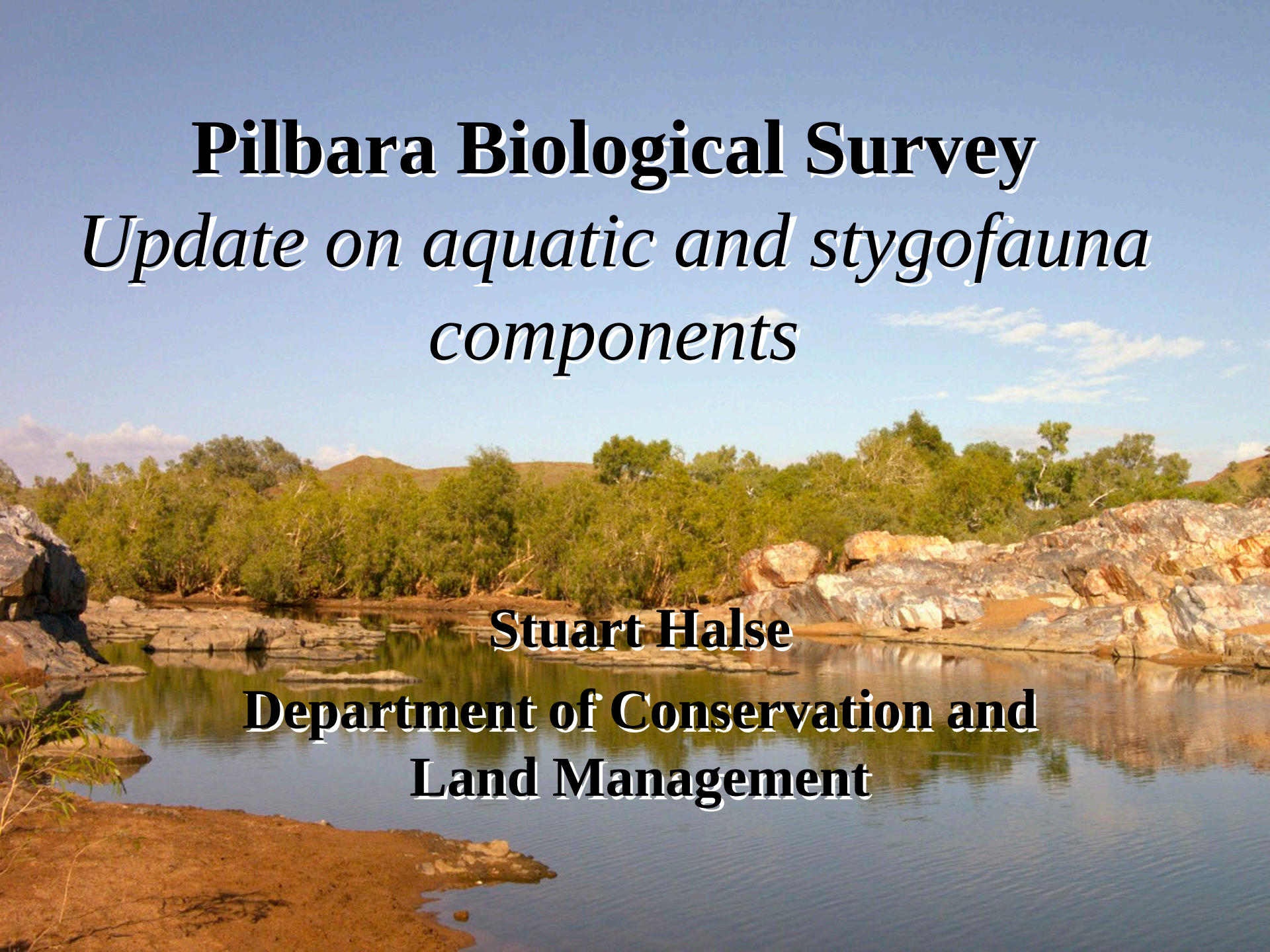
Pilbara Biological Survey

Update on aquatic and stygofauna components



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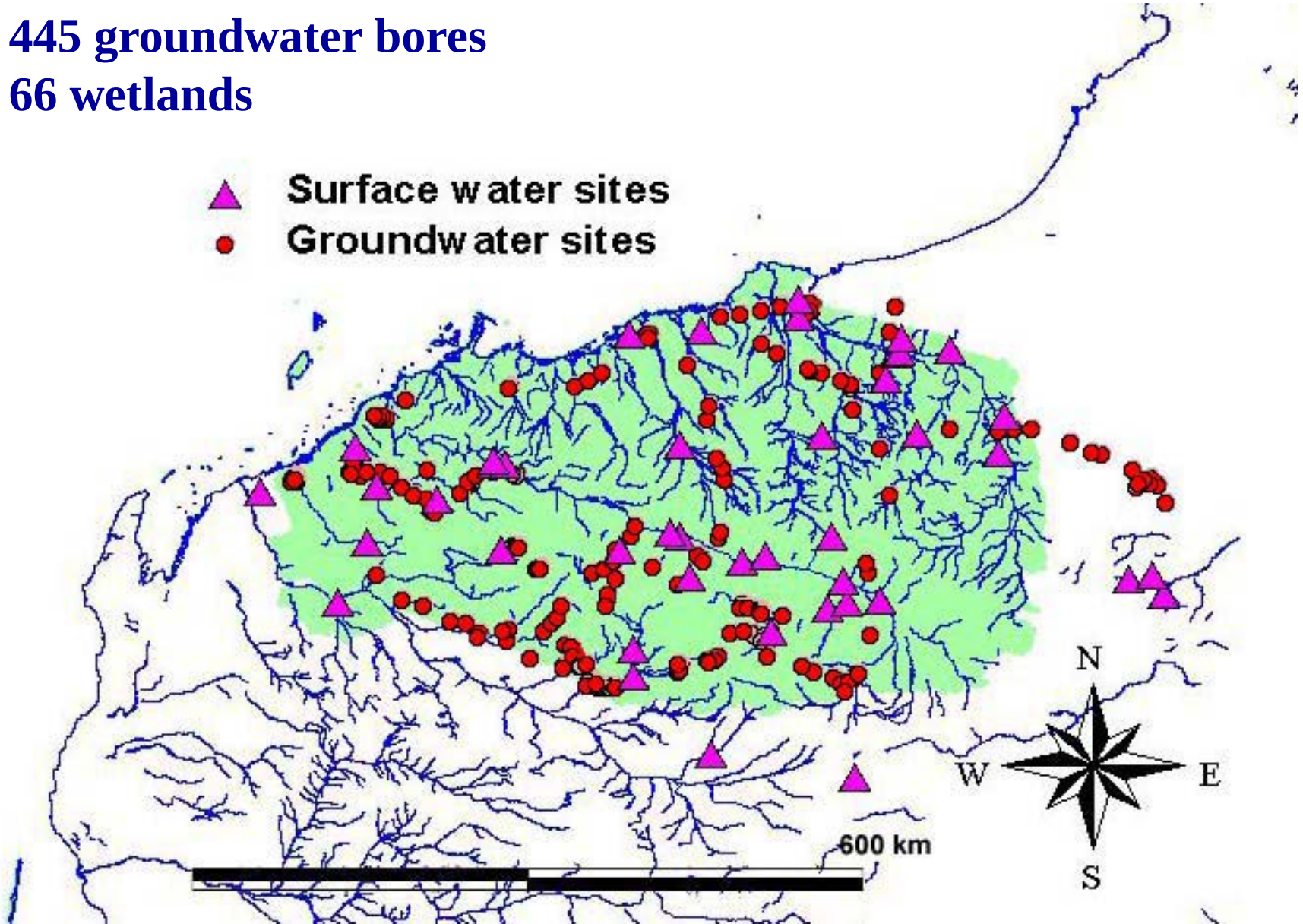
Stygofauna

- Groundwater animals, sampled in bores
- WA Museum collected in Pilbara in 1990s
- Incorporated in EPA assessment process
- Taxonomy and distribution poorly known but local endemism likely

Sites sampled

445 groundwater bores
66 wetlands



Stygofaunal facts

