

Weed Survey of Springvale Station



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Vegetation Management Science

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Summary

Springvale Station, approximately 50 km to the south-west of Cooktown, covers around 56,000 hectares. The property was purchased by the Queensland Government in May 2016 and is currently managed by the Queensland Department of Environment and Heritage Protection (EHP).

A survey of weeds (i.e. invasive exotic plants) observable from the main vehicle tracks on Springvale Station was undertaken by Peter Munt, Keith Smith and Paul Williams on the 4 and 5 August 2016. The survey covered the northern half of the property and included inspections at points on the East, Granite and West Normanby Rivers. It also included surveys of two mine lease areas on the west Normanby River.

At each record point, a GPS-derived location was documented and the abundance of all weeds in the surrounding area noted, based on an estimate of their percentage ground cover, grouped into categories (Table 1).

Table 1. The abundance categories used for mapping the abundance of each weed (based on the categories used by Weeds of National Significance and the Queensland DPI).

Weed Abundance Category	Percentage cover of weed
Scattered	< 1 % cover
Low	1 – 9 % cover
Moderate	10 – 29 % cover
High	30 – 49 % cover
Very High	≥ 50 % cover

Weed abundance was documented at regular intervals and where weed species composition or abundance changed. A total of 61 weeds were observed (Appendix 1). Nine of the weeds are declared as Category 3 under the new Queensland Biosecurity Act 2014. These weeds must not be distributed (sold, traded, released into the environment or given as a gift without a permit):

Captain Cook tree, Yellow Oleander (*Cassipouira thevetia*)

Cat's claw creeper (*Dolichandra unguis-cati*)

Chinee Apple (*Ziziphus mauritiana*)

Elephant ear vine (*Argyria nervosa*)

Olive Hymenachne (*Hymenachne amplexicaulis*)

Lantana (*Lantana camara*)

American Rat's tail grass (*Sporobolus jacquemontii*)

Rubbervine (*Cryptostegia grandiflora*)

Sicklepod (*Senna obtusifolia*)

The most abundant and widespread weeds are Grader grass, Hyptis, Sensitive weed, Sicklepod and Wynn cassia. Each of these weeds is extensively established across the property and capable of abundant seed germination annually. Therefore they should not be considered a priority for control at this stage.

Weeds that are known to be capable of very significant habitat damage and which were only seen at a few locations are Annual Mission grass (exact identification in process) on edge of Lake's Creek dam, Calotrope (single bushes in Boggy and Farm paddocks), Captain Cook tree (at the old homestead garden), Castor oil bush (West Normanby River bank), Cat's claw creeper (at the old homestead garden), Chinee apple (a single bush in Boggy paddock near homestead), Neem (at the old homestead garden), Olive Hymenachne (two dams) and Rat's tail grass (small American Rat's tail species) along track in King's paddock.

Several areas are in relatively good condition, in regards to low density of problem weeds and good coverage of native grasses, especially Black spear grass (Figure 1). This is especially in the hills amongst Cook and Sugar paddocks. Keeping these areas clean of significant weed infestations should be a priority.

Recommendations: Priorities for weed control of Springvale Station

Highest Priority

- Establish a vehicle and machinery washdown procedure and policy. This requires all vehicles and machines to be washed when entering the property (or have a current certificate of washdown); after earthworks and before any travel to low weed areas, such as Cook Paddock. A notice sign should be put up at the property entrance gate instructing all visitors to go directly to the shed for washdown. The washdown area should drain into a sump or area that catches seed and is inspected for weed germination regularly.
- The entrance to Cook (and Sugar) paddocks should be quarantined from regular traffic to reduce weed spread into these woodlands which are in fairly good condition. No vehicle, except for management programs, should be permitted to travel into the Cook paddock quarantine area.
- The single Chinee apple in Boggy Paddock should be removed.
- Calotrope bushes (currently only two known - in Boggy and Farm paddocks) should be removed.
- Neem tree at the old homestead should be cut down and removed.

- The Cat's claw creeper vine near the old homestead should be killed.
- Olive hymenachne patches at Cook and at Leichhardt dams should be herbicide sprayed (using Verdict and / or Roundup Biactive), to try to eradicate from the property. Rinyirru (Lakefield) National Park rangers have had success spraying Olive hymenachne with Verdict (haloxyfop 520 g L⁻¹) at a mix rate of 50 ml chemical to 100 L of water, using BonusTM as a spray adjuvant (Clarkson *et al.* 2012; Tony Cockburn pers. com. 2015). Verdict targets grasses with limited effect on other types of plants. A wetland infestation of Hymenachne at Lambell's Lagoon near Darwin has been controlled by initial Glyphosate spraying (i.e. Roundup Biactive), then burning two months later once it had died off, to remove the bulk of Hymenachne, and then a subsequent herbicide treatment (Glyphosate again) to kill seedlings. The second spraying took only one third of the time that the initial treatment required.
- Control Annual Mission grass (a species of *Cenchrus*, awaiting identification confirmation) in its only known location on the edge of the dam in Lake's Creek paddock. Initial removal and bagging of seed heads will be useful, with subsequent followup of seedlings and any mature plants after rain.

Mid level priority

- Herbicide control of Guinea grass on the roadsides near Springvale homestead.
- Herbicide control of American Rat's tail grass on the track in King's paddock.
- Control Castor oil bush, currently only known from the vicinity of the downstream mine lease on the West Normanby River bank.
- Re-introduce a regular fire program when possible to thin Lantana and Rubbervine and to promote native grasses. Unfortunately regular burning will promote some weeds, especially Grader grass. Therefore burning should best be targeted in areas with rubbervine or lantana.

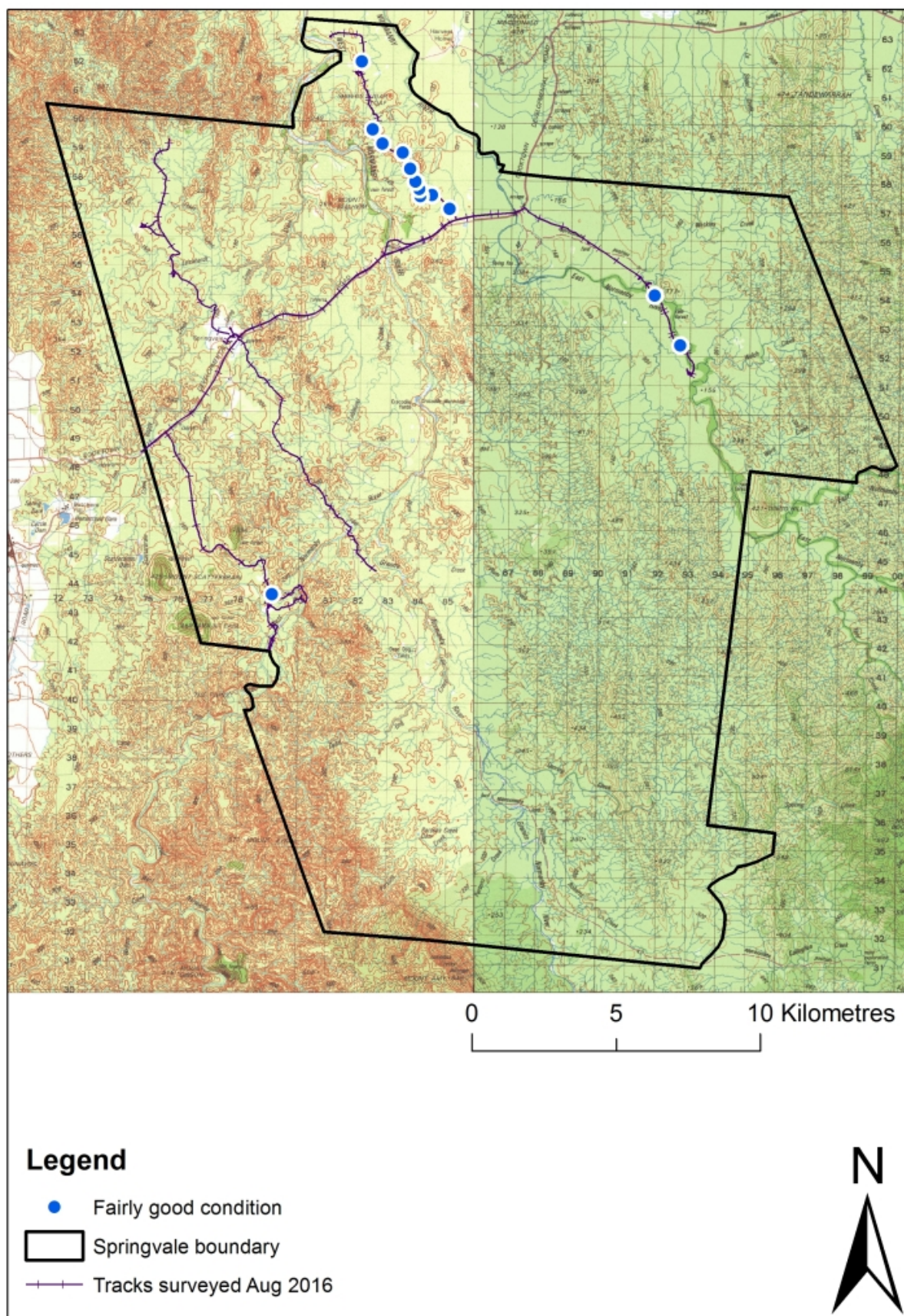


Figure 1. Areas seen in fairly good conditions, i.e. low weed density and good native grass cover.

