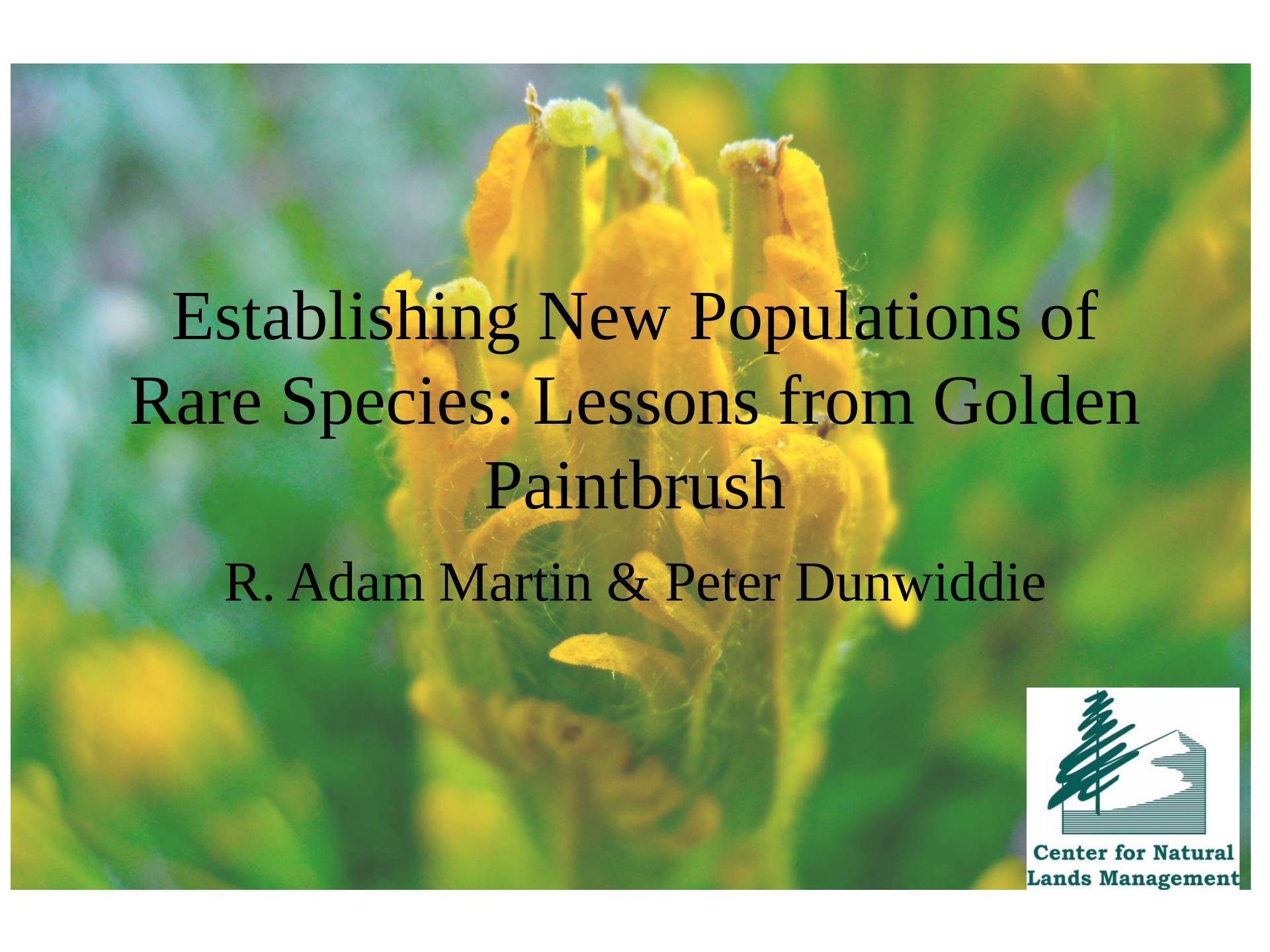


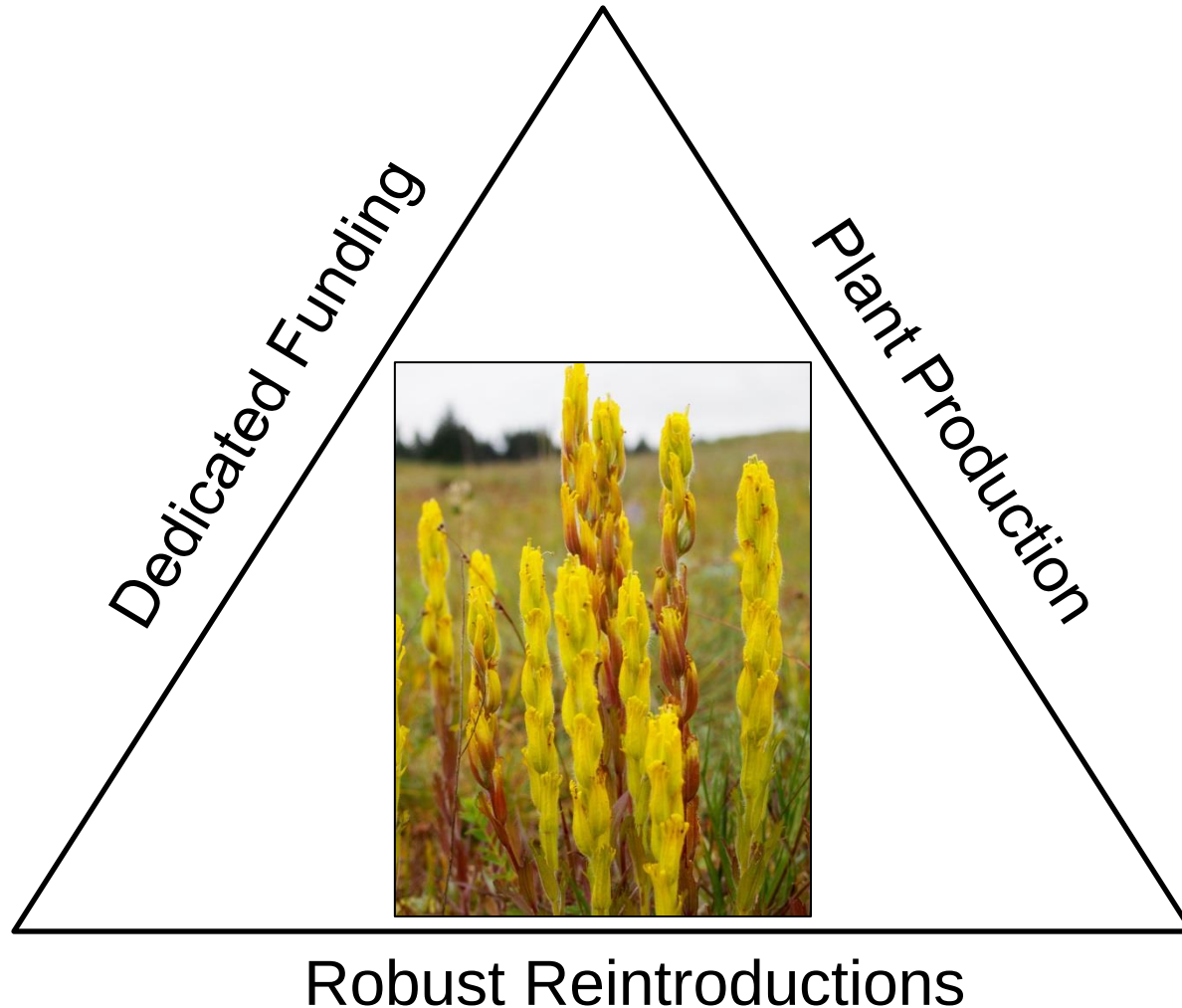


Establishing New Populations of Rare Species: Lessons from Golden Paintbrush

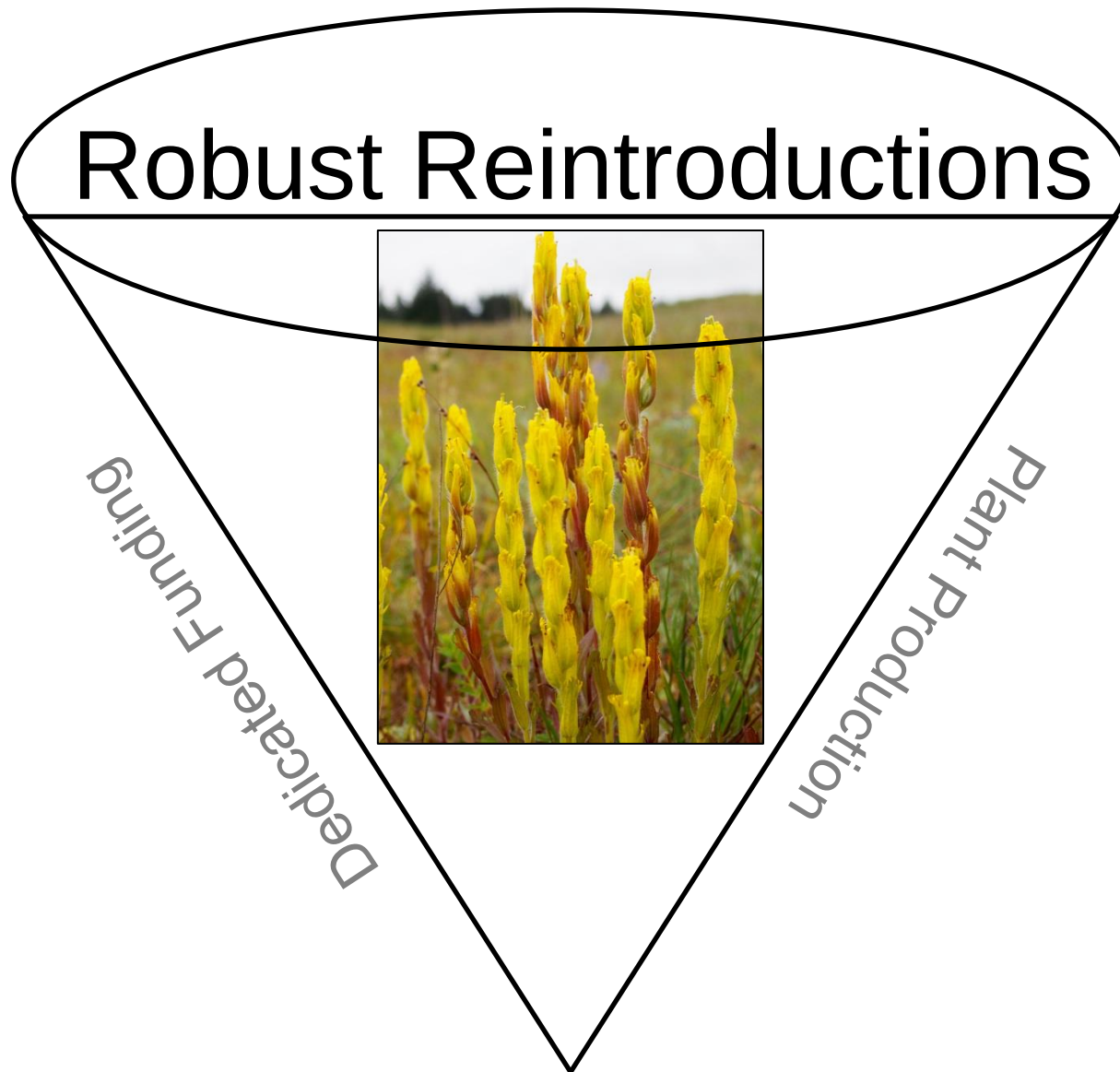
R. Adam Martin & Peter Dunwiddie



Species Recovery Triangle