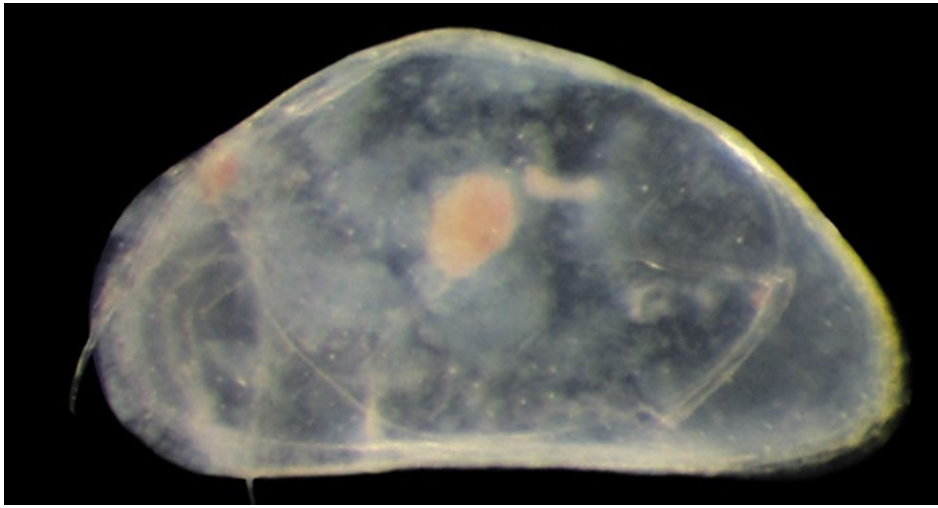
- Aim to sample 450 bores twice
- Processed 355 samples from 250 bores
  - 105+ “species” of stygofauna recorded
  - When taxonomy finished expect about 200 species
  - CALM funded work has revealed
    - 43 species of copepod, 47 species of ostracod
  - 71 % bore samples yield, 3.8 species per sample
  - 16 species in one sample

Endemism

- Expected many species would have very localised distributions
- Of the major groups
  - Copepods appear fairly widespread

