

Grasslands and Grassy Woodlands: Is restoration possible?



Major Issues

- *The Question – Is it possible to recreate a complex grassland-grassy woodland?*
- *Market drivers (biodiversity targets, offsets, market-based instruments, biodiverse carbon)*
- *Restoration Infrastructure (seed production, seeders, grassland management)*
- *Provenance concerns (too restrictive or too lax)*



The Primary Components for Success

- *People are important*
- *Reference sites/conditions*
- *Infrastructure/machinery (Seed production, site preparation, seeding, weed control, maintenance)*
- *Seed resources (diversity, quantity and quality)*
- *Weed control (nutrient reduction, weed bank depletion, weed treatments)*
- *Capacity to manage (remnant/restored/enhanced)*
- *Keep learning*

The Primary Components for Success

- ***People are important***
- *Reference sites/conditions*
- *Infrastructure/machinery (Seed production, site preparation, seeding, weed control, maintenance)*
- *Seed resources (diversity, quantity and quality)*
- *Weed control (nutrient reduction, weed bank depletion, weed treatments)*
- *Capacity to manage (remnant/restored/enhanced)*
- *Keep learning*





The Primary Components for Success

- *People are important*
- ***Reference sites/conditions***
- *Infrastructure/machinery (Seed production, site preparation, seeding, weed control, maintenance)*
- *Seed resources (diversity, quantity and quality)*
- *Weed control (nutrient reduction, weed bank depletion, weed treatments)*
- *Capacity to manage (remnant/restored/enhanced)*
- *Keep learning*

































The Primary Components for Success

- *People are important*
- *Reference sites/conditions*
- *Infrastructure/machinery (seed production, site preparation, seeding, weed control, maintenance)*
- *Seed resources (diversity, quantity and quality)*
- *Weed control (nutrient reduction, weed bank depletion, weed treatments)*
- *Capacity to manage (remnant/restored/enhanced)*
- *Keep learning*

Infrastructure

Transforming
our landscapes



The Primary Components for Success

- *Adequate resourcing*
- *People are important*
- *Reference sites/conditions*
- *Infrastructure/machinery (seed production, site preparation, seeding, weed control, maintenance)*
- ***Seed resources (source, diversity, quantity and quality)***
- *Weed control (nutrient reduction, weed bank depletion, weed treatments)*
- *Capacity to manage (remnant/restored/enhanced)*
- *Keep learning*

Seed Resources







Field Collection





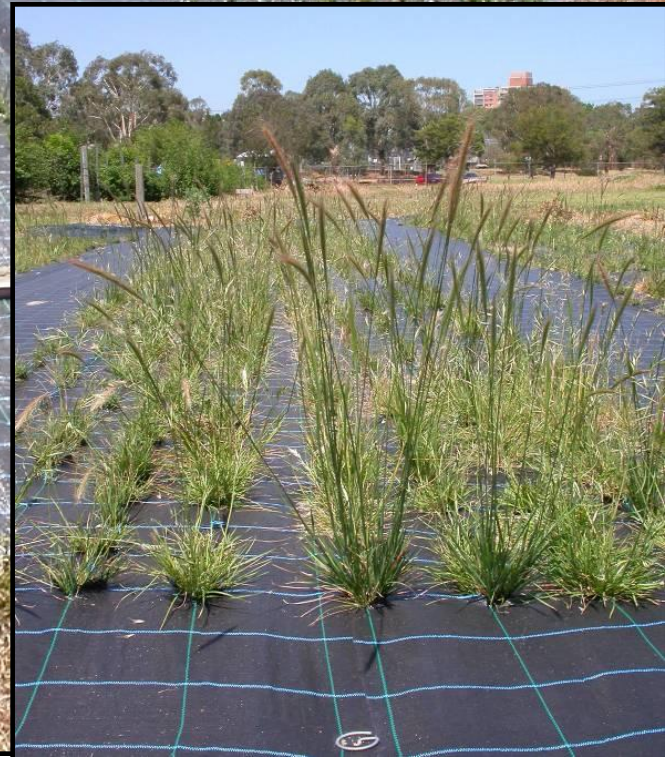






















The Primary Components for Success

- *People are important*
- *Reference sites/conditions*
- *Infrastructure/machinery (Seed production, site preparation, seeding, weed control, maintenance)*
- *Seed resources (diversity, quantity and quality)*
- ***Weed control (nutrient reduction, weed bank depletion, weed treatments)***
- *Capacity to manage (remnant/restored/enhanced)*
- *Keep learning*

