Asia-Pacific
Economic Cooperation

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Agenda Item: 3

Anatomical Identification of Internationally Traded Timber and Wood Products

Submitted by: Thünen Institute

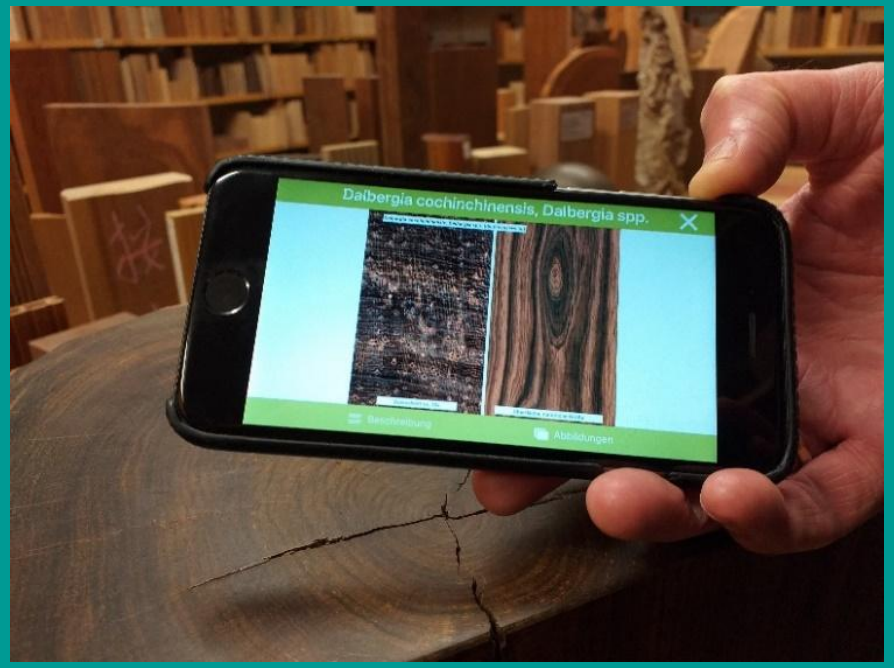
APEC 2025
KOREA

Dialogues and Mini-Exhibition on Enhancing Enforcement and Legal Timber Trade through Stakeholder Collaboration and Innovation
Incheon, Korea
28 July 2025

Anatomical identification of internationally traded timber and wood products

PD Dr. Gerald Koch, *et al.*

Thünen Institute of Wood Research, Thünen Centre of Competence on the Origin of Timber



Anatomical identification of internationally traded timber and wood products

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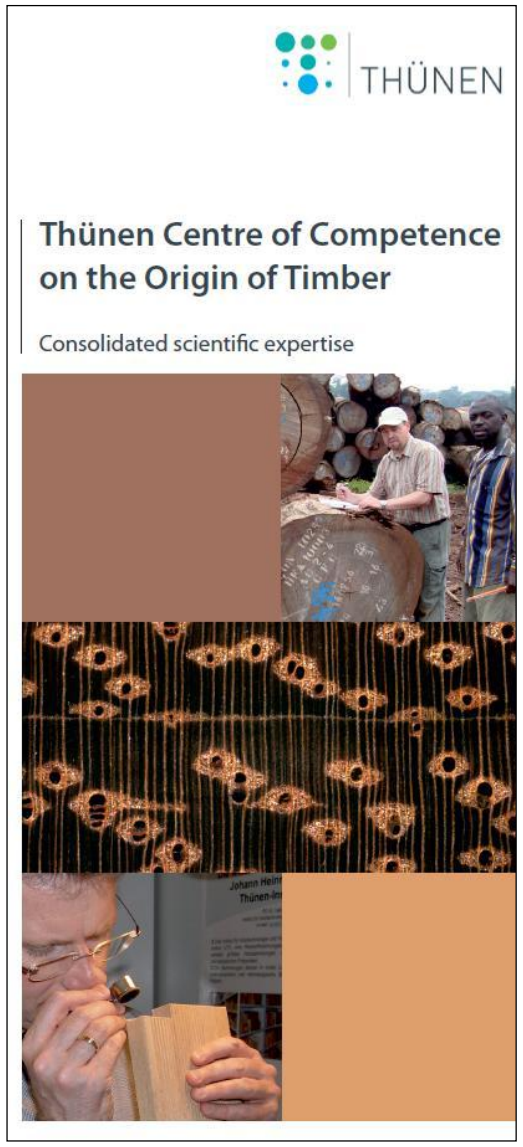
- **Databases:** App macroHOLZdata and CITES*wood*ID
- **Method development:** WoodFiberID - automated (AI) wood species identification of fibres
- **Outlook**

