ECOSYSTEM SERVICES AND NRM PRACTICE: WHERE THE RUBBER HITS THE ROAD

Dr Roel Plant, Institute for Sustainable Futures (UTS)

- Self-funded university research institute since 1996
- Currently ~30 research staff, ~25 PhD students
- Create change towards sustainable futures
- Build independent capacity by diffusing knowledge and skills
- Trans-disciplinary approach
  - Staff backgrounds include engineering, architecture, management, economics, science, social sciences, international development, political studies, etc.

Presentation Outline

- Introduction (10 mins)
  - Background and Objectives
  - Principles and Approach
- Part I: International Trends (10 mins)
- Part II: Academic Literature (10 mins)
- Part III: Practitioners' Experiences (20 mins)
- Conclusions (10 mins)

Background to LWA Study

- 2003: CSIRO's ES Research
- 2007: Currency of ES concept in US and Europe
- 2008: Review of ES in Australian Environmental Research
- 2009: LWA supported extension of review into
  - grey literature
  - practitioners' experiences

Study Objectives

- To review the Australian grey literature on Ecosystem Services
  - Has the ES concept been increasingly utilised?
  - What is the nature of this literature?
- To develop an understanding of practitioners' experiences with Ecosystem Services
  - What worked?
  - What didn't work?
  - What can be done better?

Definitions

- ‘Ecosystem Services’ - the benefits to people from nature
- ‘Academic’ literature - anything that’s published in peer reviewed academic journals
- ‘Grey’ literature – anything that’s not published in peer reviewed academic journals
- ‘NRM Practitioners’ – CMA staff

The ES Concept

- Original ES literature made three points:
  - We need to recognise the dependence of people on ecosystems
  - We need to express dependence in ways that a broader range of people can understand and engage in
  - We get better outcomes if we consider the full suite of benefits from nature

Approach

- Review of non-academic Australian ES resources based on web search and expert advice
- Semi-structured interviews with seven CMAs
- Informal conversations with selected ES experts to discuss approach and findings

Presentation Outline

Part I
International Trends

International Trends – Policy

- 2007: G8 'Potsdam Initiative': The Economics of Ecosystems & Biodiversity (TEEB)
  - Interim report presented at 2008 CBD-COP9 (Bonn)
  - Final results presented at 2010 CBD-COP10 (Nagoya)
- 2009: USDA Office of ES & Markets
  - New technical guidelines and science-based methods to assess environmental services
  - Focus on US agriculture producers

International Trends – Key Reports

- European Communities (2008)
  - *The Economics of Ecosystems & Biodiversity. An Interim Report*. EC, Cambridge, UK
- Braat & Ten Brink (eds) (2008)
  - *The Cost of Policy Inaction*. Alterra, Wageningen
- EASAC (2009)
  - *Ecosystem Services and Biodiversity in Europe*. Royal Society, UK

