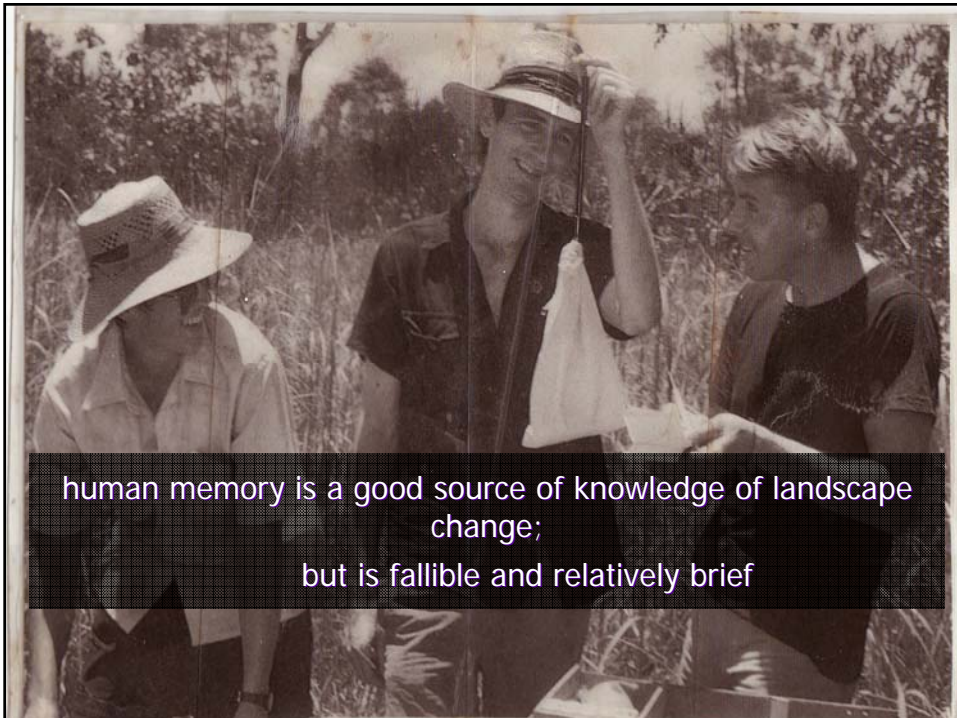


Fauna

John Woinarski



Photo: Alaric Fisher



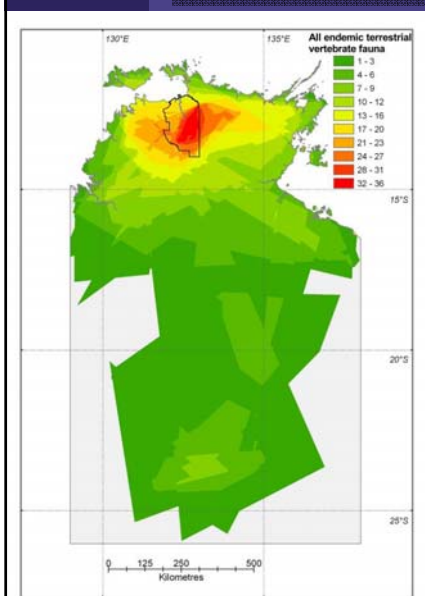
human memory is a good source of knowledge of landscape
change;
but is fallible and relatively brief

Fauna in KNP

- KNP has international significance (recognised in Ramsar and World Heritage listings) for fauna, notably including:
 - Many endemic* species;
 - Many threatened species (including strongholds for those that have declined elsewhere);
 - Wildlife of cultural significance and/or traditional use;
 - Aggregations, especially of waterfowl;
 - Exceptional richness for some groups (e.g. ants, grasshoppers, some aquatic invertebrates).