Thünen Centre of Competence on the Origin of Timber



Johann Heinrich von Thünen-Institute
Federal Research Institute for Rural Areas, Forestry and Fisheries

Participating Institutes:

- Thünen Institute of Wood Research (TI-HF)
  - **Macroscopic and microscopic wood identification**
- Thünen Institute of Forest Genetics (TI-FG)
  - **Genetic identification of wood species and origin**
- Thünen Institute of Forestry (TI-WF)
  - **Evaluation of certificates and timber market analyses, Geographic information systems**

https://www.thuenen.de/en/thuenen-institute/compound-structures/thuenen-kompetenzzentrum-holzherkuenfte

Scientific Wood collection of the Thünen Institute

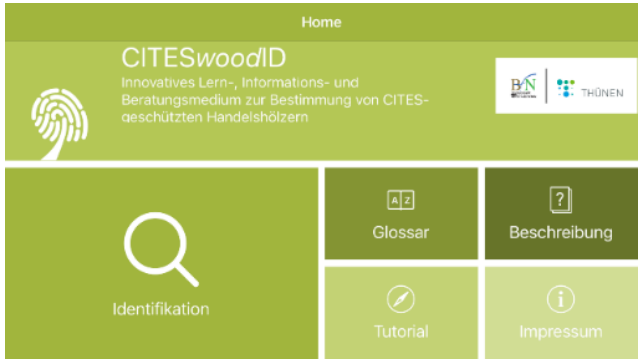
Scientific Wood Collection

Number of wood specimens: approx. **35,000**

Number of families: approx. **245**

Number of genera: approx. **2,400**

Number of species: approx. **11,500**



- Evaluation of the number of regularly traded wood taxa

Photos ©: I. Hendel

Thünen Centre of Competence - Scientific reports

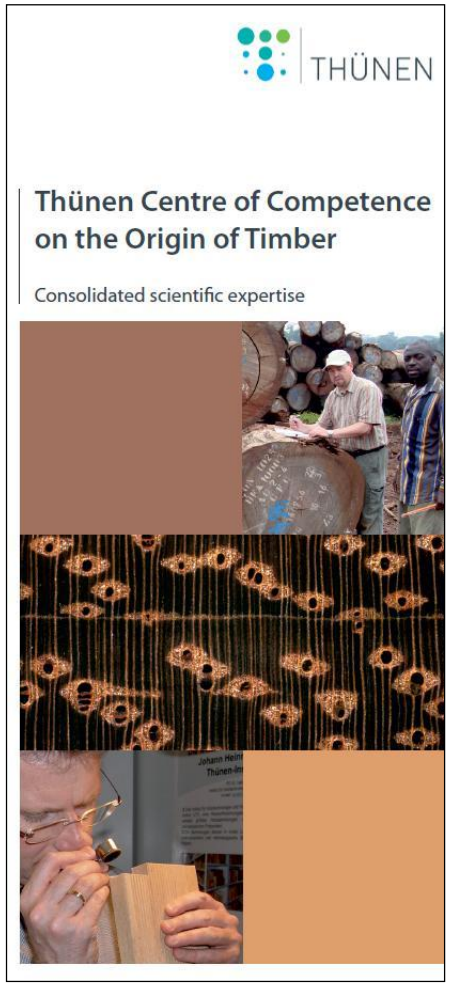
Daily submissions of samples from the fields