Herbaceous Weeds under traditional Woody Revegetation





Nutrient Reduction (3 Yrs post seeding)



Scalp



Non-scalp



Scalped

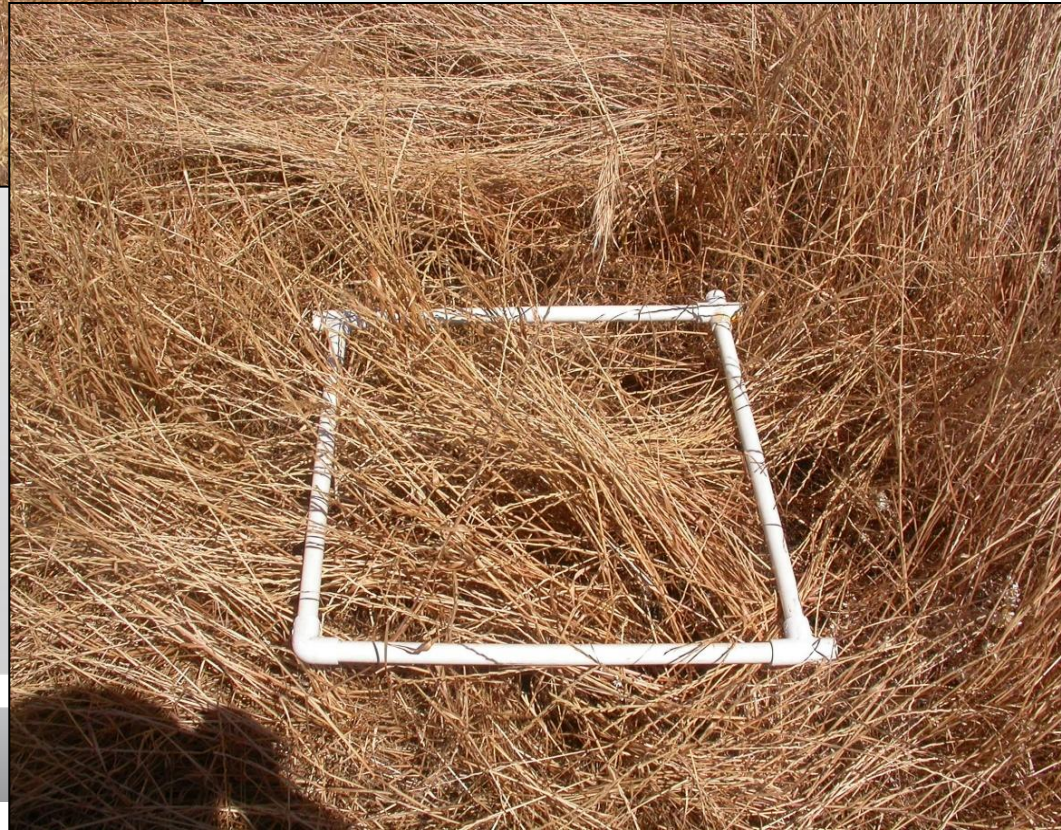
Non-Scalped



Non-Scalped



Scalped



Native m⁻² at 12 months

	Scrape + organic matter	Scrape - organic matter	Cultivation + organic matter	Cultivation - organic matter
Beeac	76	69	17	21
Chatsworth	161	154	91	142
Chepstowe	19	22	0	1
Colac	115	108	25	30
Hamilton	137	123	41	52
Laharum	39	33	15	13
Minyip - Barber	139	153	50	19
Minyip Dirt	174	169	126	96
Moyston	44	42	32	24
Ravenswood	30	30	5	4
Werribee Zoo	94	131	75	55
Winchelsea	51	55	6	1
Average	90	91	40	38

