



Biodiversity offsetting in Australia: getting the policy settings right

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National Environmental Science Programme

This talk

1. Offset policy context
2. Key challenges
3. Expert elicitation to improve biodiversity offsetting



Biodiversity offsetting



Biodiversity offsetting is used to compensate unavoidable development impacts on biodiversity

Offsets must deliver an “overall conservation outcome that **improves or maintains** the viability of the protected matter”

~ EPBC Act Environmental Offsets Policy (2012)



Biodiversity offsetting in Australia

- Offsets may be required under both Commonwealth and State/Territory policies (and maybe Local too)
- Highly complex regulatory environment
- Requires interactions with *many* actors operating at multiple levels



1 Federal /
Commonwealth
/ Australian
Government



6 state and
2 mainland
territory
governments



~700 local
governments

Some challenges with offsets

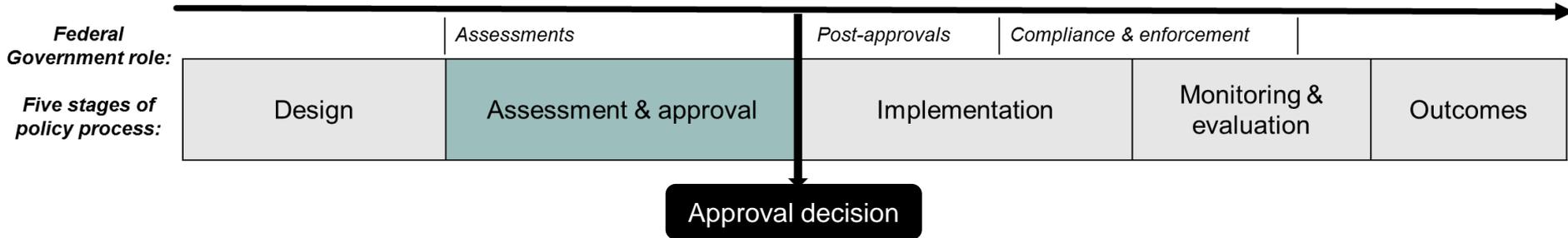
- 30 semi-structured interviews, Feb-June 2016

ANU Human Ethics Protocol
2015/274

Stakeholder group	n
Industry	5
Consulting	2
Brokers	4
Government	13
Legal	3
NGO (offset providers)	3
Total	30

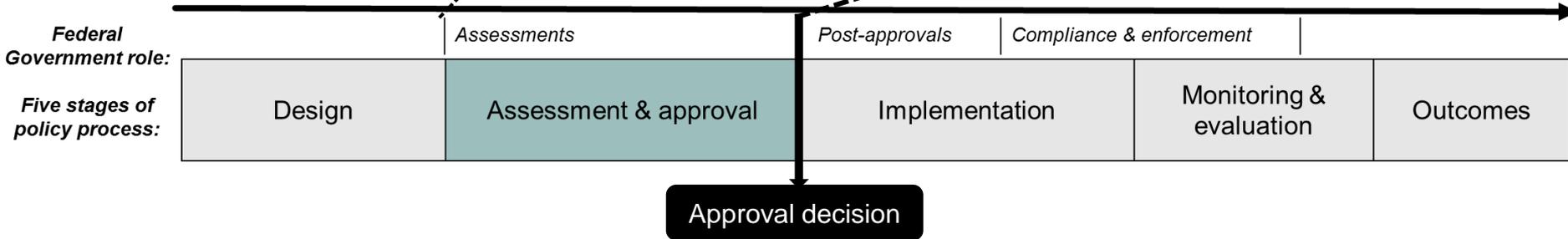
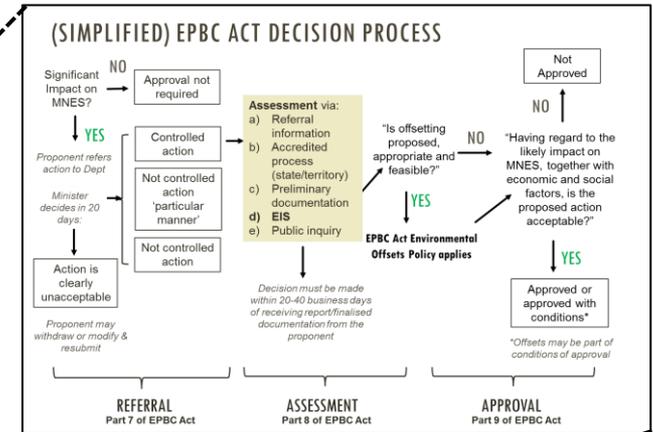
Key challenges:

