

Euphorbia terracina: Why worry?

National Park Service
U.S. Department of Interior

Santa Monica Mountains
National Recreation Area



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Outline

- *E. terracina* information
- Treatment experiment
- Effects on *E. terracina* and natives
- Treatment notes



About the species

- Mediterranean origin
- Herbaceous perennial
- Toxic milky sap
- Flower bracts serrated
- Reddish stem



Dramatic spread



Dispersal mechanisms

- Long distance
 - Humans?



Dispersal mechanisms

- Local
 - Explosive fruits



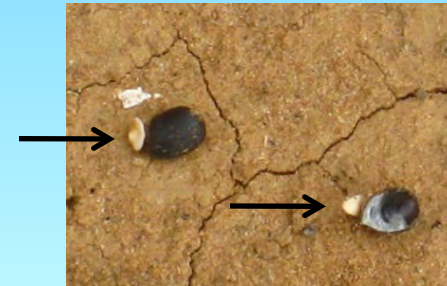
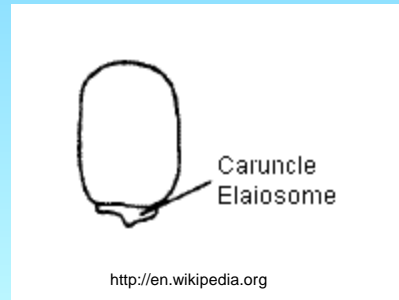
Several meters

(Randall & Brooks 2000)



Dispersal mechanisms

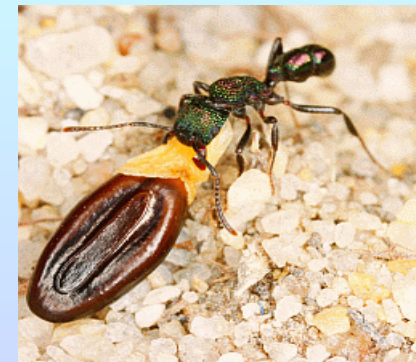
- Local
 - Ants



E. terracina caruncles



<http://myrmecos.wordpress.com>



<http://ecology.science.unideb.hu>

Dispersal mechanisms

- Local
 - Rodents



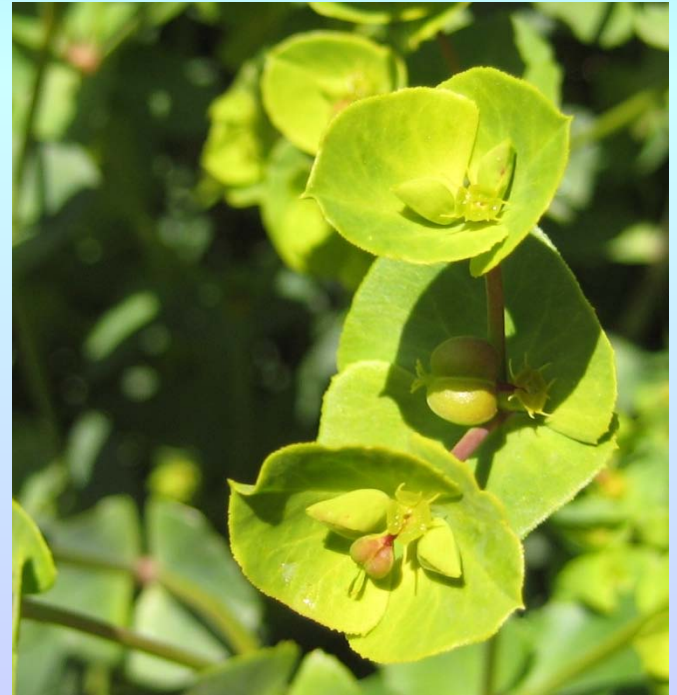
Germination

- Early and multiple



Reproduction

- Flowers 1 month
- Fruits 3 weeks
- Early spring to late summer



Resprouting

- 2nd year
- topped plants
 - 13 branches
 - 1700 seeds (Cheam & Lee 1996)



