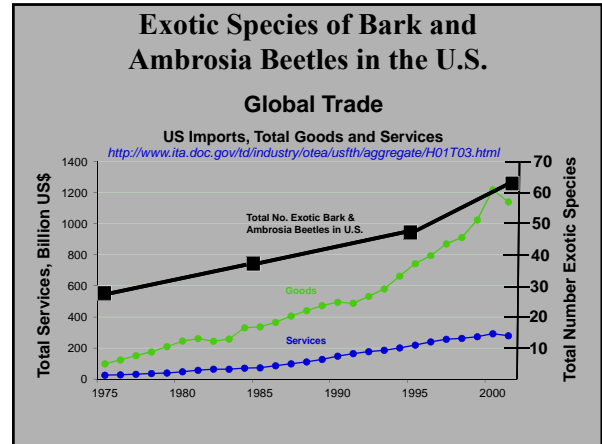





Exotic Wood Boring Insects: the Present and Future Plague

James R. LaBonte
Oregon Department of Agriculture
93rd Annual Western Plant Board Meeting
Bozeman, MT
May 15, 2012





Plus...

ALB

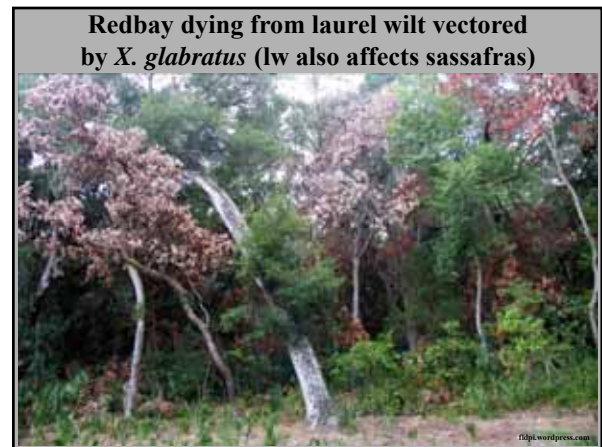


EAB





Xyleborus glabratus
Redbay ambrosia beetle



**Avocado dying from laurel wilt
vectored by *X. glabratus***



***Euwallacea fornicatus* (Eichhoff)
Tea shot hole borer**



**California avocado
attacked by *E. fornicatus*
vectoring *Fusarium* sp.**

Fusarium dieback

Regional Exotics

**Birch dying from
bronze birch borer attack**

Walnut twig beetle, *Pityophthorus juglandis*

Adult walnut twig beetle

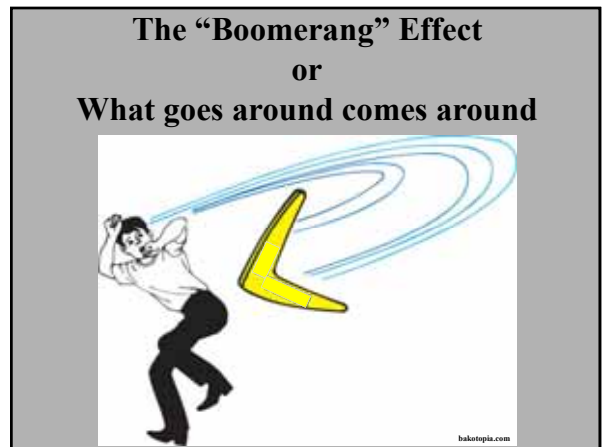
**Thousand cankers disease vectored
by walnut twig beetle**

**Walnut dying of thousand
cankers disease**

**Railroad Tie Creosoting Plant
at The Dalles, OR**

- Receives raw railroad ties from U.S. (AK & S.E.) and B.C.

- Surveyed by ODA since 1998



***Dendroctonus valens* LeConte**
Red turpentine beetle



Background

- *D. valens* native to North America
- Can attack all species of pines here
- Normally only attacks diseased, stressed, or dying pines here
- Introduced into Shanxi Province of China in mining timbers in 1985
- Timbers probably from PNW (based on *D. valens* mitochondrial DNA)

Consequences

- Severe outbreaks in Chinese pines began in 1990's
- More than 6 million *Pinus tabulaeformis* killed to date
- *Pinus bungeana* now extinct in the wild

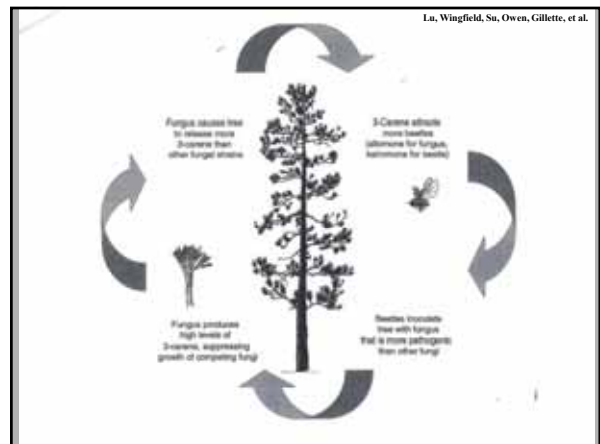
Why?