Inspection of mine leases on West Normanby River



The most south-west mine lease, on West Normanby River, contains riverine forest along the main river channel edge dominated by Blue gum (*Eucalyptus tereticornis*), Paperbark (*Melaleuca leucadendra*), Leichhardt tree (*Nauclea orientalis*), Northern swamp box (*Lophostemon grandiflorus*) and River She-oak (*Casuarina cunninghamiana*). This is Regional Ecosystem 9.3.1.3, which has an Of Concern Biodiversity status. A healthy, intact canopy covers the area.

The bank of a secondary adjacent channel is dominated by Mount Molloy box (*Eucalyptus leptophleba*), Cabbage gum (*Corymbia confertiflora*) and Cooktown Ironwood (*Erythrophleum chlorostachys*). This equates to Regional ecosystem 9.11.26.

The area has a range of weeds present, including a high abundance of Sicklepod and a low abundance of Rubbervine.



The second mine lease area, further downstream, is also dominated by RE 9.3.13, with Blue gum, Paperbark and River she-oaks. Weeds present include a low abundance of Castor oil bush, Noogoora burr, scattered Rubbervine and abundant Sicklepod.

The bank contains RE 9.11.26, Mount Molloy box and Cabbage gum woodland.

Appendix 1. List of weeds seen on Springvale Station 4 and 5 August 2016

Family	Botanical name	Common name	Declaration under Biosecurity Act 2014
Amaranthaceae	<i>Alternanthera ficoidea</i>	Alternanthera	
Amaranthaceae	<i>Celosia argentea</i>	Cock's comb	
Amaranthaceae	<i>Gomphrena celosioides</i>	Gomphrena	
Annonaceae	<i>Annona squamosa</i>	Custard apple	
Apocynaceae	<i>Asclepias curassavica</i>	Red cottonbush, Milkweed	
Apocynaceae	<i>Calotropis procera</i>	Calotrope, Rubber bush	
Apocynaceae	<i>Cascabela thevetia</i>	Capt Cook tree	Category 3
Apocynaceae	<i>Cryptostegia grandiflora</i>	Rubbervine	Category 3
Asteraceae	<i>Acanthospermum hispidum</i>	Goat's head burr	
Asteraceae	<i>Ageratum conyzoides</i>	Blue top	
Asteraceae	<i>Emilia sonchifolia</i>	Emilia	
Asteraceae	<i>Praxelis clematidea</i>	Praxelis	
Asteraceae	<i>Synedrella nodiflora</i>	Cinderella weed	
Asteraceae	<i>Tridax procumbens</i>	Tridax	
Asteraceae	<i>Xanthium occidentale</i>	Noogoora burr	
Bignoniaceae	<i>Dolichandra unguis-cati</i>	Cat's claw creeper	Category 3
Caesalpiniaceae	<i>Chamaecrista rotundifolia</i> cv Wynn	Wynn Cassia	
Caesalpiniaceae	<i>Senna obtusifolia</i>	Sicklepod	Category 3
Caesalpiniaceae	<i>Senna occidentalis</i>	Coffee senna	
Convolvulaceae	<i>Argyreia nervosa</i>	Elephant ear vine	Category 3

Convolvulaceae	<i>Ipomoea hederifolia</i>	Scarlet creeper
Cucurbitaceae	<i>Momordica charantia</i>	Balsam pear
Euphorbiaceae	<i>Euphorbia heterophylla</i>	Spurge
Euphorbiaceae	<i>Euphorbia hirta</i>	Asthma plant
Euphorbiaceae	<i>Ricinus communis</i>	Castor oil bush
Fabaceae	<i>Crotalaria lanceolata</i>	Narrow leaf rattlepod
Fabaceae	<i>Crotalaria pallida</i>	Rattlepod
Fabaceae	<i>Macroptilium atropurpureum</i>	Sitratro
Fabaceae	<i>Macroptilium lathyroides</i>	Phasey bean
Fabaceae	<i>Stylosanthes scabra</i>	Secca
Lamiaceae	<i>Hyptis capitata</i>	Knobweed
Lamiaceae	<i>Hyptis suaveolens</i>	Hyptis
Lamiaceae	<i>Ocimum americanum var. americanum</i>	Wild basil
Malvaceae	<i>Malvastrum coromandelianum</i>	Spiked malvastrum
Malvaceae	<i>Sida acuta</i>	Spikey sida
Malvaceae	<i>Sida cordifolia</i>	Flannel weed
Malvaceae	<i>Urena lobata</i>	Urena burr
Meliaceae	<i>Azadirachta indica</i>	Neem
Mimosaceae	<i>Mimosa pudica</i>	Sensitive weed
Papaveraceae	<i>Argemone ochroleuca subsp. ochroleuca</i>	Mexican poppy
Passifloraceae	<i>Passiflora foetida</i>	Stinking passionfruit
Poaceae	<i>Axonopus fissifolius</i>	Carpet grass
Poaceae	<i>Bothriochloa pertusa</i>	Indian couch

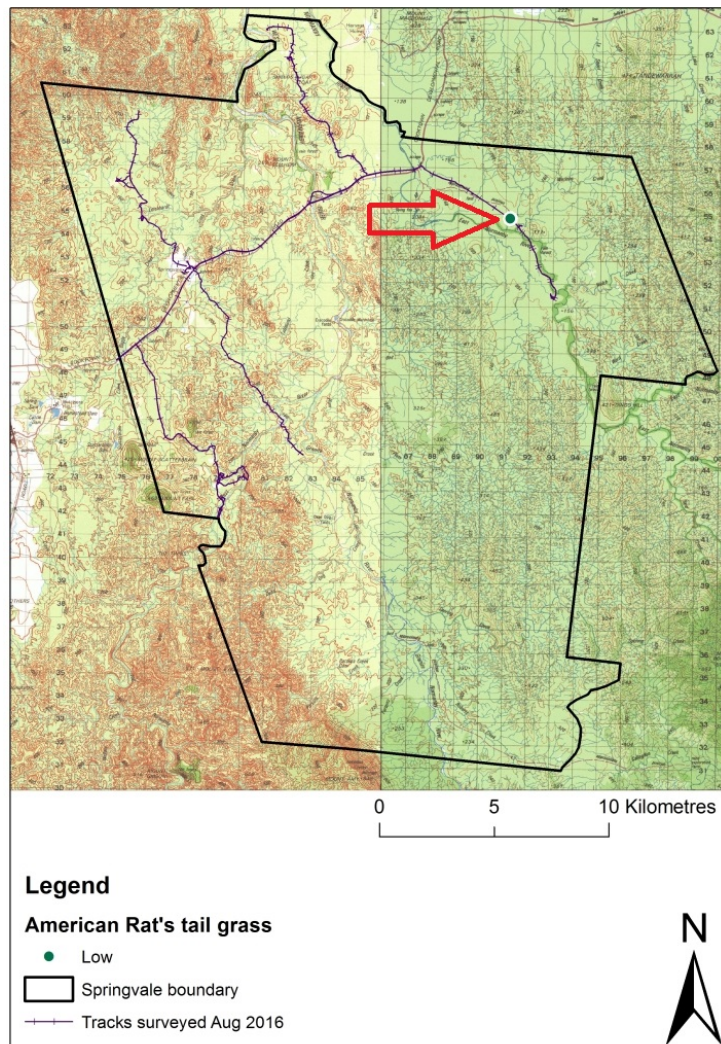
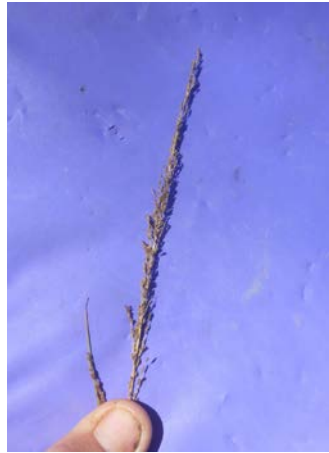
Poaceae	<i>Cenchrus pedicellatus</i>	Annual Mission grass	
Poaceae	<i>Chloris inflata</i>	Purpletop Rhodes grass	
Poaceae	<i>Cynodon dactylon</i>	Couch	
Poaceae	<i>Hymenachne amplexicaulis</i> cv. Olive	Hymenachne,Olive Hymenachne	Category 3
Poaceae	<i>Megathyrsus maximus</i> var. <i>maximus</i>	Guinea grass	
Poaceae	<i>Melinis repens</i>	Red Natal grass	
Poaceae	<i>Sporobolus jacquemontii</i>	American rat's tail grass	Category 3
Poaceae	<i>Themeda quadrivalvis</i>	Grader grass	
Poaceae	<i>Urochloa mosambicensis</i>	Sabi grass	
Rhamnaceae	<i>Ziziphus mauritiana</i>	Chinee apple	Category 3
Rubiaceae	<i>Spermacoce latifolia</i>	Spermacoce	
Scrophulariaceae	<i>Scoparia dulcis</i>	Licorice weed	
Solanaceae	<i>Solanum seaforthianum</i>	Brazilian nightshade	
Solanaceae	<i>Solanum torvum</i>	Thorn apple	
Sparrmanniaceae	<i>Grewia asiatica</i>	Large leaved grewia	
Sparrmanniaceae	<i>Triumfetta rhomboidea</i>	Chinese burr	
Verbenaceae	<i>Lantana camara</i>	Lantana	Category 3
Verbenaceae	<i>Stachytarpheta jamaicensis</i>	Snakeweed	