Species Recovery Triangle

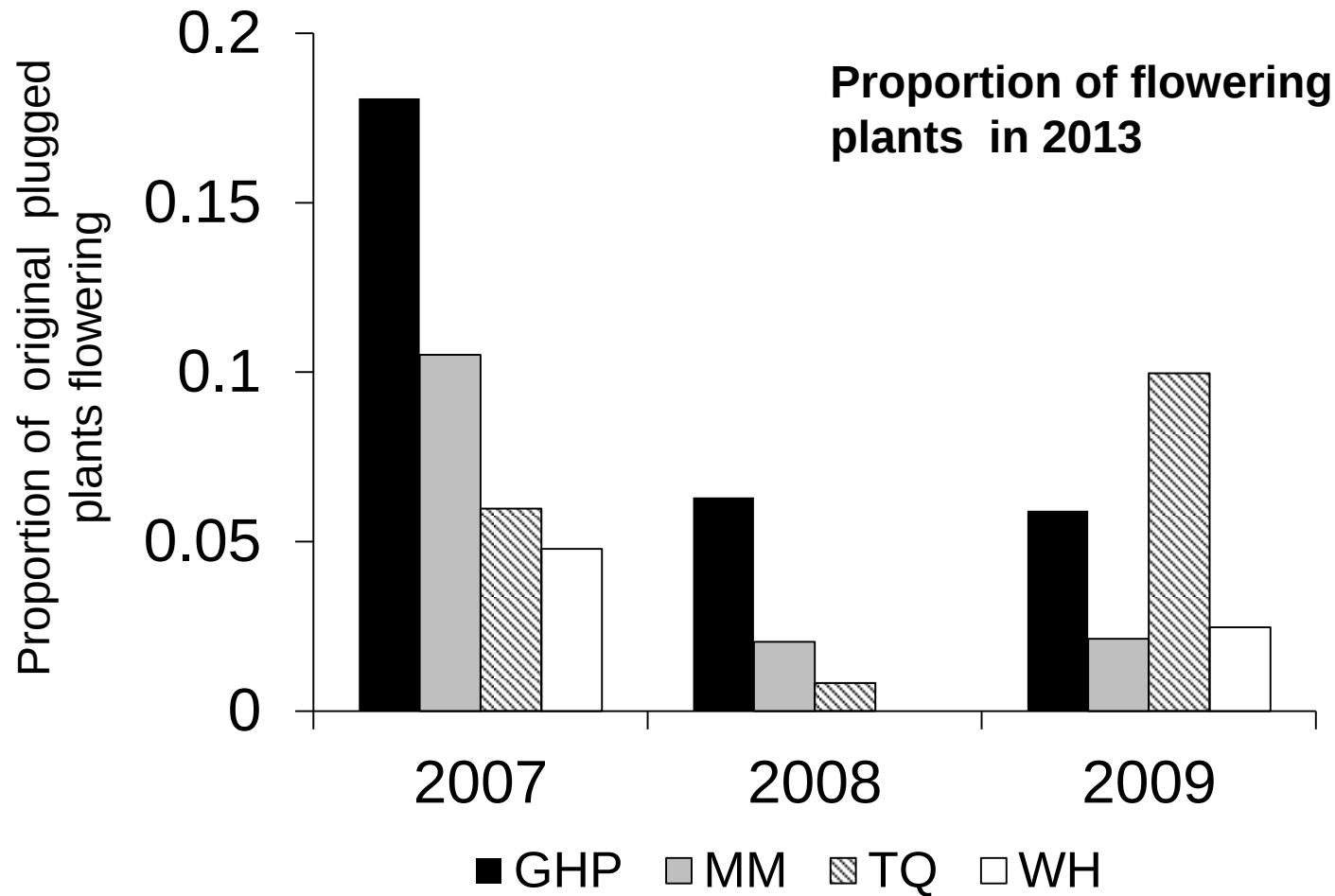


Plant reintroductions are hard

- Most reintroductions have limited success
- reasons for failure often unknown
- Not tracked for long time periods (>4 years)
- Not replicated
- Key variables not monitored