Treatment experiment

- Solstice Canyon
- 2008
- 8 sites
- treated yearly
- pre- and post-treatment
 - % cover of *E. terracina*
 - natives

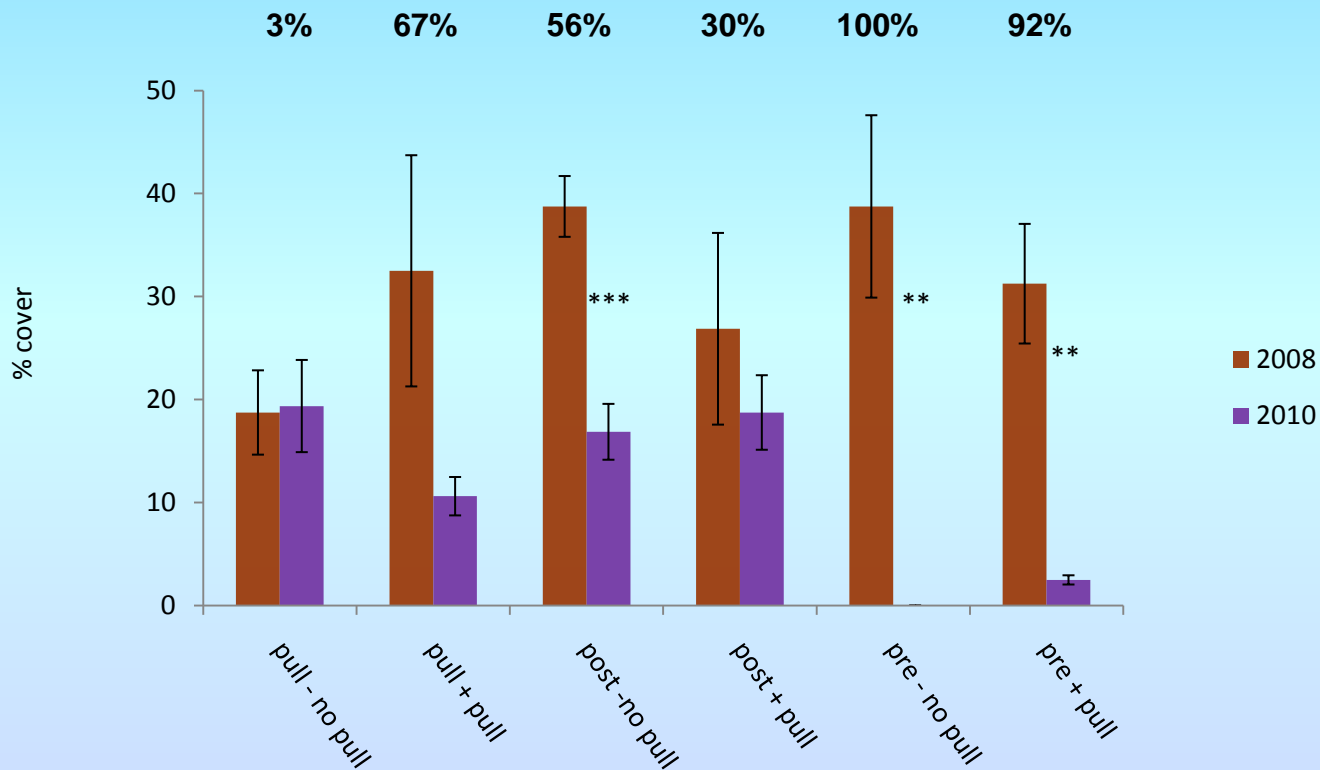
Treatments

- Post-emergent (glyphosate) + no pull
- Pre-emergent (chlorsulfuron) + no pull
- Post + pull
- Pre + pull
- pull + no pull
- pull + pull