1. The process itself

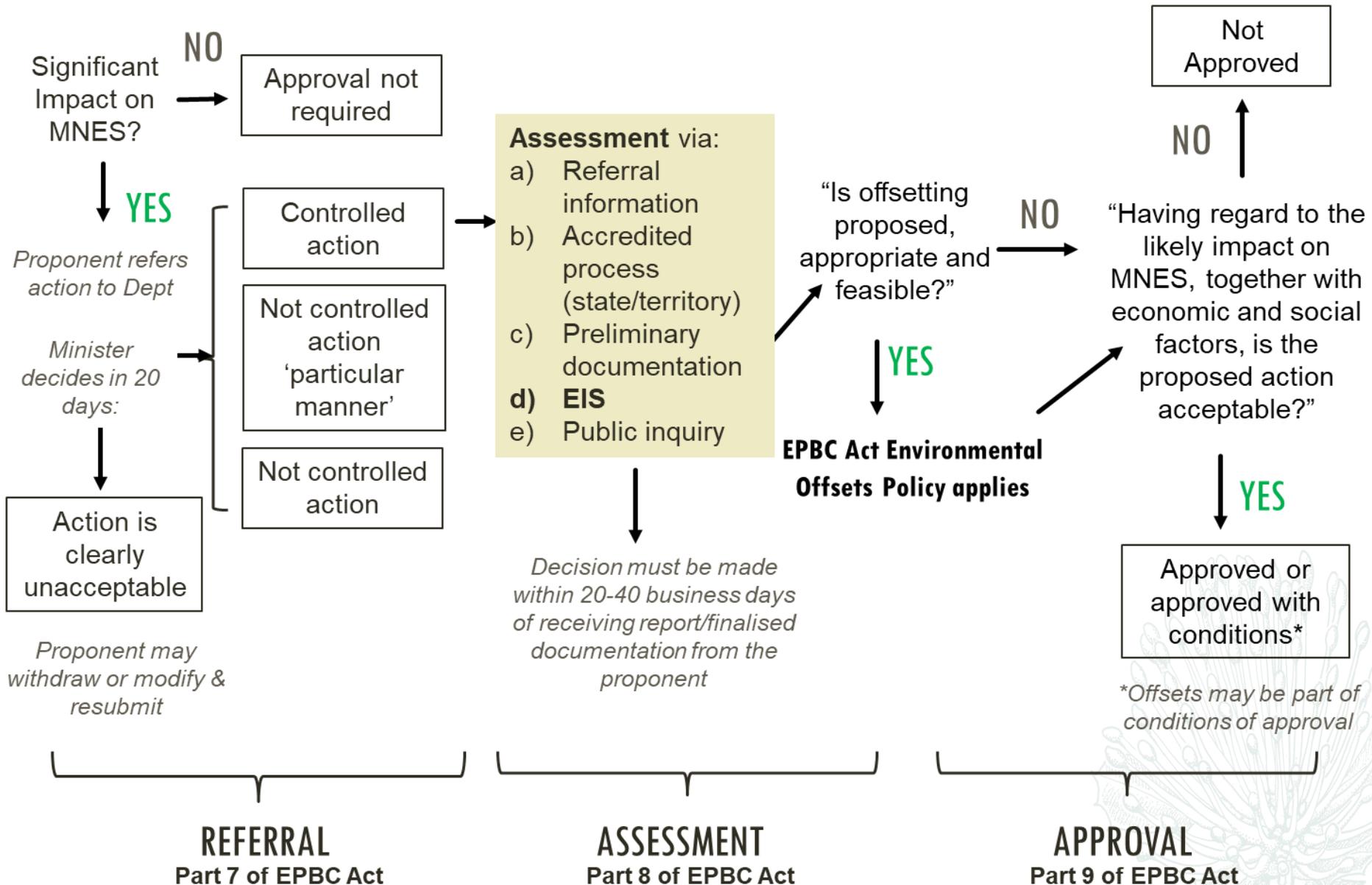


Key challenges:

1. The process itself



(Simplified) EPBC Act offset decision process



Key challenges:

1. The process itself

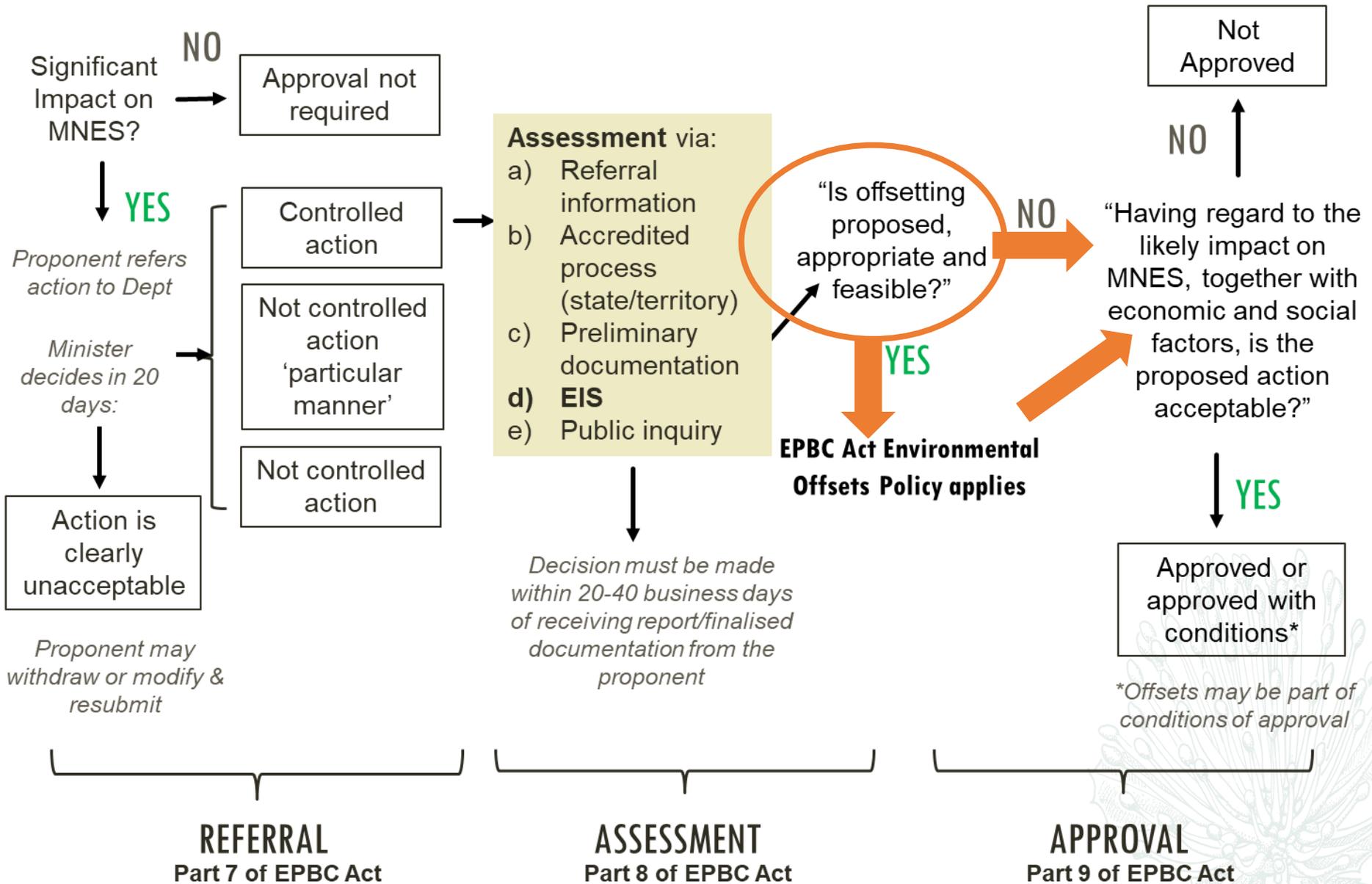
*“...under the Act it’s **very hard to refuse a project on the basis that you can’t find an offset**”*

[Government 7]

*“...the more and more we become comfortable with using the offsets policy, the assessment officers are saying **yes you can impact that if you offset this somehow**, approved, handed over to the post approvals officers...[the proponent] may then turn around and say **actually there’s no offsets**”*

[Government 12]

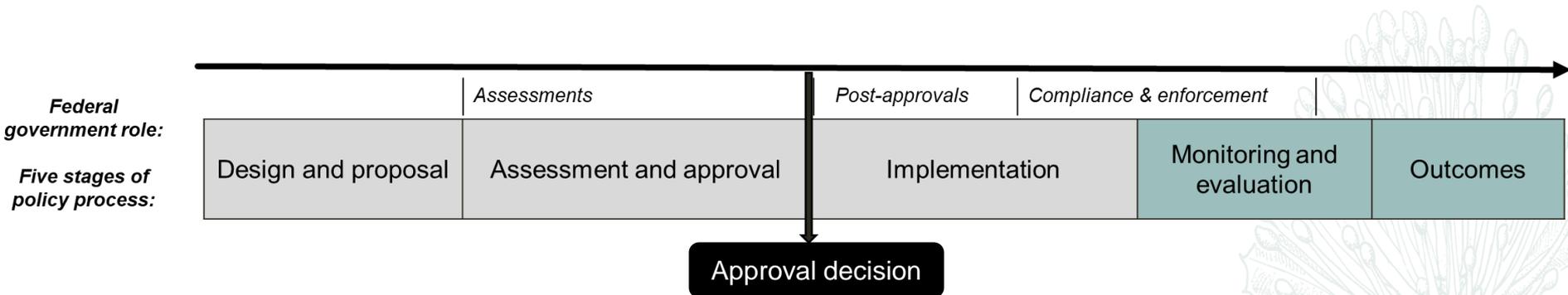
(Simplified) EPBC Act offset decision process