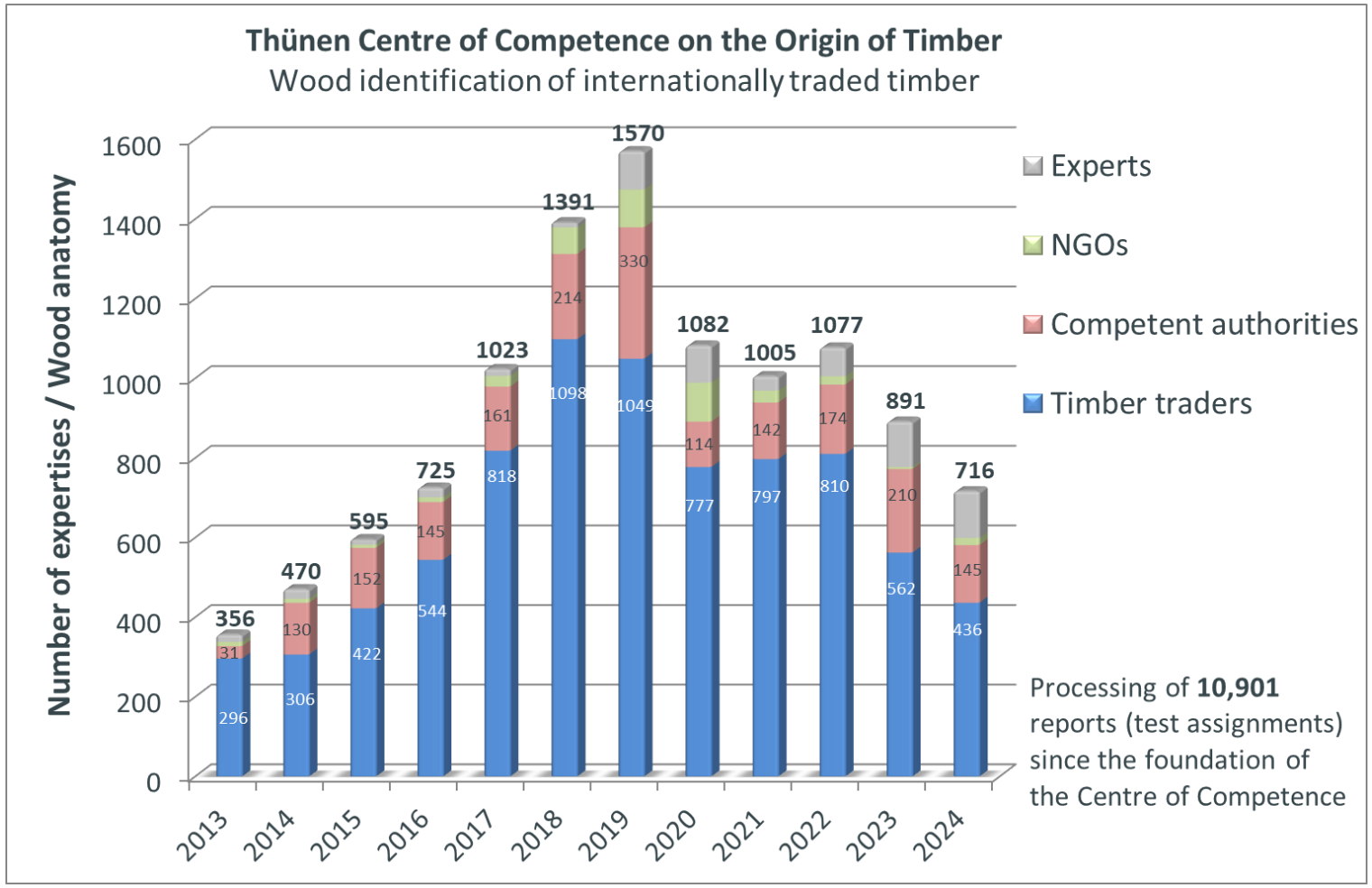
- **Wood trade** (approx. 65%)
- **Customs and EUTR / CITES authorities** (approx. 25%)
- **NGOs** (approx. 5%)
- **Private consumer** (approx. 5%)

Detailed market survey/observation of the internationally traded timber and wood species composition (utilisation of **lesser known species**)