Disclaimer:

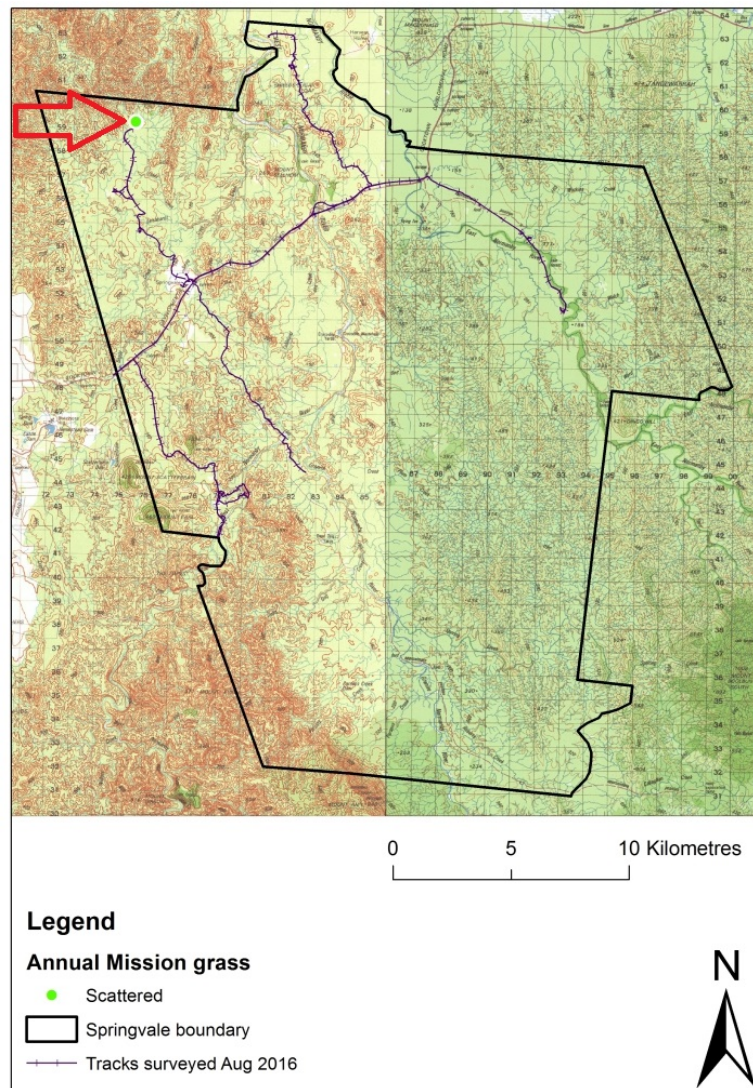
The information in this report is provided as advice for consideration only. In particular, any herbicides used must be permitted for the specific use in Queensland. The herbicides must only be used as directed on the herbicide label. Wear and use all recommended safety gear, as listed on the label and only spray under mild conditions as directed on the label.

Appendix 2. Maps of major weeds on Springvale Station

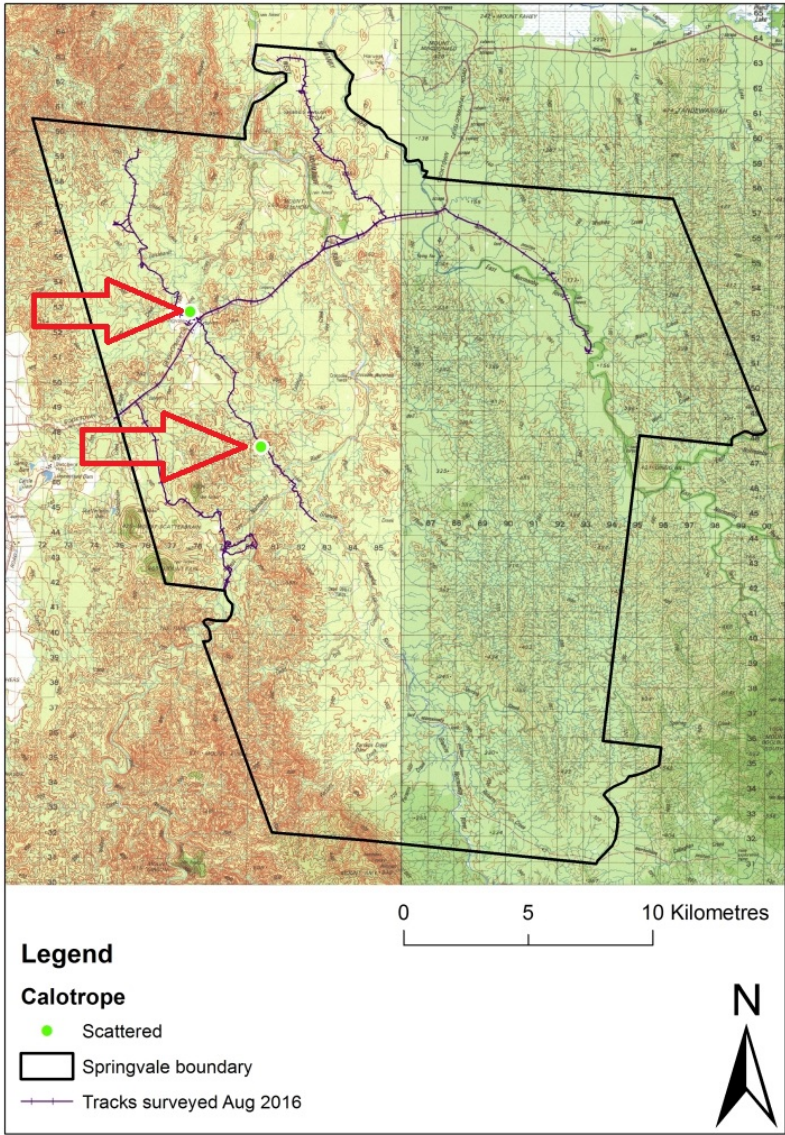
American Rat's Tail Grass (*Sporobolus jacquemontii*)