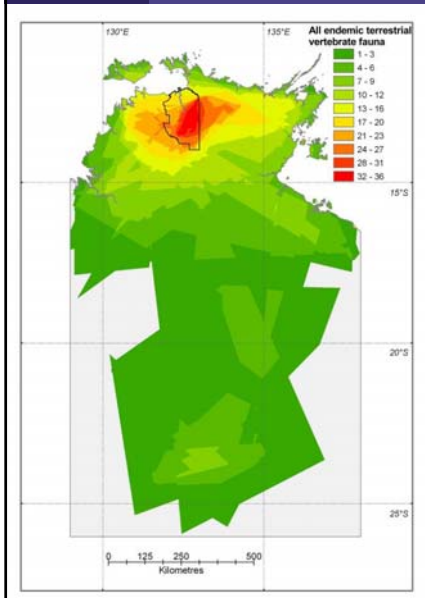
* well, AL plateau, really.

Fauna in KNP: endemism



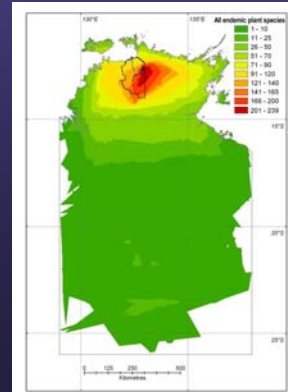
countour map of endemic (vertebrate) species

Fauna in KNP

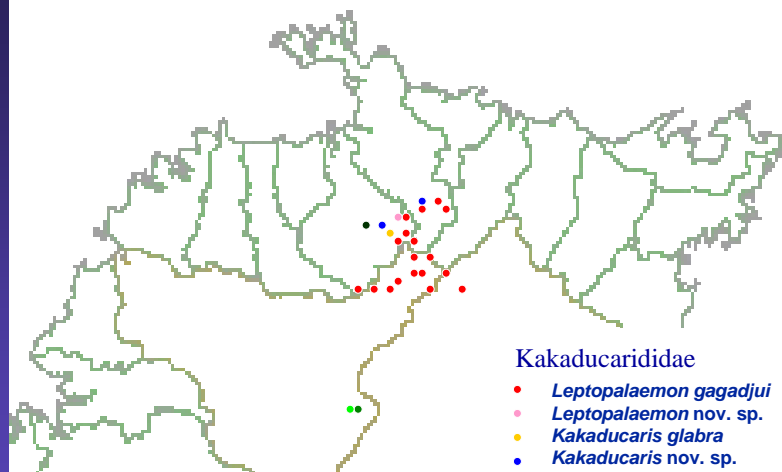


countour map of endemic (vertebrate) species

[Woinarski *et al.* (2006) *Aust. J. Botany* **54**, 627-640]



Endemic shrimps of northern tropical streams



Kakaducarididae

- *Leptopalaemon gagadjui*
- *Leptopalaemon* nov. sp.
- *Kakaducaris glabra*
- *Kakaducaris* nov. sp.

Atyidae

- *Atyidae* nov. gen.
- *Parisia ungius*
- *Parisia gracilis*

Slide from: Chris Humphrey

Fauna in KNP: threatened species

- 2 major reviews: Roeger & Russell-Smith (1995), and Woinarski (2004).
 - 21 species listed as threatened under EPBCA
 - (3 fish, 4 marine turtles, 2 other reptiles, 6 birds, 6 mammals).
 - A further 10 species listed as threatened under NT legislation.

Fauna in KNP: state of knowledge

- Broad-scale inventory of terrestrial vertebrates is good;
- Good inventory of some notable invertebrate groups;
- Inventory less good for marine species, stone country invertebrates, and some invertebrate groups generally;
- Limited documentation on Indigenous knowledge;
- Reasonably good knowledge of ecological relationships, responses to threats etc for many faunal groups;
- Very limited knowledge of trends, other than for a very few species.
- Knowledge and data are dissipated

Fauna in KNP

- **Obligations & management approach:**
 - *“Through working with Bininj, ecological processes are maintained to ensure the viability of populations of native plants and animals currently occurring in Kakadu”.*
- and
- *“Conserving the distribution, abundance and diversity of native plants and animals and communities is a fundamental objective of Kakadu National Park management”*

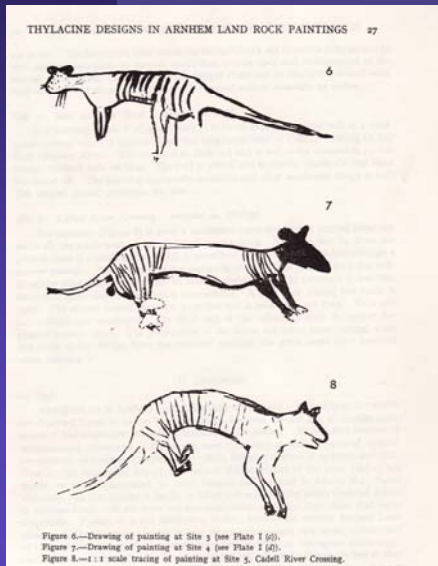
Also obligations to protect and maintain biodiversity in Ramsar, World Heritage, under EPBC Act, terms of leaseback, etc ...

