

# Forest Pest Pathways: Where do we go from here?

---

Dr. Kerry Britton

National Program Leader  
for Forest Pathology  
Research & Development

USDA Forest Service  
Arlington, VA

IUFRO 7.03.12  
2012



Work performed by  
3 work groups at NCEAS

NCEAS / TNC Work  
Groups 1, 2, & 3

RIP

NCEAS = University of California's  
National Center for Environmental  
Analysis and Synthesis

Funded by The Nature  
Conservancy (TNC)

EckiBrockhoff

BetsyVonHolle

TomHolmes

JenniferParke  
JeffEnglin

BobHaight

BrianLeung

AndrewLiebhold

JuliannAukema

LarsOlson

KerryBritton

JoeCavey

JamesTurner

DebMcCullough

CoreyChivers

BobHaack

FrankLowenstein

KentKovacs

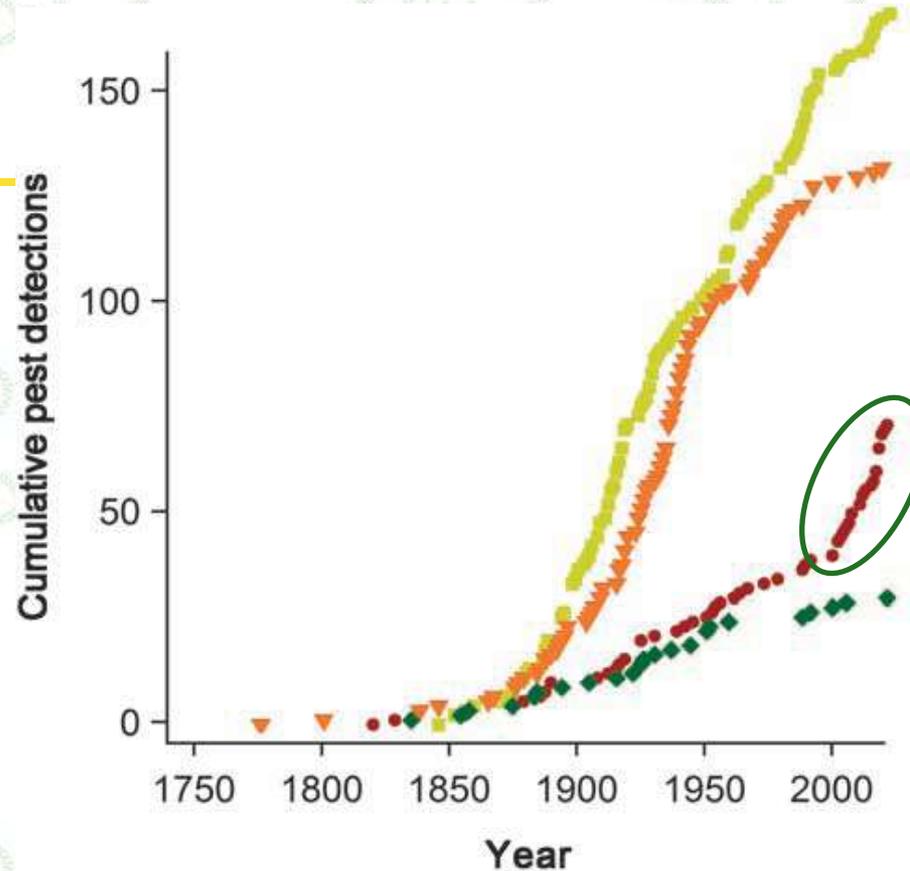
SusanFrankel

LynnGarrett

AmeliaNuding



# Historical Accumulation of Non-native Forest Pests in the US

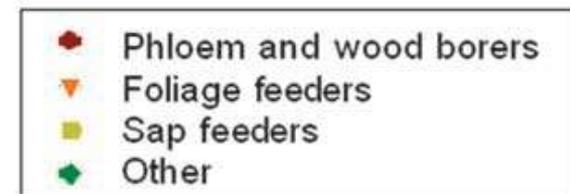


NCEAS / TNC Work Group 1

LONG LIST 455 NON-NATIVE FOREST PESTS

SHORT LIST 82 PESTS W/ SIGNIFICANT IMPACT

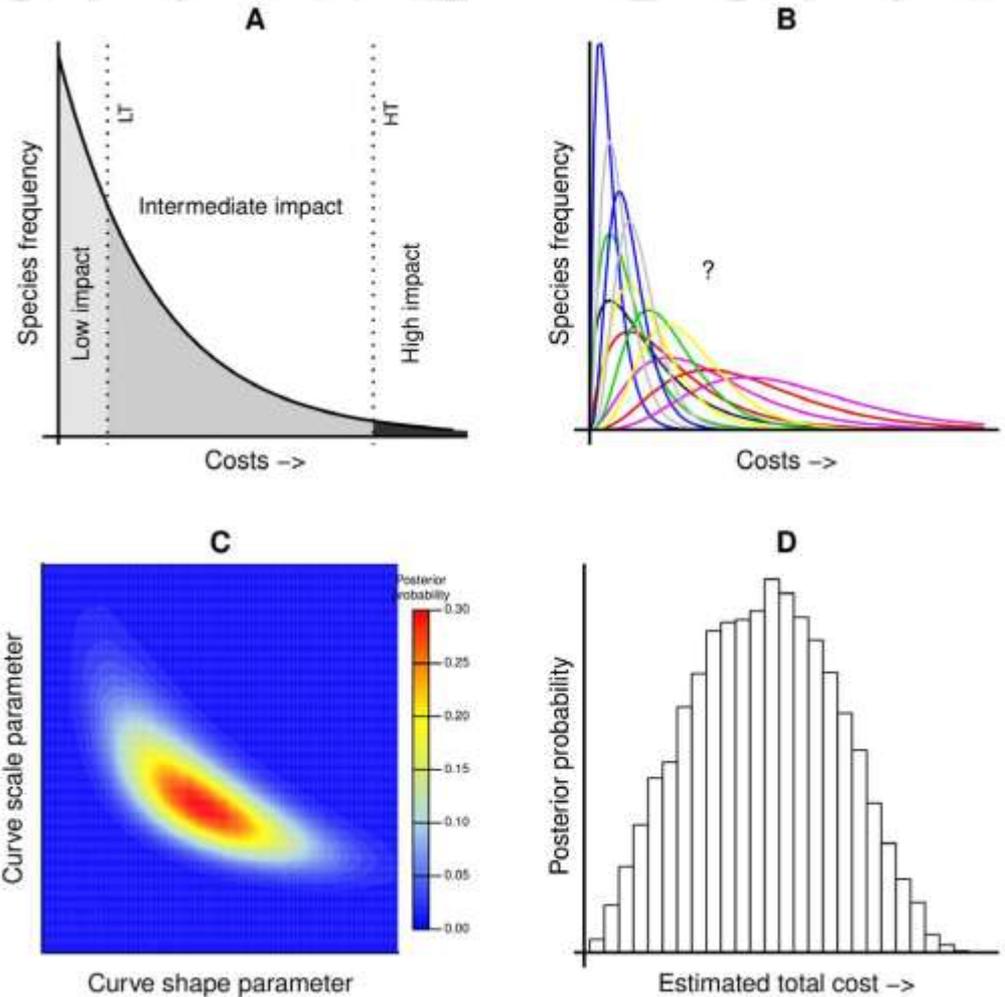
Aukema, et al, 2010 BioScience: 60: 886-897





