Riparian Rehabilitation Experiment

Evaluating the effectiveness of riparian restoration in improving stream health

Question

↑ Replant Vegetation

↓ Grazing Pressure

= Stream Health?

Investigation Options

- Space for Time Substitution
- Dedicated Experiment

Middle Creek

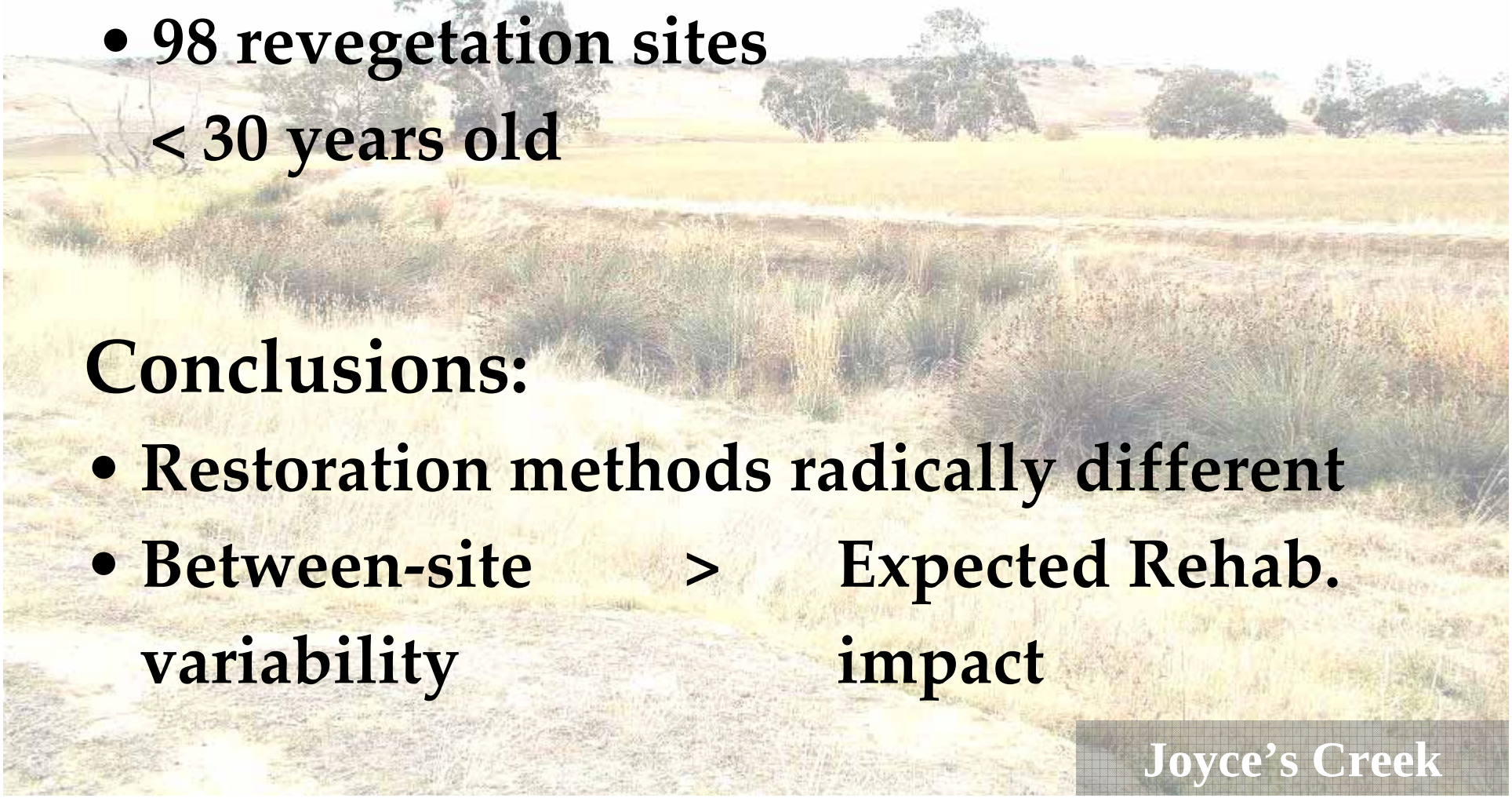
Space For Time Substitution

Ezzy's Investigation:

- 98 revegetation sites
  < 30 years old

Conclusions:

- Restoration methods radically different
- Between-site variability > Expected Rehab. impact



