Feral Species in Northern Australia: Savvy Surveillance and Evidence-Based Control

Corey J. A. Bradshaw

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"An uncontrolled outbreak could lead to key beef, lamb and pork export markets being closed for more than a year; control costs would be between $8 billion and $13 billion, and the consequences of an outbreak would be felt for up to 10 years".

(www.daff.gov.au)

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Brucellosis and Tuberculosis Eradication Campaign (BTEC)

- $850 million
- achieved B-T-free status
- little to no data collection
- back where we started
- B-T still likely to exist
- key host population

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J Estbergs, 1977. Ranger Uranium Environmental Inquiry: Second Report. Canberra: Australian Government Publishing Service

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Feral animal reduction in Northern Territory problematic

(1) large populations;

(2) cost of control increases with decreasing animal density;

(3) remote and rugged terrain makes access and logistics difficult

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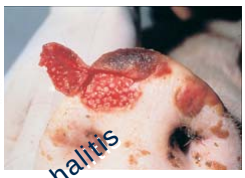
foot-and-mouth



leptospirosis

toxoplasmosis

Japanese encephalitis

bovine tuberculosis

Kunjin virus

dengue

hendra virus

Bunya virus

malaria

melioidosis

brucellosis

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- Asian swamp buffalo
- pig
- banteng
- cattle (*B. indicus; B. taurus*)
- sambar deer
- rusa deer
- donkey
- horse
- goat
- dog
- cat
- house mouse
- black rat
- rock pigeon
- cane toad
- mosquito fish
- flower-pot snake
- house gecko
- European bee
- big-headed ant
- fire ant
- Singapore ant
- crazy ants
- Pharoah's ant
- ghost ant
- cockroach
- earthworm

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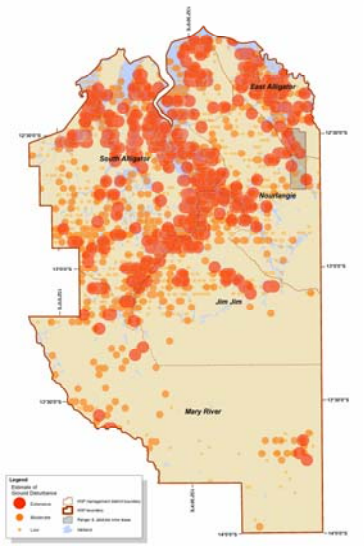

Distribution of ground disturbance damage by feral pigs on KNP (2001 & 2002)
P. Bayliss

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- collared doves
- tree sparrows
- spice finches
- house sparrows
- starlings
- Indian mynah
- house crow
- cichlid fishes
- tilapia
- rosy
- sword tail
- platy
- guppy
- sailfin molly
- black-striped mussel

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Asian swamp buffalo (*Bubalus bubalis*)

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Australian Wildlife Health Network

Commonwealth Expert Group on disease control – emphasis on vector ecology & surveillance

Commonwealth $ with ARC, KNP – broad-scale monitoring & control studies

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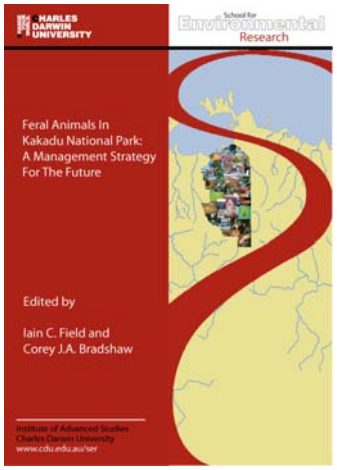
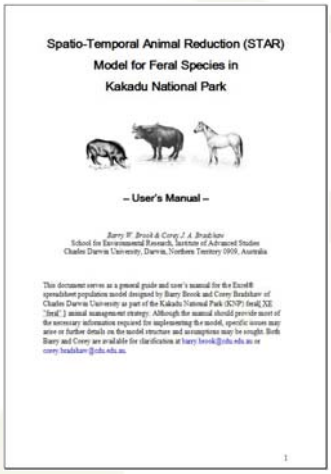
Kakadu National Park - STAR





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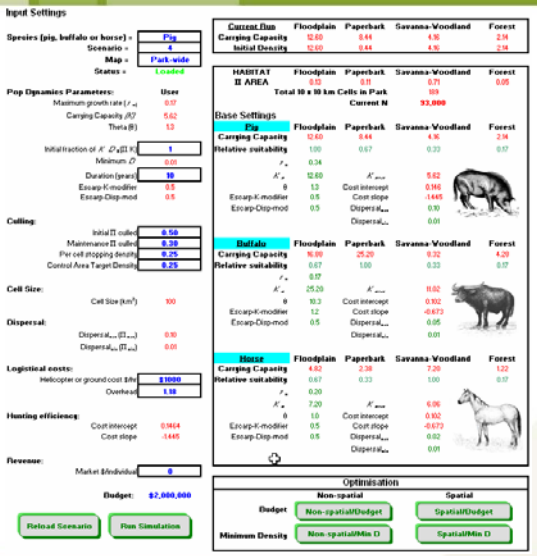

