Grazing land condition decline in Queensland's Northern Gulf: 1990 - 2018

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Background

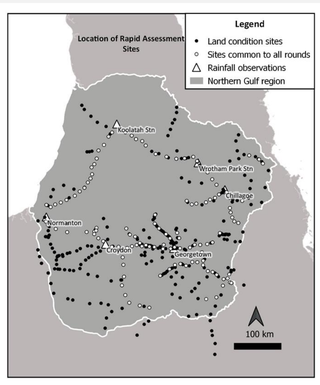
This poster describes efforts that have been made to determine and document the land condition decline in Queensland's Northern Gulf region between 1990 and 2018. Queensland's Department of Agriculture and Fisheries (DAF) Beef Extension Officers, in collaboration with staff from the Northern Gulf Resource Management Group (NGRMG) / Gulf Savannah NRM, conducted three Rapid Assessment on-ground surveys in 2004, 2012 and 2016. This was complemented by analysis of land condition changes at QGRAZE sites from 2006 – 2018, and ground cover dynamics using Remote Sensing datasets from 1990 to 2016.

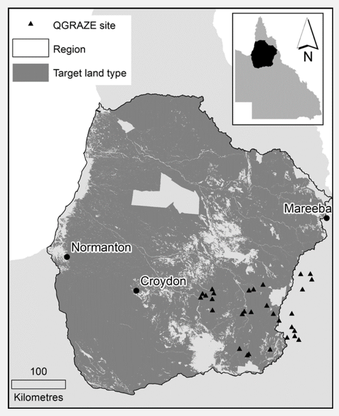
Assessments of land condition

On – ground assessments

Rapid assessments

- 262 sites were assessed for land condition over 3 survey periods from 2004, 2012 and 2016.
- 105 of these sites were revisited at all three surveys.
- Rapid Assessment surveys compared soil surface condition, pasture composition, woodland thickening, and exotic weed indicators against their assumed original state.



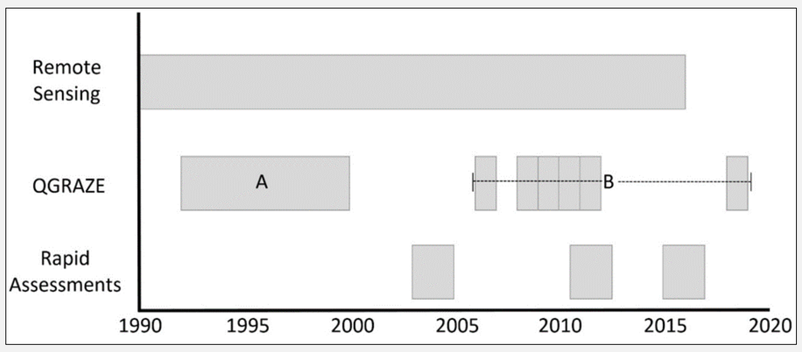


QGRAZE site assessments

- 29 QGRAZE sites were analysed for land condition changes from 2006 – 2018.
- Land condition assessments were as conducted for the Rapid assessment sites

Remote sensing analysis for ground cover dynamics 1990 – 2016

- Remote sensing datasets were analysed for ground cover dynamics between the 1990 – 2016 period, across both the QGRAZE sites and the land types where the 262 rapid assessment sites were located.



Example and condition assessment site discounted for timber thickening changes in 8 years

Improving land condition pays dividends

At **Blanncourt**, reduced stocking rates, wet season spelling, feeding programs, cross breeding and pasture improvement over 15 years resulted in:

- **33% decrease in breeder numbers**
- **70% increase** in area of the property in A and B land condition (from 15% to 85%)
- **23% increase in weaning rate** (from 46% to 69%)
- **80–100kg/head increase in** weight (from 70 to 160 kg)
- **80% decrease in cow deaths** (from 190 to 38)
- **93% increase in total gross margins**

Ecobeef project - Increased pasture production at **Namuel**

Paddock spelled for 4 successive wet seasons 2007 - 2011. Most years the paddock was heavily stocked over the dry season – 1 beast:4 ha.

Little difference in End of wet season pasture yields:

2007 – 1474 kg/ha

2011 – 1669 kg/ha

Key productivity increase was increase in proportion of 3P grasses and stylos.

Yield of 3P grasses and stylo

2007 – 31.4% of pasture yield (492 kg/ha)

2011 – 58.2% of average yield (857 kg/ha)

At **Namuel,** reduced stocking rate from high (5 ha:AE) to safe (7 ha:AE) over three years

- Safe stocking rate resulted in **higher branding rate by 10% units every year**
- **Dry cow cull weight averaged 56 kg heavier** at the safe stocking rate
- **Wet cull cow weight averaged 50 kg heavier** at the safe stocking rate
- **Steers on average gained 28 kg more** at the safe stocking rate

