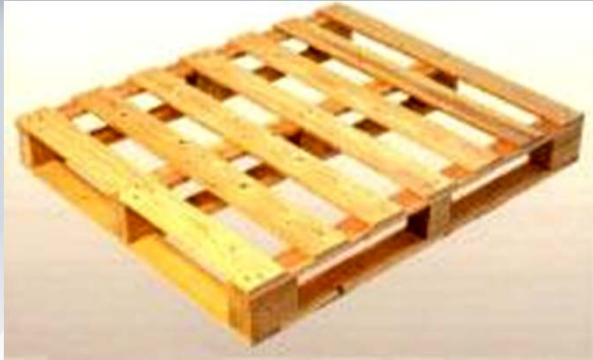


Assessing the Effectiveness of ISPM No. 15 in Reducing Infestation Rates of Wood Packaging Material

Robert A. Haack

USDA Forest Service
Northern Research Station
East Lansing, MI, USA





Pallets

What is Wood Packaging Material (WPM)?



Dunnage



Spools



Crating

What Insects Occur in WPM?



Scolytinae: Bark & Ambrosia Beetles
(>6,000 W, >600 NA, > 60 exotic)

Buprestidae: Metallic Wood Borers
(>15,000 W, >700 NA, 10 exotic)



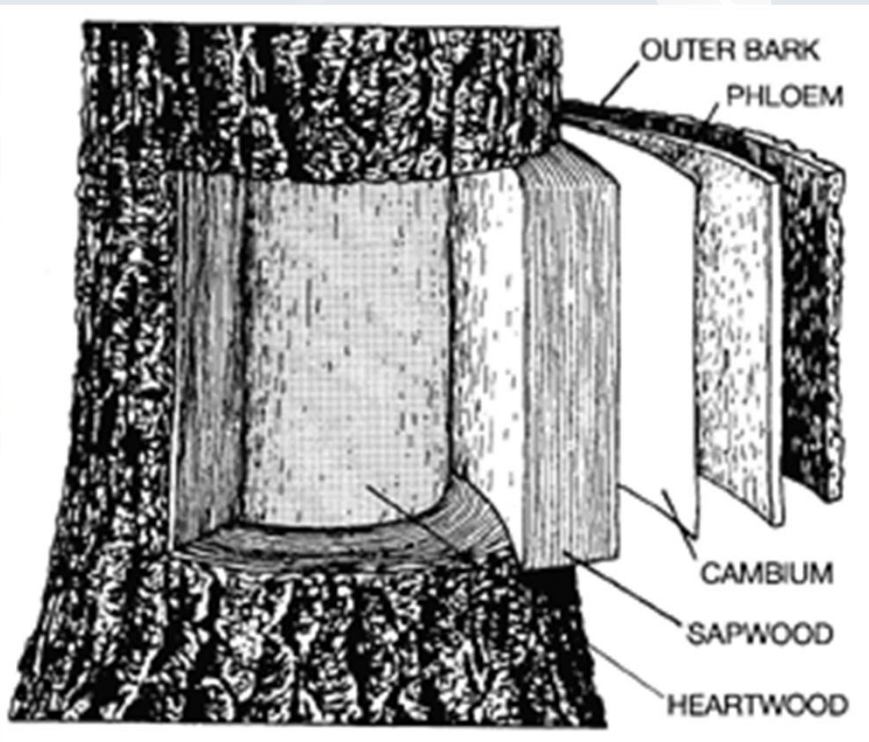
Cerambycidae: Longhorned Beetles
(>20,000 W, >1200 NA, 12 exotic)

Siricidae: Woodwasps
(~100 W, 20 NA, 3 exotic)



Why are Borers Commonly Found in WPM?

- WPM is often made from recently cut trees
- Borers often infest stressed, dying, and recently cut trees.
- Most borers feed in the inner bark, sapwood, and heartwood of trees, and often have long generation times.



Typical length of borer life cycle

Inner bark <1 - 1 year

Sapwood 1 - 2 years

Heartwood 2 - 3 years

Container Ships are Getting Bigger and Can Cross Oceans in 1-2 Weeks



Emma Mærsk (398 m long)