Endemism contd

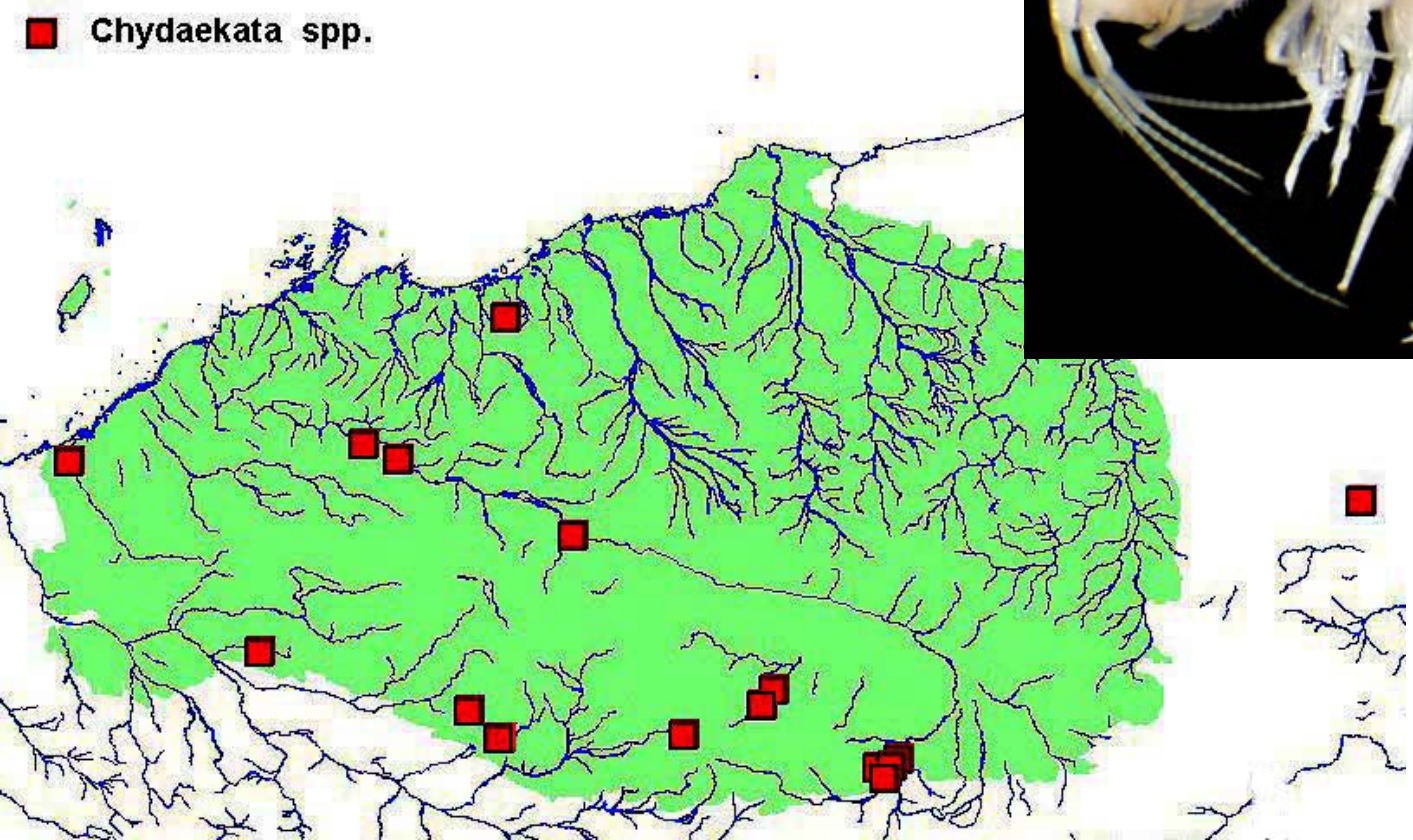
- Ostracods widespread



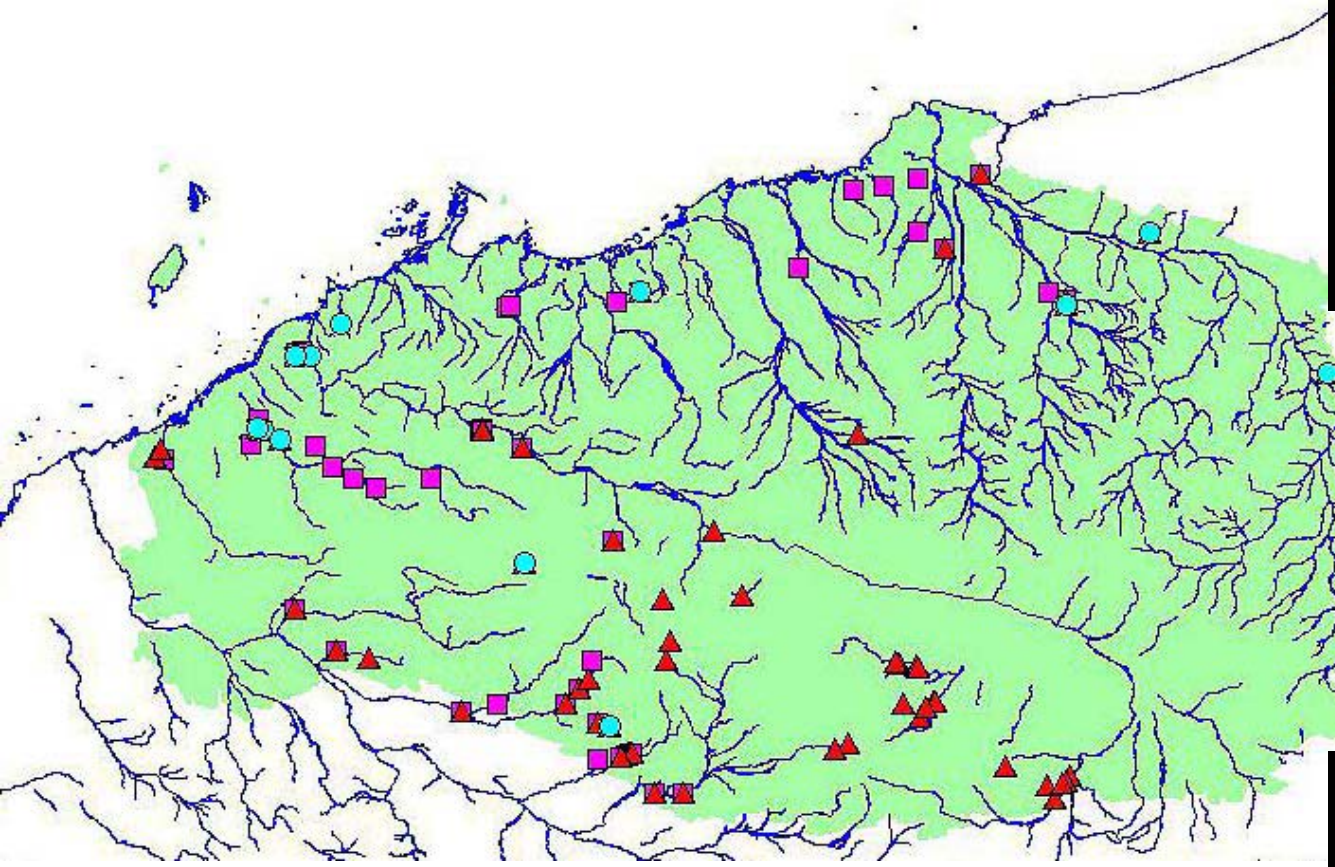
- Isopods widespread

Endemism contd

- Amphipods unclear
- Some widespread species/species clouds



Bogidiellidae
Paramelitidae
Melitidae



Some rare and unusual species…Family??

