



## Remote sensing to monitor and understand the landscape ecology of an invasive weed on monsoonal wetlands of Kakadu


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 Traditional Custodians of KNP

KNP weeds team

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## Para grass

- Perennial
- Forms mono-specific patches
- Reproduces by vegetative growth & by seed







## AIM

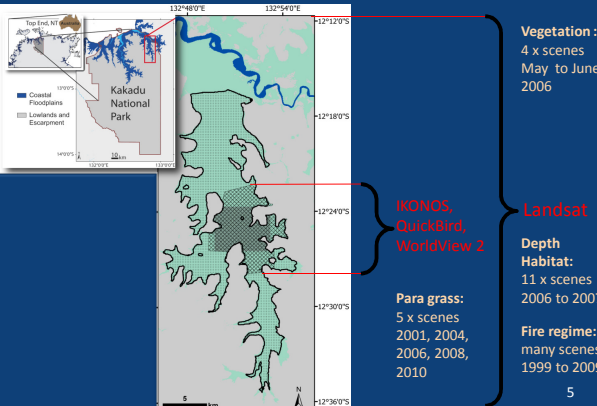
### To understand distribution dynamics to assist in weed management in Kakadu National Park



## OBJECTIVES

- 1) Map para grass and native vegetation 
- 2) Map wetland habitats / fire regimes 
- 3) Spatial vulnerability assessment 
- 4) Determine Inter-annual changes in para grass using high-spatial resolution imagery 
- 5) Describe para grass dynamics in relation to habitat

## Sites and Image datasets



**Vegetation:** 4 x scenes May to June 2006

**Para grass:** 5 x scenes 2001, 2004, 2006, 2008, 2010

**IKONOS, QuickBird, WorldView 2**


**Landsat**

**Depth Habitat:** 11 x scenes 2006 to 2007

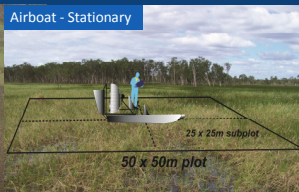
**Fire regime:** many scenes 1999 to 2009

