Bronwyn Crowe

Profile

Bronwyn’s family are wheat and sheep farmers in Dowerin. She had a keen interest in soil science and began a Bachelor of Agriculture at UWA in 1999. Thankfully agriculture is a broad degree as while interested in soil science organic chemistry isn’t Bronwyn’s strong point. She found her true passion is economics and was the first to graduate with a combined Bachelor of Agriculture and Bachelor of Commerce. Bronwyn’s honours project was on the adoption and segregation of genetically modified canola. Growing up on a farm Bronwyn was taught the integrated nature of farming and the environment. She has spent many hours planting trees and negotiating contour banks with the harvester. Her PhD work highlights the stewardship role of the farmer to the community, and the communities need to support farmers to enable them to do this important work. Conserving biodiversity, stopping salinity and ensuring food production into the future is in everyone’s best interest.
Natural Resource Management in the Developed World

Bronwyn Crowe

Prof Ben White, Prof David Pannell and E/Prof Bob Lindner
Presentation Outline

- Europe
- United States of America
- Australia
- Future programs
- My research
European Common Agricultural Policy

• First pillar - Production support
  – Single Payment Scheme
  – Cross-compliance
  – Agri-environmental schemes
• Second pillar - Rural development
  – LEADER+
United States Approaches

• Land retirement
  – Conservation Reserve Program
• Working lands
  – Environmental Quality Incentive Program
Unites States NRM Spending
Types of NRM Programs

1. Land retirement or set-aside
2. Working lands or agri-environmental schemes
3. Trusts or covenants
Australian Situation

- 70% of Australia is under private freehold, leasehold or indigenous title.
- Private conservation agencies becoming more prominent.
- NHT2 Trials
Australian Trials

• Market Based Instrument Pilot Programs
  – Auctions for Landscape Recovery
  – BushTender
• Small scale schemes
  – EcoTender
PhD Question

- How to achieve efficient and effective provision of environmental services using NRM contracts?
- Payments for environmental services raise questions of:
  - Allocation methodology
  - Contract duration
  - Assessment cost and accuracy
PhD Area

- The use of monitoring of compliance with the contract, enforcement and renegotiation to achieve the long-term sustainability and biodiversity objectives of both government and non-government conservation schemes on private land.
PhD Methodology

- Markov-chain
  - Ecological reality
  - Accuracy of assessment
- Principal-agent model
  - Payment amount & timing
  - Continuing labour effort
  - Accuracy & cost of assessment
Study Area
Study Area
Institute of Agriculture

Undegraded Woodland

Revegetation or Maintenance

No Contract

Degraded Woodland1

Revegetation, Maintenance or No Contract

Maintain or No Contract

Degraded Woodland2

Revegetation or Maintenance

Maintain or No Contract

Agriculture
Estimating ecological change
Initial Monitoring Results

Period t=5
- 0 – Reveg Monitoring
- 1 – Reveg Monitoring
- 2 – Reveg No Monitoring
- 3 – No Contract No Monitoring

Period t=4
- 0 – Reveg No Monitoring
- 1 – No Contract No Monitoring

Period t=3
- 0 – Reveg Monitoring
- 1 – No Contract No Monitoring

Period t=2
- 0 – No Contract No Monitoring

Period t=1
- 0 – No Contract No Monitoring

Legend:
- Undeg, Degw2, Ag
- Degw1
- Undeg, Ag
- Degw1, Degw2
Initial Monitoring Findings

- Salmon gum woodlands in the NEWROC are degrading gradually through time.
- Policy intervention depends on the regulator’s decision horizon.
- Monitoring of the land type only occurs if decision horizon greater than 5 years.
## Contract Monitoring Outcomes

<table>
<thead>
<tr>
<th>Undertake Labour</th>
<th>Assessed Accurately</th>
<th>Assessed Incorrectly</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Landholder pays for actions Agency makes payment</td>
<td>Landholder pays for actions Agency doesn’t make payment</td>
</tr>
<tr>
<td>DON’T Undertake Labour</td>
<td>Landholder doesn’t pay for actions Agency doesn’t make payment</td>
<td>Landholder doesn’t pay for actions Agency makes payment</td>
</tr>
</tbody>
</table>
Initial Compliance Findings

- Inaccuracy and cost of assessment reduces environmental effectiveness and cost efficiency of NRM contracts.
- On-ground assessment preferred to remote sensing.
- Observation landholder’s labour effort could be crucial to contract feasibility.
Thank you and Questions