CAN WE SEE THE WOOD FOR THE TREES? EVALUATION OF US DOMESTIC WOOD FORENSIC CAPACITY AND THE APPLICATION OF FORENSIC WOOD ANATOMY IN PRODUCT CLAIM VERIFICATION IN THE US FOREST PRODUCTS SECTOR

Alex C. Wiedenhoeft [1,2,3,4], R. Soares[1,2], J. Simeone [5,6], A. Smith [6], and M. Parker-Forney[7]

[1] Center for Wood Anatomy Research, Forest Products Laboratory, Madison, WI 53726, USA, [2] Department of Botany, University of Wisconsin, Madison, WI 53706, USA, [3] Department of Forestry and Natural Resources, Purdue University, West Lafayette, IN 47907, USA, [4] Ciências Biológicas (Botânica), Universidade Estadual Paulista – Botucatu, São Paulo, Brasil, [5] Simeone Consulting, Anchorage, AK 99501, USA [6] World Wildlife Fund, Washington, DC 20037 USA, [7] World Resources Institute, Washington, DC 20002 USA

Project Objective

To advance the use of wood anatomy as a practical, credible forensic tool in the US to support industrial compliance with and governmental enforcement of the US Lacey Act and CITES

Project Activities

- Purchase wood products from US home furnishings/big box retailers and DIY stores, and use wood anatomy testing to verify product species claims
- Publish results (no company or participant names, but companies will be notified bilaterally of wood testing findings)
- Assess technical competency of US labs that conduct wood anatomy testing to identify opportunities to build capacity

Wood Specimens for Anatomy Testing

Materials

- Product claim verification
  - 73 consumer products/125 separate product components
  - Purchased from 29 major retailers.
  - Species claims inferred based on common names in product advertising
  - Selected products advertised as containing species of concern

Methods

Product claim verification

- Microscopy
- Fluorescence
- Chemical tests
- Compared to specimens in a scientific wood collection

Backless Counter Stool - Claim

Details & Dimensions

With a clean Wabi-Sabi aesthetic, our stool is almost deceptive in its simplicity. Tapered legs, recessed apron, a gently curved seat accented by exposed wooden pegs–all are made of rubberwood, a densely grained and sturdy hardwood. This is a trend-proof, unexpectedly comfortable design that blends with kitchen islands, game rooms or even offices. And there's nothing simple about that.

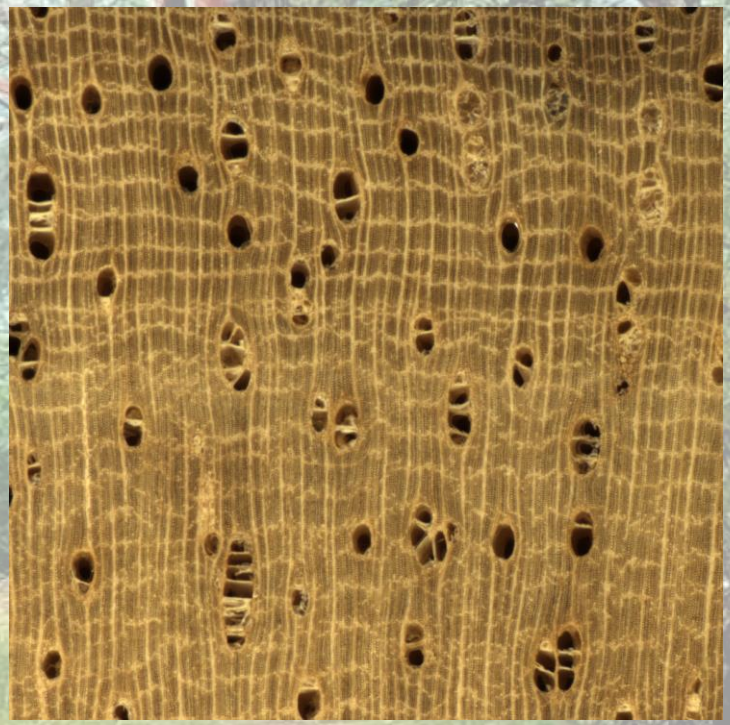
- 16"W x 13"D x 24"H
- Antiqued finish
- Rubberwood
- Tuscan brown
- Assembly Required