Photos ©: I. Hendel, C. Waitkus

Thünen Centre of Competence - Scientific reports





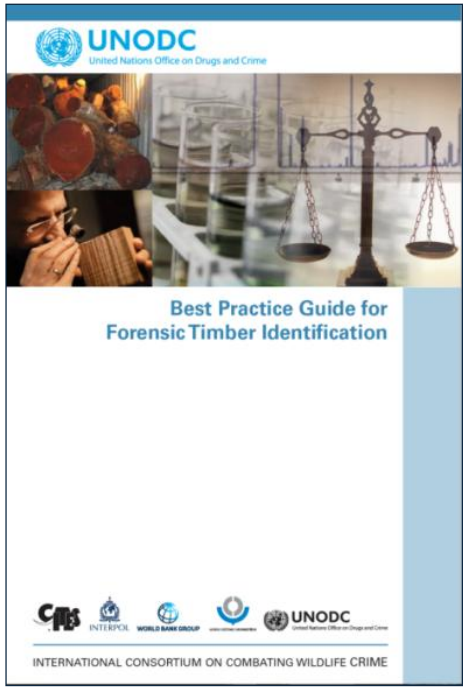
- Statistics (reports) on the service “anatomical wood identification” at the Institute of Wood Research since 2013

European Timber / Deforestation Regulation - (EUTR / EUDR)

European Timber Regulation (EUTR) / Replaced by the EUDR

ANNEX
Timber and timber products as classified in the Combined Nomenclature in Annex I to Regulation (EEC) No. 2658/87

- 4401 **Fuel wood**, in logs, billets, pellets or similar forms;
- 4403 **Wood (solid)**, not stripped, stripped of bark or two- or four-sided trimmed;
- 4406 **Timber railway sleepers**;
- 4407 **Wood (sawn)** or chipped lengthwise with a thickness exceeding 6 mm;
- 4408 **Veneer sheets** for plywood or for similar laminated wood
- 4410 **Particle board**, "oriented strand board" plates and similar plates
- 4411 **Fibreboard of wood**, agglomerated with resins or other organic substances;
- 4412 **Plywood**, veneered panels and similar laminated wood;
- 4415 **Packing cases**, boxes, and similar packing's
- 940330, 940340, 94035000, 940360 and 94039030 **wood furniture**
- **Pulp and paper** of chapters 47, 48 and 49 of the Combined Nomenclature



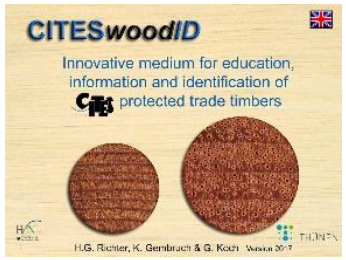
EU TR

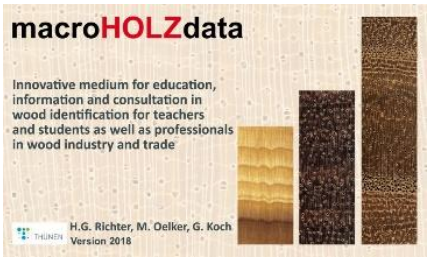
Wood anatomy - Macroscopic wood identification

- **Macroscopic analyses** offer a first valuable und practical method for the wood identification and description

Afzelia
Afzelia sp.

Itaúba
Mezilaurus sp.