Oddities

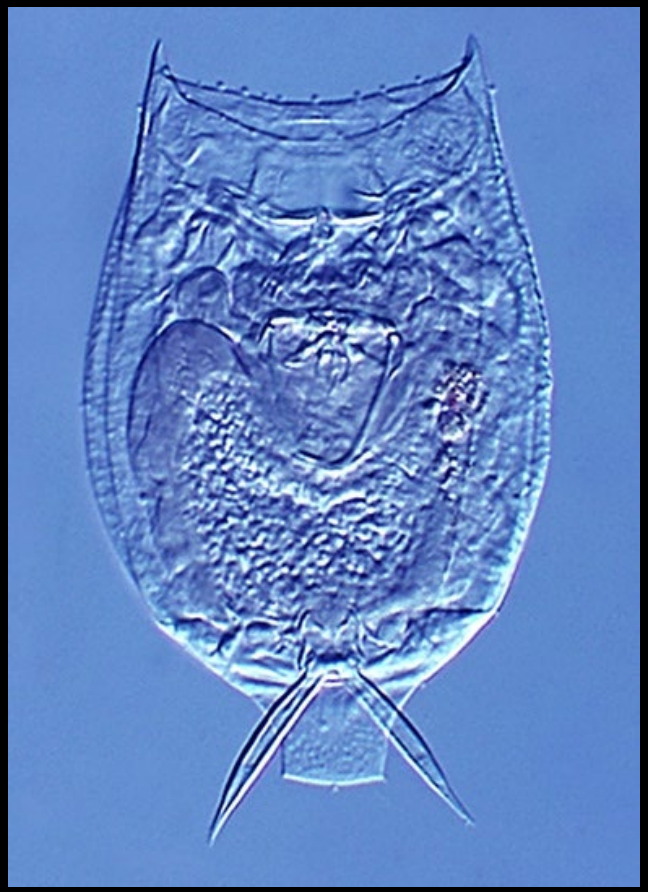
Hydrobiid snails

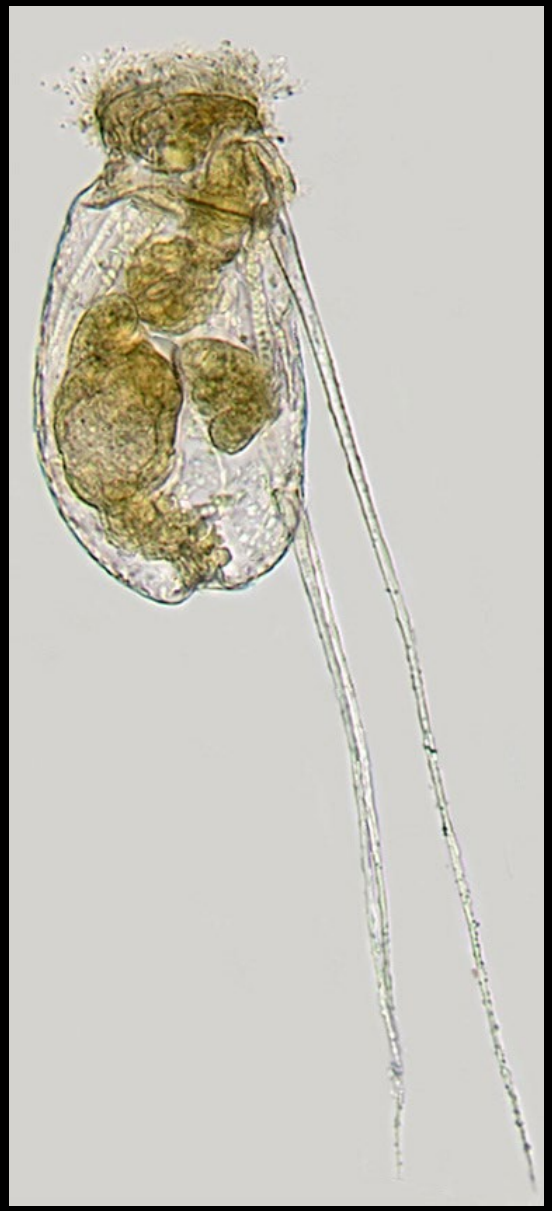
Thermosbaenascid

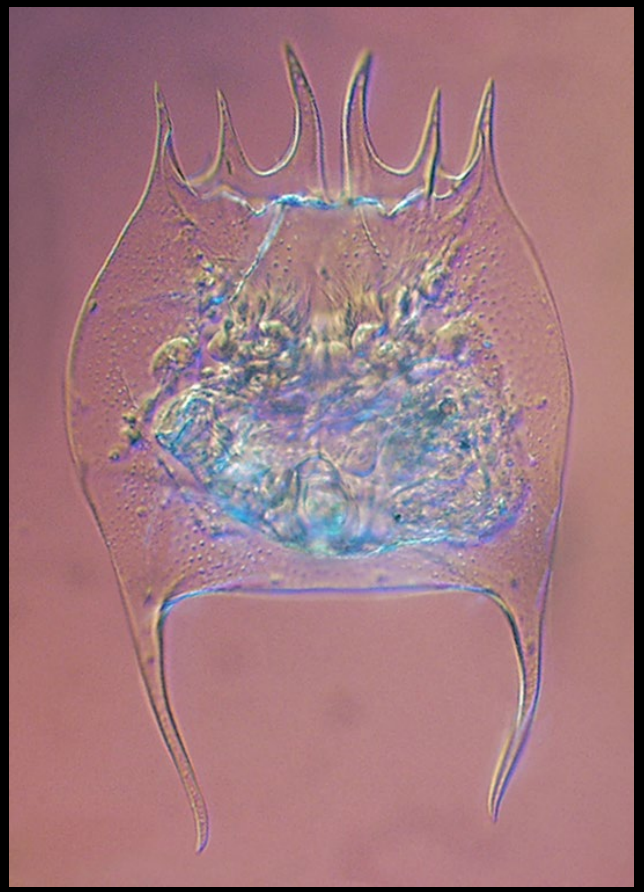

INSTRUCTIONS

Surface water facts

- Aim to sample 90 sites twice
- Have done half the sampling and sampled 66 sites 1 or 2 times
- Have processed 20 samples for >600 invertebrate species