Presentation Outline

Part II

Academic Literature

International ES Literature

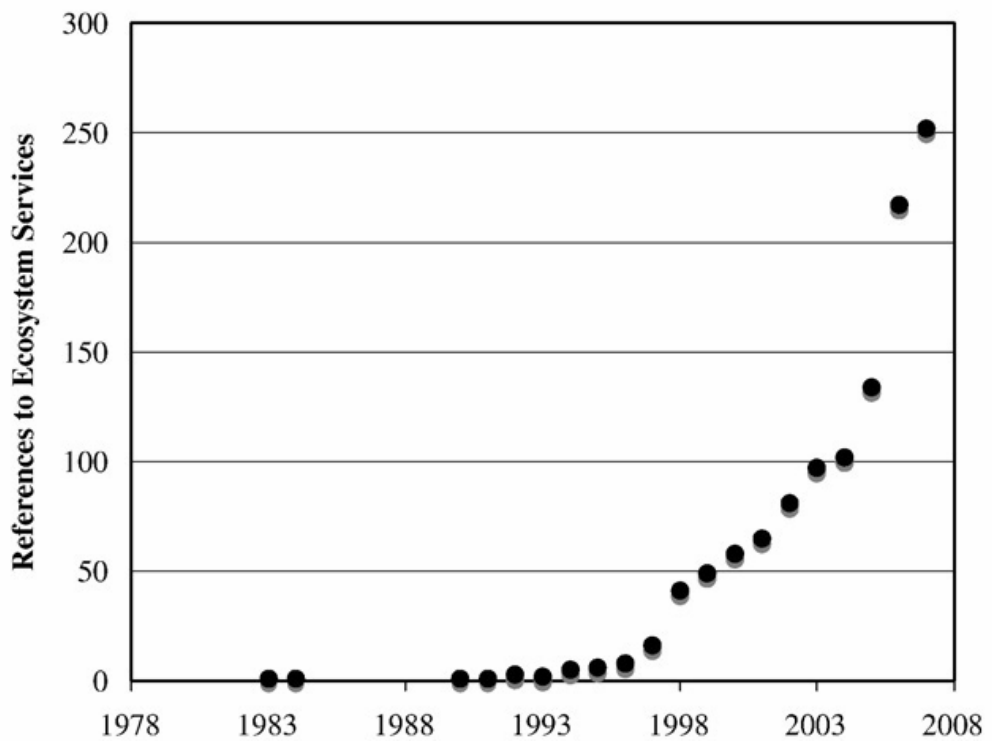


Fig. 1 –Number of papers using the term “ecosystem services” or “ecological services” in an ISI Web of Science search through 2007. Source: Fisher et al. (2009)

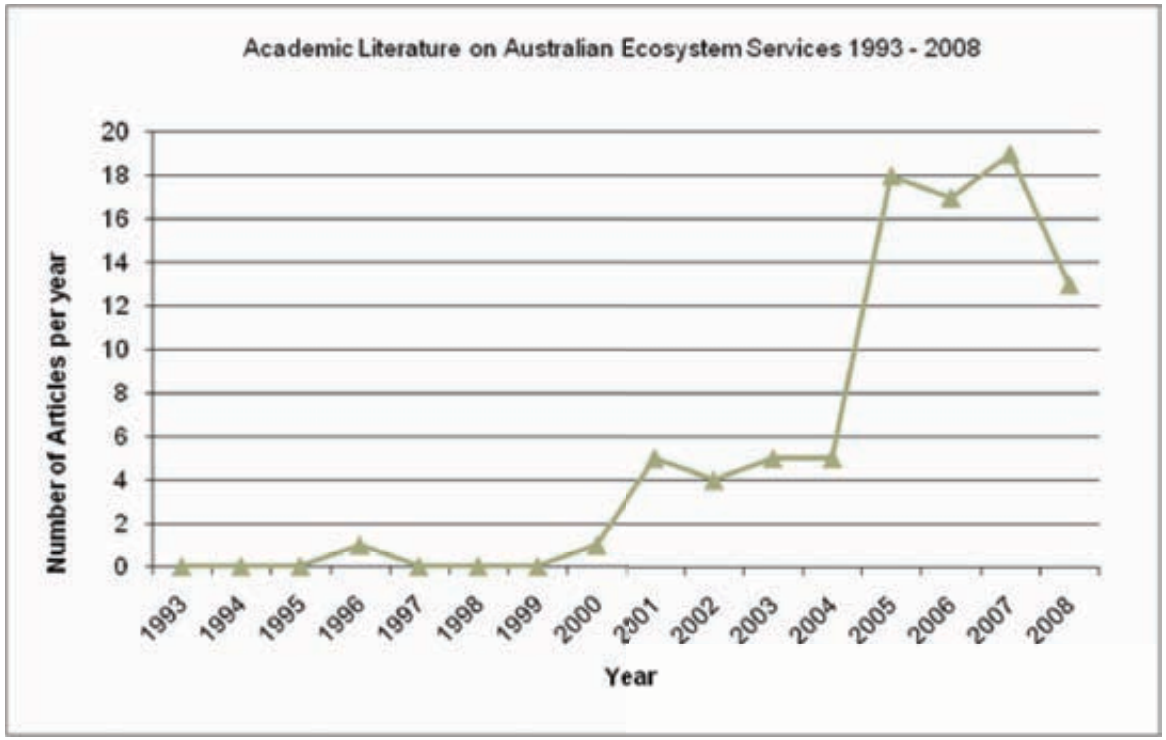
Objective of Academic Review

- To review the uptake of the Ecosystem Services concept in Australian research and practice
  - Has the concept been increasingly utilized?
  - How has the concept been adopted