# Estimated Pest Costs

NCEAS / TNC  
Work Group 1



Aukema, et al., 2011. PLoS ONE 6: e24587



# NCEAS/TNC Work Group 2

---

Developing a framework for  
costs/ benefits analysis of  
regulatory policies,

e.g., ISPM-15

And

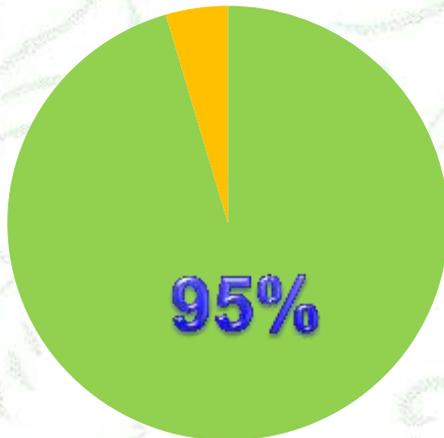
Plants for planting



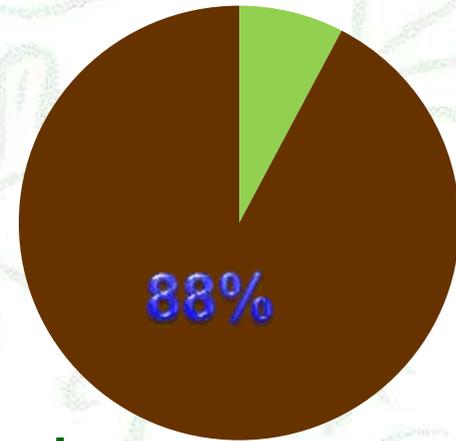


# Third NCEAS / TNC Work Group Identified Pathways for 82 Forest Pests

## Sap-Feeders

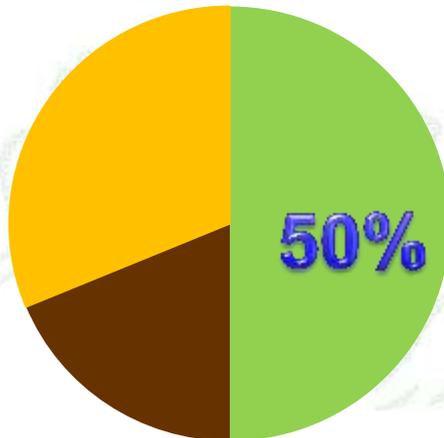


## Wood- and Phloem-feeders

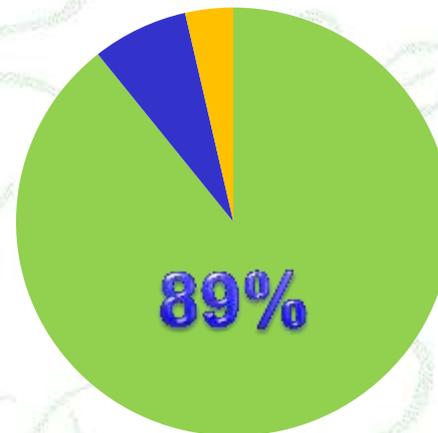


- Plants
- Hitchhiker
- Wood
- Other or Unknown

## Pathogens



## Foliage-feeders



After Liebhold  
et al, 2012





# US Invasive Forest Pest PATHWAYS :

## WOOD PRODUCTS & PACKAGING

- Most likely pathway for **20%** of all forest pests
- (for 88% of wood boring insects)



## LIVE PLANT TRADE

- Most likely pathway for **69%** of all forest pests, especially for:
  - Sap feeding insects
  - Foliage feeding insects
  - Plant pathogens





# Wood products and packaging

---



ISPM-15 developments



Wood products International Standard

🍃 Under development



NAPPO Standard for Wood Commodities

🍃 adopted 2/2012

NAPPO Standard for Christmas trees

🍃 Available for country comments through July 12

NAPPO =North American Plant Protection Organization (CA, MX & US)





# Recent developments re ISPM-15

---



Country consultation on dielectric heat (microwaves) completed



Criteria for new treatments under development



Treatment efficacy evaluations?????





# NAPPO standard for wood commodities (adopted Feb 2012)

**Low risk: processed wood**  
(eg indoor furniture)

- Wood < 6 mm thick
- Bamboo split longitudinally
- Kitchen utensils
- Baskets

**Medium risk: same as high but intended for indoor use**

- (may be regulated with technical justification)

**High risk: intended outdoor use and:**

- containing bark or foliage or made of bamboo

**REQUIRE:**

- Phytosanitary certificate
  - (not stamp):
- ISPM-15 treatment
- OR
- If bark exceeds 50 cm<sup>2</sup>, then 60C/60min

**NOTE: Does not include Round wood or Sawn Wood**





# NAPPO- 37 DRAFT standard for Christmas Trees

---



Available for country consultation until July 12, 2012



Recommends a systems approach, bilaterally negotiated (after PRA)



Producers: Use Integrated Pest Management:

- \* Growing season inspection
- \* Pest trapping
- \* Pest control (cultural, biological, chemical)
- \* Harvesting best management practices:
  - 🍃 Prevent soil contamination
  - 🍃 Shaking
  - 🍃 Safe storage
  - 🍃 Phytosanitary inspection prior to shipment



Exporting NPPO:

- \* Audits of grower's production system
- \* Trains producers
- \* Inspects and certifies clean exports



Importing NPPO:

- \* Inspect compliant countries' commodities less often
- \* Work with non-compliant countries to improve system (or entry will be denied)





# Live Plant Pathway

---



New ISPM adopted March 2012



Countries free to implement it

- 🍃 How?
- 🍃 When?
- 🍃 Why?





