass and to reduce the competition from woody weeds (mainly wattle and lantana).

Pests

The following pests occur in the district:

- buffalo fly, the worst problem
- giant rat's tail grass, a potentially large problem
- lantana, an increasing problem
- rubber vine, a small problem along creeks
- corkwood wattle, a minor problem
- noogoora burr, a minor problem
- dingos, a minor problem
- rabbits, a minor problem.

Trends

Lack of good summer rain during the last decade has resulted in smaller bodies of grass, and in poor and infrequent grass fires. This has led to an increase in regrowth of trees and woody weeds.

Over-clearing of some country has caused erosion and salinity problems.

Current and recommended property sizes

Properties within the area range from 16 ha (40 acres) hobby farms to 12 100 ha (30 000 acres). Most properties range in size from 400-8100 ha (1000-20 000 acres) (Table 2).

The area required to raise a family with school age children is 2000-2400 ha (5000-6000 acres) (Table 2). The average carrying capacity needs to be 1 AE to 2.4-3 ha (6-8 acres). Such an enterprise would have to be debt free.

Acknowledgments

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Further information

Further information may be obtained from:

The Calliope Soil Conservation Association
PO Box 80
Calliope Q 4680

The Department of Primary Industries
in Gladstone, Biloela and Rockhampton.

Table 1. Land-types and their management in the Gladstone/Bororen Coastal Lowlands

Land-type % of area	Enterprises	Recommended stocking rate	Improvements	Constraints
Blue gum 5%	Breeding, growing	1 AE/2 ha (5 acres)	Some trees	Over-clearing can cause gully erosion and salting
	Fattening	1 AE/1.6 ha (4 acres)	Cleared	
Scrub Small%	Breeding, fattening	1 AE/1.6-2 ha (4-5 acres)	Cleared	Regrowth, poisonous plants
Tea tree flats 10%	Breeding	1 AE/8 ha (20 acres)	Uncleared	Serious regrowth problem
Bull oak 10%	Breeding	1 AE/8-20 ha (20-50 acres)	Uncleared	Increasing tree density
Gum-topped box Small%	Breeding, growing	1 AE/6.5 ha (16 acres)	Uncleared	Prone to gully erosion
	Fattening	1 AE/3 ha (8 acres) 1 AE/1.6 ha (4-5 acres)	Cleared Improved pastures	- -
Ironbark/ bloodwood forest 75%	Breeding, growing	1 AE/12 ha (30 acres)	Uncleared	Regrowth
	Fattening	1 AE/3-4 ha (8-10 acres) 1 AE/1.6-2 ha (4-5 acres)	Cleared Improved pasture	- -
Spotted gum Small%	Breeding, growing	1 AE/12 ha (30 acres)	'Thinned'	Prone to gully erosion

* AE = Adult equivalent

Table 2. Property and animal management data for the Gladstone/Bororen Coastal Lowlands area

Category	Data
Breeds	$\frac{1}{2}$ - $\frac{5}{8}$, Brahman
Bull %	3-4%
Cull bull age	5 to 7 years
Cull cow age	7 to 10 years
Mating system	Controlled or continuous
Mating season	Mid Nov/Dec - end March
Reproduction rates	
Range	65-90%
Average	75%
Weaning	End May, earlier in dry season
Turn-off weights (native pastures)	
Bullocks 4 $\frac{1}{2}$ -5 year olds	610-640 kg liveweight
Stores 3 $\frac{1}{2}$ -4 year olds	590 kg liveweight
Cows	380-420 kg liveweight
Herd health procedures:	
Drenching	When needed, especially young cattle
'5 in 1' vaccination	Where blackleg occurs
Botulism vaccination	Where it occurs
Leptospirosis ('Lepto') vaccination	Where it occurs
'Vibrio' vaccination	Bulls
Three day sickness vaccination	Bulls and stud cattle
Ticks	Dip before yard sale
Tick fever vaccination	If it is a problem
Buffalo fly	Use back-rubbers
March fly	Can be a problem for pregnant breeders
Death rates	
Breeders	3-5%
Others	1-2%
Supplements:	
Phosphorus	Feed supplement, or fertilise pastures
Urea base supplement	For all stock during dry periods
Molasses/urea/cottonseed	For all stock when pasture runs out
Actual property sizes	
Range	16-12 100 ha (40-30 000 acres)
Average	400-8100 ha (1000-20 000 acres)
Recommended living area/herd size	
Area	2000-2400 ha (5000-6000 acres)
Adult Equivalents	800 AE

Addendum 1. Plant names

Common names	Botanical names
Bitter bark	<i>Alstonia constricta</i>
Black speargrass	<i>Heteropogon contortus</i>
Black wattle	<i>Acacia leiocalyx</i>
Bloodwood	<i>Eucalyptus dolichocarpa</i>
Blue couch	<i>Digitaria didactyla</i>
Blue gum.....	<i>Eucalyptus tereticornis</i>
Bull oak	<i>Allocasuarina luehmannii</i>
Corkwood wattle.....	<i>Acacia bidwillii</i>
Eucalypts	<i>Eucalyptus</i> spp.
Giant rat's tail grass	<i>Sporobolus pyramidalis</i>
Gum-topped box	<i>Eucalyptus moluccana</i>
Lantana	<i>Lantana camara</i>
Lemon scented gum	<i>Eucalyptus citriodora</i>
Narrow-leaved ironbark.....	<i>Eucalyptus crebra</i>
Noogoora burr	<i>Xanthium pungens</i>
Paspalum	<i>Paspalum dilatatum</i>
Poison peach	<i>Trema tomentosa</i>
Rubber vine	<i>Cryptostegia grandiflora</i>
Silver-leaved wattle.....	<i>Acacia aulacocarpa</i>
Spotted gum	<i>Eucalyptus citriodora</i>
Tea tree.....	<i>Melaleuca</i> spp.
Wallum.....	see tea tree and bull oak
Wattle	<i>Acacia</i> spp.
White speargrass	<i>Aristida</i> spp.