Largest in 2006

Capacity: 15,550 TEU

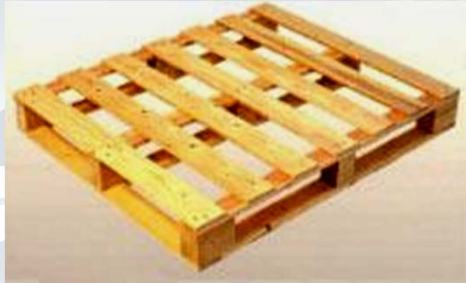
Now: 18,270 TEU

Soon: 18,400 TEU

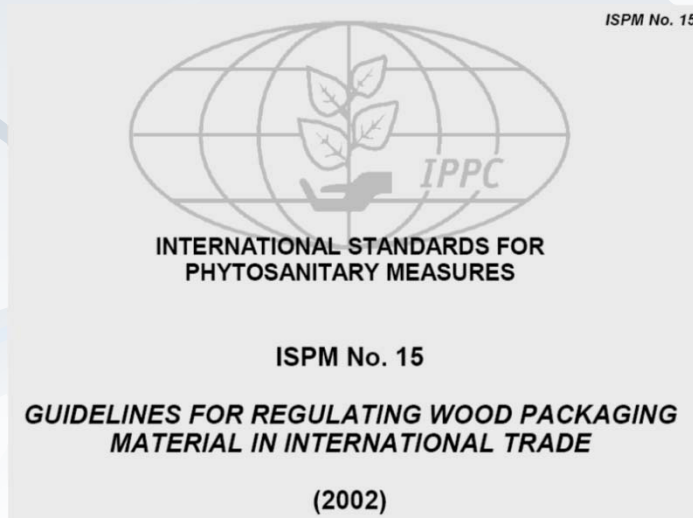
TEU = Twenty-foot Equivalent Units

What is ISPM 15?

(ISPM = International Standards for Phytosanitary Measures)



Codes:
Country
Producer
Treatment

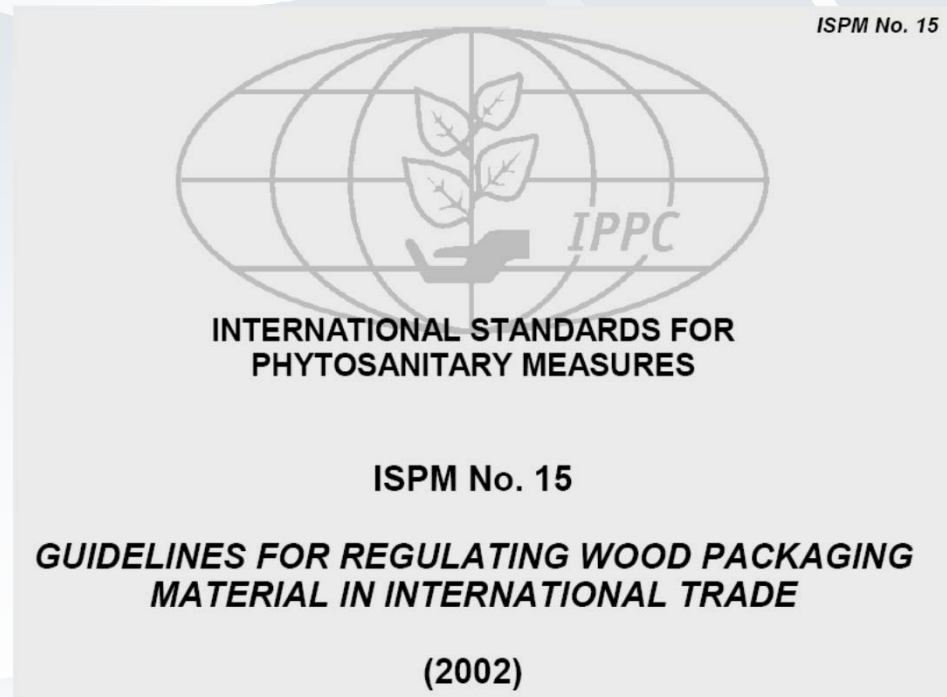


ISPM No. 15:

“Guidelines for Regulating
Wood Packaging Material
in International Trade”
(1st Approved in 2002)

The Goal of ISPM 15 is to:
Reduce the Risk of Introducing Pests
Associated with WPM

(It never said "Eliminate" the risk)



ISPM 15: Background Information

First approved in 2002

First implemented in NZ in 2003

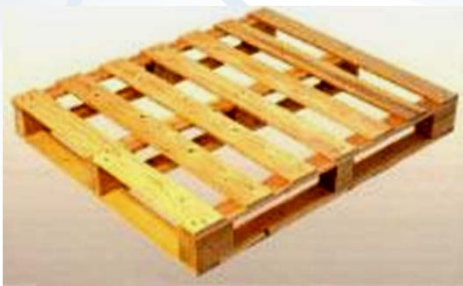
Australia in 2004

European Union in 2005

North America in 2005-2006

78 countries have implemented ISPM 15

There are now 180 countries that are signatories to IPPC





National Center for Ecological
Analysis and Synthesis

NCEAS
University
of
California

$$\frac{\partial}{\partial t} (\nabla^2 \phi) = \frac{\partial \psi}{\partial z} \frac{\partial}{\partial x} (\nabla^2 \psi) - \frac{\partial \psi}{\partial x} \frac{\partial}{\partial z} (\nabla^2 \psi) + \nu \nabla^2 (\nabla^2 \psi) + g \alpha \frac{dT}{dx}$$

Has ISPM 15 Made a Difference?