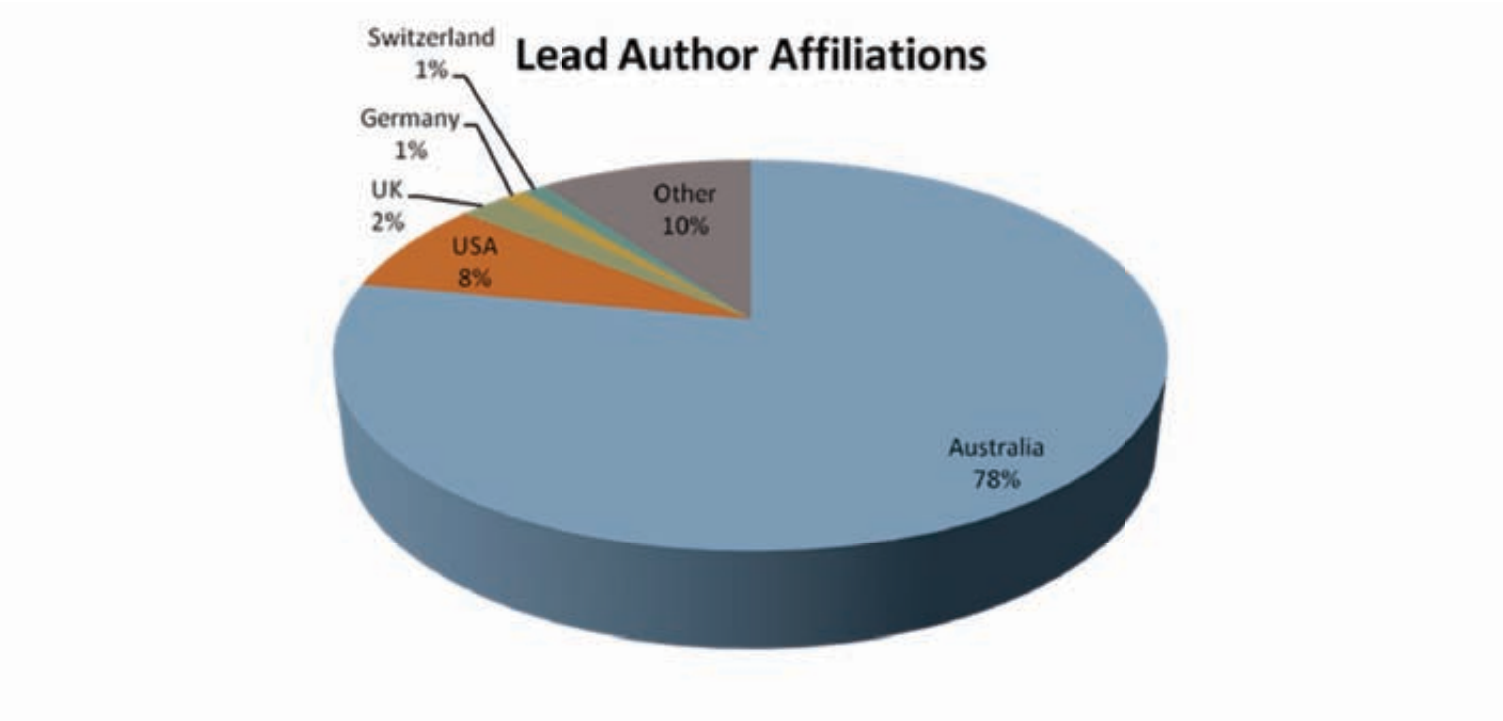
Approach

- Journal search 2008/09
  - Keywords “ecosystem services” and “australia”
  - Databases:
    - CSA Ecology Abstracts
    - Blackwell Synergy
    - Web of Science
- Raw search results: ~330 unique entries
  - Discarded book reviews, editorials, etc.
  - Manual screening for relevance to AU: ~100 papers

Results – Uptake of the ES Concept



Author Affiliations



How has the ES concept been used?