- Limited by availability of plants

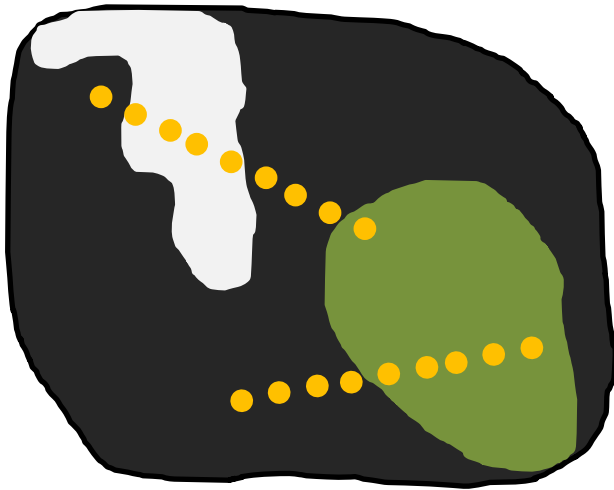


Reintroduction using plugs had variable success across three years



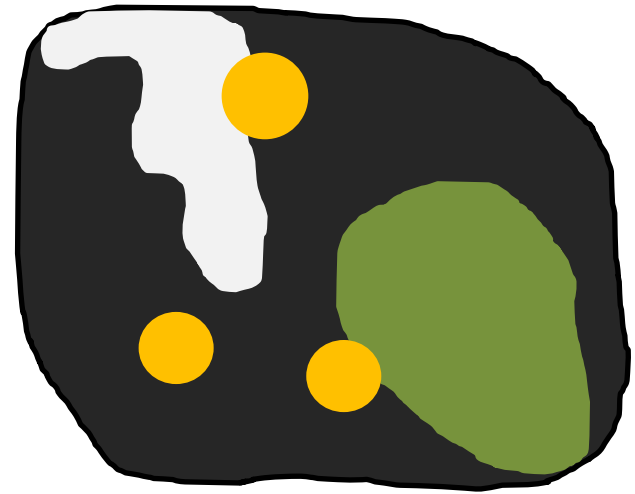
The number and size of reintroduction locations within a site matter