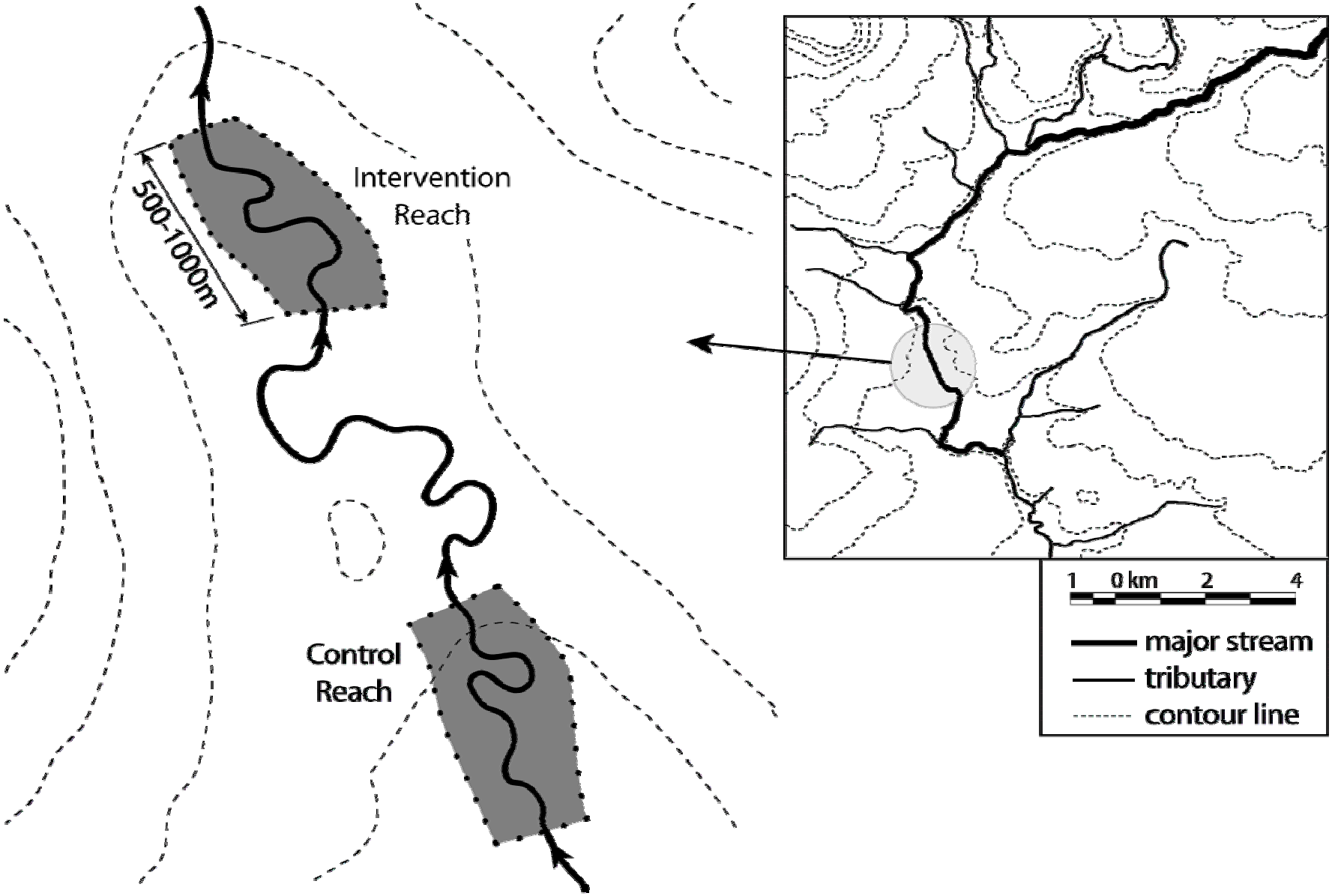
Dedicated Experiment

BACI Design

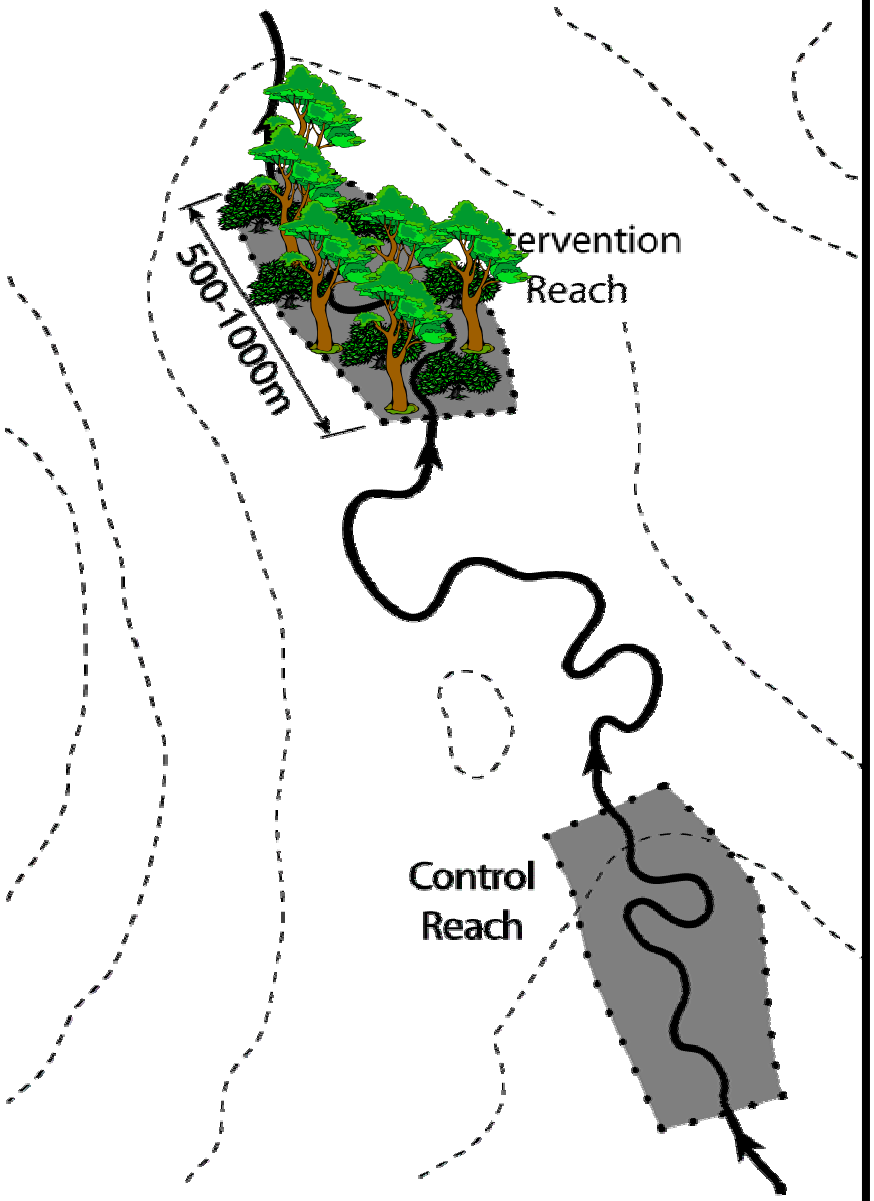
- **Before > monitoring started in 2004**
- **After > continue until 2014**
- **Control > stock grazing & no reveg**
- **Intervention > fence & replant 2005**