Why is *D. valens* a primary pest in China?

- Release due to natural enemy absence?
- Release due to absence of competitors?
- Climatic differences?
- Novel fungal associates?
- Change in semiochemical responses?

Novel fungal associates changed the semiochemical response of *D. valens*

- In North America:
Leptographium procerum (in E)
L. terebrantis (in W)
now *L. wingfieldii* (in E, from contact with *Tomicus piniperda*)
- In China, two different strains *L. procerum* much more virulent than N.A. *L. procerum* to *P. tabulaeformis*
- In North America, *D. valens* attracted to (+)- α -pinene and (-)- β -pinene
- In China, kairomone is 3-carene



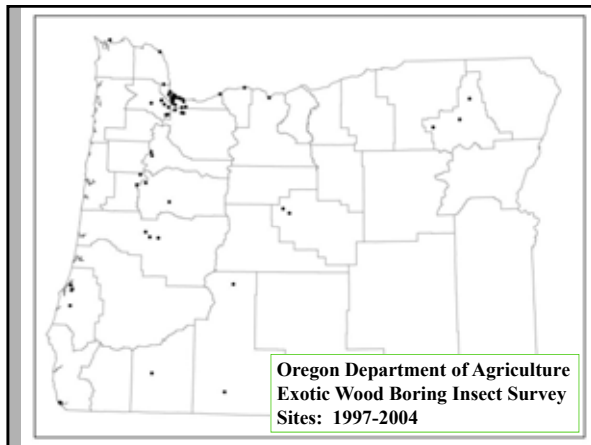
The “Boomerang”

Re-introduction of *D. valens* into North America with new fungal associates



So, What Can We Do?

1. Maintain or (better) increase surveillance for exotic wood boring insects



Surveillance for and Detection of Exotic Species is Costly



The technology for surveillance and detection of exotic wood boring insects is primitive

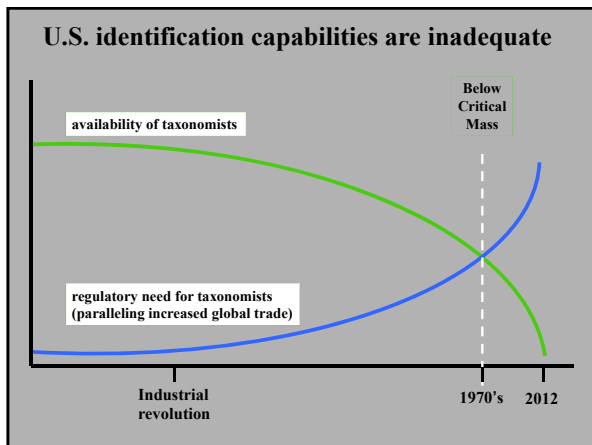
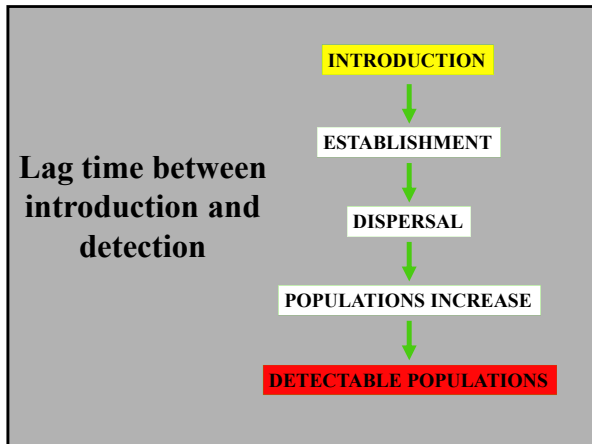
“Jim! I’m working with stone knives and bearskins here!”