Are live pests found less frequently in WPM now?

From the literature.....

Pre-ISPM 15: Data on a *consignment* basis (4.3% NZ in 1999)

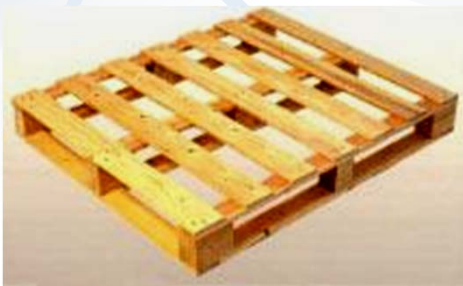
Post-ISPM 15: Australia: 0.5% of WPM items had live insects
USA: 0.1%

Chile (2007): 18 months Pre vs 12 months Post (consignment)
Infestation rate fell 35% from 0.25% to 0.16%

The AQIM Program

(Agriculture Quarantine Inspection Monitoring)

- AQIM is maintained by USDA APHIS
- Shipments selected randomly for inspection at cooperating US ports
- WPM started to be inspected in 2003
- We analyzed AQIM data from 2003-2009 (ca. 35,000 records. Major changes made in 2009)

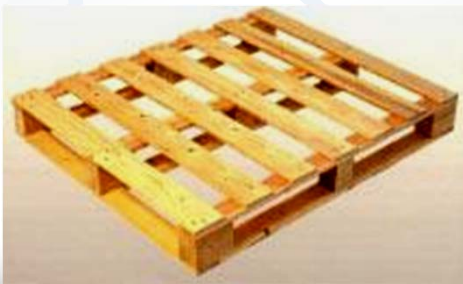


AQIM Findings

- ISPM15 was implemented in the US over 18 months during 2005-2006.
- Infestation rates fell by 36-52%, depending on start date selected for ISPM 15 and countries included in the analyses

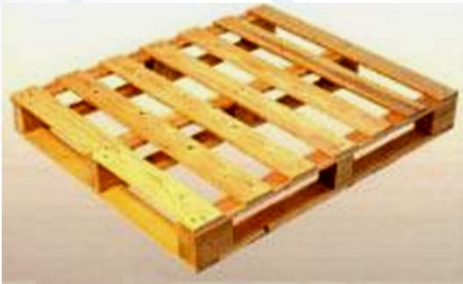
0.17 to 0.25% pre-ISPM15
0.11 to 0.12% post-ISPM15

- Recall 4.3% infestation rate from 1999 NZ study.
A 0.11% rate would represent a 97% drop



Why not a larger drop?

- Pest tolerance of the treatment
- Unintentional noncompliance
- Fraud
- Post-treatment colonization of WPM
- Data issues in AQIM
- Policy anticipatory effect



Reality Check

- A 0.11% infestation rate of WPM is very low, but ...
- 16 million containers enter the US per yr
- 52% of containers have WPM
- 52% of 16 million = 8.32 million containers with WPM
- 0.11% of 8.32 = 9152 containers/yr with live wood pests

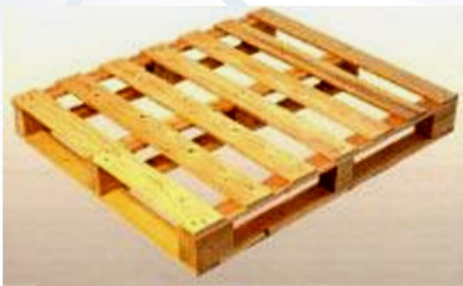


Summary Thoughts

WPM infestation rates appear to be falling post-ISPM 15

New AQIM analysis is needed: 2009-2013

Overall, we need large comparable surveys before and after implementation of major phytosanitary standards to verify policy effectiveness

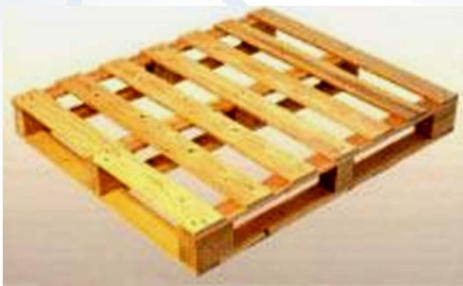


Upcoming Publication

Submitted for publication in *PloS ONE*

Effectiveness of the International Phytosanitary Standard
ISPM No. 15 on Reducing Wood Borer Infestation Rates
in Wood Packaging Material Entering the United States

Robert Haack, Kerry Britton, Eckehard Brockerhoff,
Joseph Cavey, Lynn Garrett, Mark Kimberley,
Frank Lowenstein, Amelia Nuding, Lars Olson,
James Turner, and Kathryn Vasilaky



Thanks!

