An Overview Of Non-Chemical Strategies To Sustain Forests

Pete Angwin USDA Forest Service Forest Health Protection Redding, CA Integrated Pest Management Prevent, reduce or maintain pest populations so their their impacts do not interfere with management goals and objectives.

- Effective and environmentally sensitive approaches. Recognize that insects & pathogens are part of a functioning ecosystem (except for the exotics!).
- Use a combination of tactics aimed at prevention or suppression.
- Use current, comprehensive information on the life cycles of pests and their interactions with the environment. Consider all aspects of the pest triangle.
- Manage insects and diseases using the most economical means, with the least possible hazard to people, property, and the environment. Recognize that not all problems require action!



Implementation of IPM

Implementation of IPM involves a series of steps that function together:

- Prevention
- Detection
- Evaluation
- Suppression
- Monitoring

– Prevention, prevention, prevention!!!!!

- Present little to no risk to people or the environment
 - Mostly non-chemical measures, but when pesticides are used, they are at lower rates and much more targeted (i.e. borax stump treatment)
- Can be very effective and cost efficient
 Cost for prevention is much less than for suppression

"The best time to do good in the woods is when the woods are doing good!"

Examples:



Education and Outreach



y the lungal pathogen Heterobasidion annosum), which is specific to sequoia, hemlock, and Douglas fir. Even infected trees that appear thy can have enough root decay to cause them to fall and break unspreads underground across root-to-root connections and is widenout the campground, meaning that it is likely all firs in the campwill become infected. In addition, there are also several large trees tost species (e.g. ponderosa pine, incense cedar) that are dead, dying, to drop large limbs in the campground areas. Once the conifer II stumps will be treated with a California registered borate fungicide to prevent the spread of annosus root disease.

will be done during the period of July 30 to February 15 due to limperiods, and is planned for implementation in 2010-2011, starting in

-Mr. = Mrs. Paying Your Salar



Prevention Exclusion





Prevention Exclusion





Middle Creek, Klamath NF Before Treatment

Prevention Thinning



Middle Creek, Klamath NF After Treatment

Develop/Utilize Genetically Resistant Stock





Detection Both Aerial And On The Ground





Evaluation-3 Steps

- <u>Diagnosis</u>: Identification of the cause of the problem
 - mistaken ID, chosen action may not solve problem
- Prognosis: What are the potential impacts?
 - Gather information about the damage agents (biology, life cycles, host/environmental relationships, etc.)
 - Models can help
- Identification and Discussion of Alternatives:
 - Explore a range of options and their likely outcomes relative to management goals and objectives
 - Include no action alternative
 - Evaluate options for both effectiveness and risk
 - Again, models can help to determine outcomes of alternatives

Utilize all resources, including FHP specialists!

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Insect and Disease Models

Many kinds are available

Suppression

- Many kinds of techniques:
 - ♦ Silvicultural
 - Mechanical
 - Chemical
 - ♦ Biological
- The intent or purpose of suppression is not to kill pests, but to prevent or reduce unacceptable loss so that management goals can be achieved (exception- eradication of exotics)
- Effective, less risky control methods are usually chosen first

Examples:



Black Stain Root Disease

Suppression Sanitation Thinning



Dwarf Mistletoe

Suppression Favor/Plant Non-Host, Less Susceptible or Resistant Trees



Suppression Protect High Value Trees





Suppression - Eradication Successful Phytophthora lateralis eradication at Scott Camp Creek: 2001-2012



<image>

Pathogen discovered and POC treated early, followed by continuous monitoring and retreatment

Suppression Prescribed Fire



Effective in some cases, not effective in others. In many cases, more research/assessment is needed

Monitoring Hugely Important! Again, Both Aerial And On The Ground



Monitoring

- Did the management action work?
- Are populations increasing or decreasing?
- If it didn't work, can you provide a reason why?
- If initial management actions are not working, then what additional methods might be employed?
- Will you use this management technique again?
- What might you change?



Questions?



