

Rangeland Monitoring and Biodiversity Data

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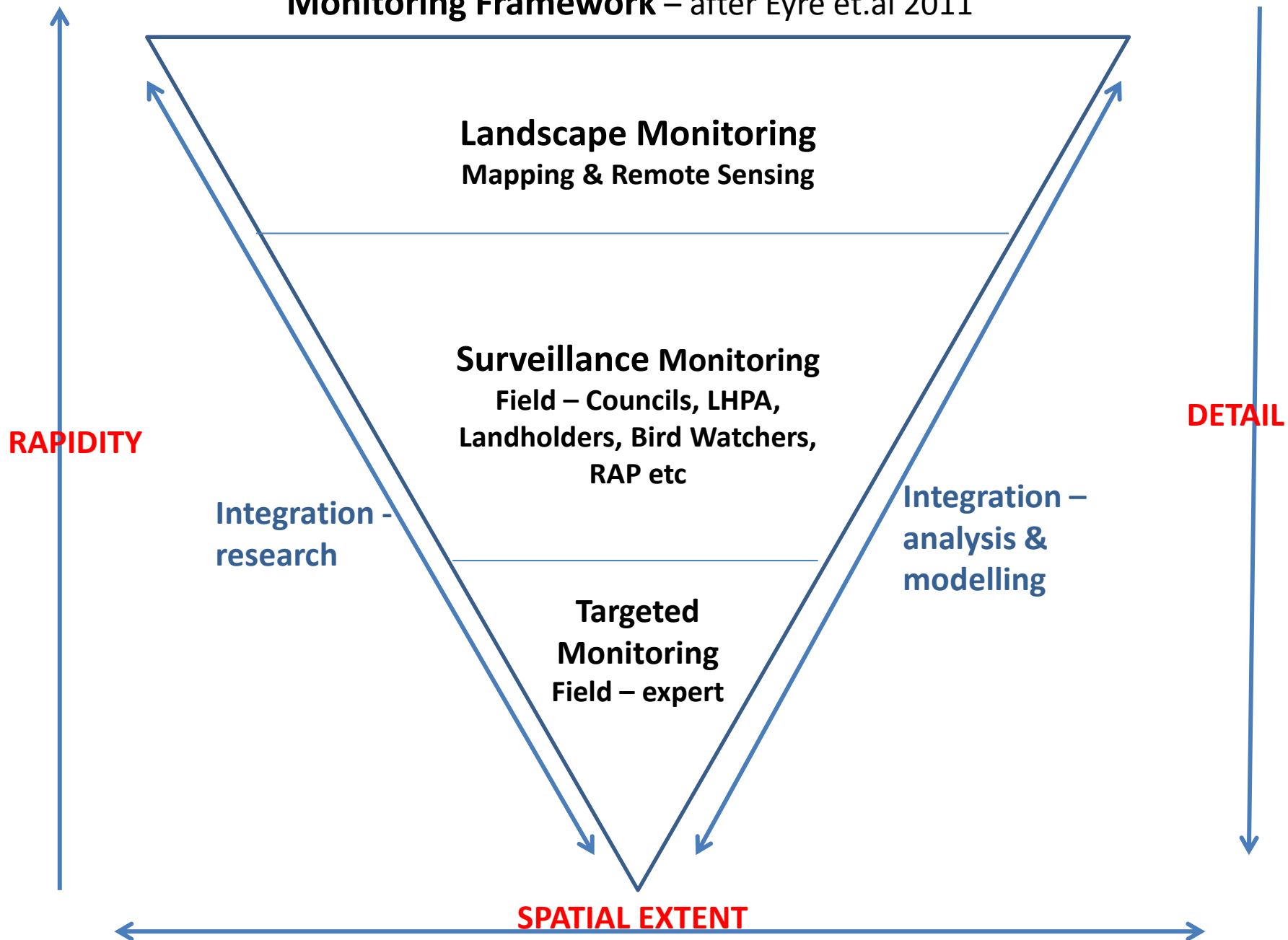
Background

- **Designed and implemented the NSW Rangeland Assessment Program (RAP) - 1988**
- **National Rangeland Monitoring Program – 1990**
- **National Land and Water Resources Audit – Rangeland Monitoring Committee - 1998**
- **Rangelands - Tracking Changes, 2001**
- **Australian Collaborative Rangelands Information System**
- **Rangelands –Taking the Pulse, 2008**

Issues

- Scale – area, size of species, populations.
- Time – to measure, long term and repeat times
- Stratification of landscapes
- ‘Boom & Bust’ of rangelands
- Support – long term?