Addendum 2. Native Pasture Communities map















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NATIVE PASTURE COMMUNITIES

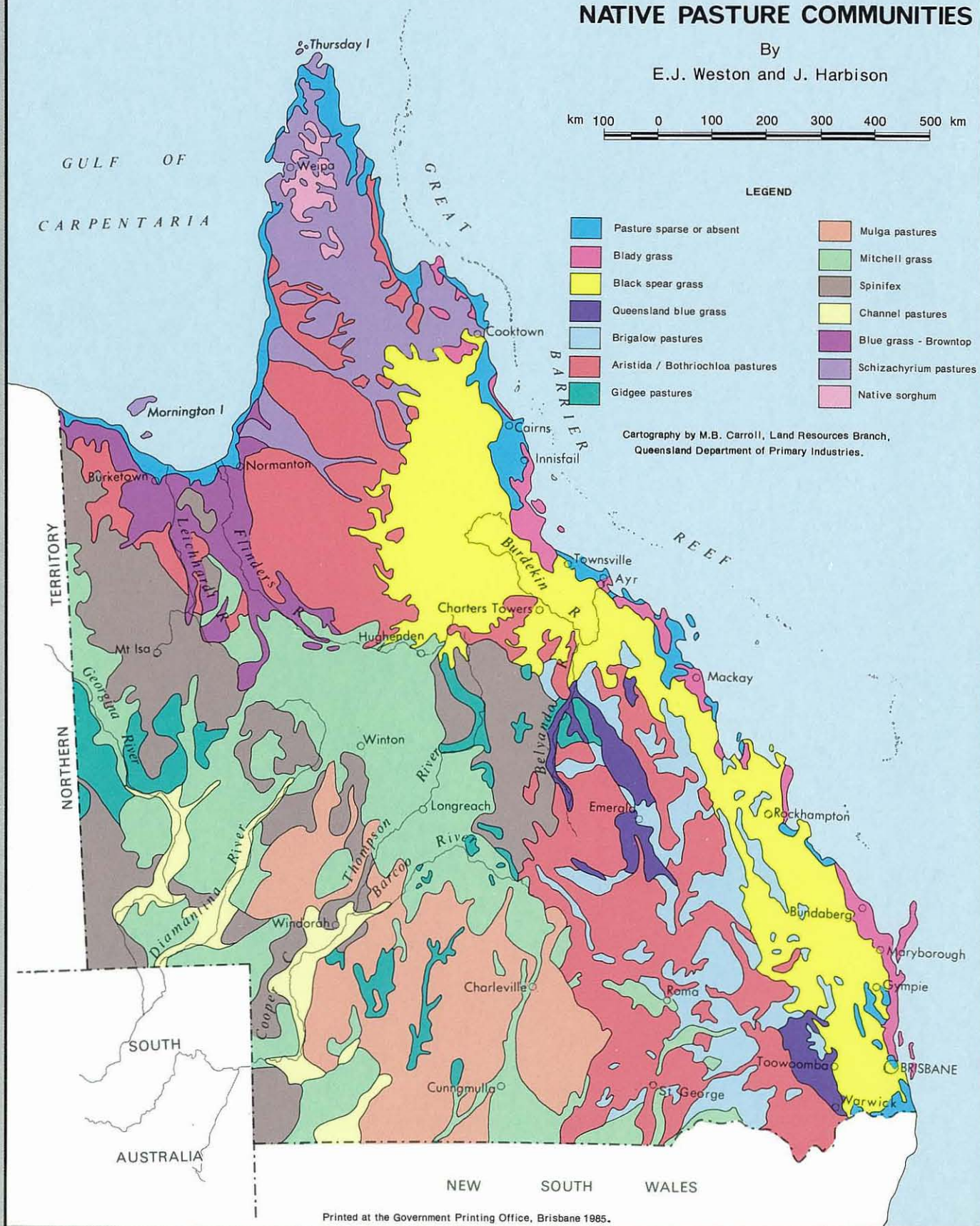
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E.J. Weston and J. Harbison

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LEGEND

- | | | | |
|---|----------------------------------|---|------------------------|
|  | Pasture sparse or absent |  | Mulga pastures |
|  | Blady grass |  | Mitchell grass |
|  | Black spear grass |  | Spinifex |
|  | Queensland blue grass |  | Channel pastures |
|  | Brigalow pastures |  | Blue grass - Browntop |
|  | Aristida / Bothriochloa pastures |  | Schizachyrium pastures |
|  | Gidgee pastures |  | Native sorghum |

Cartography by M.B. Carroll, Land Resources Branch,
Queensland Department of Primary Industries.



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