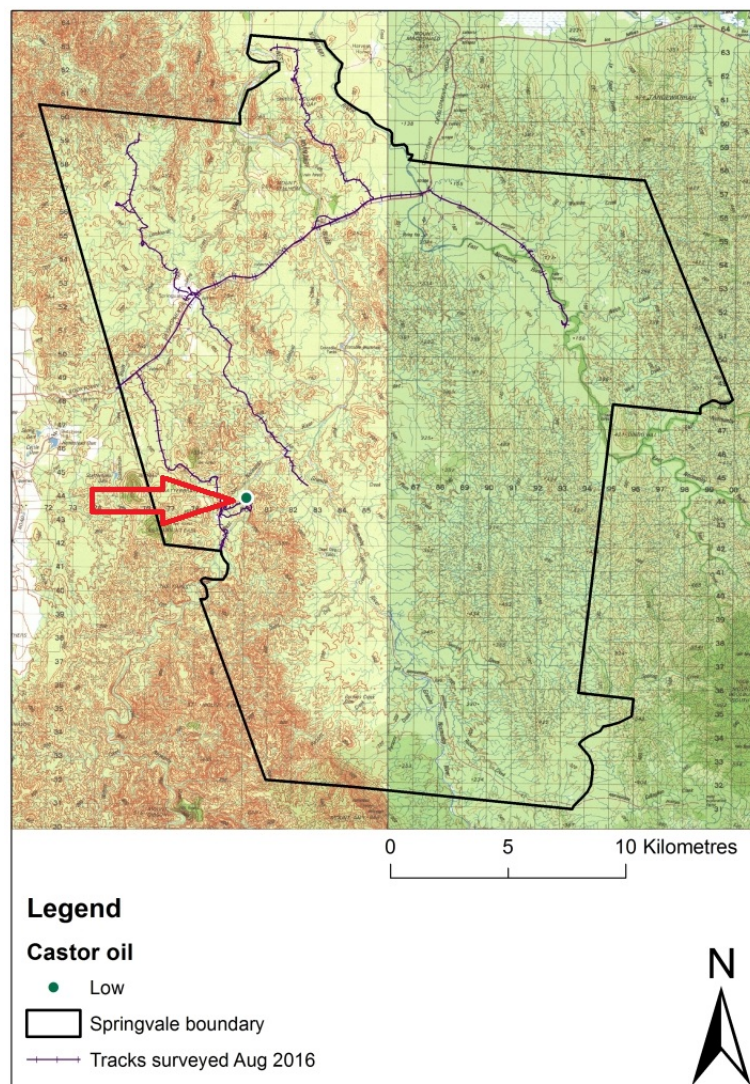
Annual Mission grass (*Cenchrus pedicellatus*)



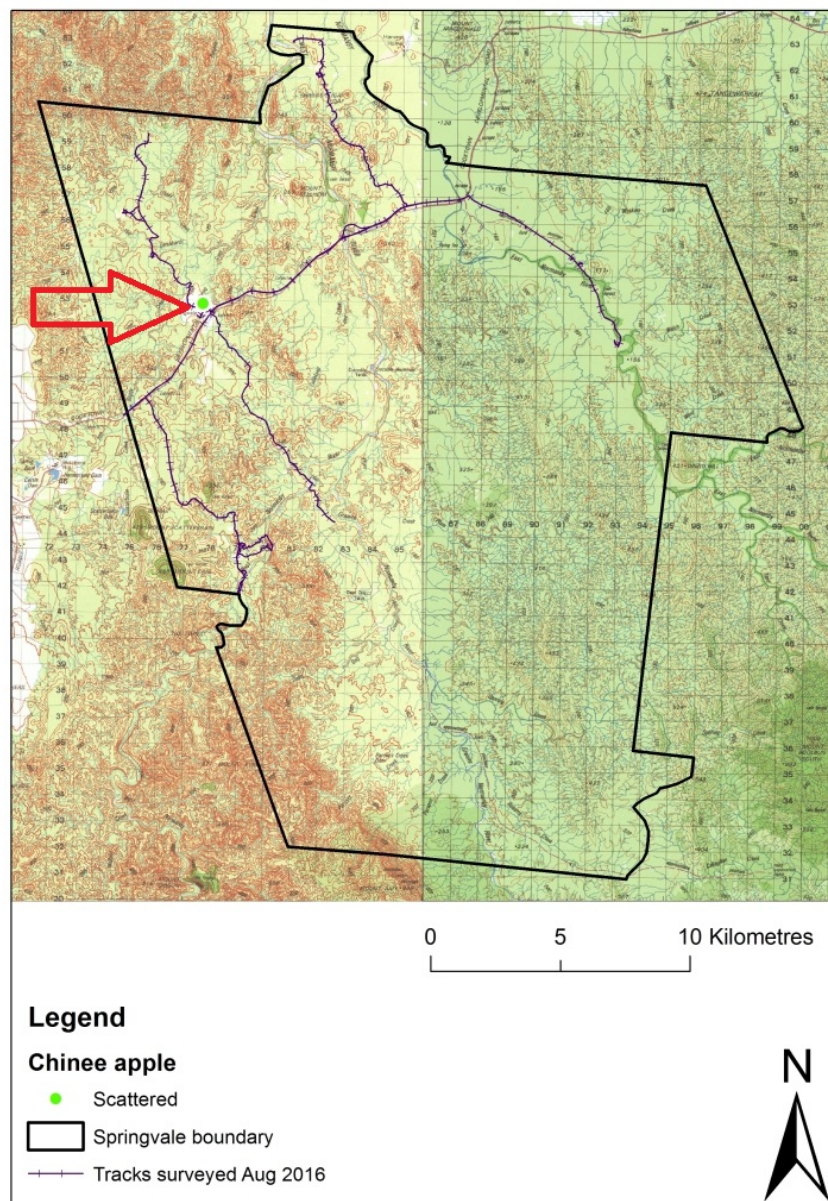
Calotrope (*Calotropis procera*)



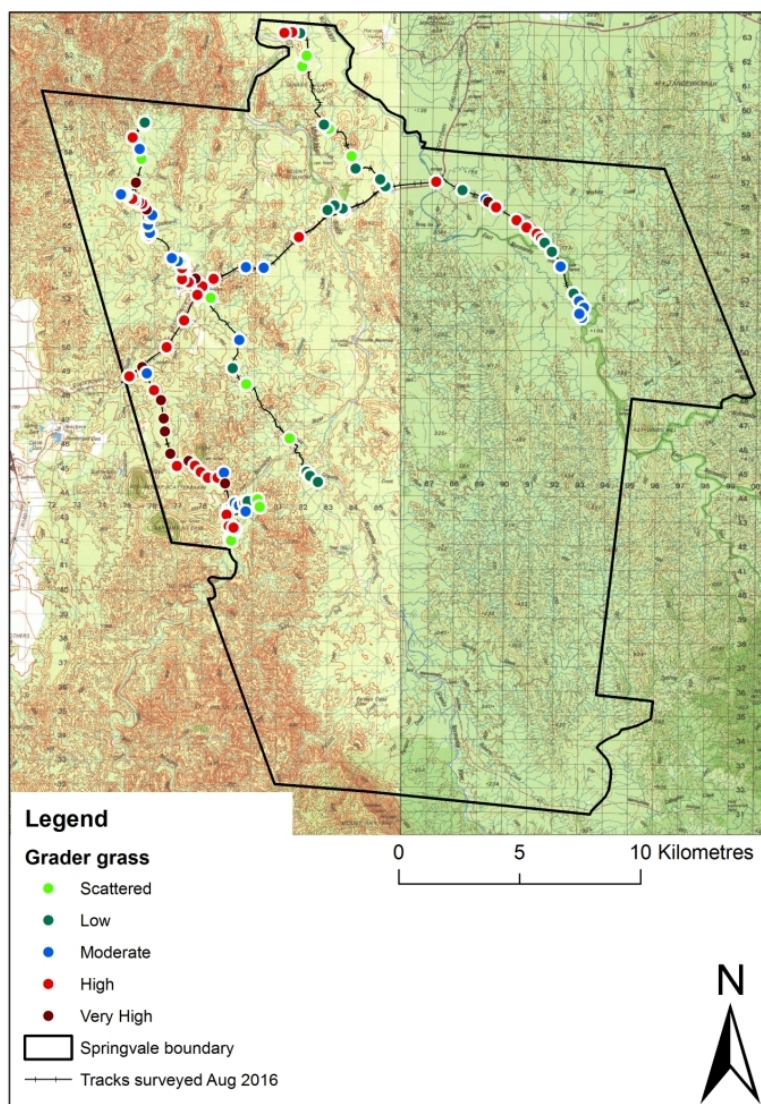
Castor oil bush (*Ricinus communis*)



