Ethel Gorge: Aquifer Stresses and Stygofauna Habitat Questions

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Acknowledgements

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Background (year 2000)

- Calcretes identified as habitat most likely to support stygofauna in Pilbara
- Presumed good habitat due to voids in formation
- No stygofauna sampling before 2000
- But: we have long term groundwater data on water level variability in calcrete habitat
Close relationship between calcrete and amphipod occurrence
Sampling yields in 2000

- Bore W245 = highest amphipod yields
- Bore W152 (nearby)
Loss of calcrete habitat for >4 years due to natural recession in water table due to low rainfall years
Question: why is W245 a hotspot?

- Are amphipod fauna actually quite robust?
- Can they survive in partially saturated refugia in calcretes until full resaturation? (eg. > 4 years)
- Can amphipods move laterally or vertically and/or re-colonise previously dewatered aquifers?
- Can amphipods adapt to different habitats? (eg. alluvial formations: gravel-sand-silt-clay-calcrete?)
- Can amphipods adapt to different water quality?
- **Observer Effect**: (effects due to act of observing)
  - do sampling boreholes enhance the habitat for stygofauna?
  - would over-drilled sumps provide a stygal refuge for post-impact re-colonisation?
Observer Effect

- Effects on measurements due to the act of observing itself
- How much do sampling boreholes enhance the habitat for stygofauna?
- Does sampling de-populate stygofauna?
- Would over-drilled sumps provide a stygal refuge for post-impact re-colonisation?