## Field survey methods

### Eyes, Photography & GPS

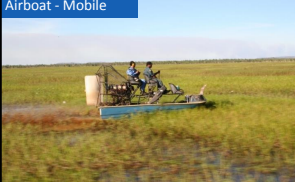


### Airboat - Stationary

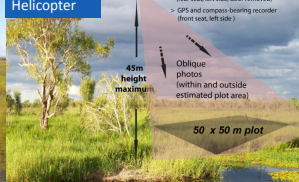


25 x 25m subplot  
50 x 50m plot

### Airboat - Mobile

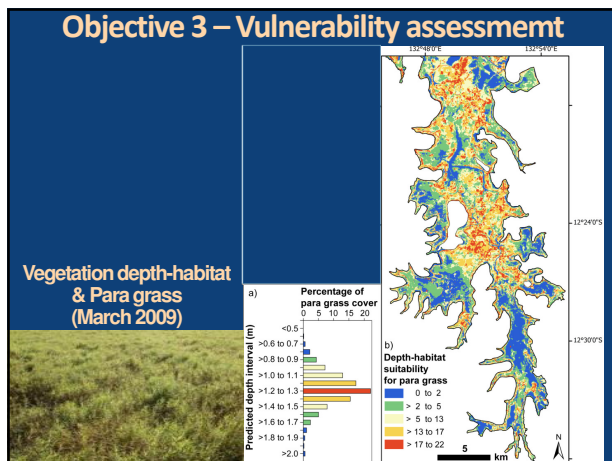
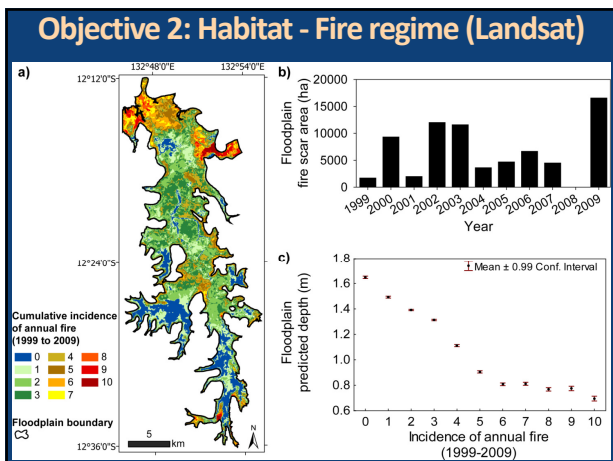
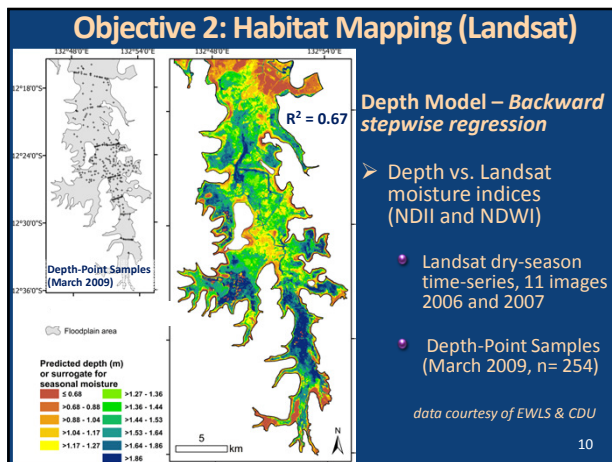
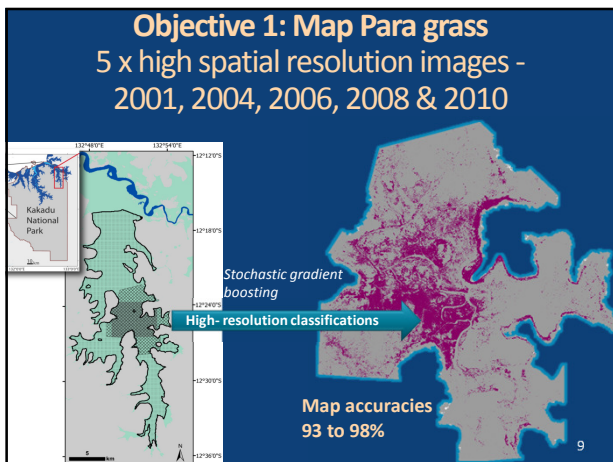
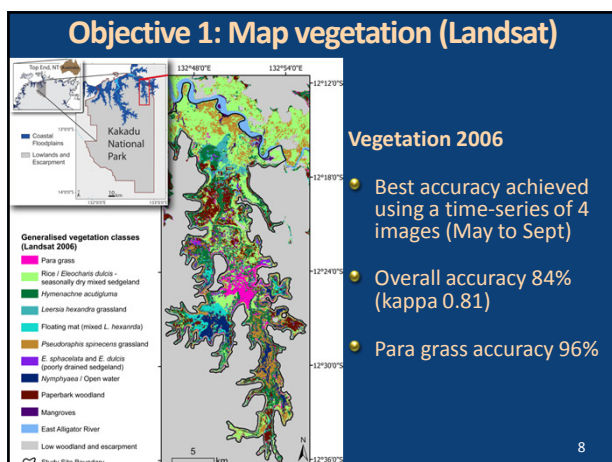
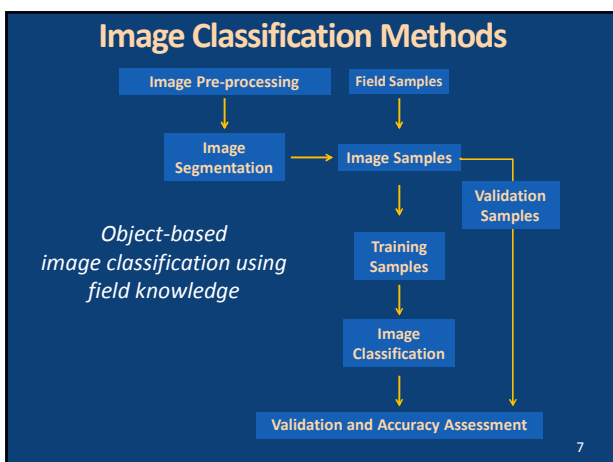