	Scrape + organic matter	Scrape - organic matter	Cultivation + organic matter	Cultivation - organic matter
Beeac	76	69	17	21
Chatsworth	161	154	91	142
Chepstowe	19	22	0	1
Colac	115	108	25	30
Hamilton	137	123	41	52
Laharum	39	33	15	13
Minyip - Barber	139	153	50	19
Minyip Dirt	174	169	126	96
Moyston	44	42	32	24
Ravenswood	30	30	5	4
Werribee Zoo	94	131	75	55
Winchelsea	51	55	6	1
Average	90	91	40	38

Weed m⁻² at 12 months

	Scrape + organic matter	Scrape - organic matter	Cultivation + organic matter	Cultivation - organic matter
Beeac	29	37	415	355
Chatsworth	9	18	52	66
Chepstowe	34	31	105	109
Colac	20	52	123	98
Hamilton	65	44	136	242
Laharum	5	13	22	19
Minyip - Barber	79	131	307	351
Minyip Dirt	39	45	50	58
Moyston	55	91	170	206
Ravenswood	6	7	45	75
Werribee Zoo	5	10	57	50
Winchelsea	42	30	98	90
Average	32	42	132	143

Weed m⁻² at 12 months

	Scrape + organic matter	Scrape - organic matter	Cultivation + organic matter	Cultivation - organic matter
Beeac	29	37	415	355
Chatsworth	9	18	52	66
Chepstowe	34	31	105	109
Colac	20	52	123	98
Hamilton	65	44	136	242
Laharum	5	13	22	19
Minyip - Barber	79	131	307	351
Minyip Dirt	39	45	50	58
Moyston	55	91	170	206
Ravenswood	6	7	45	75
Werribee Zoo	5	10	57	50
Winchelsea	42	30	98	90
Average	32	42	132	143

The Primary Components for Success

- *People are important*
- *Reference sites/conditions*
- *Infrastructure/machinery (Seed production, site preparation, seeding, weed control, maintenance)*
- *Seed resources (diversity, quantity and quality)*
- *Weed control (nutrient reduction, weed bank depletion, weed treatments)*
- ***Capacity to manage
(remnant/restored/enhanced)***
- *Keep learning*

Management

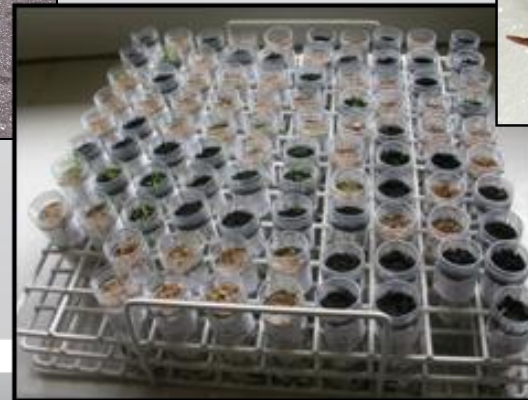
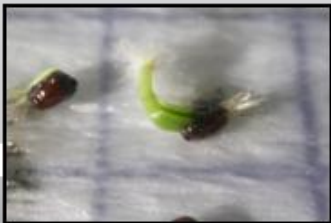
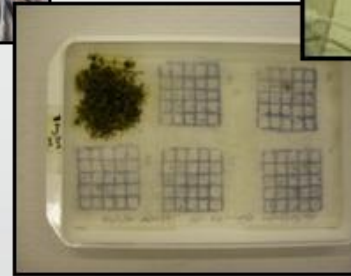
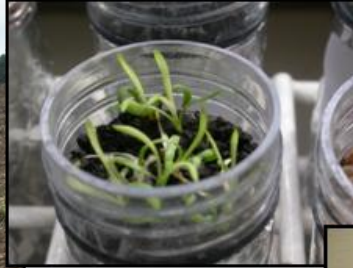