# New ISPM

## Integrated Measures for Plants for Planting

---



“may” be used to manage risk



“throughout the production and  
distribution process”



“at the place of production”





# Clean plants: a joint effort

---



Producers: BMPs, recordkeeping



NPPO (National Plant Protection Organization): Negotiate bilaterally

(in Japan the Ministry of Agriculture, Forestry and Fisheries)





# Clean plants: a joint effort

---



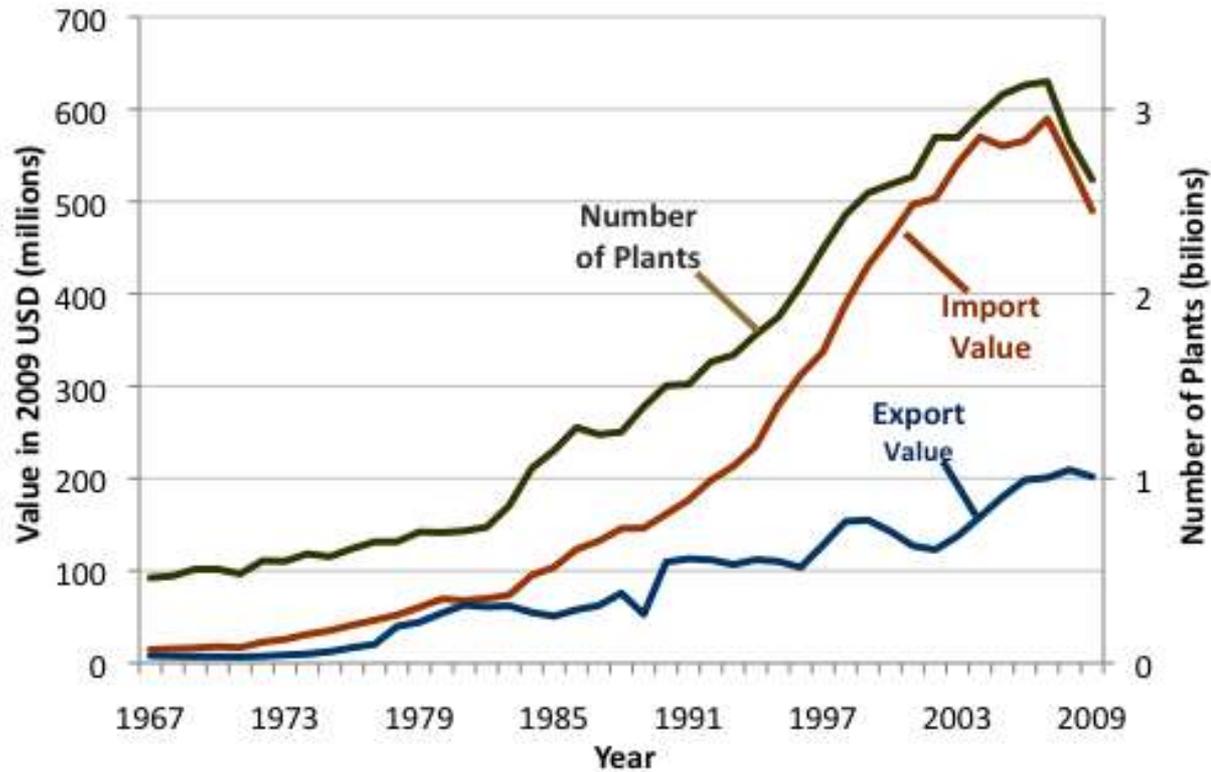
## Scientists:

- ✿ Help prioritize host plants of concern
- ✿ Help identify broad-spectrum management options for pests of concern
- ✿ **SHARE** this information internationally





# Value and Volume of Live Plant Imports into the United States





# US Approach to P4P

---

- 🍃 Permit required if >12 plants, woody plant seed (exc. CA)
- 🍃 156 genera prohibited from particular, or all, origins
- 🍃 Phytosanitary Certificate required
- 🍃 Plants must be < 460 mm tall, and < 2-3 yrs old
- 🍃 No soil (except from Canada)
- 🍃 Inspection at one of 17 Plant Inspection Stations
- 🍃 State Department of Agriculture may also inspect plants on arrival at destination





# NEWS: Recent Changes in US Approach to P4P

---



## New NAPPRA Category of P4P

- ✿ A “grey list” for plants with some known pests of concern
- ✿ Not Approved Pending Pest Risk Assessment
- ✿ Proposed genera advertised in Federal Register for comment



## National Nurserystock Release Program

- ✿ Inspection Targeting (low risk plants will be inspected less)





# Before shipment

---

Pest free place of production

required for fruit trees, eg.