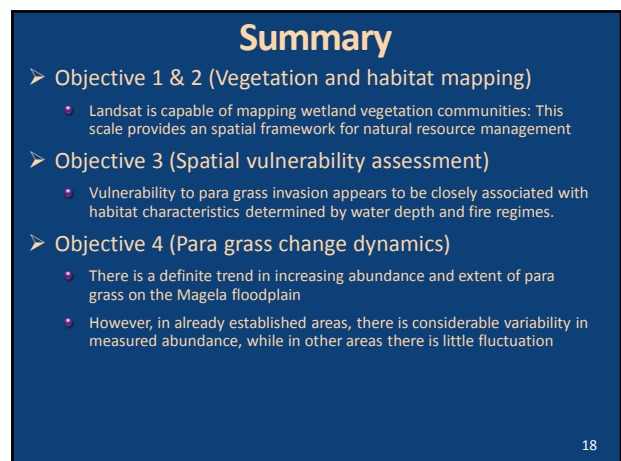
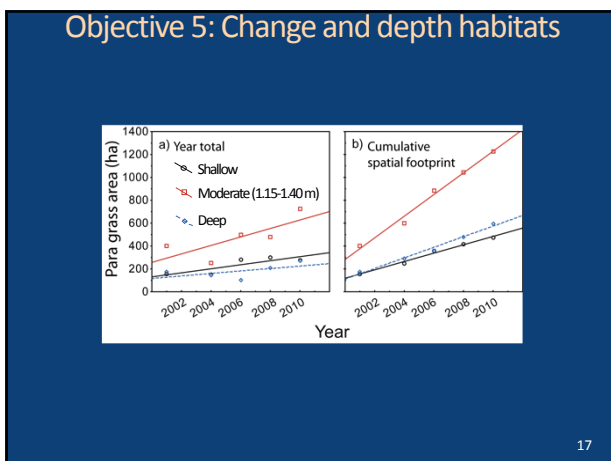
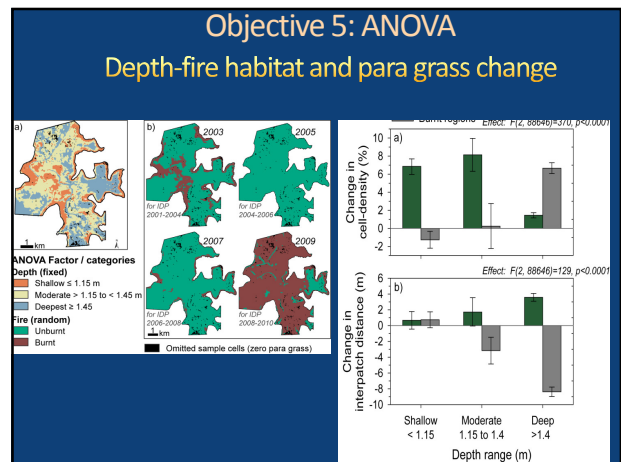
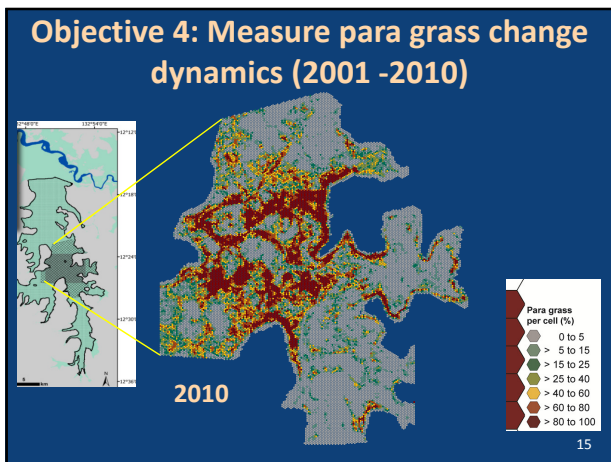
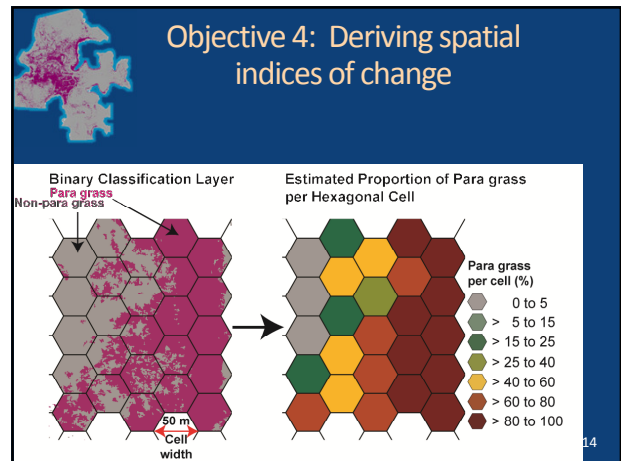
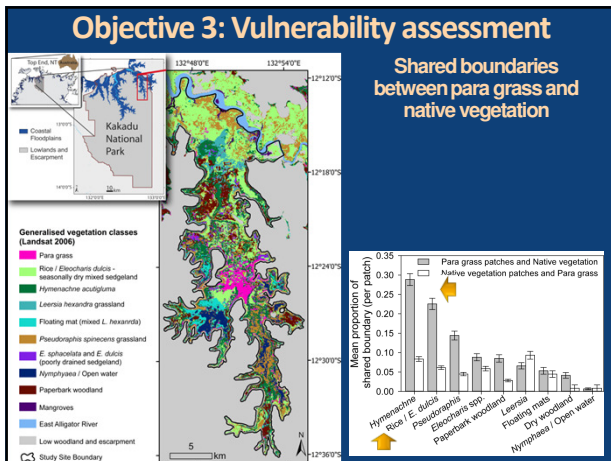
### Helicopter