Fauna in KNP: *working with Bininj*



- *Documenting Bininj knowledge – ARC Linkage grant (various Top End communities) [Mark Ziembicki]*
- *Collaborative survey camps (Carol Palmer)*

Fauna in KNP: trends



- Extinction happens, but isn't a particular management success

– 2 mammal species probably extinct in KNP since establishment:

– golden bandicoot (last record 1967)

– golden-backed tree-rat (last record 1969)

Fauna in KNP: trends

Monitoring status for 31 threatened animal species

- NIL: 24 species;
- LIMITED (insufficient to reliably determine trends): 2-3 species;
- OK: 4-5 species (marine turtles, goannas, quolls)

How then do you measure performance relative to the overall objectives in PoM? How do you gauge whether management is good?

Fauna in KNP: trends

An example: brush-tailed rabbit-rat *Conilurus penicillatus*



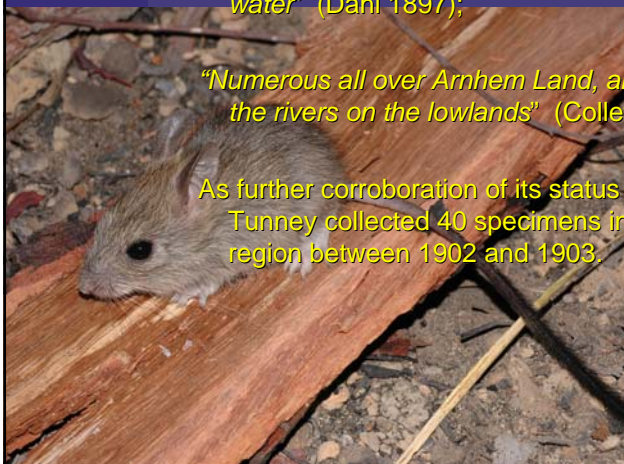
Fauna in KNP: trends

Pre-contact abundance:

"in Arnhem Land is everywhere common in the vicinity of water" (Dahl 1897);

"Numerous all over Arnhem Land, and in great numbers on the rivers on the lowlands" (Collett 1897).

As further corroboration of its status in the area at this time, Tunney collected 40 specimens in the Alligator Rivers region between 1902 and 1903.



Fauna in KNP: trends

1960s-1970:

Alligator Rivers Region Fact-finding study
Calaby (n.d. = ca. 1971) stated that, in the Kakadu area, it was:

“a reasonably common species, found chiefly in woodland with suitable hollow tree shelters”



Fauna in KNP: trends

1980s:

Braithwaite (1985) stated that, in Kakadu:

“This beautiful uncommon species is likely to be widespread in open forest and woodland”.

(Recorded at 3 of 18 survey sites)



Fauna in KNP: trends

1990s-2000s:

Recorded at 0 of about 500 survey sites, including those 3 where recorded in 1980s



Fauna in KNP: trends

Rabbit-rat problems:

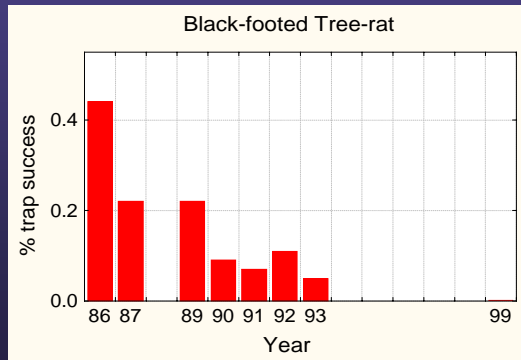
- relies on hollow logs (and/or tree hollows);
- depends upon seeds of perennial grasses;
- [very predateable], especially after fire