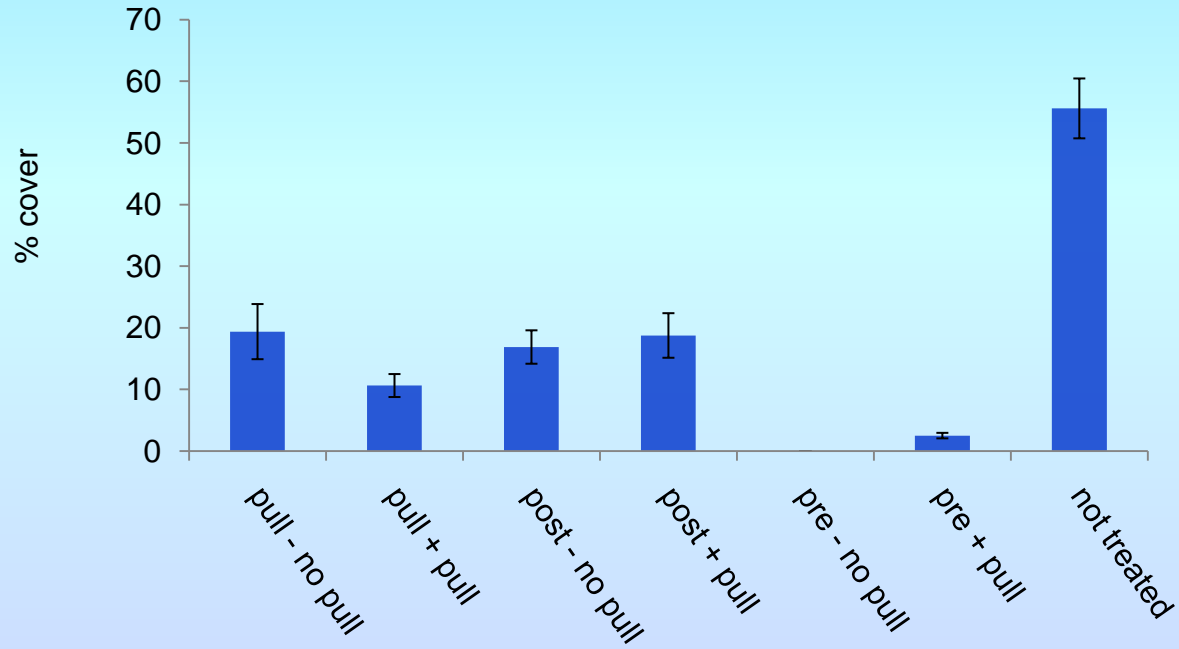
<http://www.waterwatchadelaide.net.au>

E. terracina 2008 and 2010

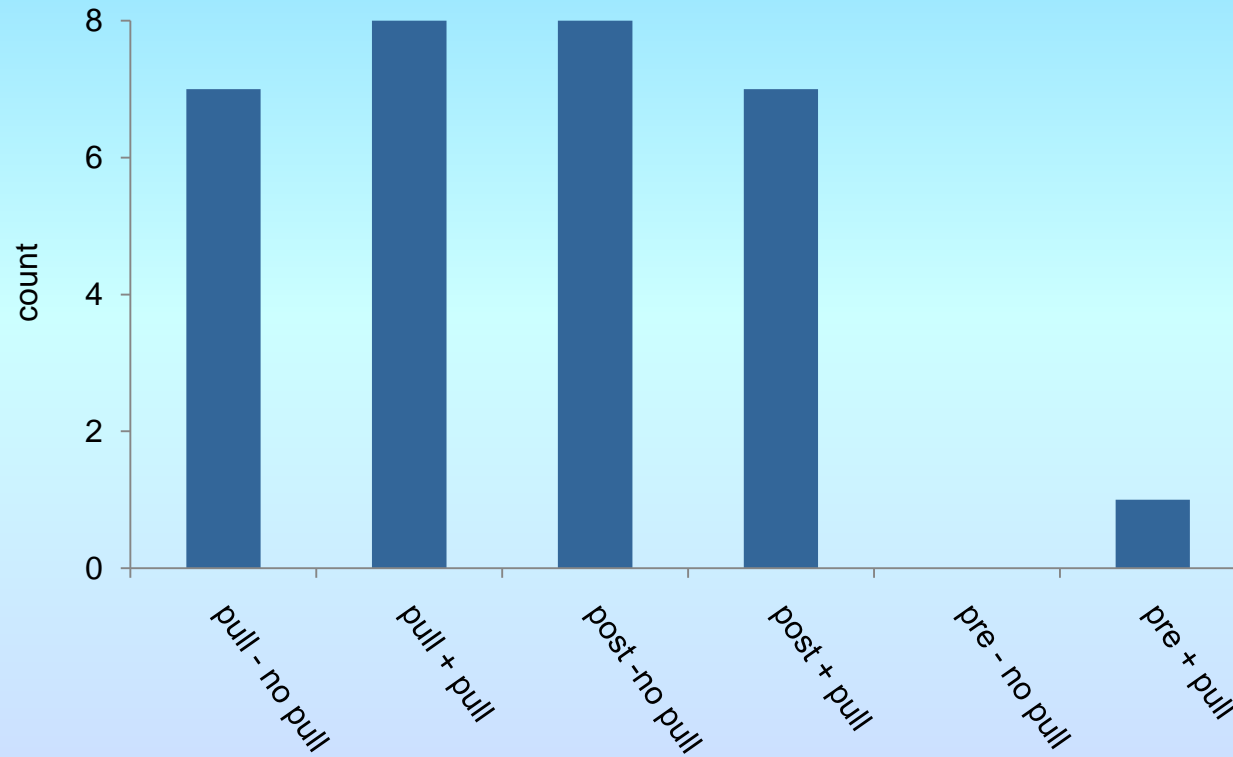


** p<0.01, *** p<0.001

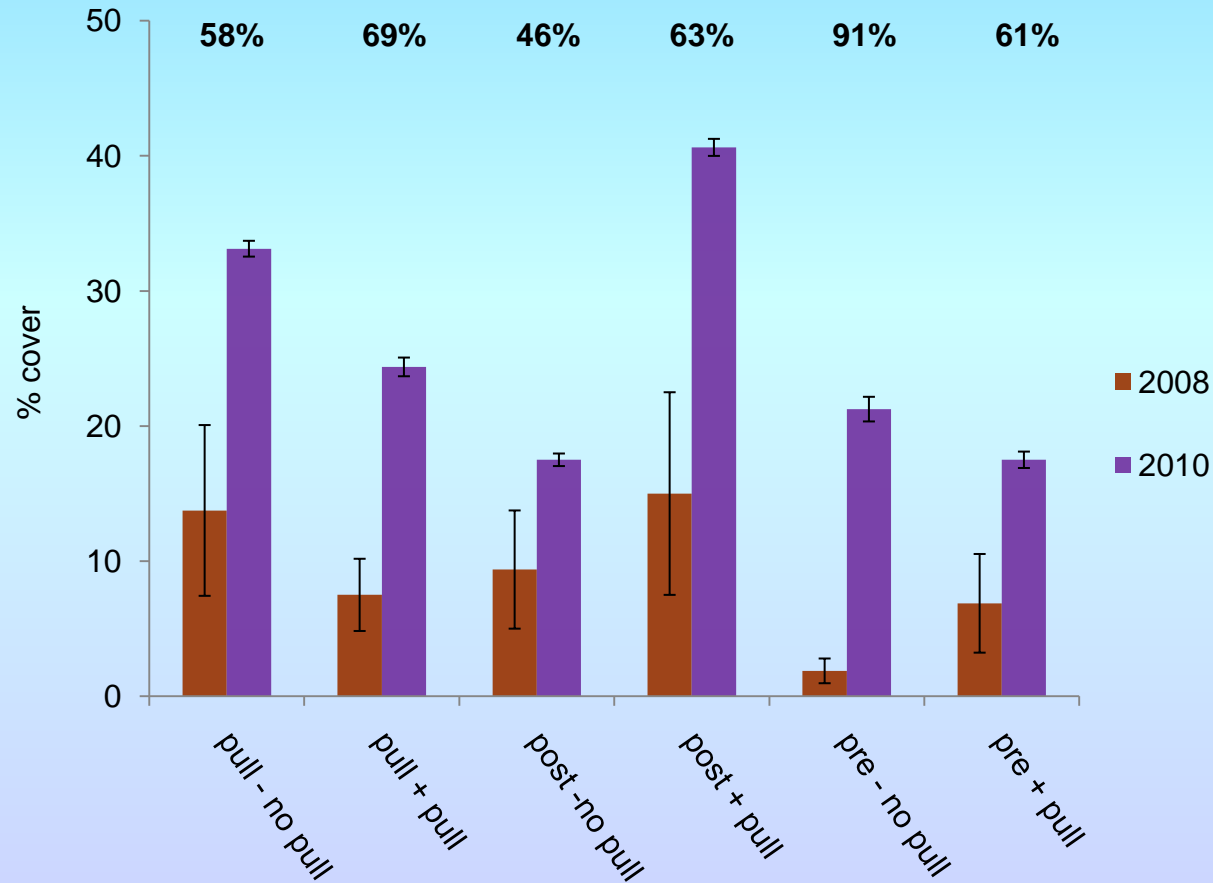
E. terracina 2010



Number of plots with *E. terracina*

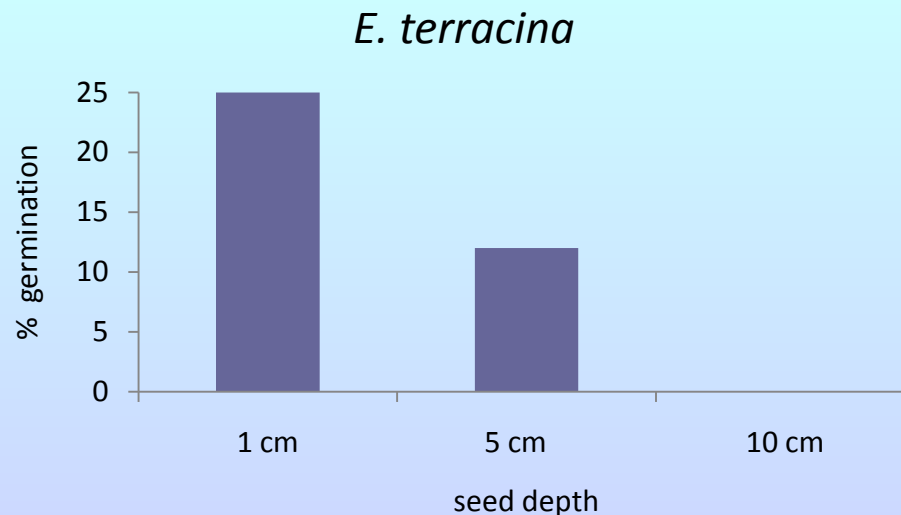


Natives 2008 and 2010



Is pulling less effective?

- Partial seed bank germination each year (Cheam & Lee 1996)
- 3 to 5 year seed bank (Randall & Brooks 2000)
- Active germination depth (Cheam & Lee 1996)



Further research

- test the effects of chlorsulfron (pre)
 - on native seed germination and recruitment
 - planted native species



Treatment Notes

- Remove as much as root as possible
- Spray early (age and season)
- Spray completely
- Brush cut and spray



Questions ?



Literature Cited

- Cheam, A.H. & S.I. Lee. 1996. Ecology of Geraldton Carnation Weed. Western Australian Department of Agriculture. (unpublished data)
- Randall, R. & K. Brooks. 2000. Geraldton carnation weed. *Euphorbia terracina* L. Euphorbiaceae. Environmental Weeds Action Network, Perth