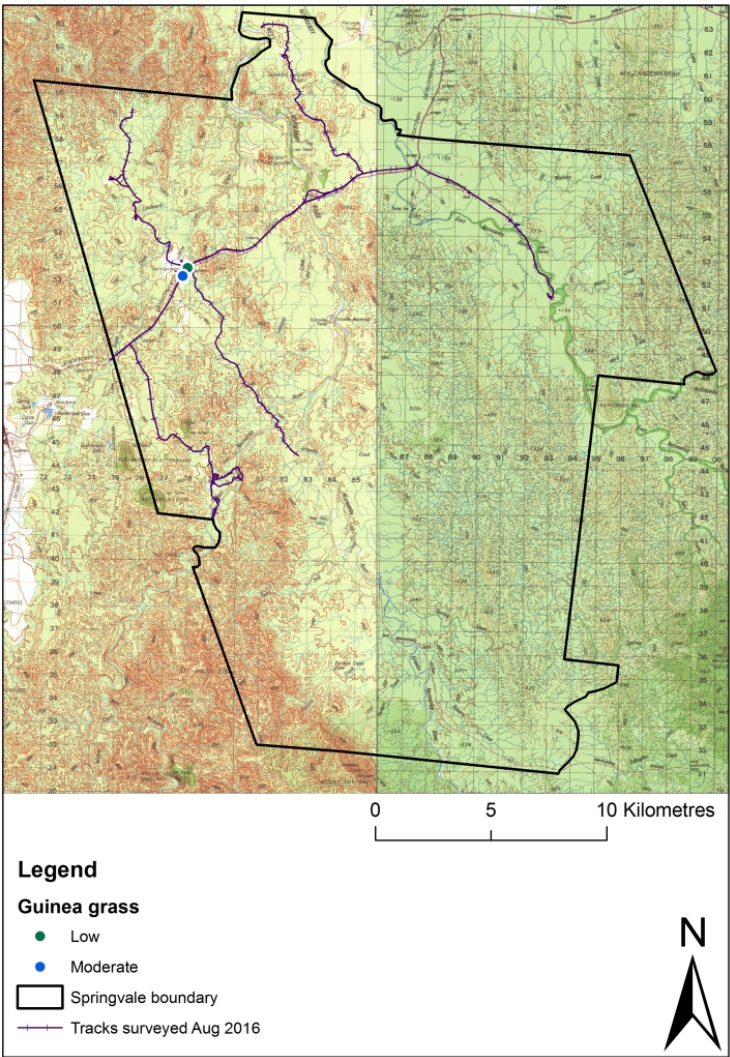
Chinee apple (*Ziziphus mauritiana*)



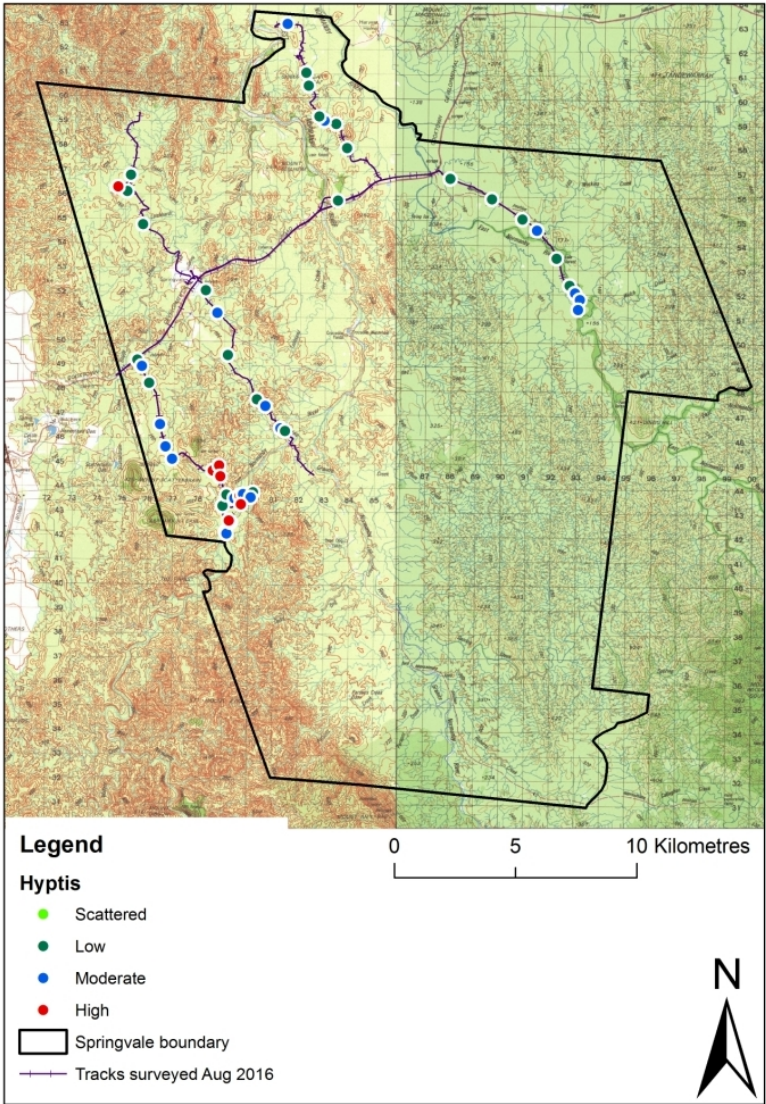
Grader grass (*Themeda quadrivalvis*)



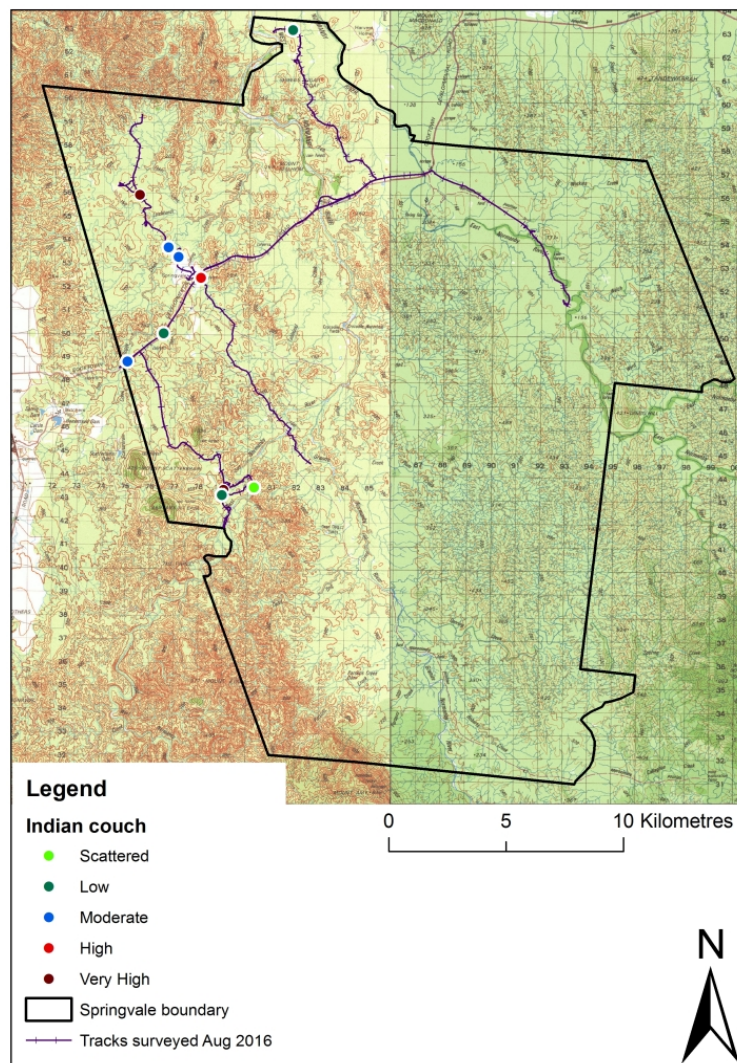
Guinea grass (*Megathyrsus maximus* var. *maximus*)