- **Reference > estimating trajectories**

Site Layout


Intervention
Reach
500-1000m
Control
Reach
1 0 km 2 4
major stream
tributary
contour line

Site Layout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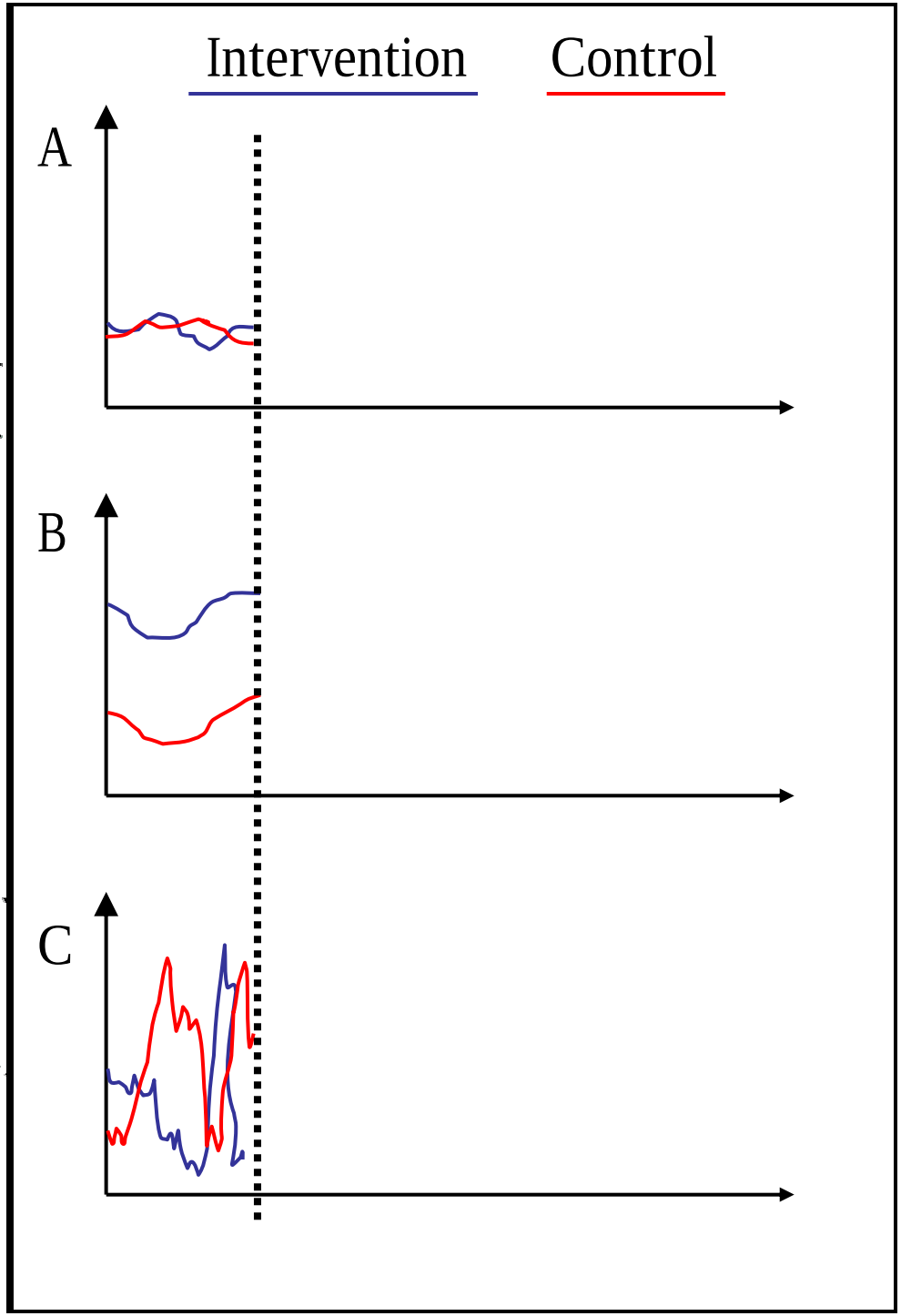
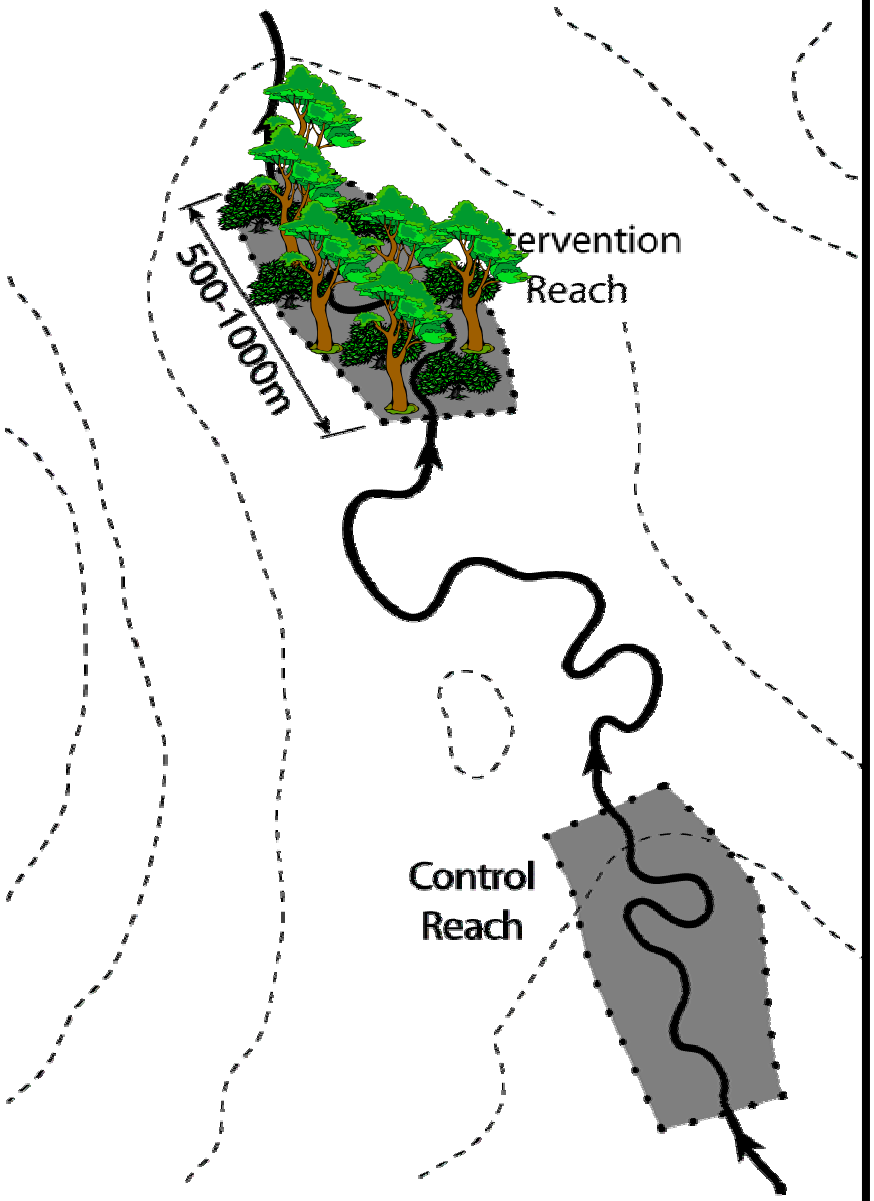
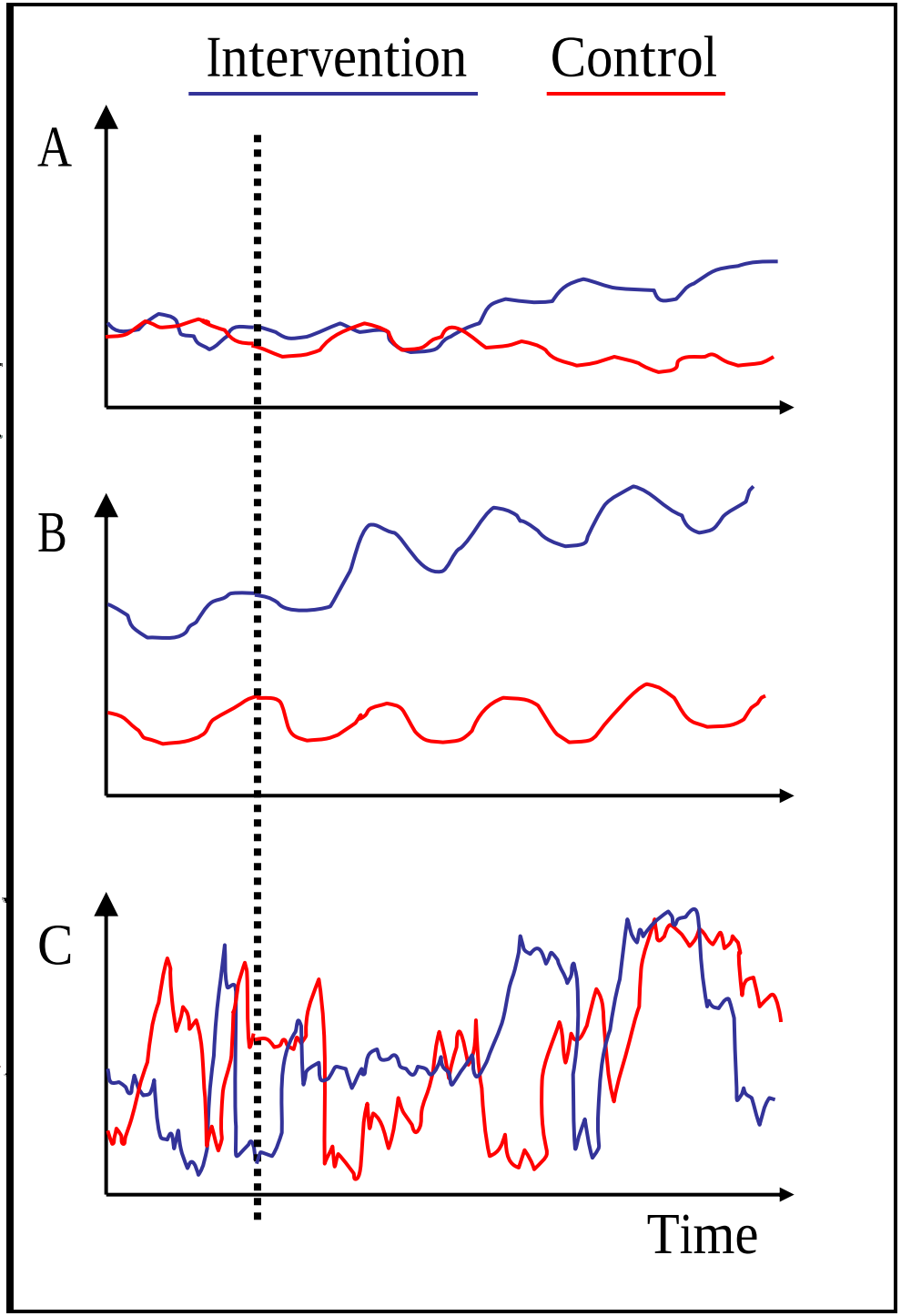
Reach
500-1000m
Control
Reach


