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Indigenous Ecological Knowledge and Western Science

Critical foundations for the development of sustainable wildlife enterprises in remote Indigenous communities

Adrian Fordham and Bill Fogarty

Purpose of the Overall Study

- Identify the contributions made by IEK and WSK to wildlife enterprise
- Examine ways local Indigenous people and scientists work
- Assess Education and Training
- Identify institutional barriers to the effectiveness of wildlife enterprises

Characteristics of the Study

- The research team:

  Adrian Fordham, Bill Fogarty and Damien Fordham

  with assistance from BAC Wildlife Centre, Qld. Museum, CDU, MCEC and NT DET

- Multi-disciplinary study, involving a research team with expertise in:

  anthropology,

  western science - ecology, taxonomy and wildlife management,

  science education,

  Indigenous education & training, and

  business planning & organisational evaluation

The role of western science in wildlife enterprises

- 1. Provides the necessary evidence that wildlife utilisation for commercial purposes can be sustainable
- 2. Can identify species and the necessary conditions for such utilisation
- 3. Contributes to the development of the appropriate collection and animal husbandry techniques and the monitoring of harvesting impacts

Defining IEK and its application to wildlife enterprises

- A variety of terms and definitions
- Widespread use in land, sea and wildlife management, although often used uncritically
- The challenge for research is to:

  develop a framework that is not just concerned with identifying a separate realm of knowledge but rather to focus upon the interconnectedness of knowledge systems

Complementarity of IEK and WSK

- Information gathering in terms of locality and time -

  provides more complete spatial and temporal

- Identifying averages and extremes -

  enables application of general principles to local situations

- Quantitative and qualitative information

  leads to better understanding of complex systems

- Hypotheses and testing

  testing locally relevant hypotheses in shorter time-frames

[Moller et al. 2004]

Focus of the study

- The BAC Wildlife enterprise, in particular:

  a well established freshwater turtle egg harvesting and hatchling industry, with hatchlings sold into the Darwin domestic pet market;

  a fledgling tarantula spider industry, with potential sales of spiderlings to the Australian domestic market and venom extraction for pharmaceutical companies

The two species……..

- Chelodina rugosa

Selenotholus sp.

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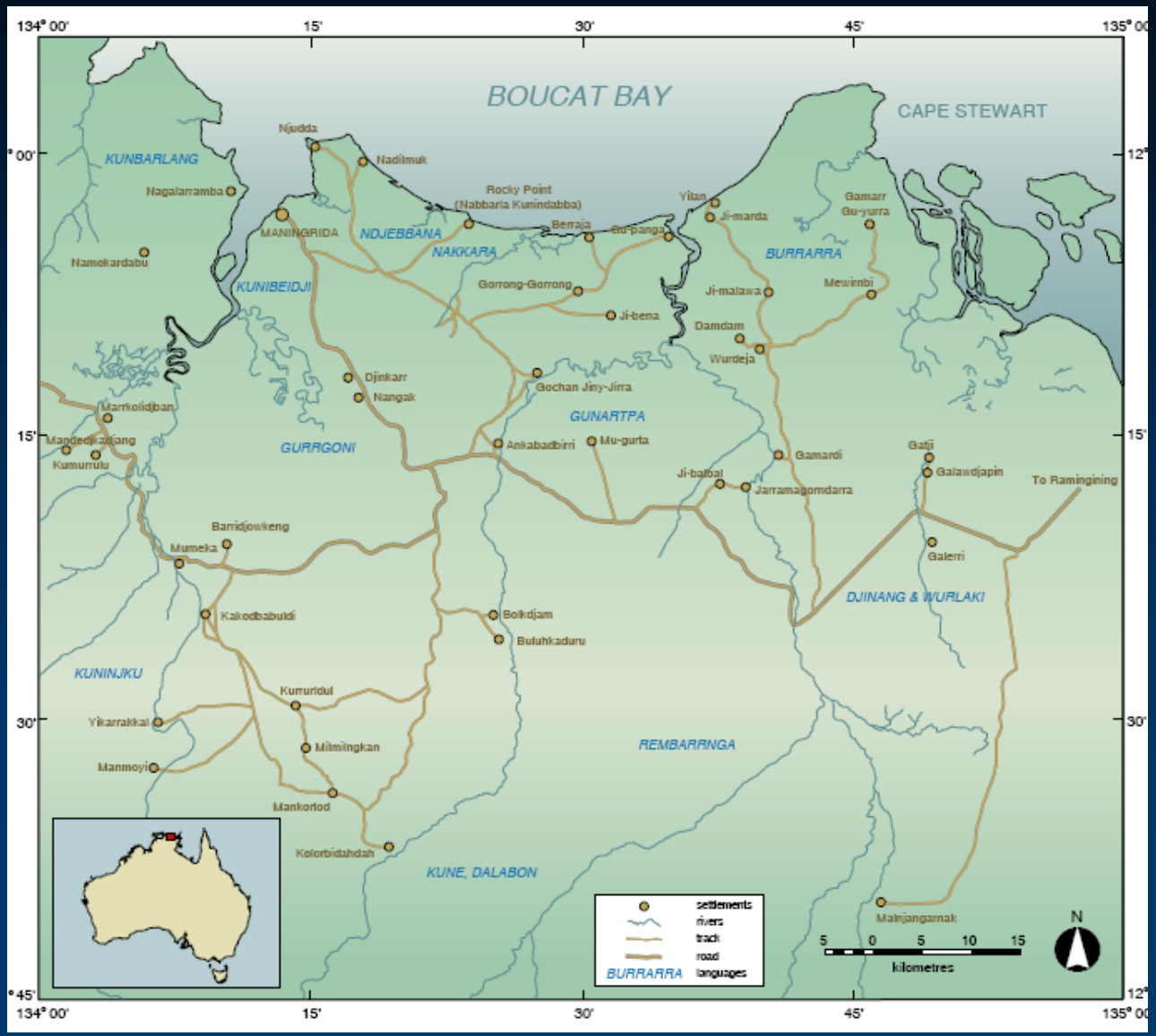
Selenotholus sp

