Educating first-year students about the benefits of conservation partnerships: an experiential approach

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With special thanks to:
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Background

• Australia’s biodiversity
  – rich, endemic
  – extinctions, continuing impacts
• Management responsibility changed
  – Reserves, gov’t agency
  – Reserves, private land / sector, multi gov’t / agencies, community, education, research
  • Landcare, Dunecare, Waterwatch, bush care groups
• “The involvement of all Australians is vital to the conservation of biological diversity” (NSCABD 1996)

Education for Conservation

• “The education system has an essential role to play…”
• “Teaching and learning should focus on the development of skills that will enhance understanding and acceptance of the need for biological diversity conservation as well as commitment to achieving it”
• “Encourage ‘hands on’ educational programs that involve the wider community as part of the educational process in biological diversity conservation”


Motivation & Guidance

• Graduate conservation managers: develop & manage community partnerships
• Students’ needs for this experience
  • Relevant, experiential \( \rightarrow \) education effectiveness
  • Field experiences
    – highly motivational
    – knowledge gains, attitudinal changes
  • ↓ condition of Reserve
  • Local community bush care group ↓
  • Monitoring by community groups not feasible
    – No resources to hire expert consultants
    – Limited technical capacity
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Sustainable Resource Management (SRM)

- 3 yr major in BSc
- Core science + SRM courses
- Social systems, water, biodiversity, land, values, resource assessment, conservation science, planning, community resource management
- Natural Systems (1st yr)
  - Ecosystem science, issues, management

Wamberal Lagoon Nature Reserve

- Gazetted 1981 for educational values
- Register of the National Estate
- 1993 management plan: "undisturbed", "refuge for native plants and animals"
- Surrounding suburbia → fire + invasive weeds
  - Littoral rain forest (endangered ecological community)
  - Magenta lilly pilly (Syzygium paniculatum) (vulnerable)
  - Sand spurge (Chamaesyce psammogeton) (endangered)

Conservation context

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Development & structure

Framework: Envirofund grant
1. Partners: Government + business + community + education
2. Rehabilitation: private contractors
3. Infra-structure (fencing + interpretive signage): NSW National Parks & Wildlife Service
4. Re-establishment of community bush care group: NSW National Parks & Wildlife Service
5. Bush regeneration: community + students
6. Effectiveness monitoring: students
7. Annual assessment of further needs: students
8. Broader community awareness: university

In-class theory, practical skills

- Lectures (4 hr)
  - Australian veg types
  - Forest ecosystem structure & function
  - Issues, management
- Problem-solving tutorials (6 hr)
  - Invasive weeds
  - Wamberal Lagoon NR
  - Independent research
  - Information gathering
In-class theory, practical skills

- Computer-based tutorial (3 hr)
  - Monitoring for evaluation
  - Hypothesis testing
  - Data compilation
  - Statistical tests

- Practical skills (3 hr)
  - Rapid weed assessment
  - Quantifying veg cover, density
  - Map reading, GPS

Field work at Wamberal Lagoon

Practical classes (9 hr)

- Effectiveness of bush regeneration
  - 3 sites
    - Regular bush regeneration
    - Single bush regeneration
    - No bush regeneration
  - Cover, density weeds & native plants in ground, mid and upper veg layers

- Rapid weed assessment
  - 15 sites around the NR
  - Intensity of weed invasion
  - Plotted with GPS
  - Map of extent, intensity of weed invasion
  - Monitored and updated annually

Bush regeneration

- Partners:
  - Wamberal Lagoon Bushcare Group
  - NPWS
  - students
  - teaching staff
- 3 Saturday mornings
- Weed, native plant identification
- Weed removal, poisoning
- Planting native seedlings
- Rubbish removal
- OH & S

Monitoring effectiveness

Computer-based tutorial (3 hr)

- Survey, monitoring data → spreadsheets
- Statistical test for significant differences in cover of natives and weeds between the 3 areas

Ground layer weed cover

0
10
20
30
40
50
60
70
80
90
100
% Cover
Communicating Results

- Reflective diary after bush regeneration
  - Work accomplished
  - Reflections on achievements, work remaining, observations

- Technical evaluation report
  - Survey and monitoring results
  - Recommended management

On-ground works

Outcomes

- Education:
  - Knowledge, skills, experience using skills
  - Experience in practical conservation
    - Community partnership
    - Realistic understanding of problem and commitment required
    - Monitoring effectiveness of community’s work
    - Responsibilities, limitations of agencies
    - Up-to-date weed assessment of Reserve

- Conservation:
  - Weeds in Reserve
  - Support for threatened species
Qualitative Outcomes

• Very +ve response / attitude from students
  – Field experience, staff participation
  – Visible benefit from their work
  – Feedback from community group
  – Signage, fencing, media ➔ public profile
  – Beauty of Reserve
  – Class “team”

• Community participation
  – Admiration for community group’s work
  – Joined local bushcare group
  – Established student bushcare group

• Perceptions
  – Dismay: remaining work, -ve public attitudes