(a single dry season fire led to loss of experimental population)

[nb populations have remained stable at Garik Garnu Barlu NP over exactly the same period]

Fauna in KNP: trends

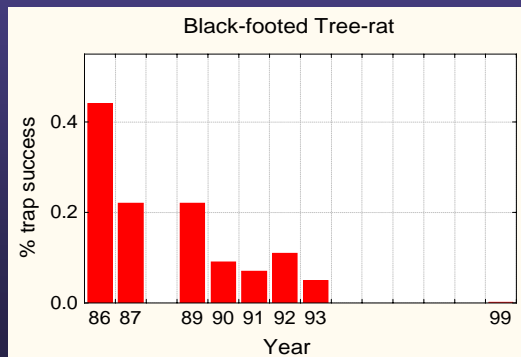
Mammal data corroborate results from Kapalga:



Woinarski et al. (2001). Austral Ecology 26, 360-370.

Fauna in KNP: trends

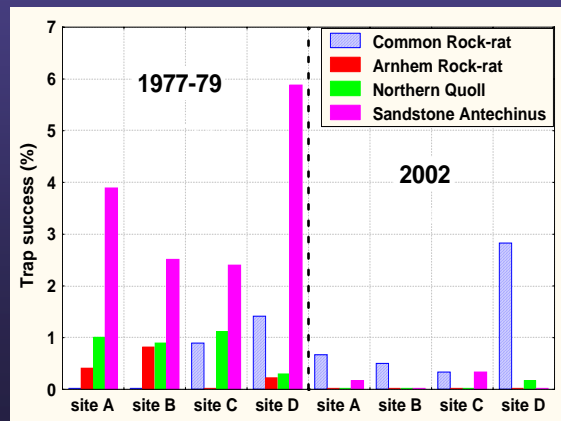
Mammal data corroborate results from Kapalga:



Tree-rat problems – use
of hollow logs, tree
hollows, native fruits

Fauna in KNP: trends

... and results from Nawurlandja



Fauna in KNP: trends

... and anecdotal records across the stone country

Fauna in KNP: trends

General wildlife monitoring:

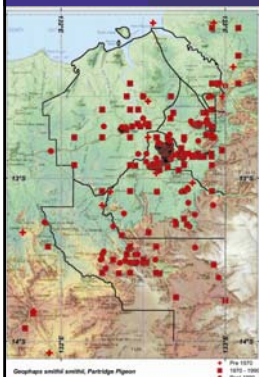
Fauna sampling in (the 134) Fire Monitoring plots:

year	no. plots baseline sampled	no. plots re-sampled	cumulative no. plots sampled
1995/96	15	0	15
2000/01	5	15	20
2001/02	36	0	56
2002/03	14	0	70
2003/04	44	0	114
2004/05	0	0	114
2005/06	0	0	114
2006/07	0	0	114

Fauna in KNP: data basing

Currently no central (nor distributed) collation of data about KNP threatened (or other) fauna

... but some recent developments



Fauna in KNP: threats

- *The usual suspects (fire, weeds, feral animals)*
 - » *Cats @@@*
 - » *Toads @@ (quolls, goannas, snakes, aquatic invertebrates)*
 - » *[but increases for marine turtles, partridge pigeons, skinks etc]*
 - » *Horses/pigs @*
 - » *Others @*

 - » *Too much fire @@@@*
- *Global climate change;*
 - » *Epecially waterfowl and other aquatics*
- *Lack of:*
 - *explicit direction and targets,*
 - *performance review,*
 - *knowledge of trends,*
 - *input to management priorities and actions.*

Fauna in KNP: priorities for management

- *Monitoring*
- *Monitoring*
- *Monitoring*

- *Knowledge gaps (some invertebrates, some understanding of management requirements)*

- *Knowledge brokering (at least data basing)*

- *Mechanisms for reducing fire*

- *Input of Bininj knowledge*

- *Mechanism for reducing cats (?)*

- *Quantification/audit of performance*



Fauna in KNP: thanks

- Tropical Savannas CRC
- Many Natural Resource Managers at Kakadu
- Carol Palmer, Alaric Fisher, Mark Ziembicki
- Traditional landowners