Intervention
Control
A
B
C

Site Layout


500-1000m
ervention
Reach
Control
Reach

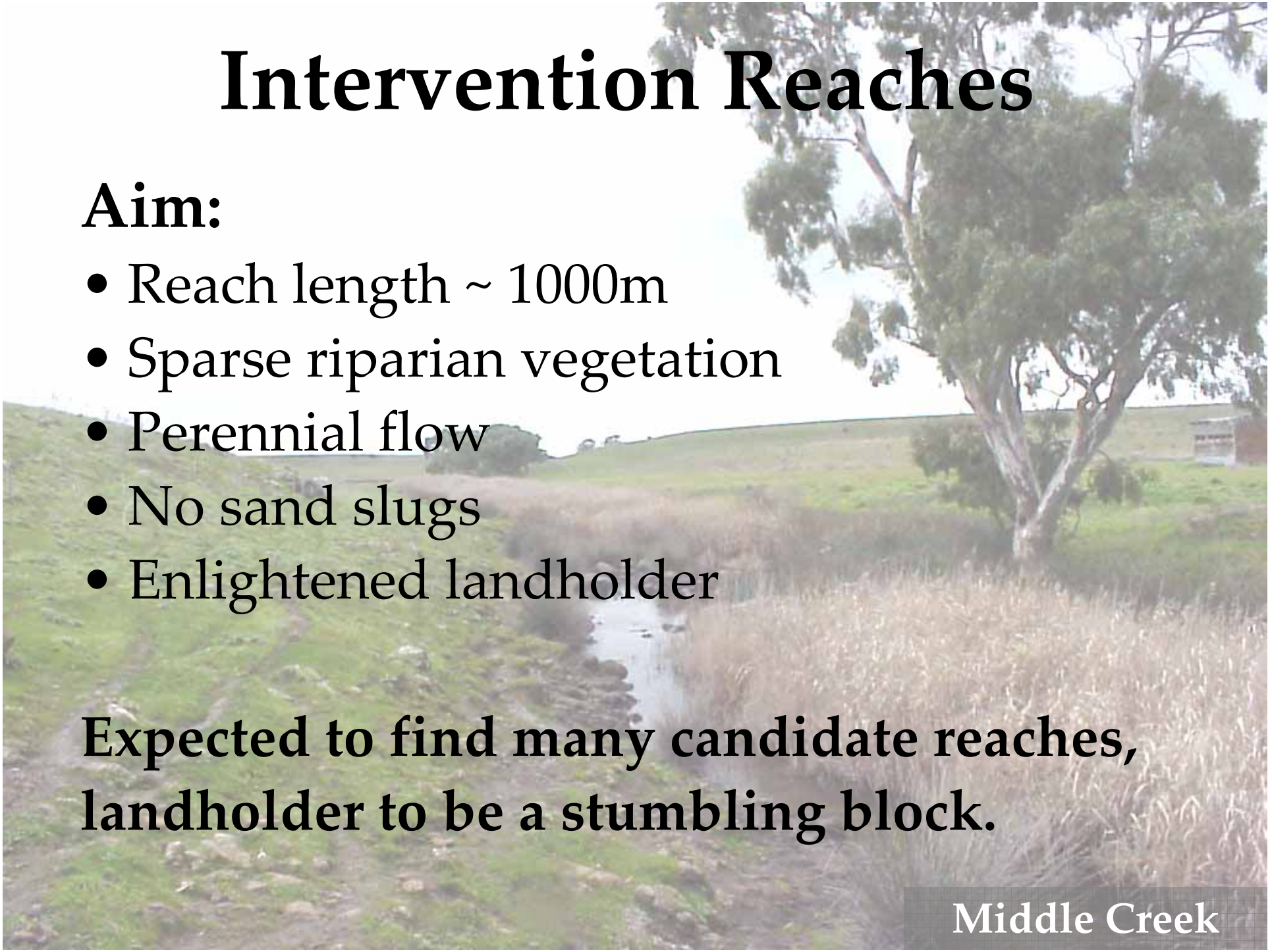

Intervention
Control
A
B
C
Time

Intervention Reaches

Aim:

- Reach length ~ 1000m
- Sparse riparian vegetation
- Perennial flow
- No sand slugs
- Enlightened landholder

Expected to find many candidate reaches, landholder to be a stumbling block.