Key challenges: 2. Long term governance

Federal Government has limited role beyond the expiry of the offset management plan attached to the conditions:

*“...there isn’t necessarily great formal management after [EPBC liability is severed]. And there **certainly isn’t tracking in outcomes I don’t think**” [Government 9]*



Key challenges:

3. Conditions of approval

- Conditions of approval generally specify *inputs*, not *outcomes*
- Approved condition may be to “*develop an offset management plan*”
- Legal compliance \neq environmental effectiveness
(Lindenmayer et al., 2017)



The plan to protect wildlife displaced by the Hume Highway has failed

May 26, 2017 6:19am AEST

THE CONVERSATION

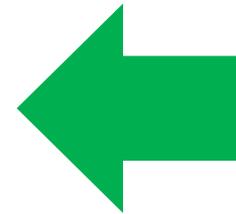
Key challenges

1. The process itself
2. Long term governance
3. Conditions of approval



Key challenges

1. The process itself
2. Long term governance
3. Conditions of approval



- Decision makers rely on **quick and easy** access to information on the **costs and benefits** of different offset activities
- These data often **not** available or accessible



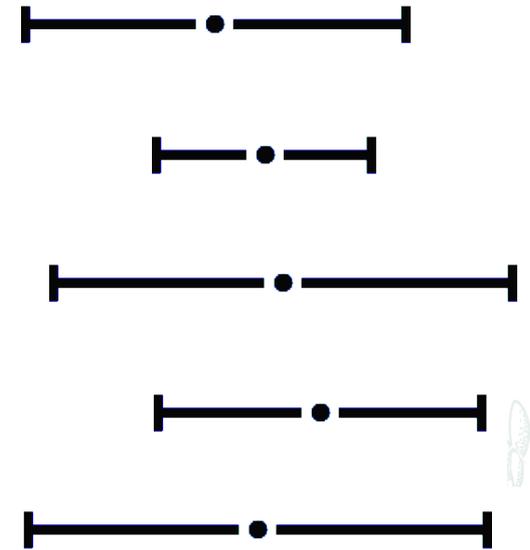
How will our research help?

- Offsets are particularly difficult to identify where:
 - i. Ecological data are scarce or uncertain
 - ii. Habitat protection may not be possible
 - iii. Habitat protection may not be beneficial



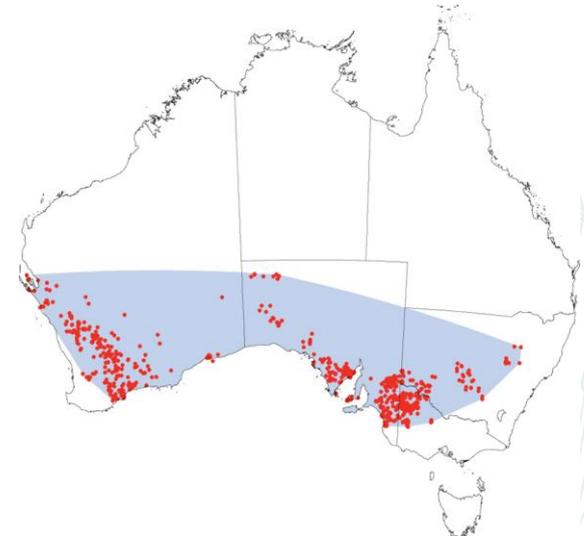
How will our research help?

- Formal *expert elicitation* methods can be used to rapidly and cheaply acquire such information
- E.g the **IDEA protocol** (*Investigate, Discuss, Estimate, Aggregate*)
Hemming et al, 2017 *Methods in Ecology and Evolution*



Case study: Malleefowl

- Structured survey, 13 experts
 - I. Each expert makes an **anonymous** individual estimate
 - II. Facilitated discussion
 - III. Experts submit final individual estimate
- **Result:** estimated benefit of 9 different offset strategies for malleefowl, based on **average group estimate**



Case study: Malleefowl

Offset strategy: Protect existing habitat

For this question, we would like you to think of a site which contains malleefowl habitat. ***In 2018 there were 5 active mounds on site.***