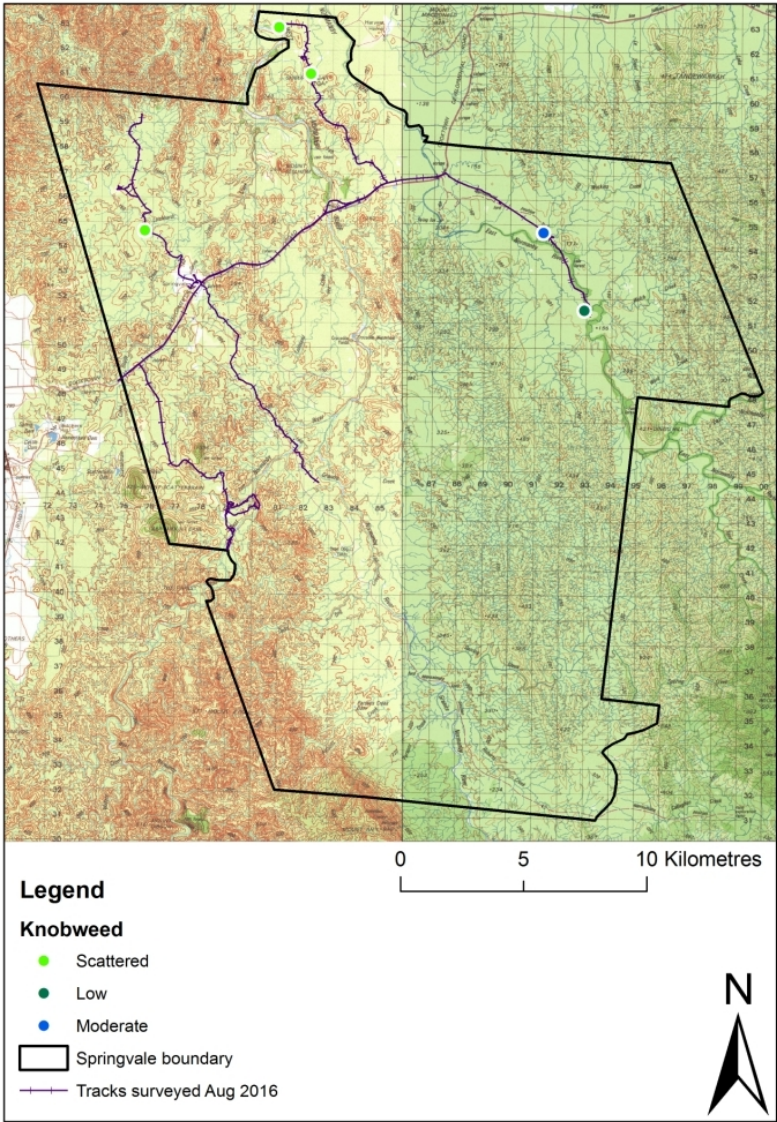
Hyptis (*Hyptis suaveolens*)



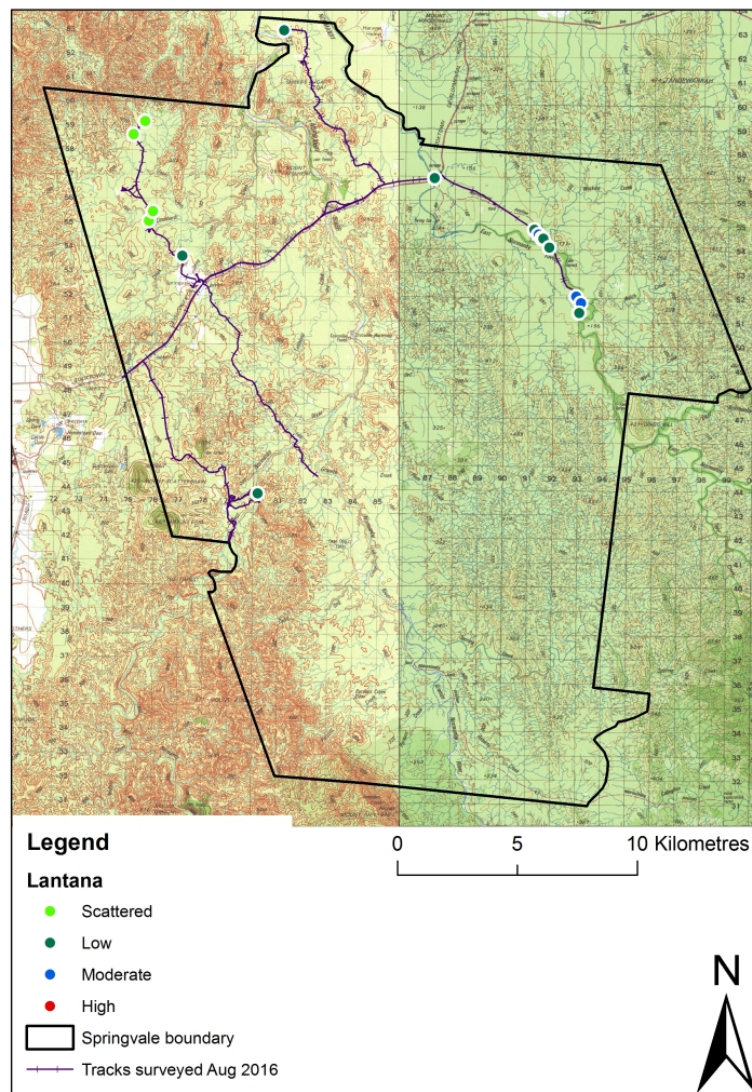
Indian couch (*Bothriochloa pertusa*)



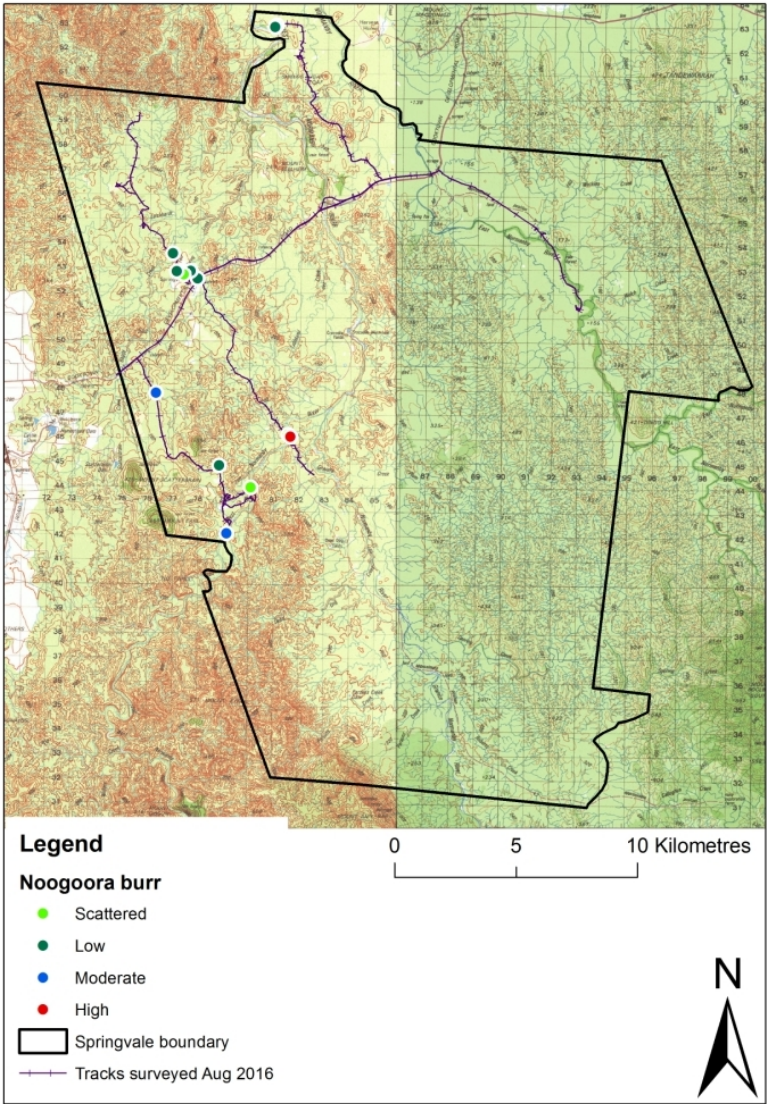
Knobweed (*Hyptis capitata*)



