The Hotspots Fire Training Program:

Transmission of Skills and Information
or
Co-production of Knowledge?

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PhD – Evaluation of a Project called Hotspots which trains landholders to use fire to manage their land for biodiversity conservation.

Today focus on one aspect of phd and look at how knowledge about fire ecology and fire management is created, and benefits and risks of sharing that with Hotspots participants, bearing in mind that participants have a huge range of knowledge, experience and opinions about sustainable fire management.

The Hotspots Fire Project is a comprehensive Training program which provides landholders and land managers with the skills and knowledge needed to actively and collectively participate in fire management planning and implementation for the protection and enhancement of biodiversity conservation.

Objective One: On-ground fire management is informed by the best available fire ecology research and operational knowledge.

What exactly is Hotspots? This is their words…

Two days of workshops, usually one month in between.

At the end of the workshops, participants are expected to have produced a Fire Management Plan for their property which indicates how they propose to manage their native vegetation (possibly through fire).

Using Fire To Manage Land Is

Controversial

Emotionally and politically charged. Up there with climate change and refugees.

This presents a real challenge to a program such as Hotspots:

Should they share and embrace the controversy during workshops?

Or

Should the workshops be about transmitting a pre-selected body of information that supports their view of sustainable fire management?

Clark summed up the challenges in 2008. He said there are issues around

(1) What we should be aiming for. What is the range of ecologically acceptable outcomes for fire management?

(2) *How* can we achieve these outcomes given the highly modified and fragmented nature of the habitats being managed.

Since then books have been written and published on these issues by my worthy colleagues at the Bushfire CRC.

Challenges to Sustainable Fire Management

- What we have
- What we want
- How to get there

Another challenge to Sustainable Fire Management – what we've got in the first place.

Focus on this because less obvious than the other issues but it is something that Hotspots participants struggle with.

My background is in Ecology, I'm not here to denigrate Science. I am here to deconstruct it. Because that's what Hotspots participants do.

If you're familiar with all the information, I'm about to give you, try to imagine what it would be like coming to this for the first time.

What we have

- (Some) vegetation is used as a proxy for overall biodiversity

- Vegetation is assigned to Keith classes

- Keith classes are not perfectly replicable

Now going to look in more detail at some of the controversies around each of these issues.

Ecological fire management in Australia is often built on an assumption that meeting the needs of plant species will automatically meet the needs of animal species...

Clarke, M. F. (2008)
Catering for the needs of fauna in fire management: science or just wishful thinking?
Wildlife Research, 35, 385-394.

Impractical to measure total biodiversity : sustainable fire management focuses on specific taxonomic groups (Jurskis 2003). Focus on plants

Not ideal because plants and animals respond very differently to fire.
Plants have epicormic buds, lignotubers, seeds.
If animals can't get away from fire they die.
When animals die they die! Don't reproduce babies in their death throes.
Each species can only recolonise if there are populations nearby *and* if all the key resources that they need remain in the locality after a burn.

But it's not just animals that we marginalise.

Estimate that we've identified about a quarter of Australian fungi. Nearly 40000 species out there that we haven't identified, so we certainly don't know anything about their ecology or what effect fire will have on them.

Moving focus between taxa leads to very different conclusions about impacts of fire on biodiversity.

Keith Classes

"... the conceptual framework that brings the natural world into a comprehensible form becomes especially evident when a scientist constructs a classification. Previous experience, early training, institutional loyalties, personal temperament and theoretical outlook are all brought to bear in defining particular boundaries as 'natural'.

James A. Secord (1986) Controversy in Victorian Science
Cambridge: Cambridge University Press, p.6
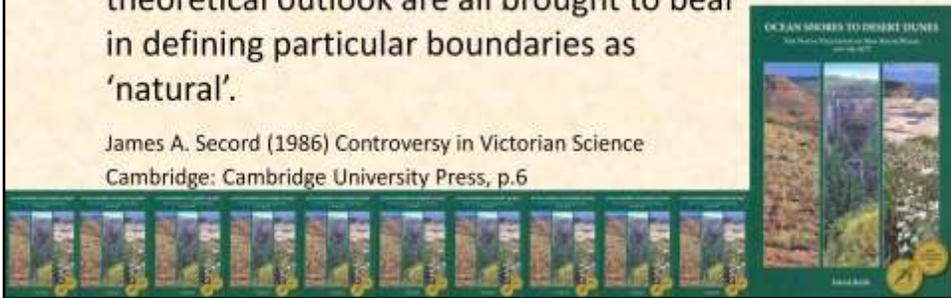
So we look at *some* vegetation and then we chop vegetation into chunks to assign fire regimes to it. In NSW, these chunks or classes, are usually Keith classes: first described by David Keith.