*Prunus, Malus, Pyrus,*

*Chaenomeles, Cydonia,*

*Chrysanthemum,*

*Pelargonium,*

and hosts of ALB & CLB



WebTable 5. Sources of annual US imports of live trees and shrubs, including fruit trees, rhododendrons and azaleas.

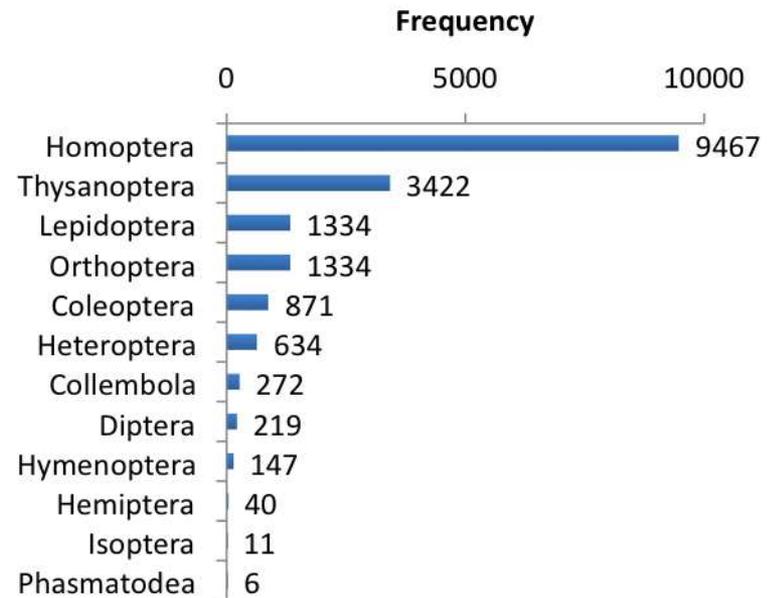
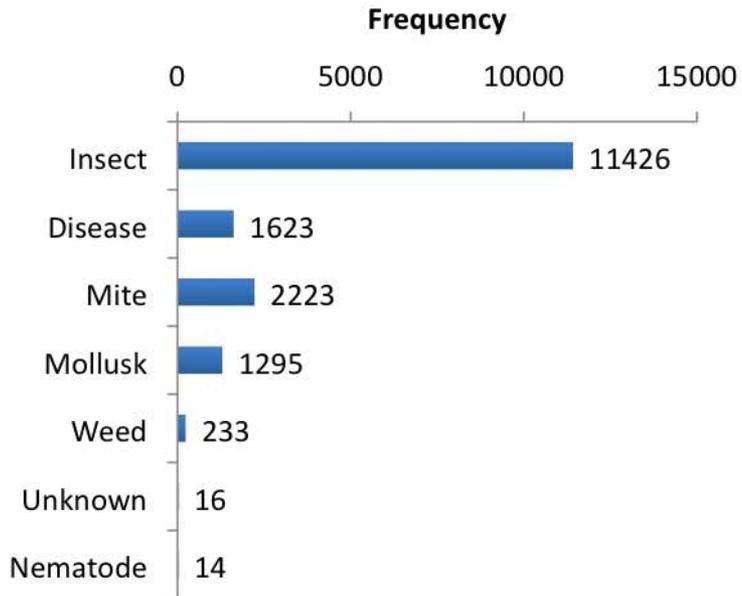


<b>Live Trees and Shrubs</b> <i>Import Source</i>	<i>Average annual imports</i>		
	<i>(in 1000s of plant units)</i>		
	<i>1989–1993</i>	<i>2005–2009</i>	<i>Percent change</i>
<i>Total world</i>	<b>74 838</b>	<b>117 795</b>	<b>57%</b>
<i>North America</i>	<b>72 949</b>	<b>114 390</b>	<b>57%</b>
<i>Central America and Caribbean</i>	<b>0</b>	<b>142</b>	<b>-</b>
<i>Asia</i>	<b>12</b>	<b>806</b>	<b>6617%</b>
<i>Europe</i>	<b>1 863</b>	<b>2 043</b>	<b>10%</b>
<i>South America</i>	<b>11</b>	<b>2</b>	<b>-82%</b>
<i>Middle East</i>	<b>2</b>	<b>0</b>	<b>-100%</b>
<i>Oceania</i>	<b>1</b>	<b>412</b>	<b>41100%</b>