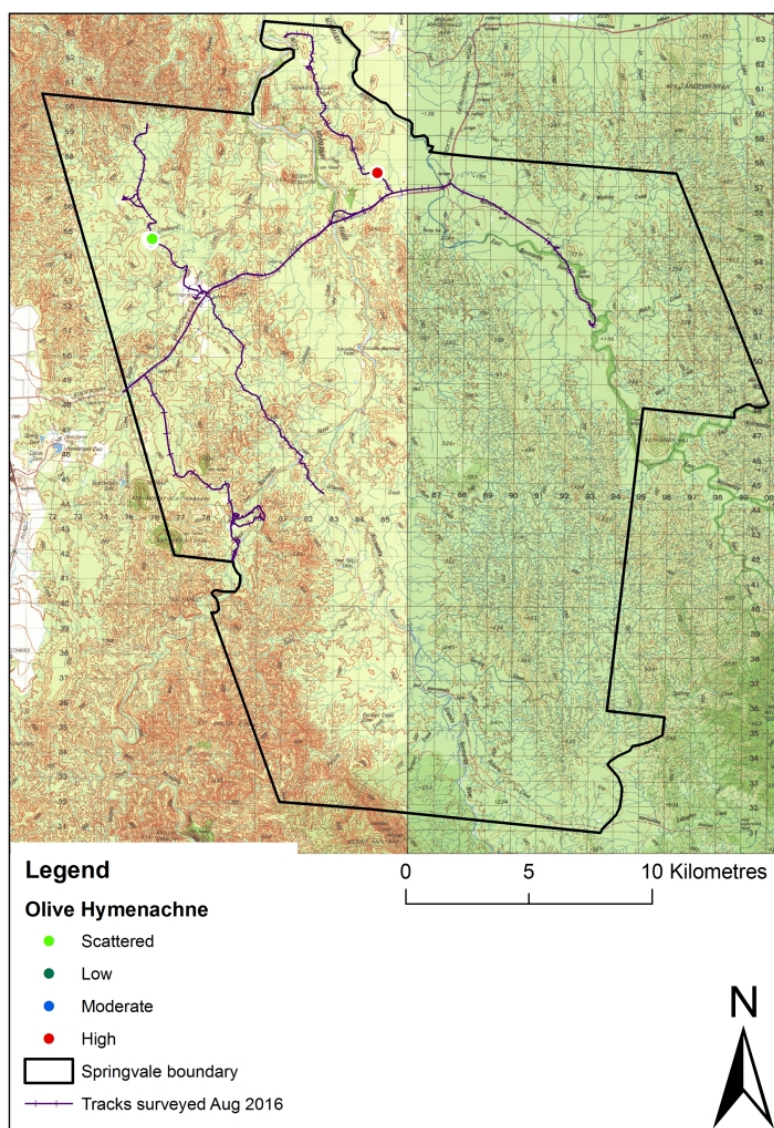
Lantana (*Lantana camara*)



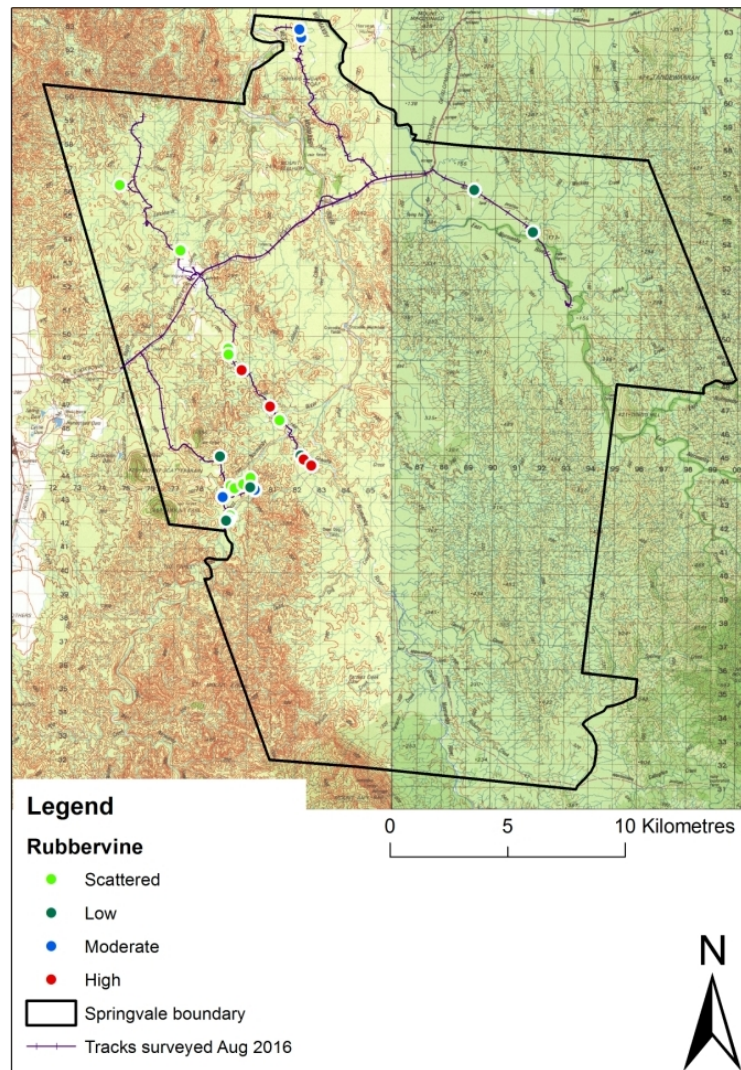
Noogoora burr (*Xanthium occidentale*)



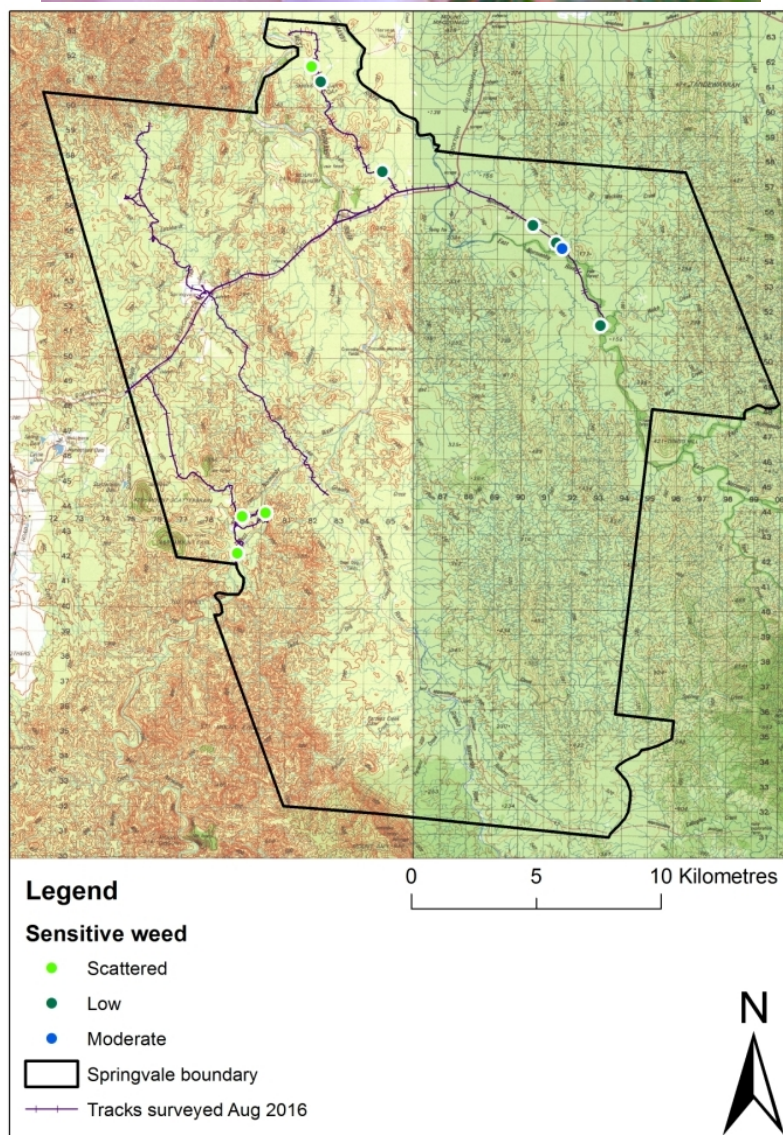
Olive hymenachne (*Hymenachne amplexicaulis* cv. Olive)



