Action benefits from certainty: What certainty is there species are being lost and how can we improve it?

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Species extinction (MEA)

- Species extinction is natural phenomenon
  - Only 2-4 % of all species are extant
- Global data suggest about 100 birds/mammals/ amphibians have become extinct over last 100 y
- Estimated extinction rate ≥100 times background rate (other pulses owing to stone- age technology, arrival of people in Australia etc)
  - Affected mostly large taxa?
- But how good is the estimate!

Groups at most risk

- Freshwater taxa, ancient lineages and perhaps invertebrates

Species risk by group in USA
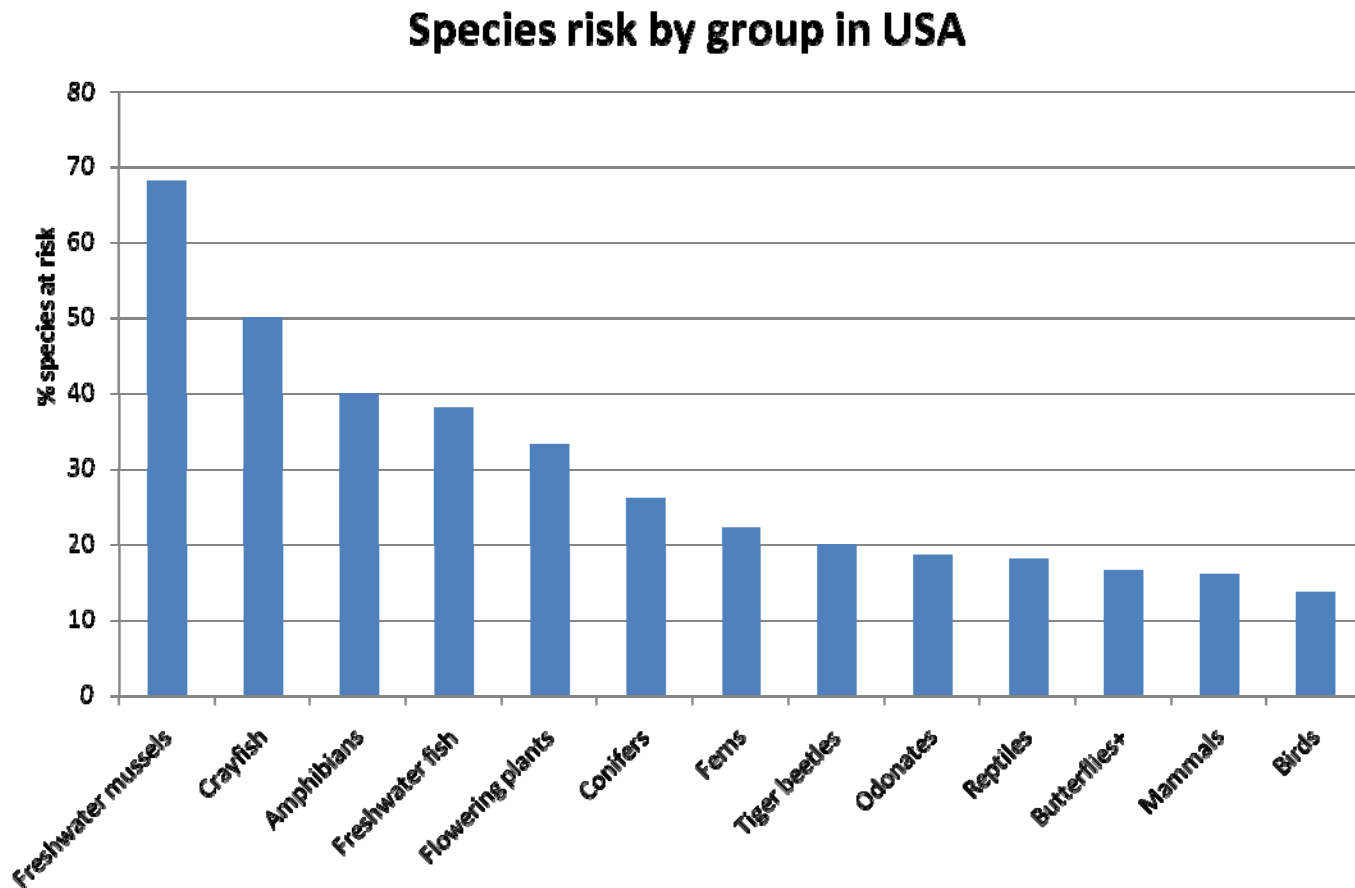
Western Australian situation

- After survey of WA wheatbelt wetlands, Halse et al. (2003) predicted salinisation would cause loss of 30 % of aquatic invertebrates

- However, no evidence of aquatic invertebrate loss from existing salinity (some plant loss)

Existing information

- Extinct
  - 4 terrestrial invertebrates (3 snail, 1 bee)
  - 13 vertebrates (2 subspp)
  - 14 plants (11 in wheatbelt/south coast)
- 'Rare'
  - 81 invertebrates (4 aquatic, 15 stygobytic)
  - 121 vertebrates
  - 378 plants

Information to action

- Conservation planning should be based on facts
  - Legislation exists to protect species known to be at risk
  - Listing of invertebrates(incl troglobytes and stygobytes) on Schedules shows management will incorporate invertebrate information
  - However, most planning based on terrestrial plants and vertebrates because they are only groups with adequate data
  - Unlikely to be strong concordance in vertebrate and invertebrate patterns

Acquiring invertebrate information

- Why so little information available?
  - Taxonomic impediment less important than inability to identify and lack of avenues for making distributional data public
  - Herbariums curate large collections, museums would be swamped by whole-scale lodging of unprocessed material
  - Solution to information needs is organized development and hosting of databases to acquire species information

Databases

- Am advocating acting upon existing ideas
  - Databases need to offer taxonomic and specimen tracking support and facilities, including keys
  - Should tie into Museum specimen/voucher system
 - GIF provides partial model

Populating database

- Requiring that data from EIS/NRM be lodged would provide large amounts of data from everywhere
  - Should be open to all projects
  - BA Atlas demonstrated there is potential support

Data accuracy

- Data quality may be criticized
  - But are no data better?
- Filter data and assign confidence level
  - Mapping shows outliers
  - Errors can inform future identifications and taxonomic work
    - Voucher material is very important
- Accreditation system for biologists would be useful
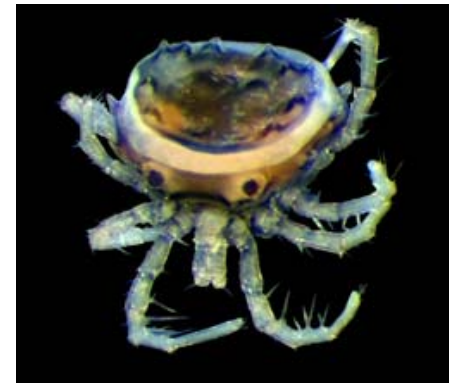
Auditing status of biodiversity

- Aim is to provide information about biodiversity
  - Currently predict species loss but have no way of validating prediction
  - Real data provide the certainty that leads to action
- All aquatic invertebrate extinction in WA to date is undocumented
  - Has there been any?

Illustations

- Widespread collecting and collating of data changes our view of biodiversity and its distribution
  - Wheatbelt survey in WA – estimated 200 spp of aquatic invertebrates and regional survey revealed 1000 (Pinder et al 2004)
  - AusRivAS – spin-off of systematic river surveying was that known distribution of invertebrates changed dramatically

- **If you are serious about biodiversity conservation, think about supporting a database**

- **Think about the development of invertebrate identification skills**