CEB Workshop
May 18, 2018

Session 1: **Use of Chemical Pesticides and Herbicides to Control Invasive Species in Open Spaces**

Our goal is to develop a set of research questions that, if answered, will help guide decision-making related to the use of chemicals in restoration.

Poster
What makes certain tree species nonfatal to SHB infestations (environmental/abiotic factors)?
Note: Are certain individuals of species resistant and why?

Poster
What is a management trigger for when to cut infested trees down? (OC Parks may have ideas for this issue.)

Poster
Cost-effectiveness? Current resources can't deal with the scale of the problem, no additional money is expected, so being smarter with use of efficient management practices will be imperative for long-term solutions.
Note: Cost/benefit to faunal life including humans, amphibians…

Poster
Big-scale: Regulate/inform nurseries

Poster
What are the alternative measures to control invasive species that have not been explored on a small and landscape level? What is their efficacy? Are they implementable at various scales?
Note: And which do you worry about controlling when?
Note: Is there a threshold at which the efficacy changes between scales?
Note: What has been done involving solarization to control invasive species (such as mustard)?
Note: How can we create more community involvement? Integrate school systems?
Note: What sort of residual toxins might be in soil as a result of invasives?
Note: Community engagement/community-based restoration?
Note: Communicating the reality of the situation to the public?

Poster
Do native/invasive hybrid systems promote native [mld] life diversity and other ecosystem services?

Note: Starr Ranch says yes?

Effect of size of project or methods: Are herbicides necessary at larger spatial scales?

Note: Agree

Note: or smaller scales with a lot of public interaction?

How are emergent invasives included?

Note: Early detection and rapid response

Note: Make this approach part of your program

Note: How to inform the public of this issue before it's an established program (emergency)

Note: *Need

Poster
At what scale are Starr Ranch's methods replicable?

Poster
How to improve passive restoration techniques & minimize damage to existing native plants?

Poster
What are the metrics we need to develop /record to assess the costs and benefits of chemical use to direct decision making?

Note: Define metrics in terms of 5-10 years vs annual cost to ensure project effectiveness and completion.

Note: Possible measures: Veg. cover? Species diversity? Target community type?

Note: This is awesome – need public agreement to decrease misuse by lay people

Note: Habitat quality, vertical structural complexity

Poster
How do we account for exposure risk to various groups (i.e., kids in parks → pesticide applicators) in our changing policies??

Note: How to address education/outreach in these areas where pesticide use will be very public?

What are long-term implications of below and above ground impacts on microbes to traditional pesticides and alternatives?

How does this affect management/restoration success/outcomes?

Can we track chemical residues in body over time with changes in policy (need to separate environmental exposure from dietary exposure)?

Is there an accurate understanding of risk from different sources (household, food, wildlands, etc.)??

Poster

Comment: These downside questions would need to be complemented with understanding of benefits

Question: How can we reach out and education communities about herbicides?

Note: Yay! Thank you! Pesticides—lay people over-application huge problem!

Note: libraries, posters, nextdoor.com campaign, kid school poster contest. Treat like an epidemic, too many people use round-up like water in urban communities; run-off to ocean; bee impacts, amphibian die-off, human fert ↓ [frowny face]

Poster

Comparative community-level effects of synthetic vs. organic herbicide/pesticides

Note: *

Note: Over different time scales

What are appropriate indicators/metrics to determine impacts? Scale, Vegetative, fungal, biogeochemical?

Note: On what? Human health? Ecosystem function

What are the cost-benefits of different approaches?

Note: What is the cost of [in action]? Ex. Mustard's impact on the community structure

Note: What are assumptions of risk for organic pesticides? Are these risks great or lesser than risks of synthetics?

Sticky Notes on Poster Questions/Ideas

- Apply rapid response application for new threats. Weigh pro/con.
- Human tests, like drug tests, for common chemicals. More understanding of that.
- Farming health and ecology all need to be integrated – inflammation, autism, [A12], arthritis
- What makes tree individuals more or less susceptible to infection?
- Monsanto Bayer: how to collaborate with the "enemy" "necessary" Get on same page for [unknown] Stay abreast of them, collaborate more
- Social scientists—organic people talk to chemical people; Monsanto Bayer be part of the solution please; big companies fund organic research please
- Neutral fund from big AG to help fund restoration
- Biomagnification and accumulation: Pro & con, half-life chemical use
- Address biomagnification of common chemicals more
- [Minetal] based inert chemical development – barrier use too –
- Shot hole borer history during [female] movement, predator – smell nets? Chem – smell repellant, Fly
- How do SHB identify predators and avoid? Avoidance behavior?
- How do drought conditions influence SHB infestations?
- Soil crust salvage & mycroizae suite

- Natural fungicides development
- [Decollette] a NN snail impacts on native restoration areas
- Xylem – cambium treatment trials
    Note: Agree
    Note: Rope-girdle stump
- What other invertebrate invasives species should be researched to increase the likelihood of a healthy native community? What about vertebrates?
- Black mustard invasion more likely in fungi depleted/grazed environment
- Studies on a fungal species palate to apply on restoration sites to stimulate re-introduction with herbicide use.
    Note: Agree, whole complex community
    Note: Fungal pallette