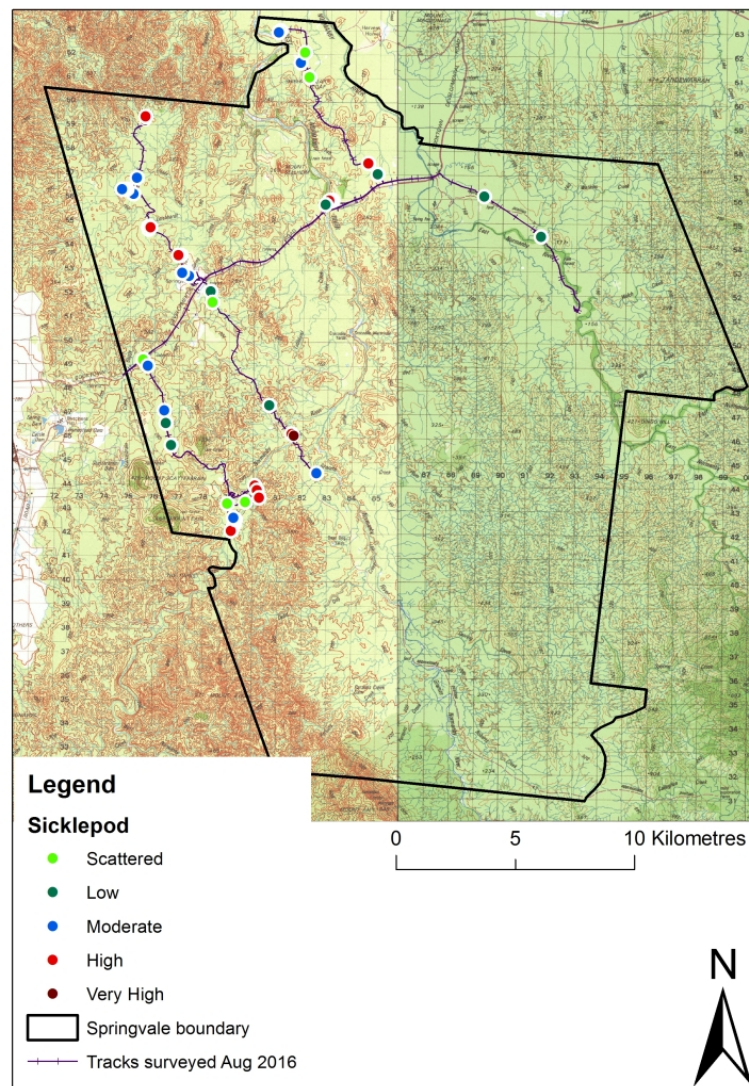
Rubbervine (*Cryptostegia grandiflora*)



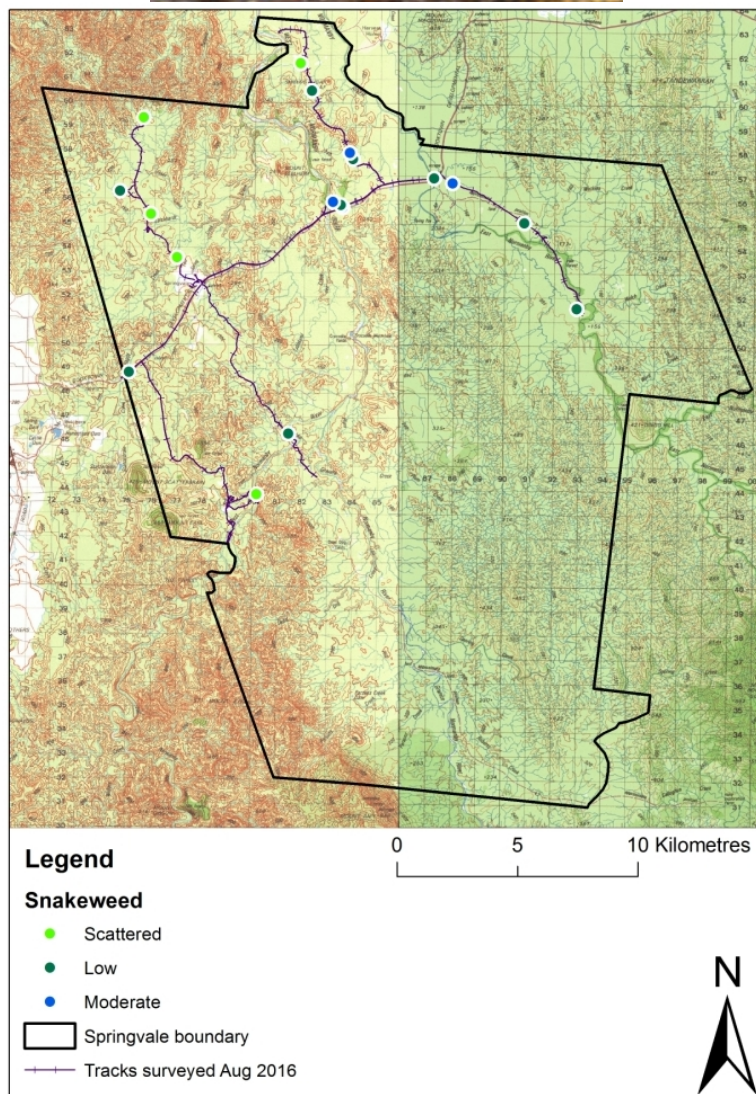
Sensitive Weed (*Mimosa pudica*)



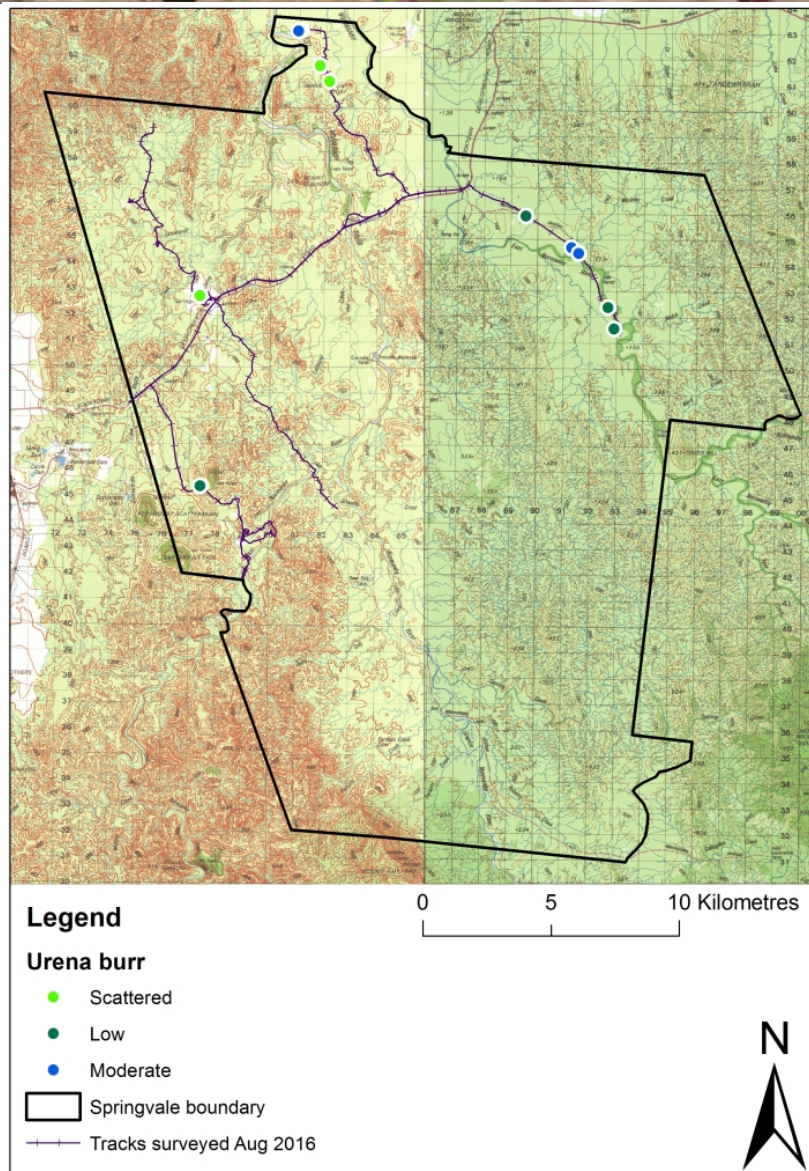
Sicklepod (*Senna obtusifolia*)



Snake Weed (*Stachytarpheta jamaicensis*)



Urena Burr (*Urena lobata*)



Wynn Cassia (*Chamaecrista rotundifolia*)