- Bio-Physical (~35 papers)
  - Sales piece for traditional research, e.g. pollination
  - Water-related ecosystems
  - Production ccosystems, e.g. fisheries, forestry, agriculture
- Valuation (~15 papers)
- Policy Design and Governance (~25 papers)
  - Markets for Ecosystem Services

Findings

- Increasing uptake in academic literature
- Lots of 'sales pieces'
- Emphasis on ecology and economic valuation
- Gap in the 'middle' - few explicit linkages between ES concept and (disciplinary) approaches
- Lots of potentially relevant Australian literature 'under the radar' because not explicitly labelled as ES

Presentation Outline

Part III

Practitioners' Experience

Approach

- Seven CMAs in three 'clusters'
  - Experienced: Goulburn-Broken, North Central
  - Intermediate: Namoi, Border Rivers-Gwydir, Murray
  - Beginners: Murrumbidgee, Lachlan
- Semi-structured face to face interviews
  - Part A: Introduction (10min)
  - Part B: Understanding of ES concept (15min)
  - Part C: Experience with ES concept (30min)
  - Part D: Other frameworks & NRM issues (30min)
- All interviews (12 hrs total) recorded & transcribed

Understanding of ES Concept

- the term was not widely used or understood by the broader community
- some had used it an moved to habitat hectares, stewardship terms or multiple outcomes terminology
- the concept was seen as background, necessary for grant success, useful and innocuous

Examples of CMA Projects - VIC

- Goulburn-Broken CMA
  - CSIRO Ecosystem Services Project
    - ecosystemservicesproject.org
- Corangamite CMA / DSE
  - "ecoTender"
- North Central CMA
  - Literature review Reid & Williams (2008)
  - Investment Framework For Environmental Resources
    - cyllene.uwa.edu.au/~dpannell/inffer.htm