- Average 98 species per site
- Very rich in invertebrates





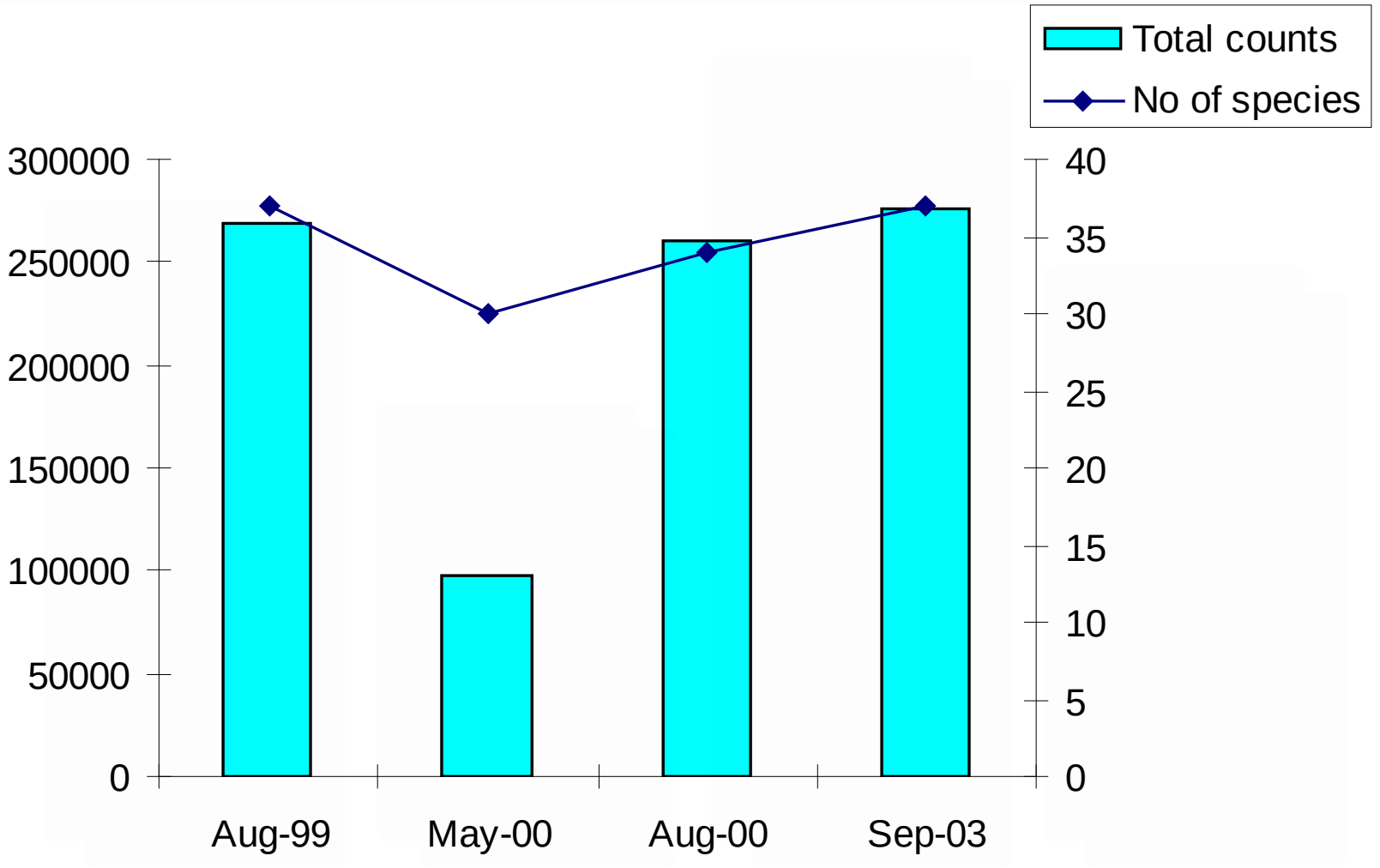


Surface water contd

- Also looking at
  - Riparian plants
  - Macrophytes
  - Diatoms
  - Planktonic algae
- Waterbirds being surveyed
  - Different scale of pattern
  - Little known about Pilbara waterbirds