# What regulated pests are being detected on Plants for Planting?

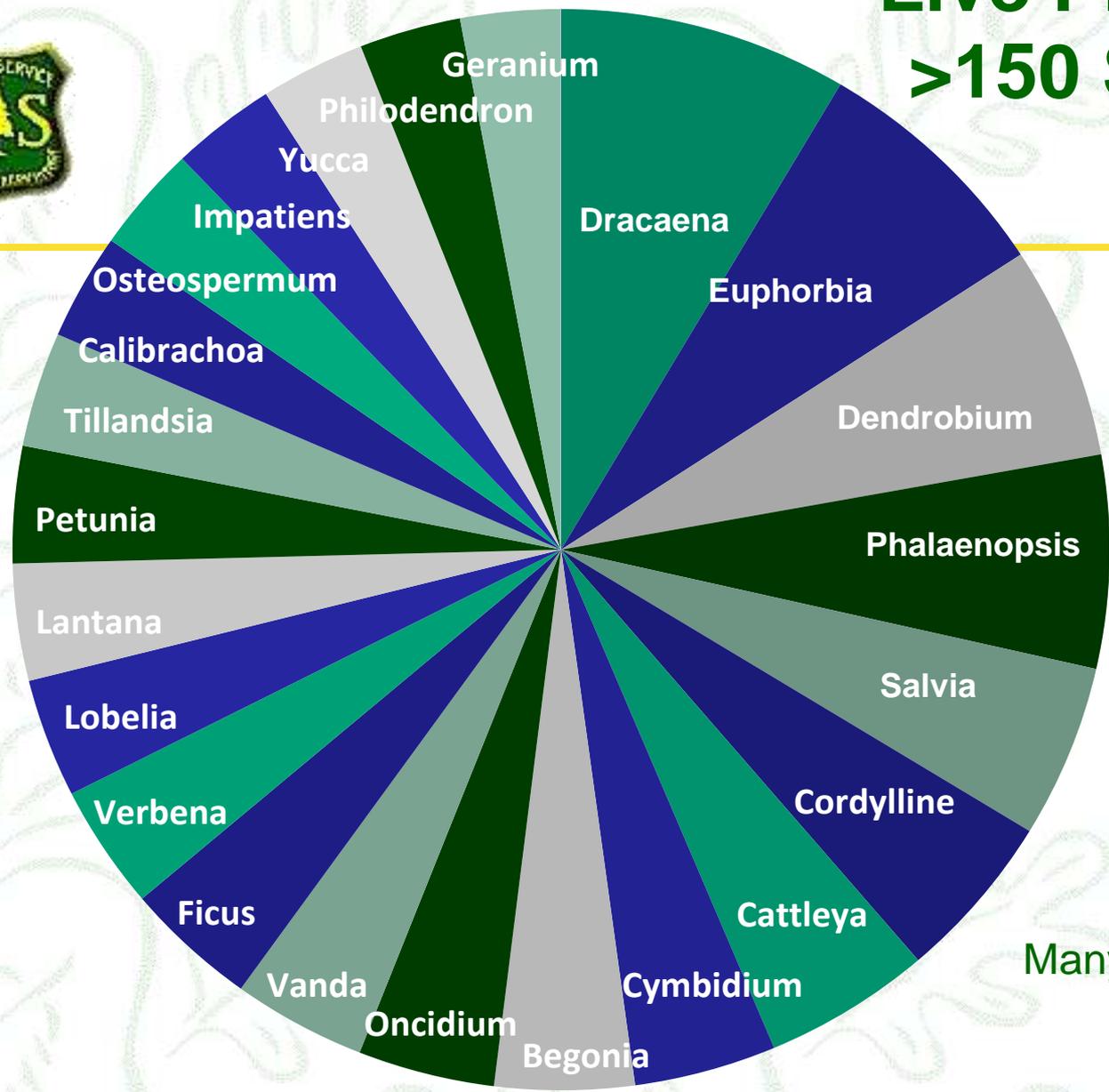


BUT, we recognize that not all pests are detectable (or regulated, for that matter)





# Live Plant Genera >150 Shipments from 2006-2010



Many are indoor plants!





# More proactive prevention in the FUTURE



Better informed black lists:

- ✦ Info sharing data systems
- ✦ Sentinel plant networks



Integrated measures for P4P

Need data on efficacy of  
best management practices!



User tools for prioritization of effort

- ✦ For pest risk assessments, NAPPRA listing
- ✦ For land managers – early detection & rapid response





# More and better outreach