A lot of small dispersed plantings



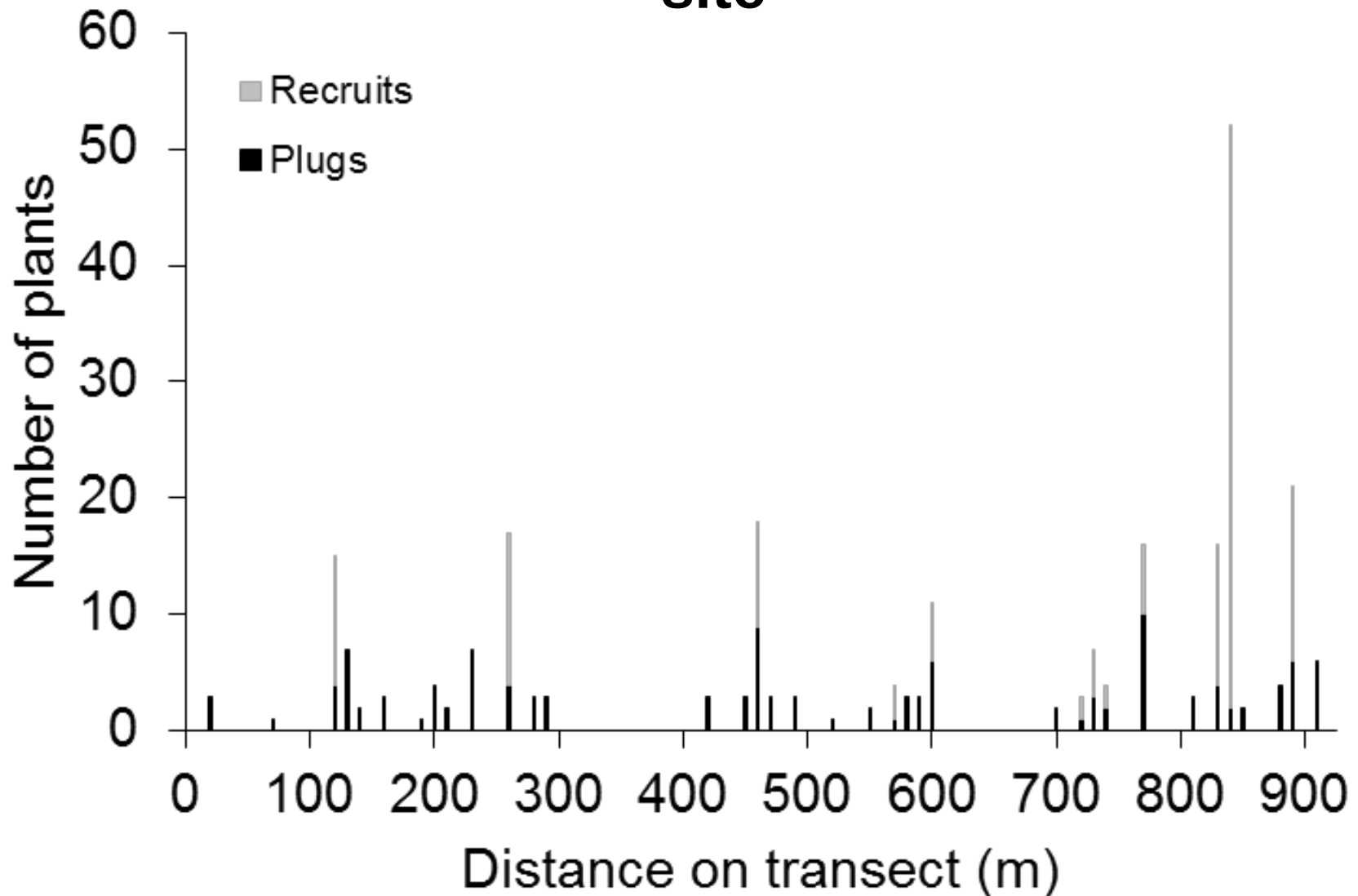
2007 plantings

A few large plantings



2008 & 2009 plantings

Survival and recruitment of 2007 plantings varied wildly within a site

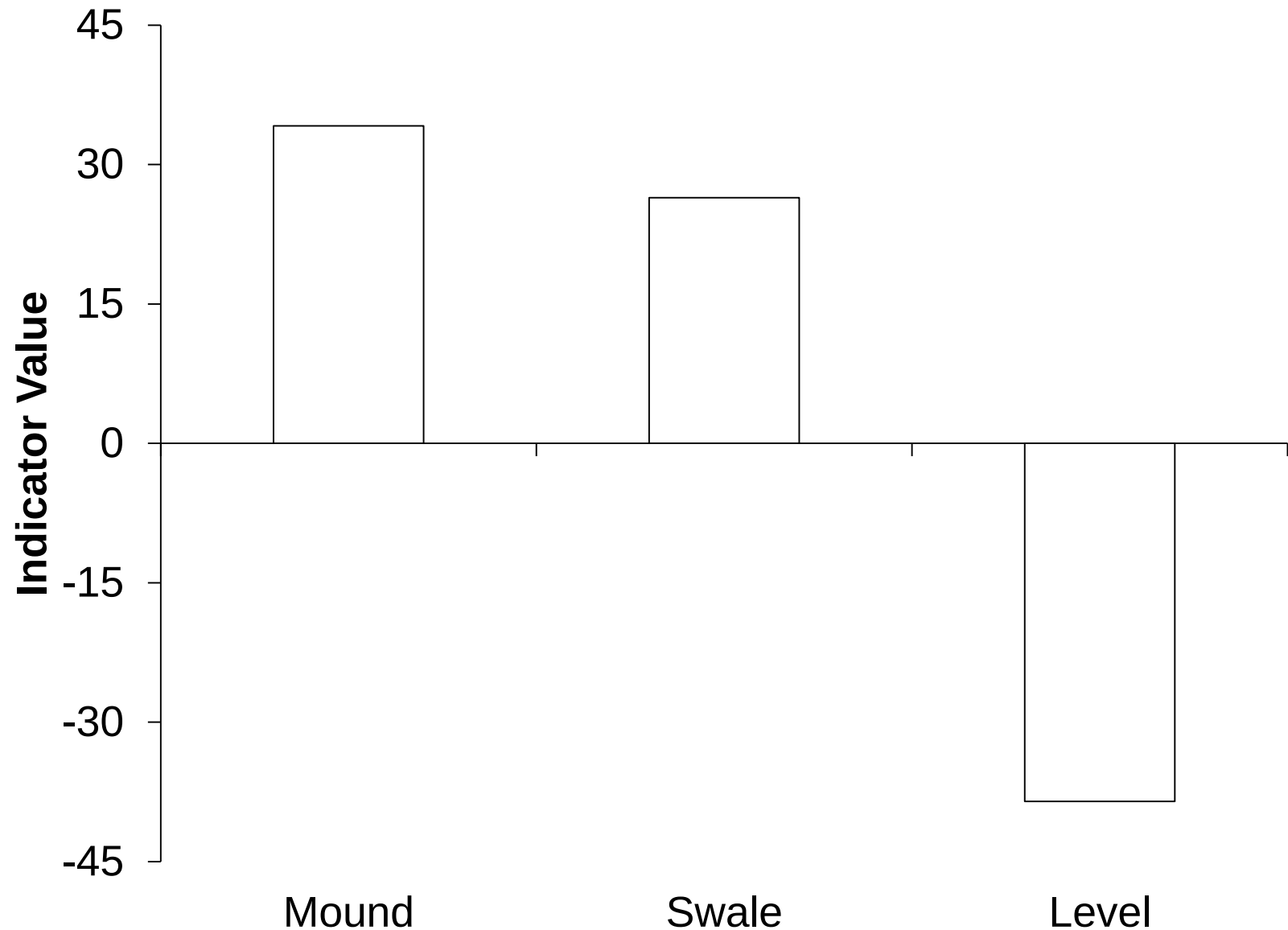