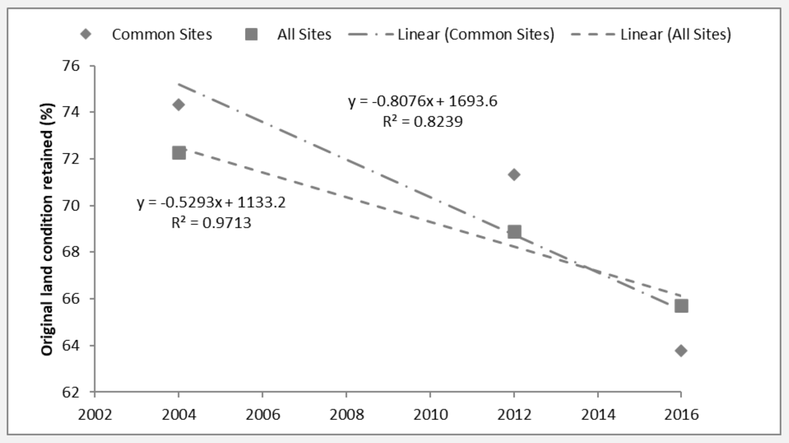
Fed into modelling

Results

Land condition decline

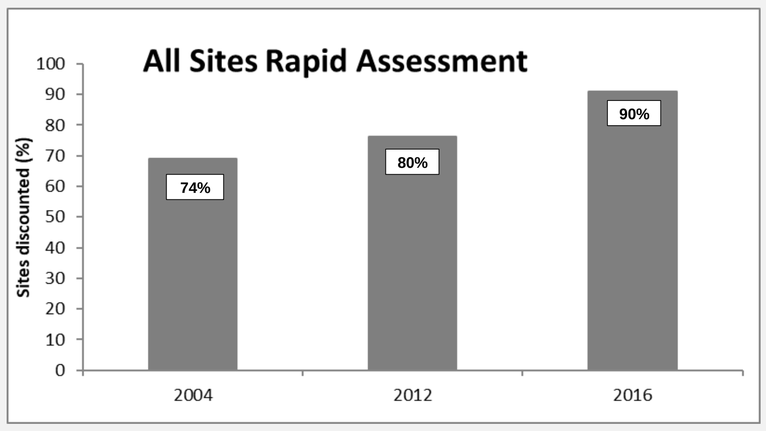
- Since 2004, using all 262 sites, original carrying capacity declined from 72% to 66%.
- When using only the common sites (105 sites) over the three periods, the trend is worse - 4% to 64%.
- The trend was similar in both high and low grazing value land types, with high value land type condition always slightly lower

LAND CONDITION DECLINE = CARRYING CAPACITY DECLINE

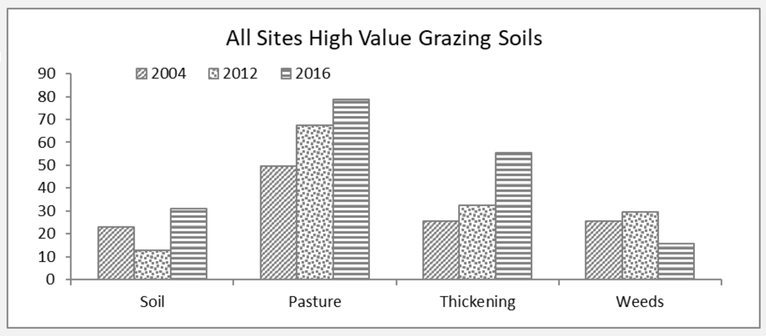


Sites discounted for land condition variables

- In 2004, 74% of the rapid assessment sites were discounted due to one or more or more factors.
- This increased to 80% of sites in 2012, and 90% of sites in 2016



- Across the three rapid assessment periods, on high grazing value land types:
- 73% of sites were discounted for pasture composition
- 38% for timber thickening
- 24% of sites for soil surface conditions
- 24% of sites for weed invasion

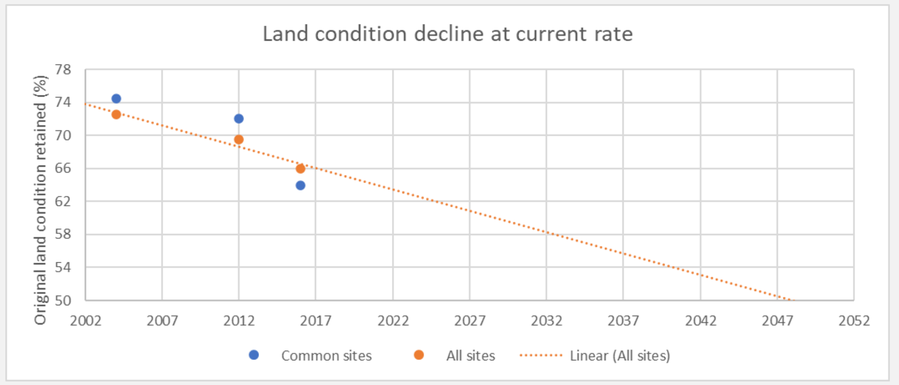


Remote sensing analysis for ground cover dynamics 1990 – 2016

- Remote sensing analysis suggests a total regional ground cover loss of 4.75% between 1992 and 2015

The Future……?

- **If current trends in land condition continue it is estimated that 50% of original carrying capacity will be lost by 2047!**
- We believe maintaining or improving land condition manages land and business risk
- Analysis of a representative Northern Gulf property managed to steadily improve land condition through reduced stocking rate (2500 AE to 1500 AE) and wet season spelling (20% of property)
- 30-year herd modelling demonstrated improved cumulative 30-year cashflow of (+) $388,300, compared to the business-as-usual land condition decline scenario *[Bowen et al. (2019), modelling analysis based on weighted 2006-2018 prices].*



Gulf Savannah NRM

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