Monitoring Framework – after Eyre et.al 2011



What makes up biodiversity?

- Plants species and vegetation communities
- Bird species
- Vertebrate animals
- Reptiles
- Insects
- Soil biodiversity
- Micro-organisms

Pressures on Biodiversity

- Grazing Management
- Feral predators
- Invasive species (competition)
- Fire regimes
- Climate variability (change)
- Habitat changes (clearing/structure/species)
- Refugia modification

Grazing Management



Feral Pests





Invasive Weeds – Habitat change



Habitat Changes



Habitat Changes



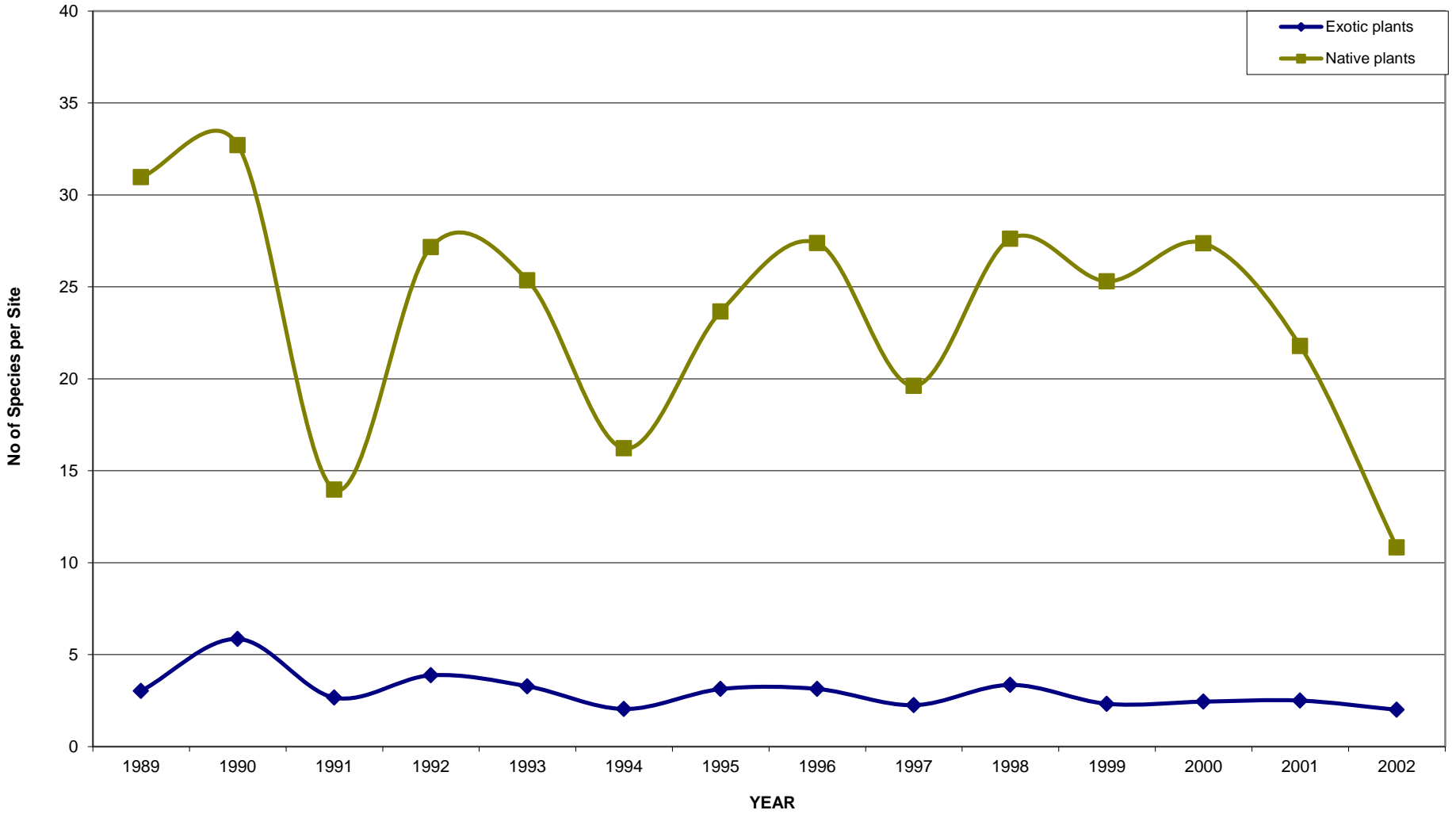
Cuttaburra Wetlands - Refugia



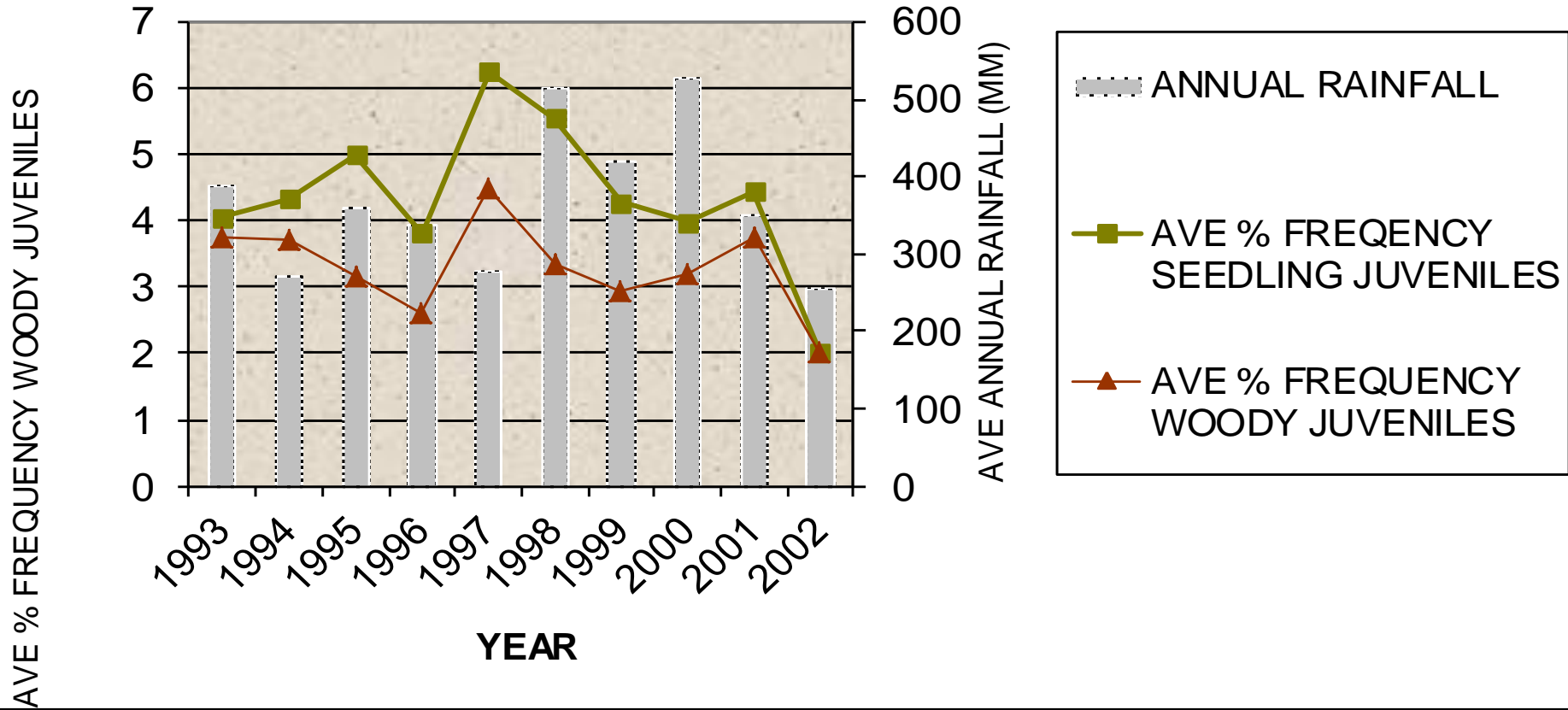
Plant species and Vegetation Communities