What makes success so variable within a site?

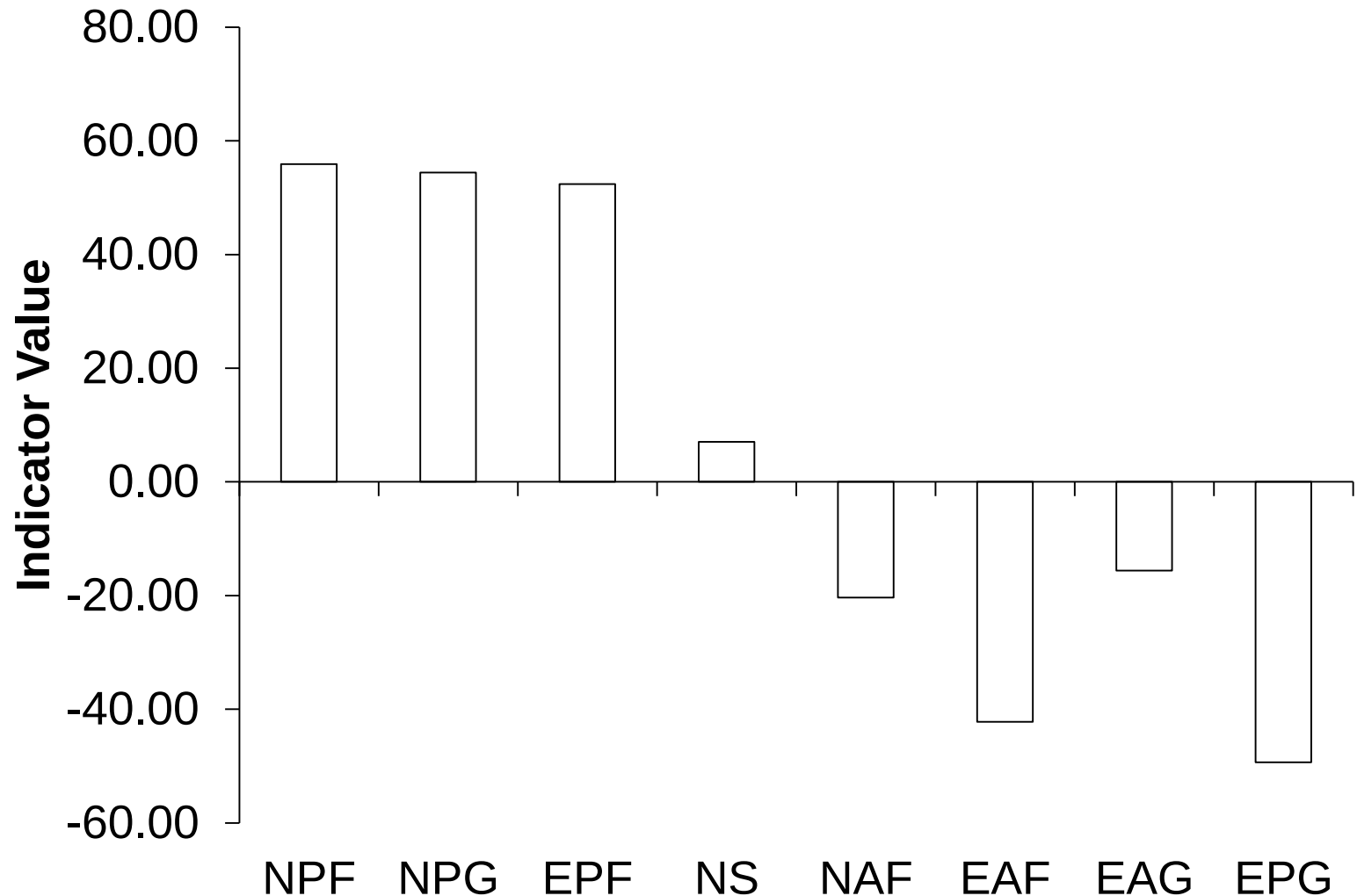
- Recorded associated plant species
- Recorded micro-habitat topography (swale, mound, level)
- Used meta-analytic techniques to find trends across reintroduction sites