Backless counter stool - specimens

Backless Counter Stool - Actual

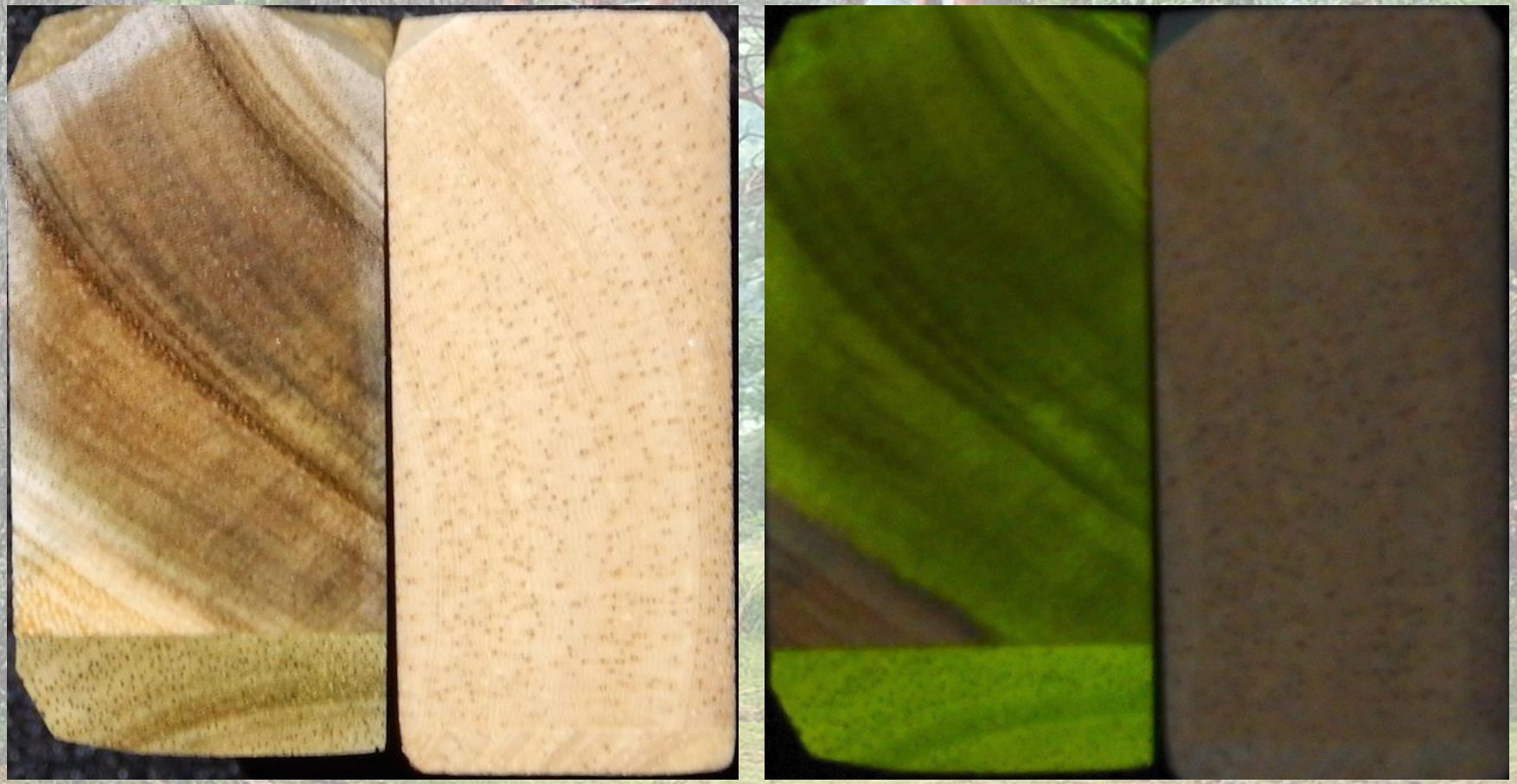
Acacia cf. *confusa*

Hevea brasiliensis



Some product components were *Acacia* and some were *Hevea.*
Overall, the product is misrepresented.

Backless Counter Stool - Actual



Incident light (left) and UV surface fluorescence (right), *Acacia* on the left in each, *Hevea* on the right

Product Claim Verification Results

Species claim

- 33 of 73 products correctly represented
  - 68 of 125 product components
- 40 of 73 products with at least one component misidentified
  - 57 of 125 product components

Product-type claim

- 24 of 125 components misrepresented regarding the product type
  - Claim of solid wood
  - Actually veneer over MDF

Proficiency Testing

- Surveys sent to 48 consultants, universities, private contractors, and other wood identification experts
- Requested information on facilities/resources and a self-assessment of wood forensic proficiency
- All survey recipients invited to take part in blind proficiency testing

Survey Results

- 23 of 48 experts provided information
  - 13 respondents report ability to identify wood
  - about half of these are retired or near retirement
- Cost per specimen $50-$200
- Turn-around time of days to weeks
- 10 of 13 report minimal or absent ability to identify exotic woods
- Ability to train 1-50 people per year, generally not to a forensic level

Proficiency Testing

- Identical sets of 55 specimens to 9 participants
- Scientifically collected specimens:
  - ~ 3:1 Hardwoods to softwoods
  - ~ 1:1 Domestic to exotic
  - ~ 3:2 Temperate to tropical
- Each specimen assigned a unique number – not possible to compare specimen numbers between participants
- Participants given no additional context, allowed to use any technique and present results however they wished

Proficiency Testing Results

- 2 of 9 experts have filed results
  - Reasonable correspondence between claimed ability and actual proficiency
  - Minimal capacity to identify exotic woods

Conclusions

The US market clearly has misrepresentation

- Our methods **do not** permit quantifying the prevalence of misrepresentation, just that it exists
- Though not a part of this study, Wiedenhoeft regularly finds misrepresented wood-based products in most retailers he visits

Conclusions

- Domestic capacity does not scale with possible demand to comply with or enforce CITES, Lacey
- Domestic capacity fairly reliable for US woods
- Academia has infrastructure to increase its proficiency and to train new experts – but there is a lack of demand for skills, opportunity for practitioners
- Need for concerted program to grow capacity