- Species lists (Landholders & RAP)
- Remote monitoring (satellites)
- Vegetation structure and production (RAP +)
- Grazing management systems - biomass (Industry & CMAs)
- Invasive plant species (Councils & RAP)

HRED Plant Diversity: Natives and Annuals



FREQUENCY OF JUVENILE WOODY PLANTS



Native Vegetation Communities

Nelia Shrubland - EEC



Threatened Species
Lancewood - *Acacia*
petraea



Native Species – Natural & Cultural values



Bird Species

- Birds Australia surveys
- Local Bird Watchers
- Migratory birds (International, National & local)
- Predator numbers (LHPA, roo shooters etc.)
- Landholder observations
- Habitat management

Bird Breeding Habitats





Bird Watching - Records



Native Species and Feral Predators



Vertebrate Mammals

- Monitoring programs (kangaroo counts, Yellow footed rock wallaby)
- Fauna surveys (scale issues – time & space)
- Regional surveys (Cobar Peneplain Biodiversity Survey)
- Predator monitoring (LHPA – fox, pigs etc)
- Habitat evaluation
- Landholder observation (under utilised?)

Fauna Site Surveys



Natural Values –Peery Lake & Mound Spring



Feral Pests – predator and destroying habitat



Reptiles

- Reptile Surveys
- Habitat evaluation
- Local enthusiasts?