Middle Creek

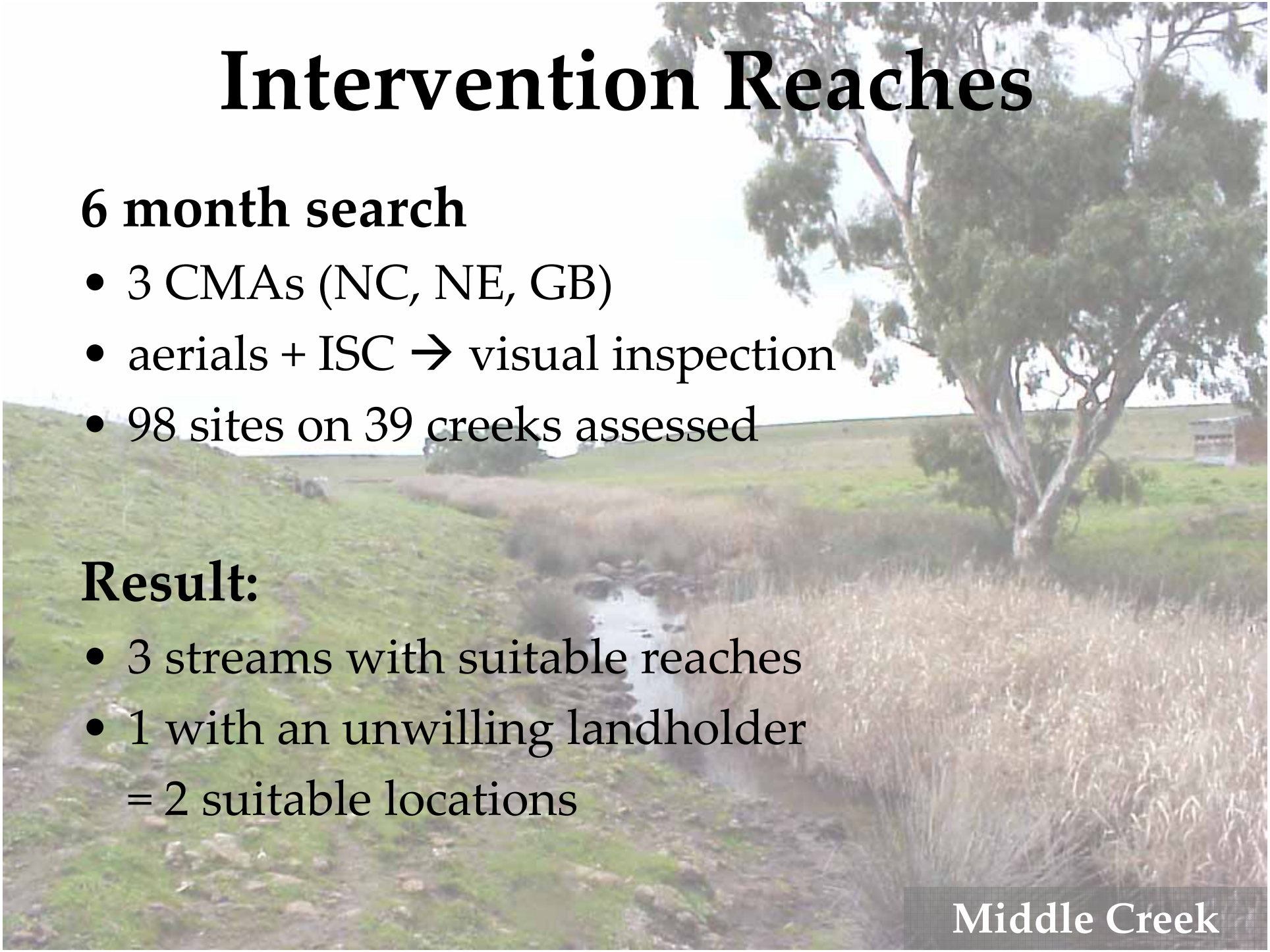
Intervention Reaches

6 month search