Keith did a good job BUT no classification system is perfect – it's an artificial process of forcing vegetation into defined units that don't exist on the ground.
There'll always be argument about whether the classes are too narrow or too broad, whether some have been missed altogether.

Some people also argue with the way Keith combines broad floristically derived units (based on species) with a structural classification system and he's not always consistent about the way he does that.

Overemphasis on the role of fire in almost all of the vegetated systems discussed. In some cases, flooding (Inland Riverine Forests) or long-term climatic cycles (grasslands) might be as or more important than fire.

(Hunter, 2006)

Repeatability of Vegetation Classification

"... there are major concerns about the subjectivity and risk of observer bias in most commonly used plant community mapping protocols."

Hearn, S. M, Healey, J. R., McDonald, M. A., Turner, A. J., Wong, J. L. G., and Stewart, G. B. (2011) The repeatability of vegetation classification and mapping. *Journal of Environmental Management* 92:4, 1174-1184.

So we have a book which has classified some vegetation into chunks and we say to people, take the book, decide which of these classes your land fits into.

In one of my previous incarnations as a science teacher, I used to teach high school kids. They'd look down a microscope and ask, "Ms Edwards, what can I see?" This question's not as stupid as it first sounds. When scientists look down a microscope, or approach a classification exercise, they bring with them a perceptual field that's steeped in training in a particular culture and tradition. They *know* what they're looking for. And they still disagree.

UK – 7 professional surveyors mapped the same upland site. The average area of agreement between maps was **77.6** % at the *habitat* level (e.g. Heathland / woodland / swamp). Due to classification issues.

All sorts of reasons for that, plants being hidden from vision by other plants, observer preconceptions about the existence of certain species within the area, fatigue or lack of focus, plants not being in a recognisable phenological stage, non-native invaders looking like natives, rarity of a single indicator species.)

Bewildered Landholders

- How do human activities (logging / forestry / peppermint still) which have changed the vegetation affect the classification?
- Should we be trying to remove plants not in that classification or introduce plants that are missing from the classification list?

That's the experts. Hotspots is asking landholders with no experience or training in classification to classify their land.

They ask these perfectly reasonably questions but they don't have nice neat answers.

Some landholders give up and just call their land Wet / dry schlerophyll forest.

Who Cares?

When it comes to managing the country you can't go, 'Oh yeah, we're gonna burn in six years'. You've got to be out there reading the country, out there every year.

Victor Steffensen
Traditional Knowledge Revival Pathways Program
Bushfire in the Landscape Conference speech, 23 June 2011

Our land is our knowledge, we walk on the knowledge, we dwell in the knowledge, we live in our thesaurus, we walk in our Bible every day of our lives.

Tex Skuthorpe, in Sveiby and Skuthorpe (2006)
Treading lightly : the hidden wisdom of the world's oldest people,
Allen and Unwin, Crow's nest, NSW.

Hotspots participants range from tree-changers on life-style blocks with no knowledge of land, through hippies who want to tread lightly on the land, through conservation agency staff members with land, to traditional farmers who've been burning for decades.

Some perfectly comfortable with matching selected aspects of their land to selected parts of a system described in a book and applying an associated management technique.

For some it's just anathema. These quotes are from indigenous people views shared by some, perhaps many, Hotspots participants.
They want to know their land, to observe it, to know how their patch responds to drought, to flood, to fire.
And until they can do that, they're more comfortable with methods that they perceive as being less drastic – slashing / grazing. Or even using fire to help individual species.

Donna: If Hakea needs fire to reproduce why not just burn the hakea?

Implications for Hotspots

Transmission of Information

Co-Production of Knowledge

Many possible approaches to workshops. I'll look at two models because I've seen Hotspots workshops that have elements of both:

Transmission of information
Co-production knowledge.

Talk about each approach.

Transmission of Skills and Information

- Traditional school (and extension) model
- Control remains in the hands of "experts" – they decide on the nature of the problem, the relevance of information and the solution to the problem
- Clear, measurable targets.