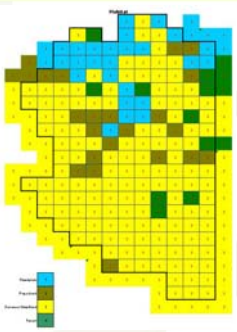

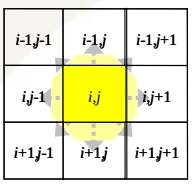

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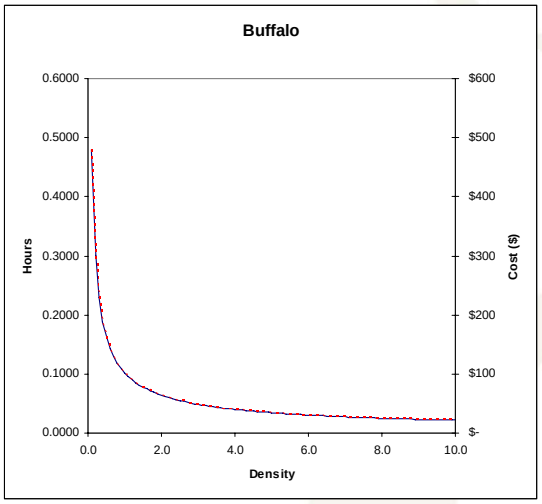

STAR – basis for $10-15 million request to Commonwealth Sessional Committee

10-year programme of pig, buffalo, horse reduction

Adaptive-management framework (implement, data collection, update model…)

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Cane Toads

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- many reptiles at risk from cane toad toxin
- rapid decrease in survival of yellow-spotted goanna following arrival
- reduction in site occupancy of Merten's goanna following arrival (12 months)
- species impacted 3-4 years after arrival
- most other species of *Varanus* little habitat overlap
- cost of exclosures high due to large area required and maintenance

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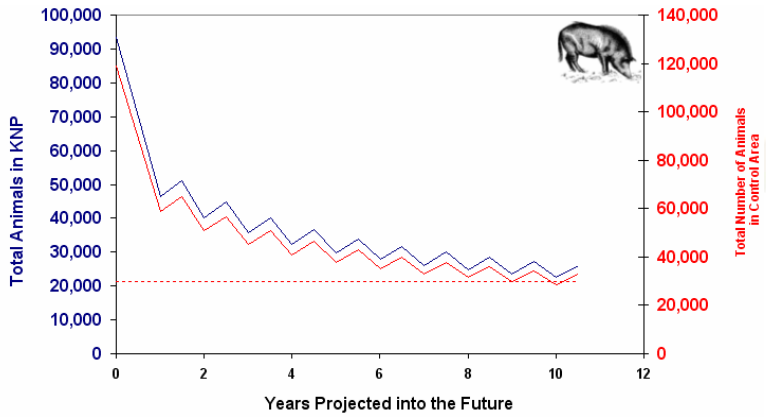
Future work

- monitoring persistence of affected species
- understanding mechanisms for impacted species to persist in the presence of cane toads
- maintaining and expanding the Island Ark translocation programme for impacted species

Savvy surveillance & evidence-based control – recommendations



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Existing models assumption-based

Risk repeating BTEC with no new information

Main parameters:

- survival
- fertility
- movement
- density-damage
- density dependence

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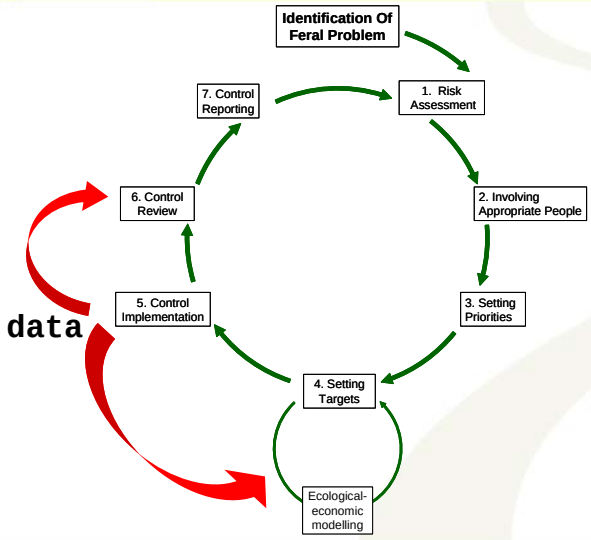

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Accept eradication impossible – density (damage & risk) reduction

Consistent, broad-scale, lengthy monitoring data essential

Broad-scale population surveys less useful than targeted density-habitat relationships

Liaising with other land-management groups (PAN, Aboriginal Corporations, AQIS)

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