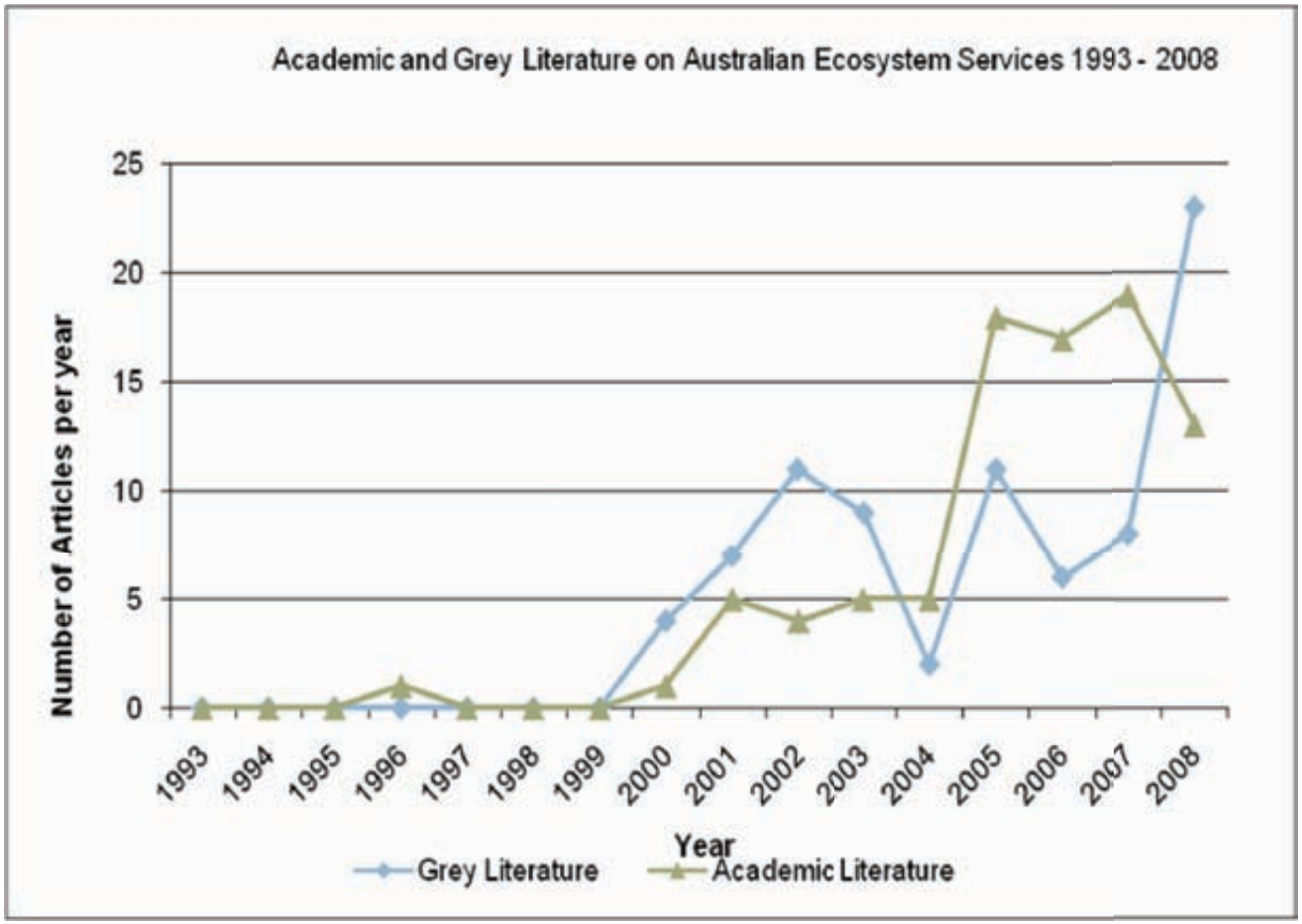
Examples of CMA Projects – NSW

- Border Rivers-Gwydir/Namoi/Western CMA
  - Biodiversity and Production Dual Outcomes
    - agbiodiversity.net
  - Moree Plains Biodiversity Extension Project
- Sydney Catchment Authority
  - Catchment as Business Assets
- North Central / Mallee CMA
  - Wimmera Mallee Ecosystem Function Project
- Murrumbidgee CMA
  - Landholder stewardship payments

Other Frameworks suggested

- Comprehensive Adequate Representative (Namoi)
  - Have certain amount of landscape units intact across landscape
- Change Management (Namoi)
  - ~Resilient communities; Resilience is an outcome
- Multi-Criteria Analysis (Namoi)
  - Development Pressure
- INFFER (North Central, Goulburn-Broken)

‘Grey’ ES Literature



Key Resources

- CSIRO
  - Natural Assets, Natural Values
  - MBIs
- Cotton Catchment Communities CRC
- DSE-VIC
  - ecoTender
- Miscellaneous
  - Brochures, media releases, PowerPoints, etc.

Gaps & Challenges

- People saw the challenges of complexity, the notion of value as opposed to assets, understanding functions before using interventions
- Limited diffusion of the idea

Conclusions

- Principle 1: dependence of people on ecosystems
  - Thinking about *value* of natural resources has broadly found its way into NRM practice
  - Notion of *dependence* seems less prominent
- Principle 2: engage/inform broader range of people
  - ES rarely used for engagement and consultation
- Principle 3: consider the full suite of benefits
  - Focus on single (or small bundle of) ES – 'production vs. biodiversity'

Conclusions – Cont'd

- VIC practitioners more experienced
  - moved on to asset-based frameworks, e.g. INFFER
  - Proactive approach to target
- NSW less experienced
  - Limited awareness of ES resources
  - Reactive approach - Fed/State targets drive agenda
- ES concept primarily lives on in MBI and stewardship programs

Research Priorities

- Innovative knowledge sharing approaches
  - Lack of mechanisms that can appropriately accommodate and communicate the complexity of concepts
  - Web portals and toolbars are a good starting point, but more is needed for R&D outputs and practical experiences to reach a broader NRM audience – and get used

Research Priorities – Cont'd

- Minimal models for ES trade-offs
  - Science of ecosystem production functions identified as key research priority (Daily & Matson 2009)
  - Current models often too complex to play a role in investment decisions involving ES trade-offs
  - Minimal models (e.g. Anderies *et al.* 2004) have potential to overcome this significant limitation of dynamic models

Final Considerations

- "Is the ES *concept* useful or not?"
  - Irrelevant question as humans depend on nature, whether we like it or not
- "Is the ES *approach* useful or not?"
  - Flawed question as approach pertains to disciplinary tools (e.g. CBA, MCA) and divert our attention from the concept

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