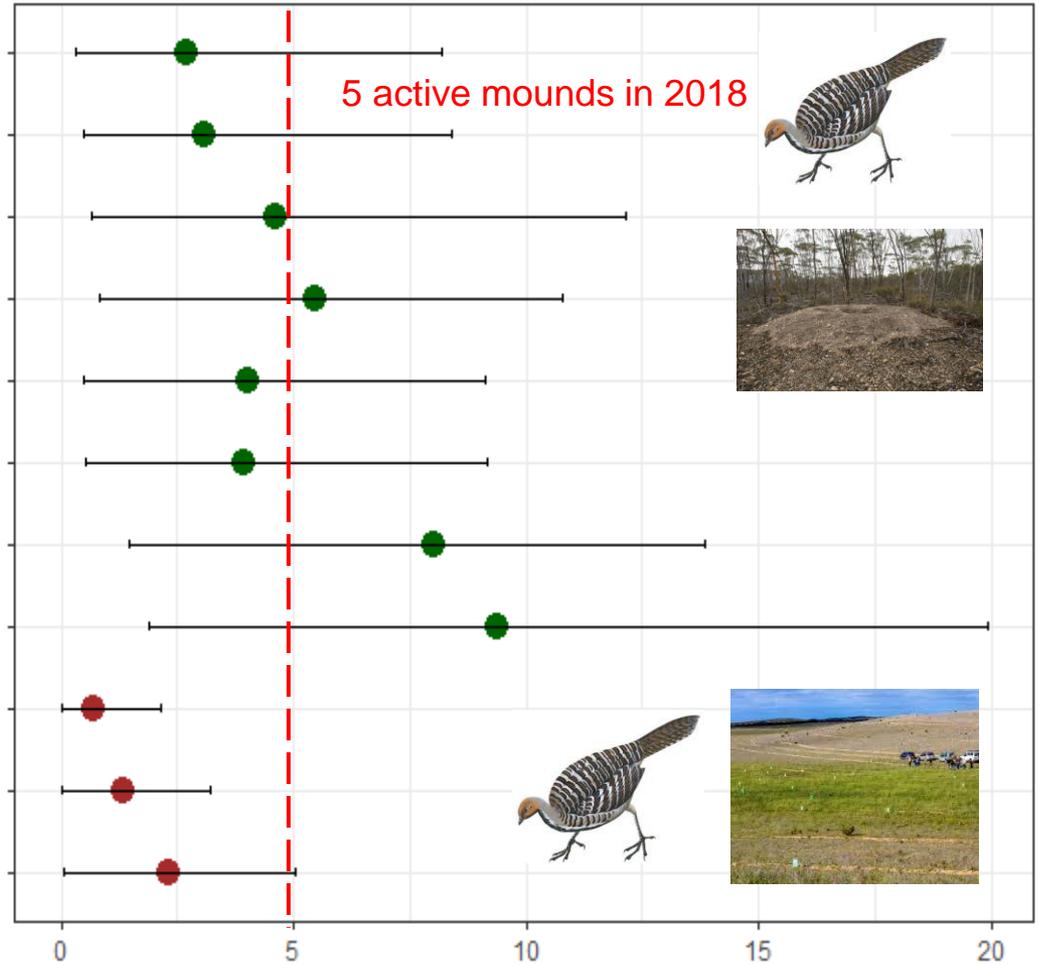
Assuming the site is placed under a ***permanent conservation covenant***, how many active malleefowl mounds will be present ***in 20 years***, excluding any additional impacts from mining, agriculture, road or urban development?