Waterbirds in the Pilbara

Fortescue Marsh is very important at national scale



The future

- Began in 2002/03 (stygo) or 2003/04 (surface)
- **Will finish fieldwork June 2006**
- Analysis and write planned for completion June 2007 with **publication about June 2008**
- Looking to ways to make data as accessible as possible (wheatbelt **data on CD/website**)
- Informally make **data available on request**

Pilbara stygofauna

Early results from the PBS

The players

- Mike Scanlon, Jim Cocking and Jane McRae from DCLM
- Substantial assistance from
  - mining companies, especially BHPB, HI, Robe
  - Dept of Environment, Water Corp, Main Roads
  - Biota

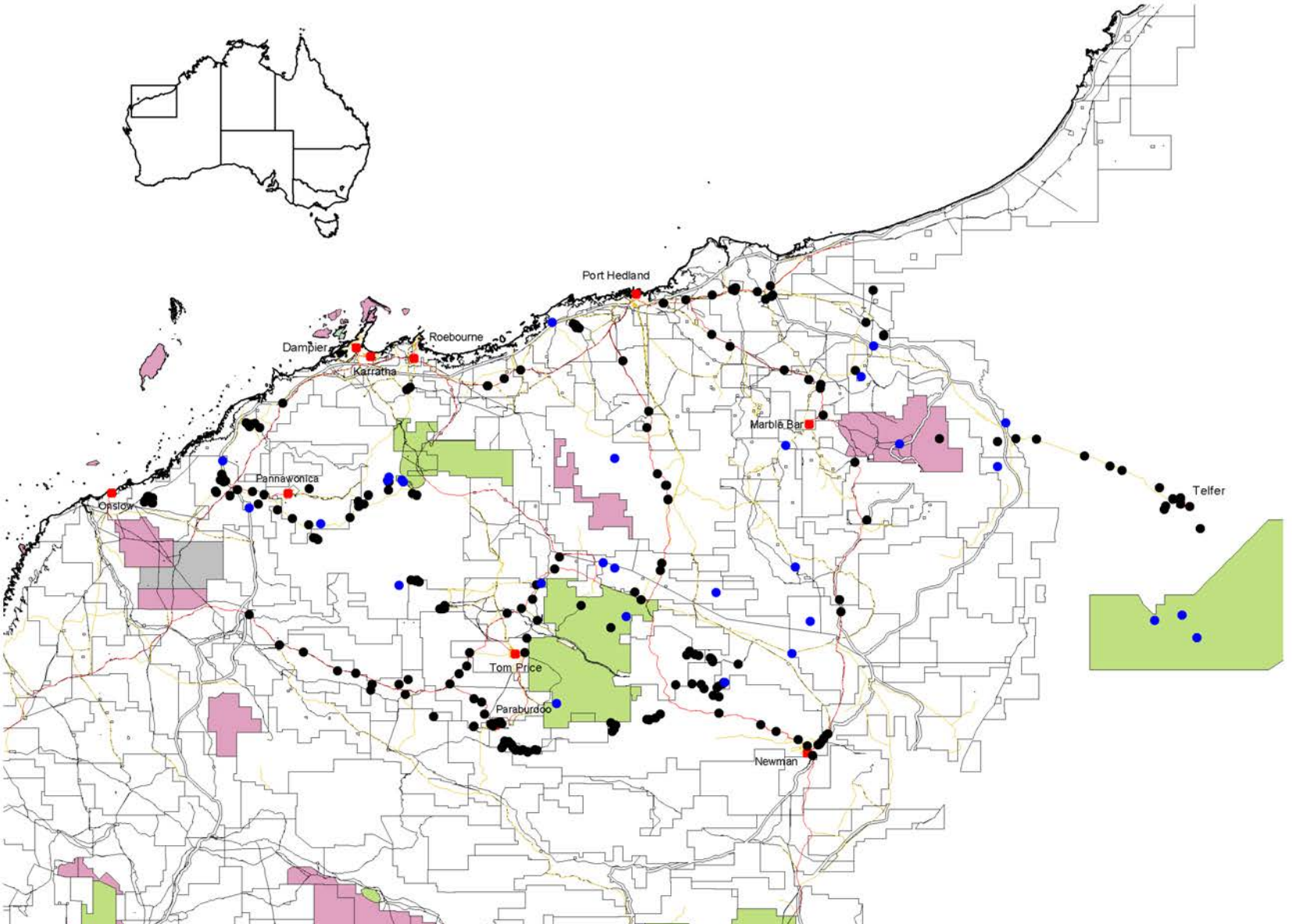
Stygofauna milestones

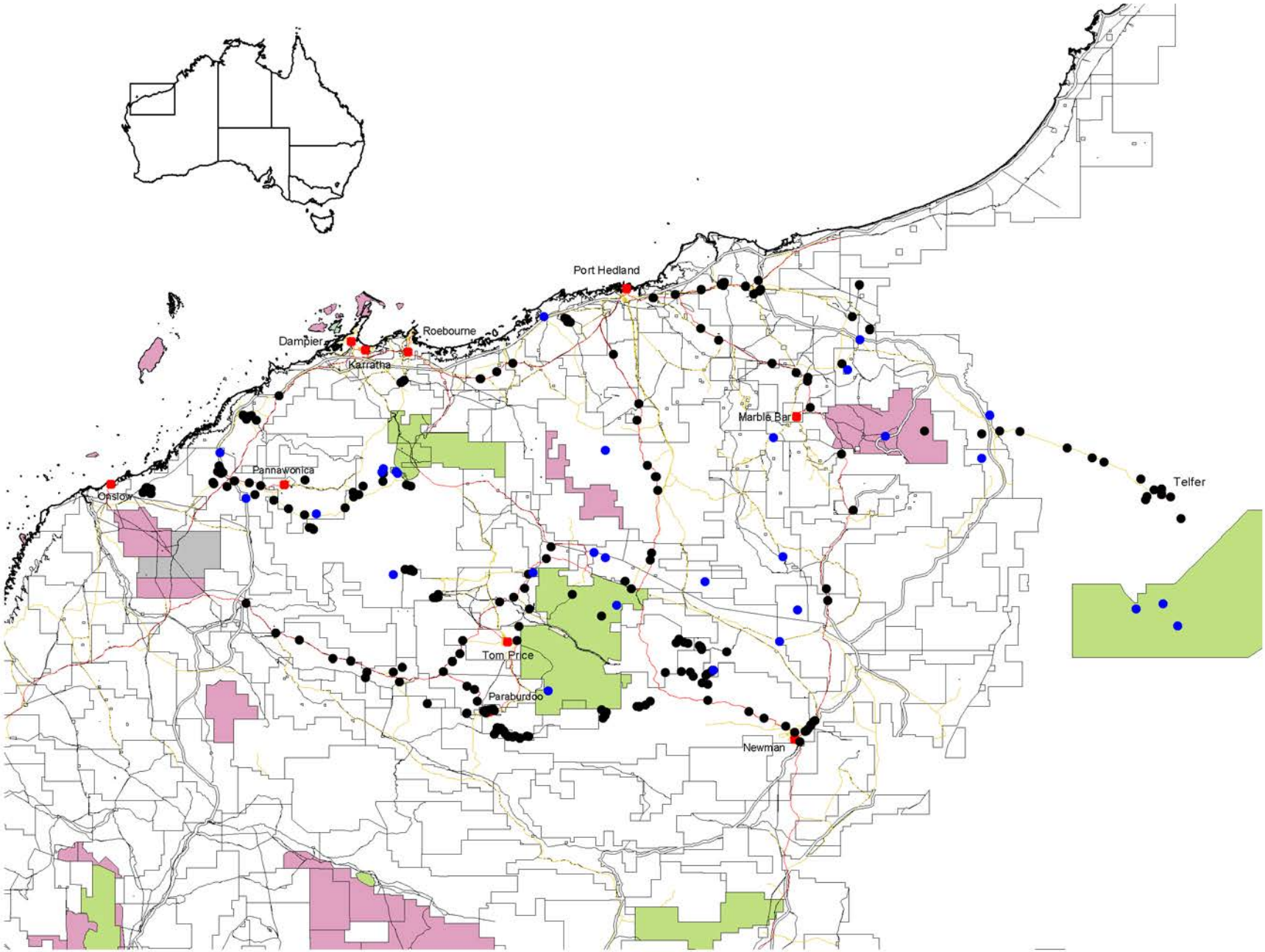
- Started July 2002
- Funded copepod taxonomy at WAM
  - 38 species recognized to date
- PhD student on ostracods September 2002
- Workshop/fieldtrip with collaborators October 2002
- Amphipod workshop June 2003
  - John Bradbury
- Rotifer workshop November 2003
- Stefan Eberhard begins January 2004

Stygofauna milestones

- **Sampled 250 bores for *ca* 300 samples**
- **First 60 + bores yielded 104 species**

Bores sampled



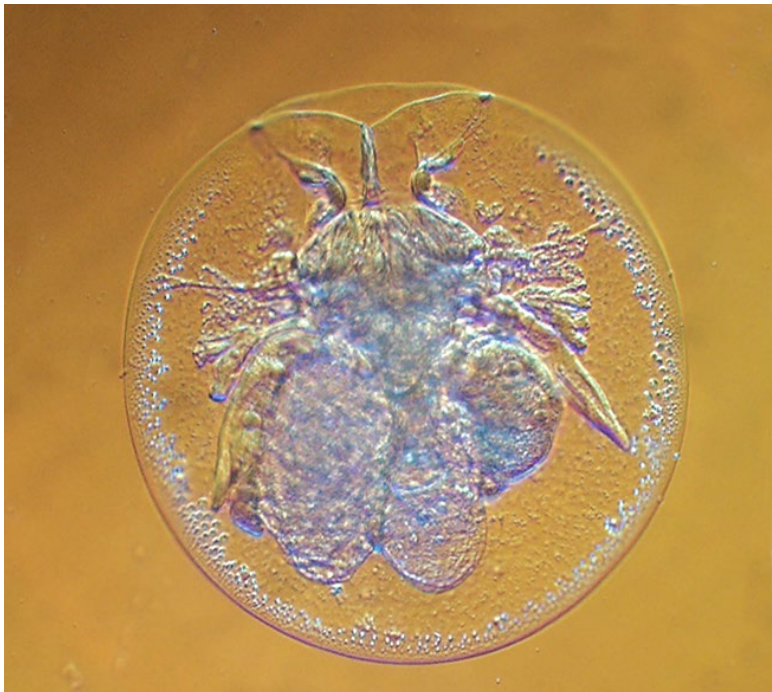

Port Hedland
Dampier
Roebourne
Karratha
Marble Bar
Pannawonica
Onslow
Telfer
Tom Price
Paraburdoo
Newman