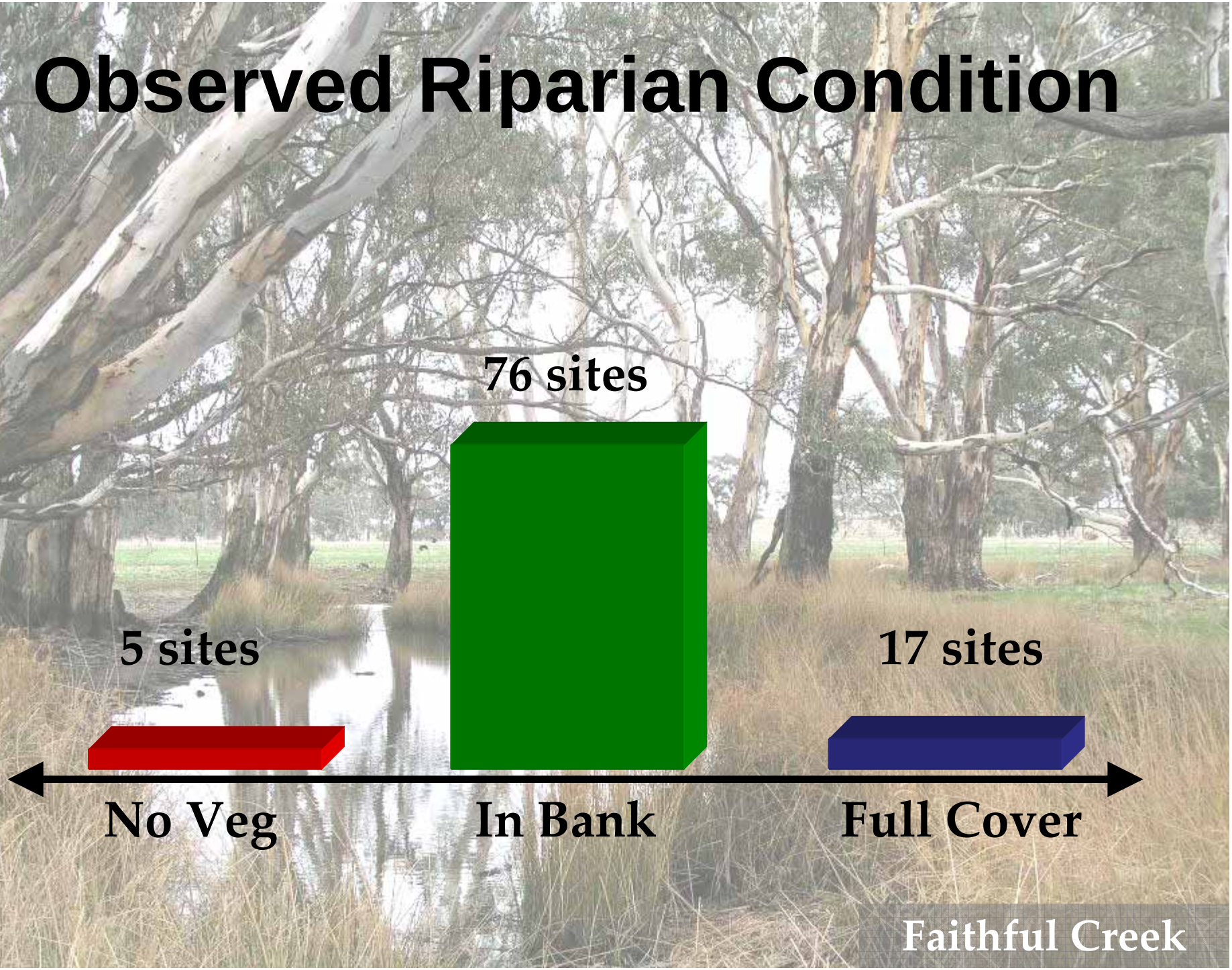
- 3 CMAs (NC, NE, GB)
- aerials + ISC → visual inspection
- 98 sites on 39 creeks assessed