Results

All scenarios and management options: *Group average estimates*

Scenario 1 baseline (DO NOTHING) →



Scenario 2 baseline (DO NOTHING) →

No. active mounds in 20 years

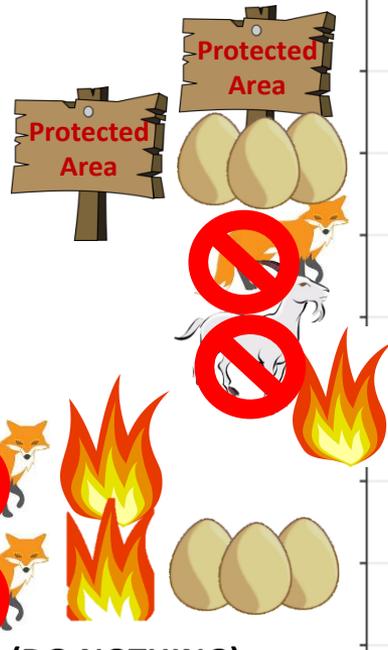
● Scenario 1: Malleefowl habitat

● Scenario 2: Degraded cropping land

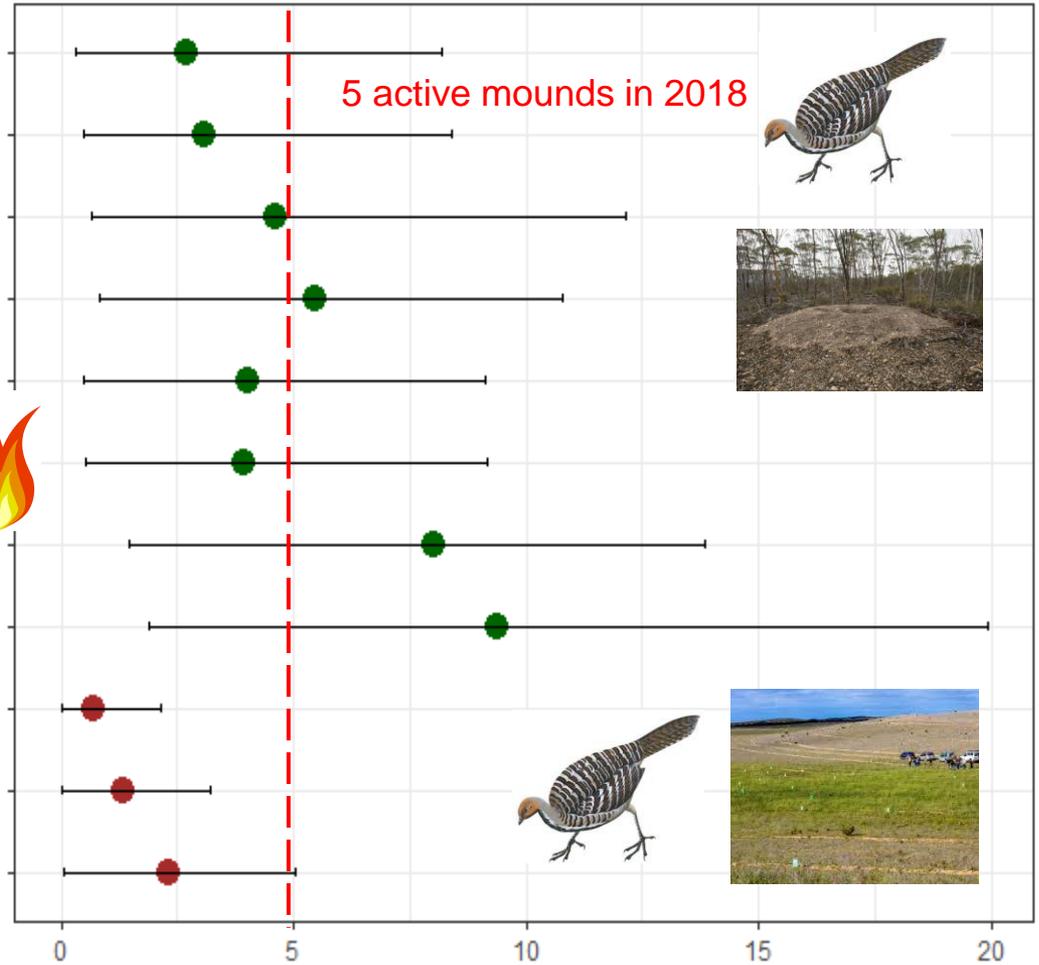
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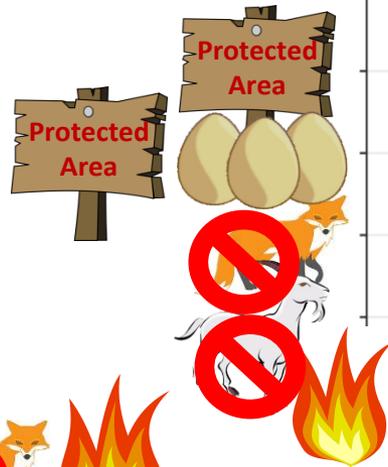
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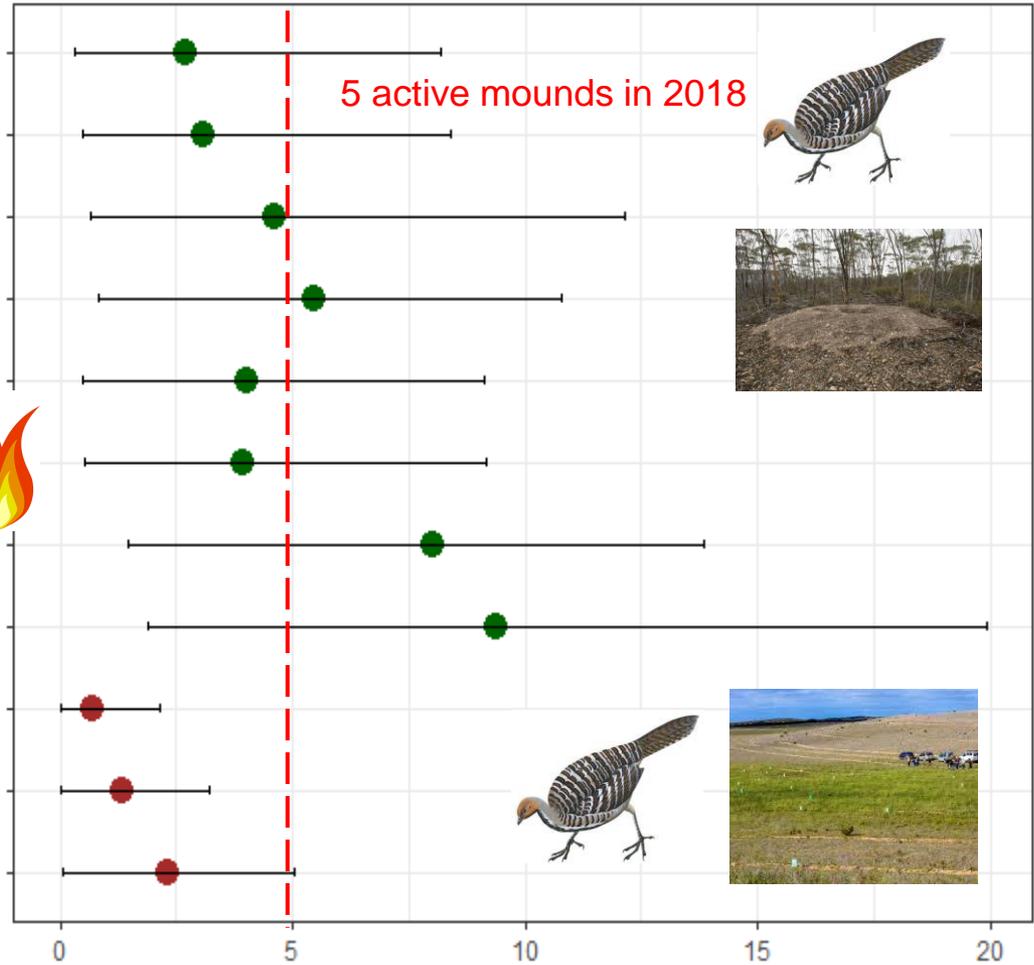
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All scenarios and management options: *Group average estimates*