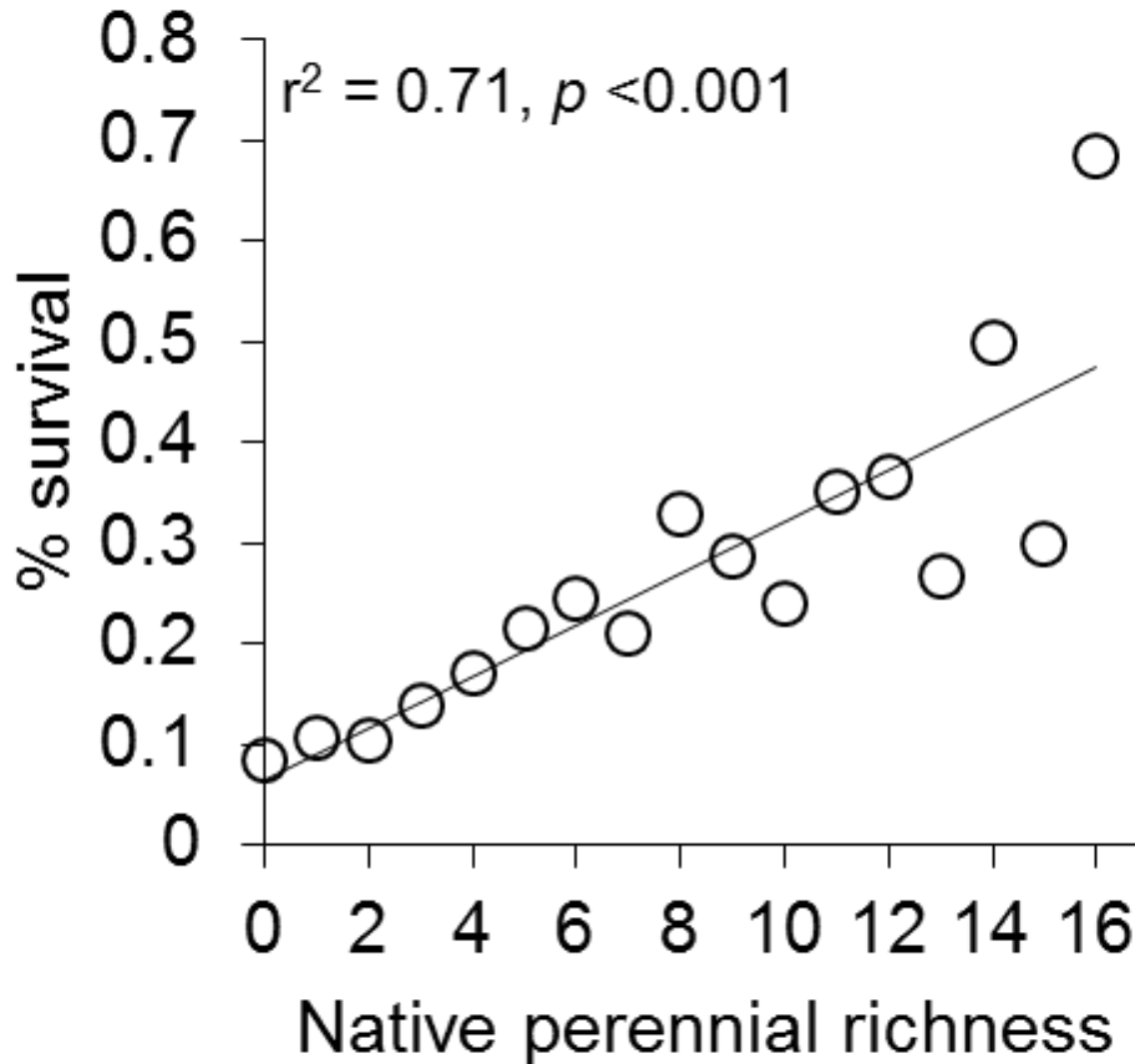
Plant survival is highest on Mima mounds or in swales