Pilbara fauna

- **Crustacea**
  - **Copepoda 21 (38)**
  - **Amphipoda 11**
  - **Ostracoda 10 +**
  - **Isopoda 7**
  - **Speleogriphacea 1**
  - **Thermosbaenacea 1**
  - **Syncarida 5**

Pilbara fauna

- **Acarina 25**
- **Nematoda 11**
- **Oligochaeta 6**
- **Mollusca 2**
- **Rotifera 2**
- **Polychaeta 1**
- **Turbellaria 1**



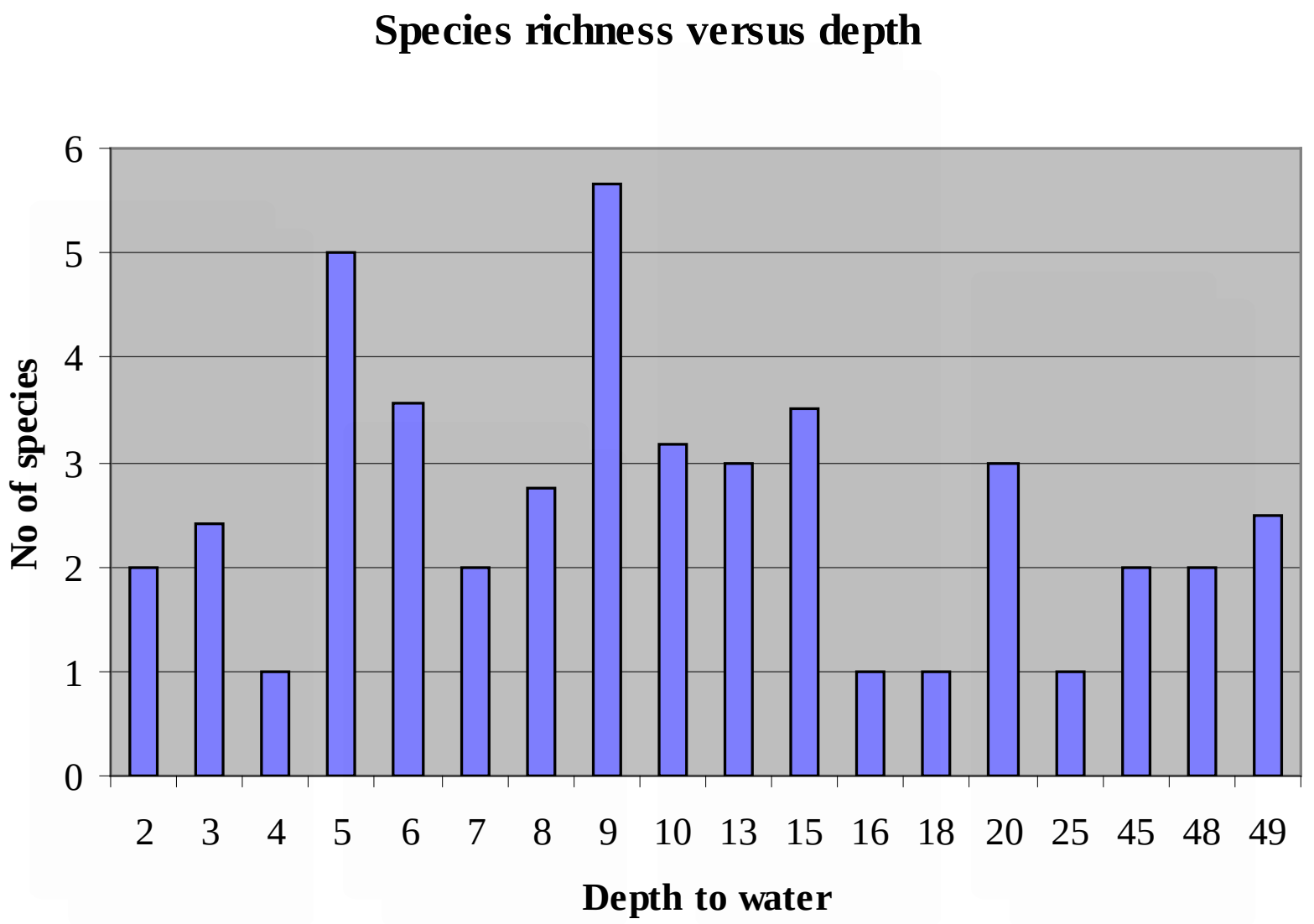
What have we learned?

- **Short range endemics**
  - ***Chydaekata* widespread**
  - **many Barrow Is. species in Pilbara**
    - **New family of calanoid**
    - ***Halosbaena tulki***
    - ***Haptolana pholeta***
    - ***Diacyclops humphreysi* subspp appear clinal**

What have we learned?

- **Many habitats in Pilbara support stygofauna**
  - **up to 16 species in a bore**
  - **ca 80 % of 'coastal' bores yield stygofauna**
  - **≤ 50 % of inland bores yield**
- **Bores appear to yield better in late dry**

What have we learned? (56 samples)



What have we learned?

- **Purging**
  - **airlift pumps yield well**
  - **minimal damage to small species, some damage to amphipods and isopods**
  - **perhaps better water chemistry**