Pit Traps – reptiles and small mammals



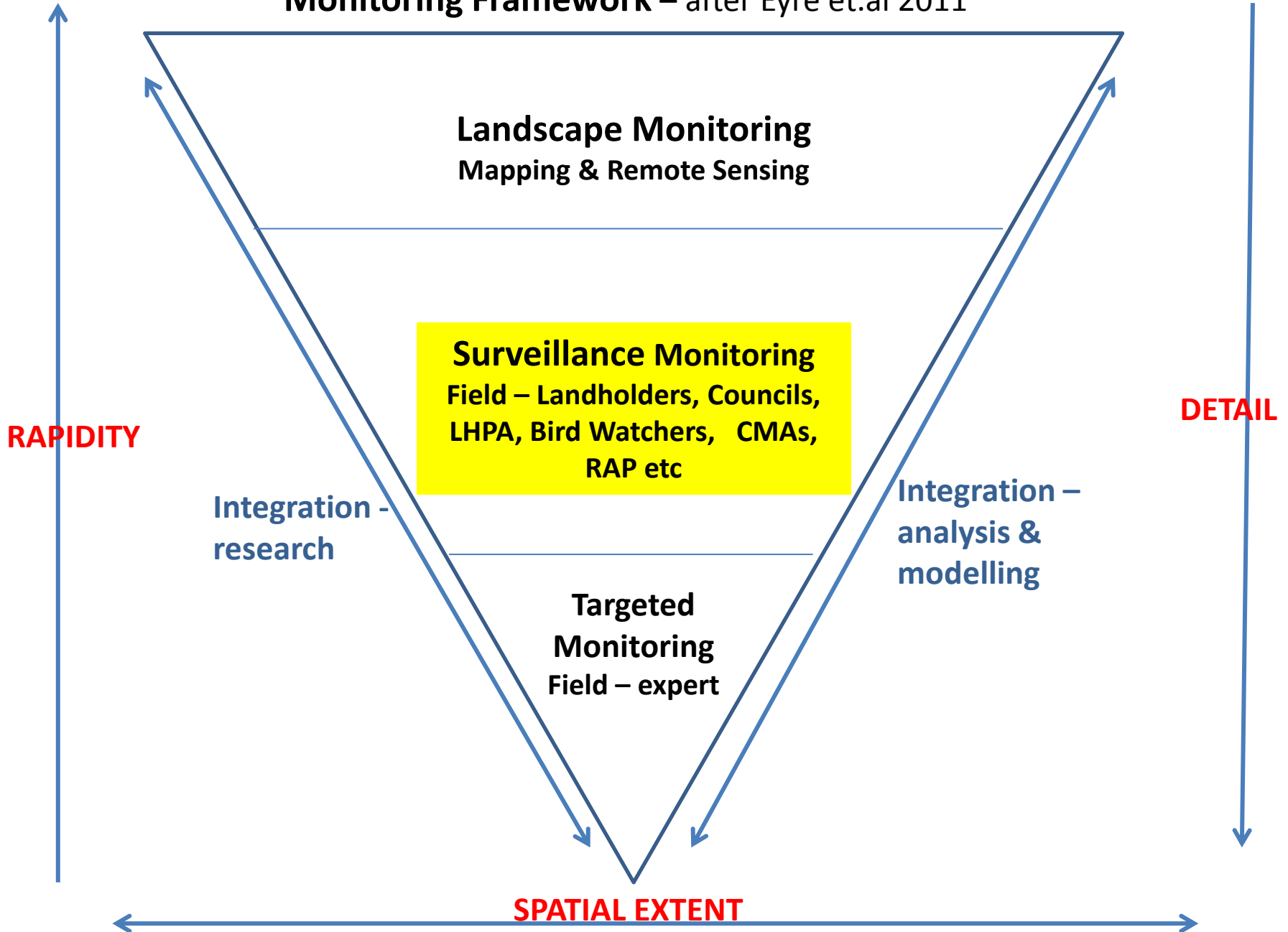
AND

Insects ??????

Soil Biodiversity ??????

Micro-organisms ??????

Monitoring Framework – after Eyre et.al 2011



Monitoring at the Local Level

- Determine the objectives!!! – reporting, evaluation, records
- Use what is already available – other sources
- Keep it simple and robust – consistency (Photos!)
- Time scale – at multiple levels (purpose)
- Be committed
- Organise and keep good records
- Share Information – communicate development and outputs
- **Use the results in decision making!!**

Information

- National - Australian Collaborative Rangelands Information System – Gary Bastin – CSIRO, Alice Springs.
- State Agencies – Office of Environment & Heritage, DPI etc
- Local – LHPAs, Councils, CMAs –Catchment Condition Reports & Monitoring, RAP?
- Community – ACF, WWF, Bird Watcher groups, Naturalist groups.

Reference papers.

- Bastin, G.N. and the ACRIS MC (2008) 'Rangelands 2008 – Taking the Pulse' (National Land and Water Resources Audit, Canberra)
- Eyre, T.J., Fisher, A., Hunt, L.P. & Walsh F., (2011) Measure it to better manage it: a biodiversity monitoring framework for the Australian Rangelands.
- NLWRA (2001). 'Rangelands – Tracking Changes. Australian Collaborative Rangelands Information System'. (National Land and Water Resources Audit: Canberra)

Australian Rangelands Initiative

- **Rangeland NRM Alliance – 14 regional bodies**
- **Multiple partnerships – CSIRO, State Agencies, NFF, ACF, CRCs, BOM etc**
- **Long term (15 year) programs for rangelands**
- **Coordinate rangeland funding – CfOC, Corridors, Biodiversity program etc**
- **Groundcover – Biodiversity - Cultural Heritage - Ecosystem Services – Monitoring - Awareness**