The two habitats…….

- Billabong (turtle)

Floodplain (tarantula)

Location: Maningrida region



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Data gathering for IEK and WSK

- Data gathering involved 60 interviews in August - October 2008 with:

  traditional owners, Djelk Rangers and BAC , across eight language groups, both genders and using interpreters

  scientists involved with the enterprise

  training providers, senior & science secondary school staff and students and science consultants with NT DET

Combined with earlier interviews (2000-2005) where detailed field notes were taken during the establishment of the turtle industry (N=35)

Scope of IEK collected for turtle & tarantula

- Cultural Importance
- Species identification: taxonomy
- Species distribution: spatial and temporal
- Species abundance
- Life cycle
- Inter-generational transfer

Languages and taxonomy

Language Group	Chelodina rugosa	Selenotholus sp.
Ndjebbana	tba	Kidjikarrabba
Rembarrnga	wammarra	garr
Kune	gomdow	garr
Kunjwinku	gomdow	garrum
Burrarra	burnda	gardany
Dalabon	wamarra	karrh
Djinang	banda	djomborlok
Gurrgonni	ngalngi	Dji-dji gardapa

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Combining IEK & WSK

Major tasks and associated IEK & WSK for sustainable turtle industry

Major Task	Relevant Western Scientific Knowledge	Relevant Indigenous Ecological Knowledge
Identification & Access to country	GIS based on geomorphology/ geography	Cultural practices & beliefs of traditional owners
Collection of individuals from wild	Ecology of savannah, wetlands and billabongs etc.	Species distribution and species abundance
	Life cycle and physiology of turtle	Knowledge of species biology
		Harvesting regimes
	Animal trapping & handling techniques	Harvest techniques
Wildlife husbandry	Facility management	
	Measurement and description of captive turtles, incl. trends	
	Incubation techniques	
	Hatchling husbandry	

Major tasks and associated IEK & WSK for sustainable turtle industry (cont.)

Maintaining sustainable populations	Ecological principles of population maintenance	Long-term and short-term knowledge of environmental impacts
		Wildlife refugia
	Statistical modelling	Spatial and temporal rotations of harvesting
	Variability within landscape using BOM records, other scientific sources.	Spatial and temporal understanding of variability within landscape (year to year changes)
	Captive breeding and release programs	

Knowledge transmission and pedagogic opportunities

- Inter-generational transmission of IEK

[Courtesy A. Georges]

Education & training in support of an Indigenous enterprise - Turtle egg incubation