Management

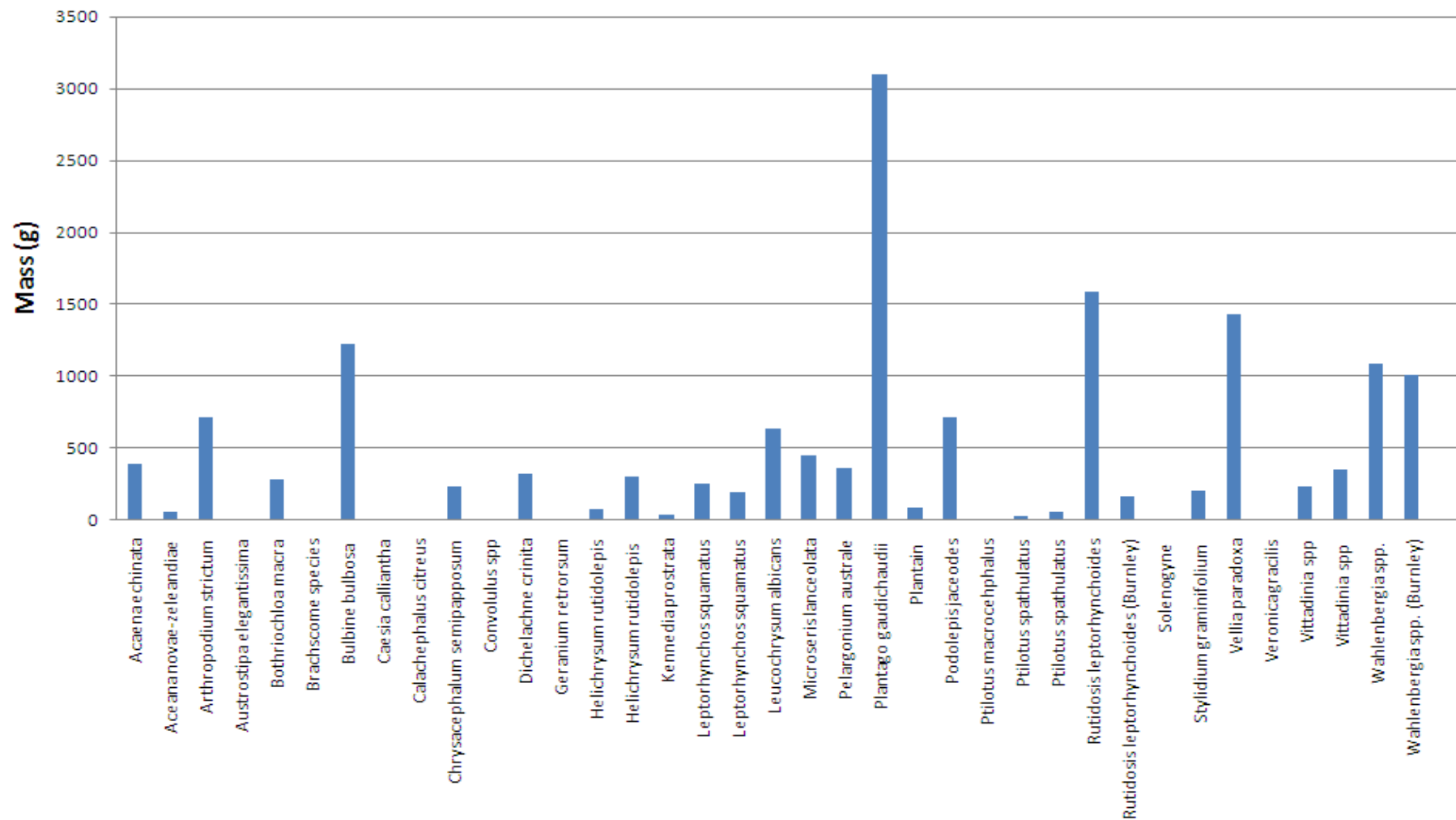


The Primary Components for Success

- *People are important*
- *Reference sites/conditions*
- *Infrastructure/machinery (Seed production, site preparation, seeding, weed control, maintenance)*
- *Seed resources (diversity, quantity and quality)*
- *Weed control (nutrient reduction, weed bank depletion, weed treatments)*
- *Capacity to manage (remnant/restored/enhanced)*
- ***Keep learning***