Scenario 1 baseline (DO NOTHING) →



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No. active mounds in 20 years

- Scenario 1: Malleefowl habitat
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Take home messages

- Offsets are fiendishly complex - ecology just part of it
- Good policy, **process**, and **governance** needed
- Expert elicitation can be used to support offset decisions



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National Environmental Science Programme

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Shortlisted MNES

- i. limited data are available to inform offset strategies
- ii. offsets are challenging to identify/highly costly
- iii. typical approaches to offsets are/may be of limited benefit

Species/subspecies	Species group
<ul style="list-style-type: none"> • Greater bilby • Northern quoll • Malleefowl • Night parrot • Tasmanian devil • Spot-tailed quoll • Wedge-tailed eagle (Tasmanian) • Australian grayling • Striped legless lizard • Pink-tailed worm-lizard • Spiny rice flower • Wallum sedge frog • Baudin's cockatoo • Orange-bellied parrot 	<ul style="list-style-type: none"> • Migratory shorebirds • Small-bodied woodland birds • Cryptic orchids
	Ecological community
	<ul style="list-style-type: none"> • Littoral rainforest and coastal vine thickets of eastern Australia • Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest • Brigalow (<i>Acacia harpophylla</i> dominant and co-dominant) • Banksia Woodlands of the Swan Coastal Plain



Participants

Modified snowball sample

13 participants (62% male) from government (state and federal), industry, NGOs, NRM bodies

1 to 30 years experience in malleefowl ecology/management

Bachelors, Masters & PhD



Survey questions

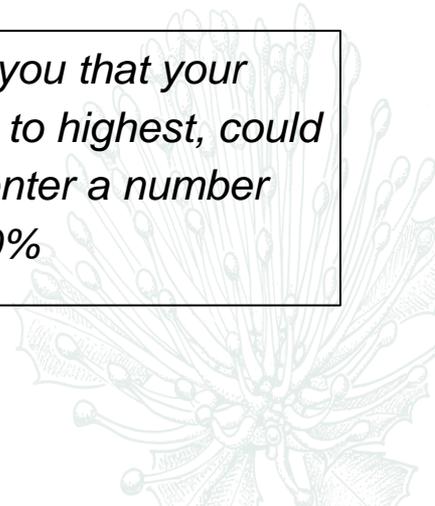
The 4-step elicitation format:

1. *Realistically, what do you think is the **lowest** plausible value for X will be?*

2. *Realistically, what do you think is the **highest** plausible value for X will be?*

3. *Realistically, what is your **best guess** for X?*

4. ***How confident** are you that your interval, from lowest to highest, could capture X? Please enter a number between 50 and 100%*



Who is an “expert”?

Google expert scientist

All **Images** News Videos Shopping More Settings Tools

chemist science life two real life climate change nasa icon female halloween james e hansen bio forensi

Medical Doctor (M.D.) Climate Scientist (Ph.D.) & friend

Who is an “expert”?