You can see how Hotspots could fit into this model:

They come in, they say

The problem is loss of biodiversity
The relevant information is about specific vegetation types, Keith classes and fire regimes
The solution is prescribed burning
Targets: x number of sustainable fire management plans developed and implemented

Transmission of Information
Advantages

- Measurable Targets = Funding
  (Assumption that Intervention leads to
  Pro-conservation attitudes, which leads to
  Pro-conservation behaviour, which leads to
  Adoption of a specific biodiversity innovation,
  which leads to
  Improved biodiversity outcomes.)

- Some people like being told what to do!

Major advantage: funding. Because funding is usually short term

Targets are usually about how many workshops are held and how many plans are made, how many landholders change their attitudes. Assumption that those things will impact on biodiversity BUT there's many a slip twixt cup and lip!

Long-term ecological monitoring is necessary to identify impacts on biodiversity

Most of us grew up being taught in this way. Comfortable with it, particularly if you're not that familiar with a subject.

## Transmission of Information Risks

- Some members of the community don't even come to workshop because of existing hostilities towards the approach
- Workshops result in stagnation between opposing parties or polarisation of views
- Landholders become disillusioned because they don't see rapid, indisputable benefits
- It's not possible to avoid controversy in wider society.

Emotional and political nature of fire management means that some people won't even attend the workshops, some will come and be trouble-makers as some of us were known in school.

Co-production of knowledge

- Environmental discourse is opened up to difference and indeterminacy.
- Public controversies are not a failure of governance but "generative forces" providing opportunities to engage more people in research.
- Expertise is reproduced in local contexts rather being than a property of certain actors – science-based knowledge is not *a priori* granted priority over experience based knowledge.
- Participants act as individuals and not as representatives for institutional stakeholders or categories of local residents.
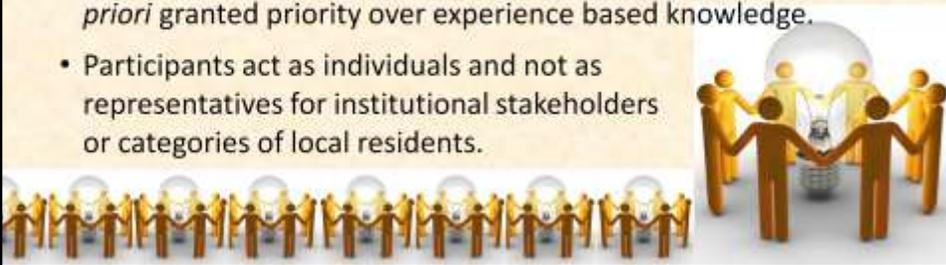
1. No fear of controversy – it's welcomed. The whole point is to get people together and talking.
2. Nobody's automatically granted expert status

Hotspots might approach participants by saying:

Fire is both a threat and a regenerative force in our landscape. How do we envisage a future landscape that recognises this role of fire and how do we get there?

Co-production of Knowledge
Advantages

It brings hostile parties back to the debate

If you have no fixed agenda then people are more likely to come to the debate and
start to realise what they've got in common
overcome language barriers (again rooted in culture and training).

It could be argued that until all Australians are engaging with the debate about sustainable fire management, we're going to continue going round in negative circles of blame and protest.

Co-production of Knowledge
Risk

- Funding
- It takes longer
- It's a bit scary

It's hard to get funding if you say, "We're going to open up debate about fire in Australia!"

Scary for the facilitators and Hotspots HQ staff – we're more accustomed to telling people what to do, to being the expert, to getting immediate, tangible results.

And participants

Conclusion

For issues like... biodiversity loss, the response by landholders as a whole is clearly insufficient to halt degradation processes.

Pannell D. And Vanclay, F. (2011) Changing Land Management: Adoption of New Practices by Rural Landholders. CSIRO Publishing, Collingwood, Vic.

(Pannell and Vanclay argue it's not failure of communication that stops landholders from adopting conservation initiatives, it's failure to manipulate them into thinking that the proposed changes are consistent with their goals

But perhaps that's because extension projects have traditionally said, "This is the problem, this is what you should do about it." Some landholders, particularly those who are less confident on the land, may respond well to that.

But others may well prefer a more open approach that says something like,

In Australia, Land, People and Fire do, and always will, co-exist. How do we, as a community, want to shape that existence?