45m height maximum  
plot: photos (within and outside estimated plot area)  
50 x 50 m plot

- Vegetation recorder with camera (rear seat, left side, clear removed)
- GPS and camera boomer recorder (front seat, left side)



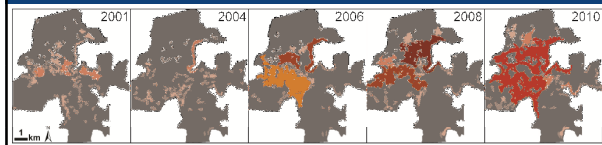


## Summary

- Objective 5 (Change in relation to habitat)
  - Depth and fire regime interact to determine dynamics of para grass invasion

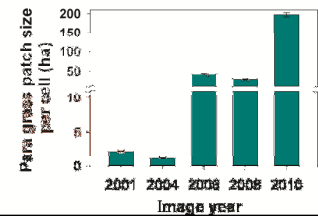
19

## Objective 4: Changes in patch connectivity

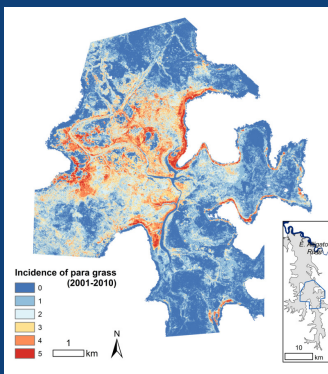


a) Maximum patch size per cell (ha) - 2001 to 2010

- 0 to 1
- > 1 to 5
- > 5 to 20
- > 20 to 50
- > 50 to 100
- > 100 to 300
- > 300 to 500
- > 500

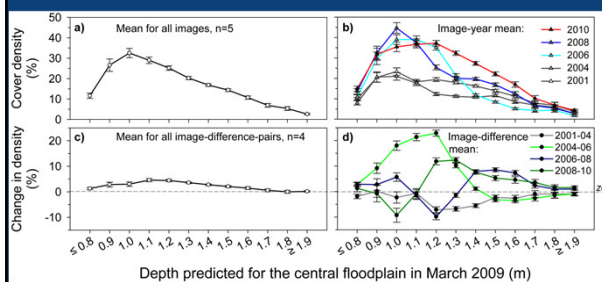


## Objective 4: Cumulative Incidence of Para grass (five maps: 2001-2010)



21

## Objective 5: Change and depth habitats



22