Social expectation hypothesis: The more highly regarded and more experienced experts will give better advice

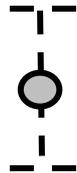
- Expert “status” is a poor indicator of performance
Burgman et al., 2011 *PLOS One*
- The *average aggregated group estimate* outperforms the best estimate from the most “esteemed” expert
- The power of expert elicited judgements comes from group **diversity, anonymous estimates, and facilitated discussion**



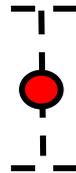
Results

Protect existing habitat

Round 1
group
average



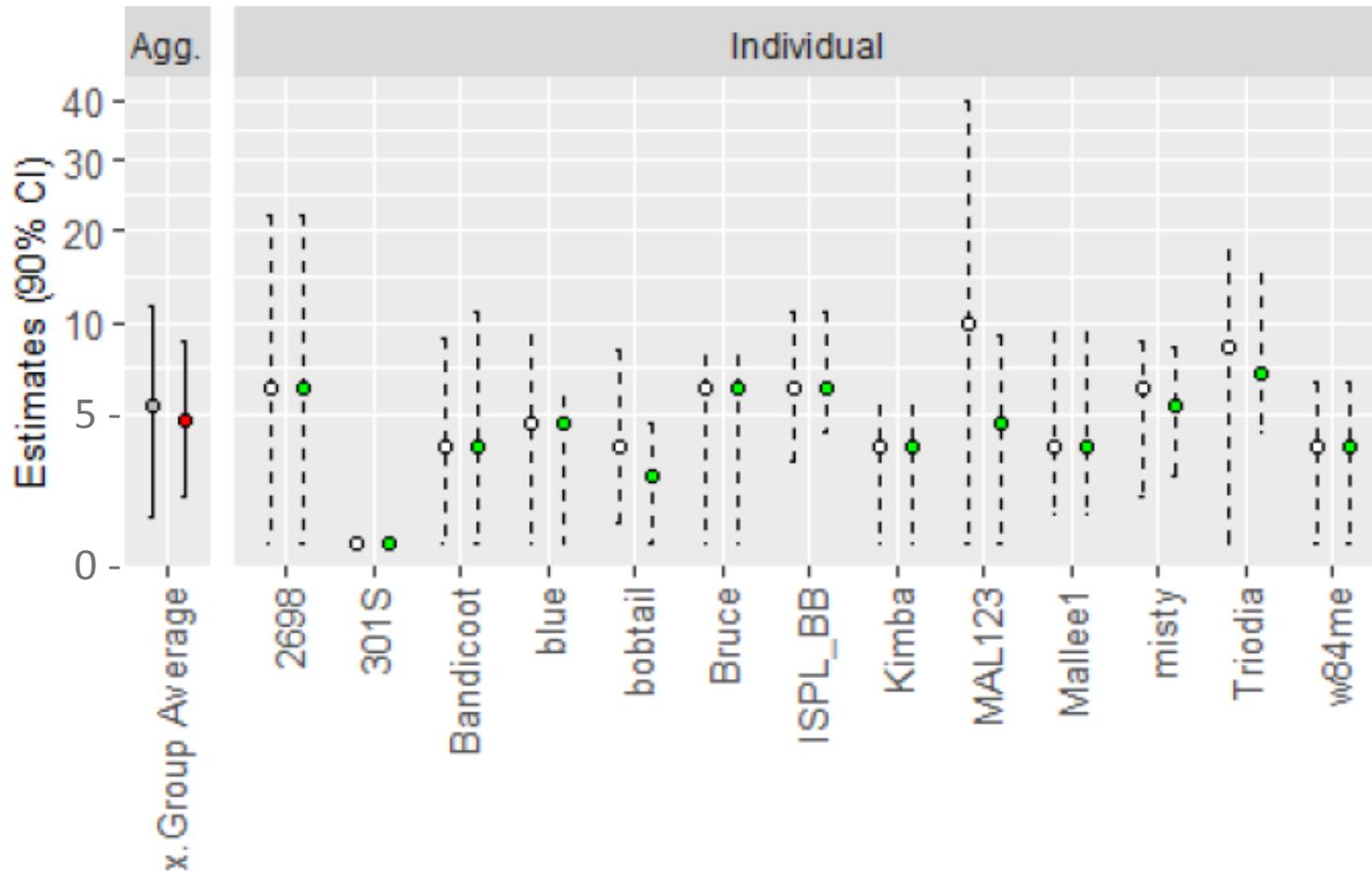
Round 2
group
average



Round 1
individual
estimates



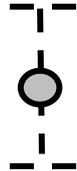
Round 2
individual
estimates



Results

Protect existing habitat

Round 1
group
average



Round 2
group
average



Round 1
individual
estimates



Round 2
individual
estimates