Survival of plants were associated with the presence of native perennials

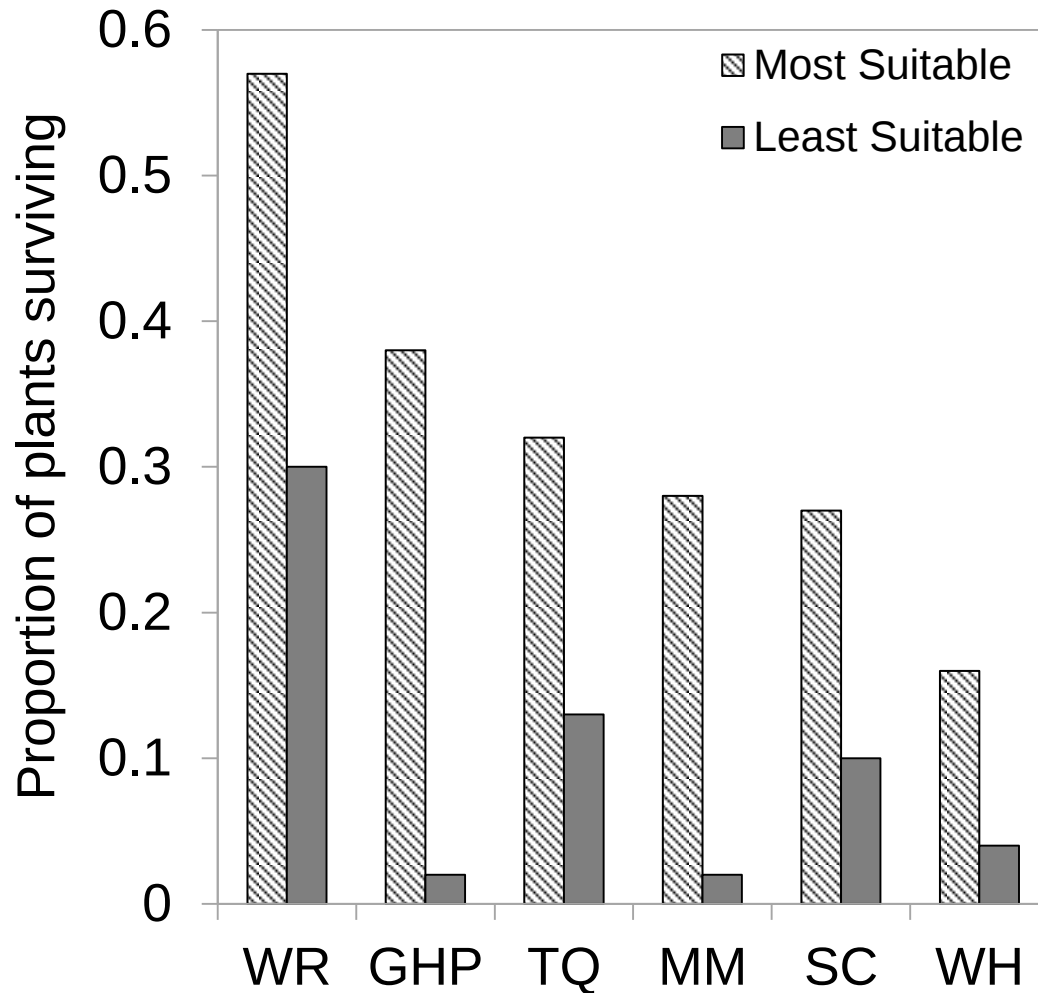


Survival of plants increased with native perennial richness

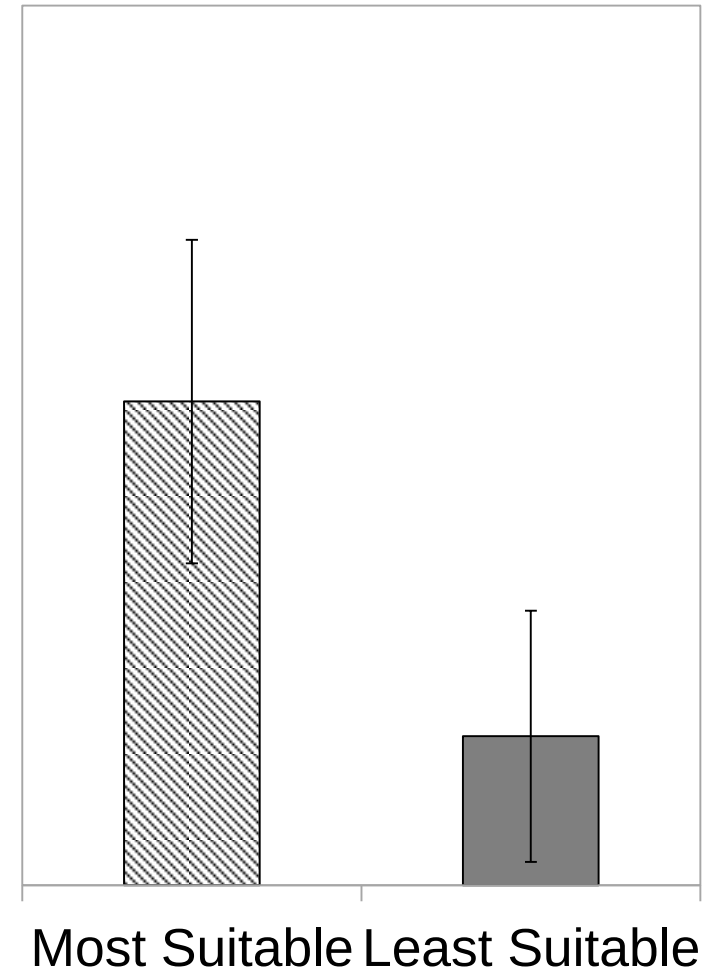


Micro-site selection matters... a lot

within a site

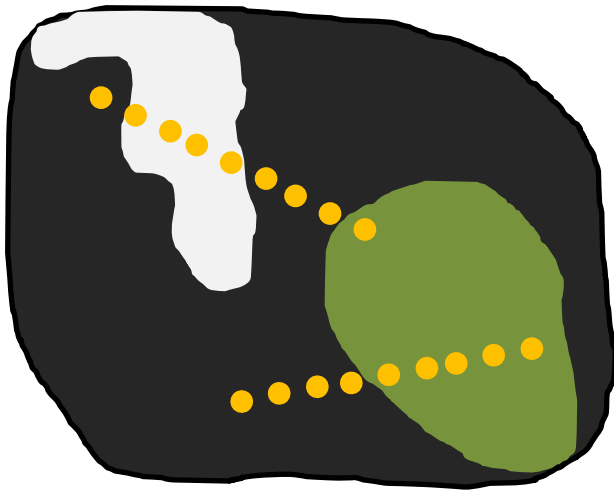


across sites

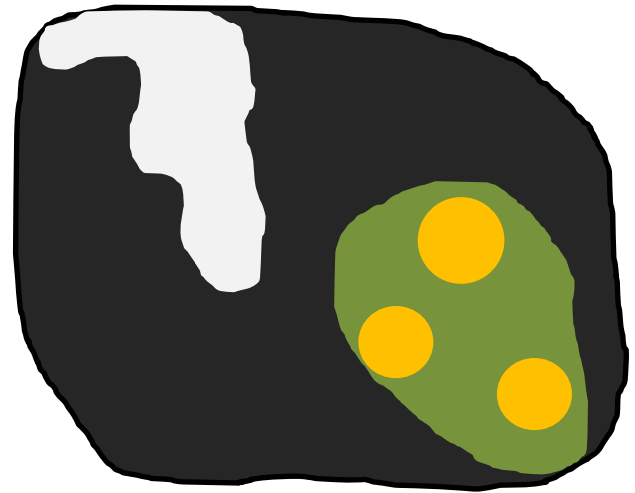


Use planting methods in an iterative manner

Start here first



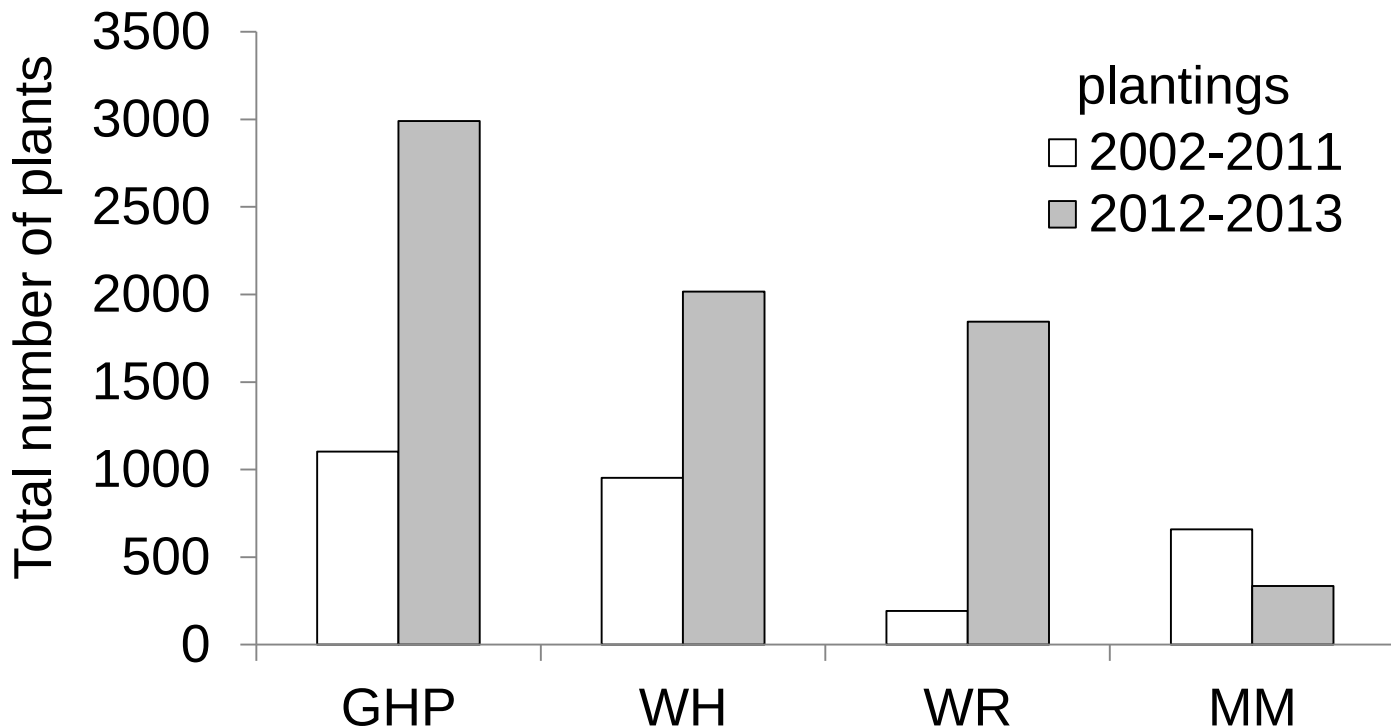
Then place larger reintroductions
in most successful habit



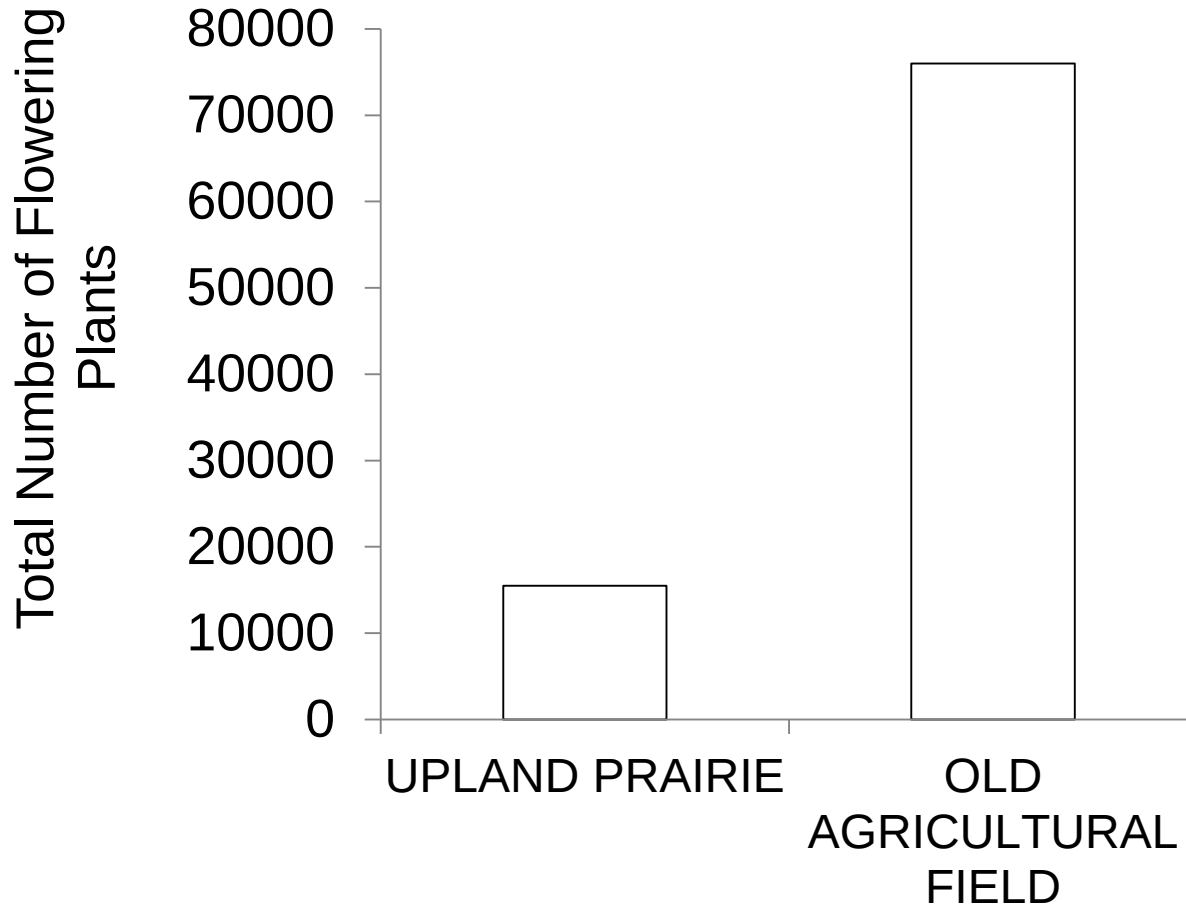
Where we are now?

- Switched to seeding (broadcast and hand crank)
- Focused seeding in high-quality prairie with mounds, swales or on productive soils

Plants flowering in 2015



Golden paintbrush does great on agricultural soils even if there is no native plant community



One broadcast seeding at Cavness ranch led to >70,000 flowering plants the following spring

A successful reintroduction framework

- Dedicated funding and propagation capacity
- Plant at a broad suite of sites (degraded and extant), and across multiple areas within a site
- Use plugs to assess site suitability & understanding of species
- Collect associated vegetation and habitat data
- Monitor for multiple years (>4)
- Seed where you had success with plugs
- Use iterative process (adaptive management)