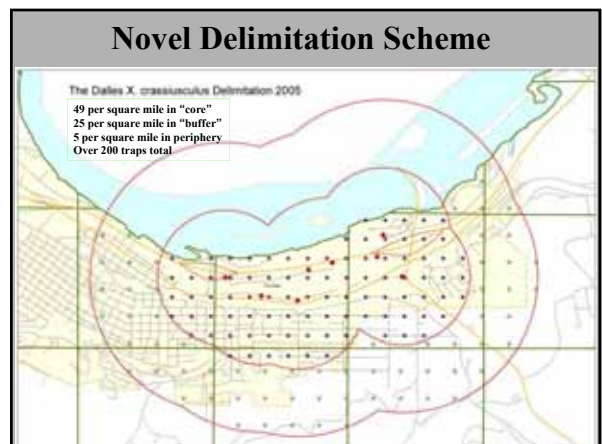
Example: non-specific woodborer lures & traps

1 season’s catch: ~ 50,000 wood boring insects





- So, What Can We Do?**
1. Maintain or (better) increase surveillance for exotic wood boring insects
 2. Eradicate or control infestations of exotic wood boring insects

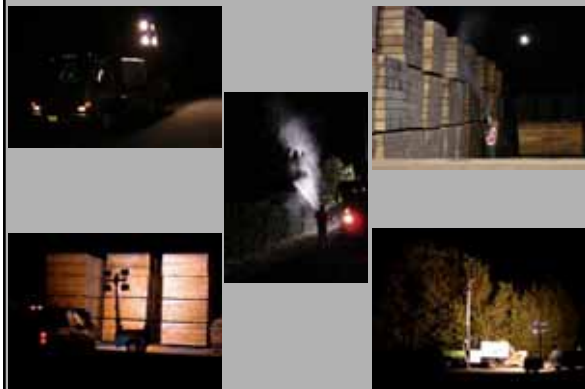


Novel Pesticide Use

* *Xylosandrus crassiusculus* facultatively parthenogenetic, thus 100% mortality goal



Novel (nocturnal) pesticide applications



\$

- Three nights per application
- Five spray trucks and crews
- 3,625 gal. Perm-up
- 13,115 gal. Masterline
- ODA-only total application cost: \$68,865
- On-going post eradication surveillance - 157,305 wood boring insects ID'd since 2004
- SE rail ties now only imported December-February



So, What Can We Do?

1. Maintain or (better) increase surveillance for exotic wood boring insects
2. Eradicate or control infestations of exotic wood boring insects
3. Change our behavior

Solid Wood Packing Material



Dunnage offloaded from a single Russian ship at Terminal 6, Port of Portland, 2006.





- More Research**
- Ignorance is Not Bliss!**
- Better lures
 - Better traps
 - Better eradication and control technologies
 - Better alternatives to wood packaging
 - Better knowledge of present and potential pest biologies
 - Better understanding of pathway risks



Weaker Regulation!

Reduced treatment temperature based on faulty application of scientific paper.

DEPARTMENT OF AGRICULTURE

Animal and Plant Health Inspection Service

7 CFR Part 319

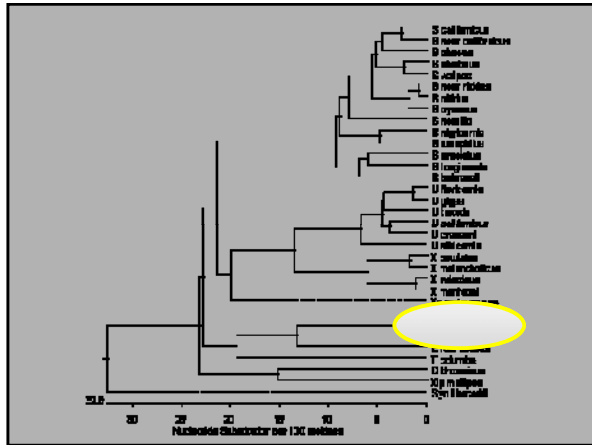
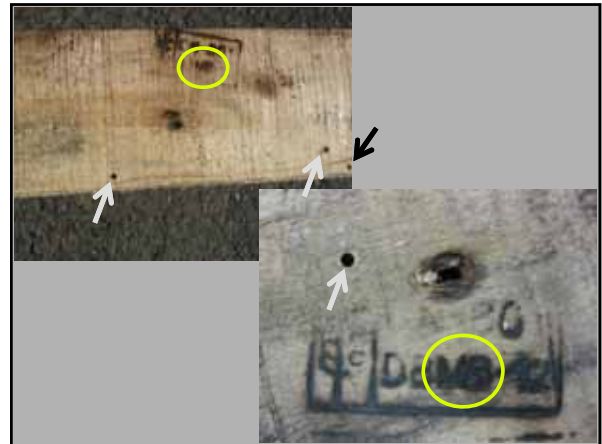
[Docket No. APHIS-2007-0117]

RIN 0579-AC90

Importation of Wooden Handicrafts From China



...A Reprise...Portland, September 2011



When in doubt, keep it out!

Exclusion

Invasive Species

With a grin, let it in!

Everything's fine, no worries!
SSSSSSSSSSSSSSSS



**We Can
Do
Better**