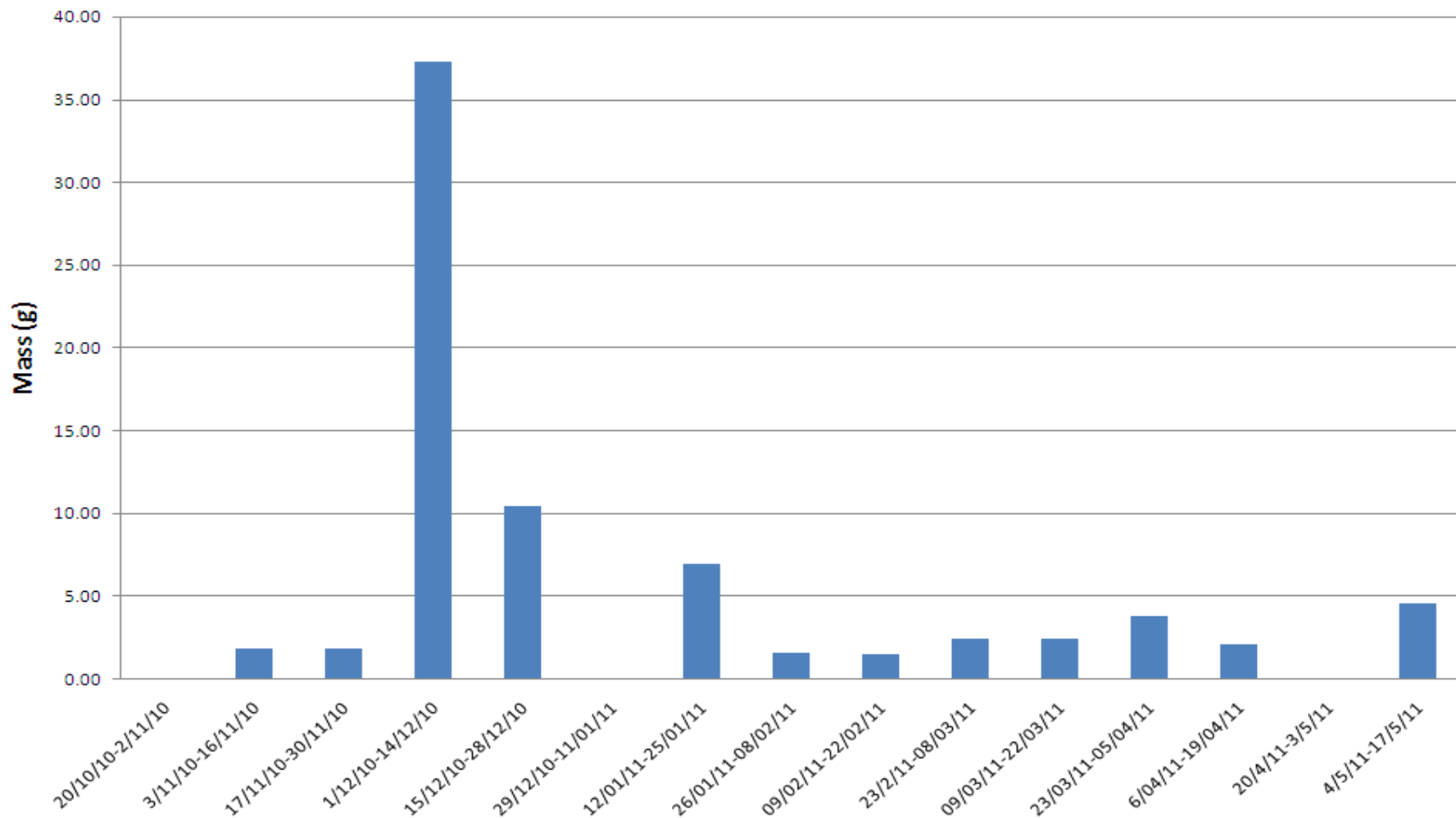


SPA Seed



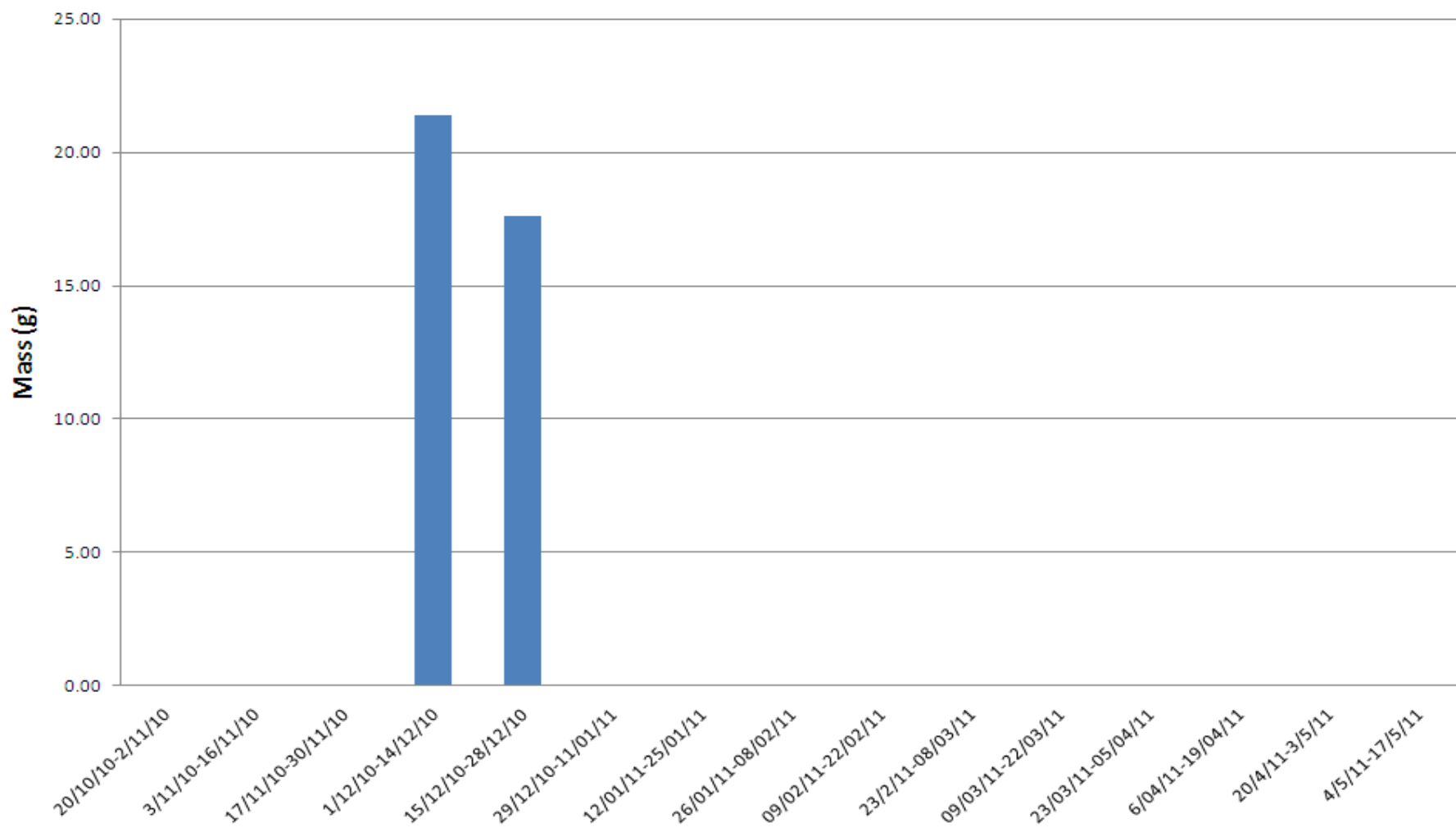
Species-Specific Outcomes