Result:

- 3 streams with suitable reaches
- 1 with an unwilling landholder
  = 2 suitable locations

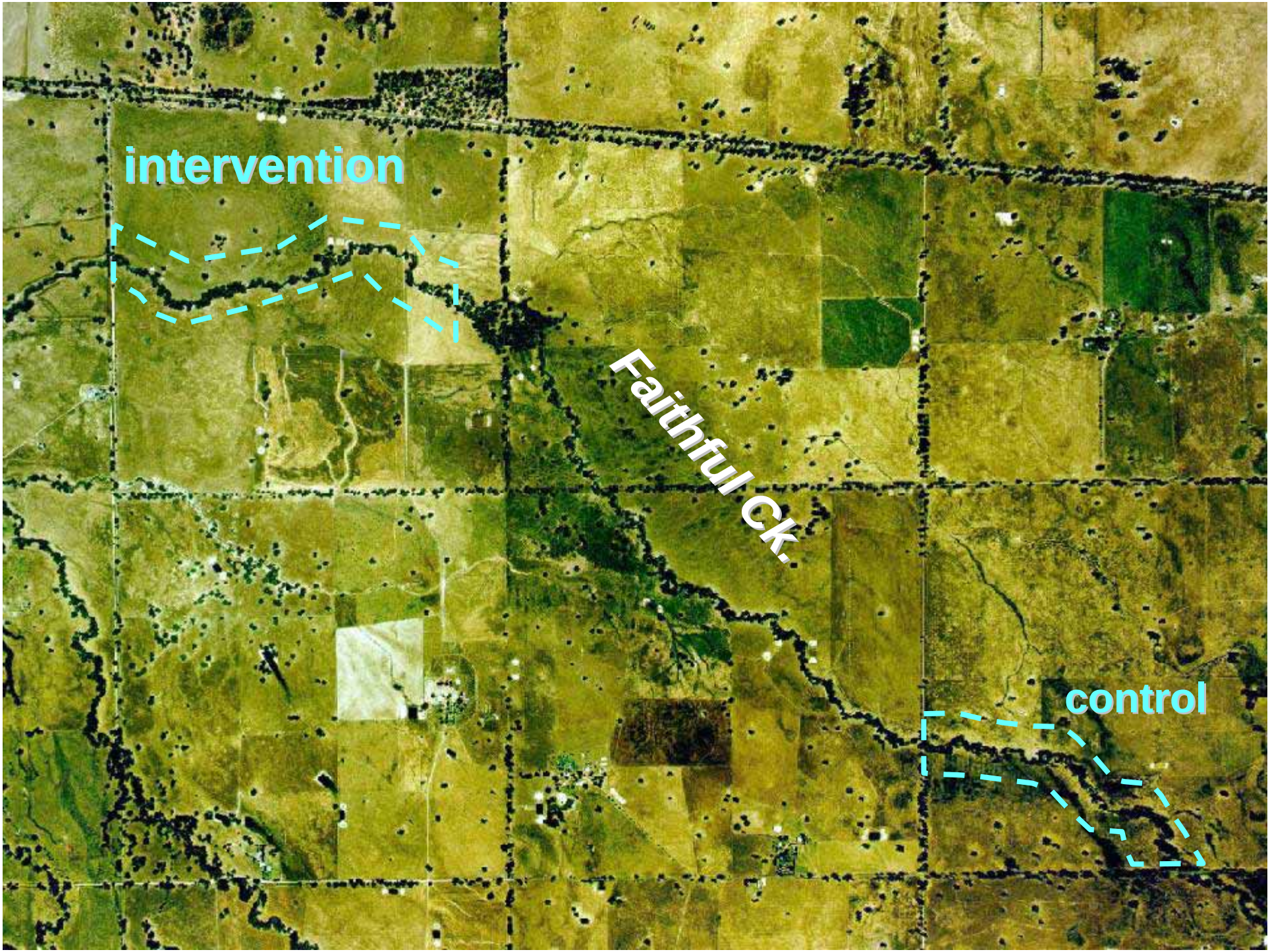


Observed Riparian Condition



Faithful Creek

“Quasi-Reference”


intervention
Faithful Ck.
control

Practical Issues Facing Experiment Design

- **Few totally degraded reaches exist**
  - **> ‘most degraded’ reaches selected**
- **Riparian vegetation present**
  - **> expect weaker response magnitude**
- **True reference unavailable**
  - **> multiple lines of evidence**

Going forward…

Field Sites: intervention & control

- ✓ Faithful Creek (GBCMA)
- ✓ Middle Creek (NCCMA)
- ✓ Joyce's Creek (NCCMA)
- ? *Major Creek (GBCMA)*

Upcoming monitoring:

- Late Spring Oct – Nov 04
- Late Summer Feb – Mar 05

Extra slides

Next slides show:

- the site layout
- depict how the experiment will proceed
  - initial monitoring
  - intervention
  - continued monitoring with different types of responses:
    - top = clear, delayed divergence
    - middle = instant divergence with seasonal cycling
    - bottom = complex and noisy variable, no trend