Helichrysum rutidolepis

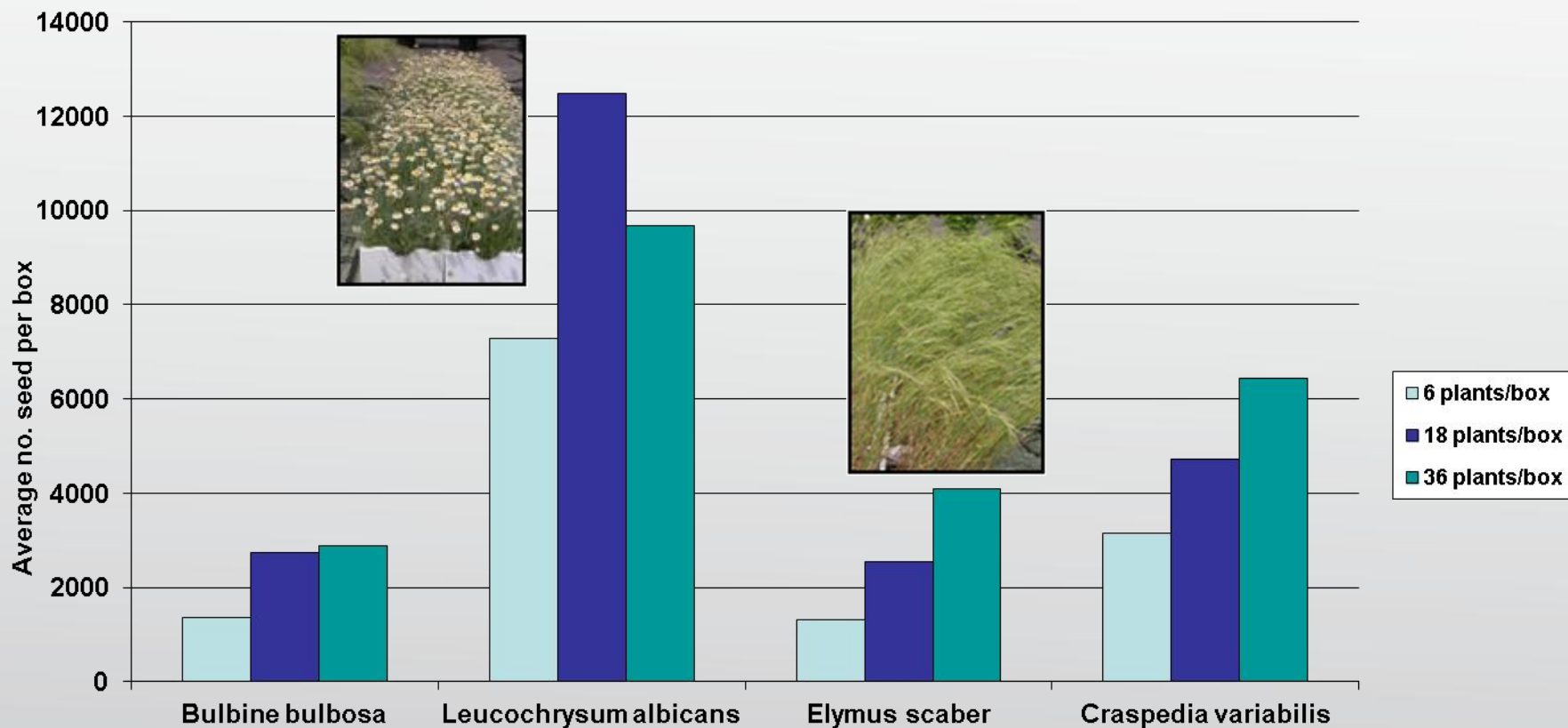


Species-Specific Outcomes

Kennedia prostrata



Plant Density and Seed Production



So Is It Possible (or a Myth)?

































Over Storey



It Is Possible
Let's Make Sure It Happens