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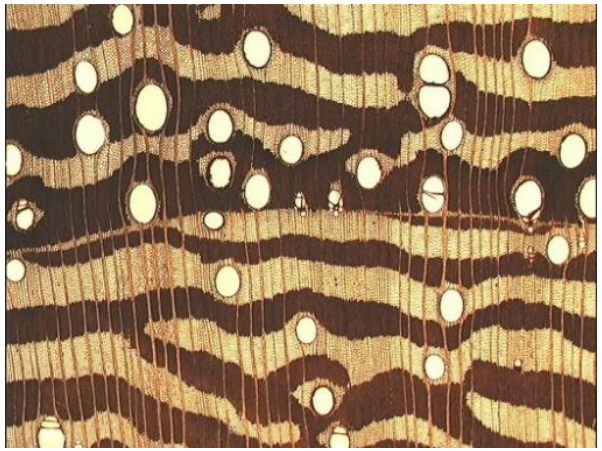
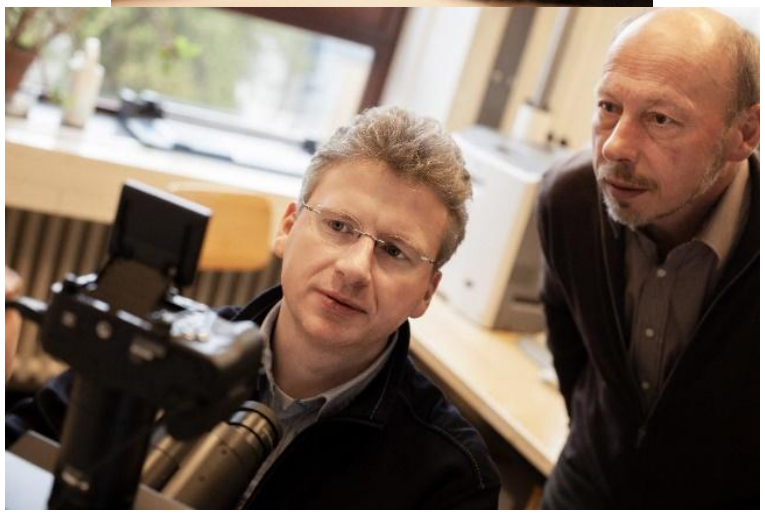
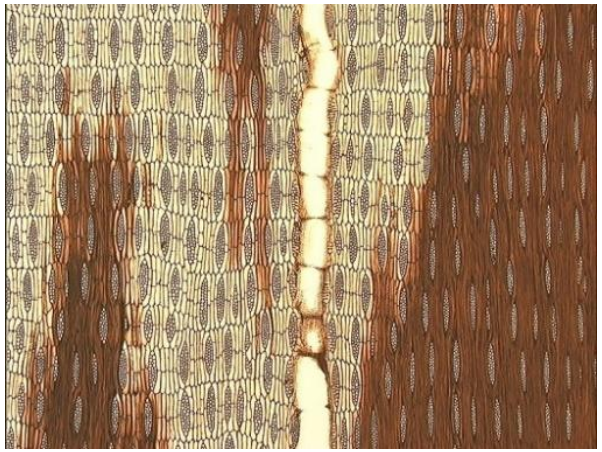
Wood anatomy - Microscopic wood identification

- **Microscopic analyses:** the standard method for wood anatomical description and identification of wood taxa (genera and species)

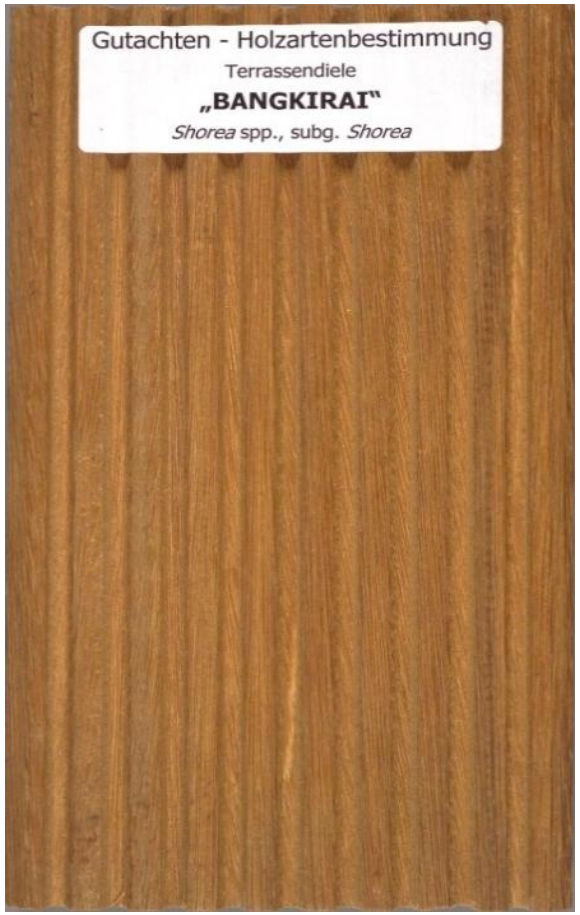


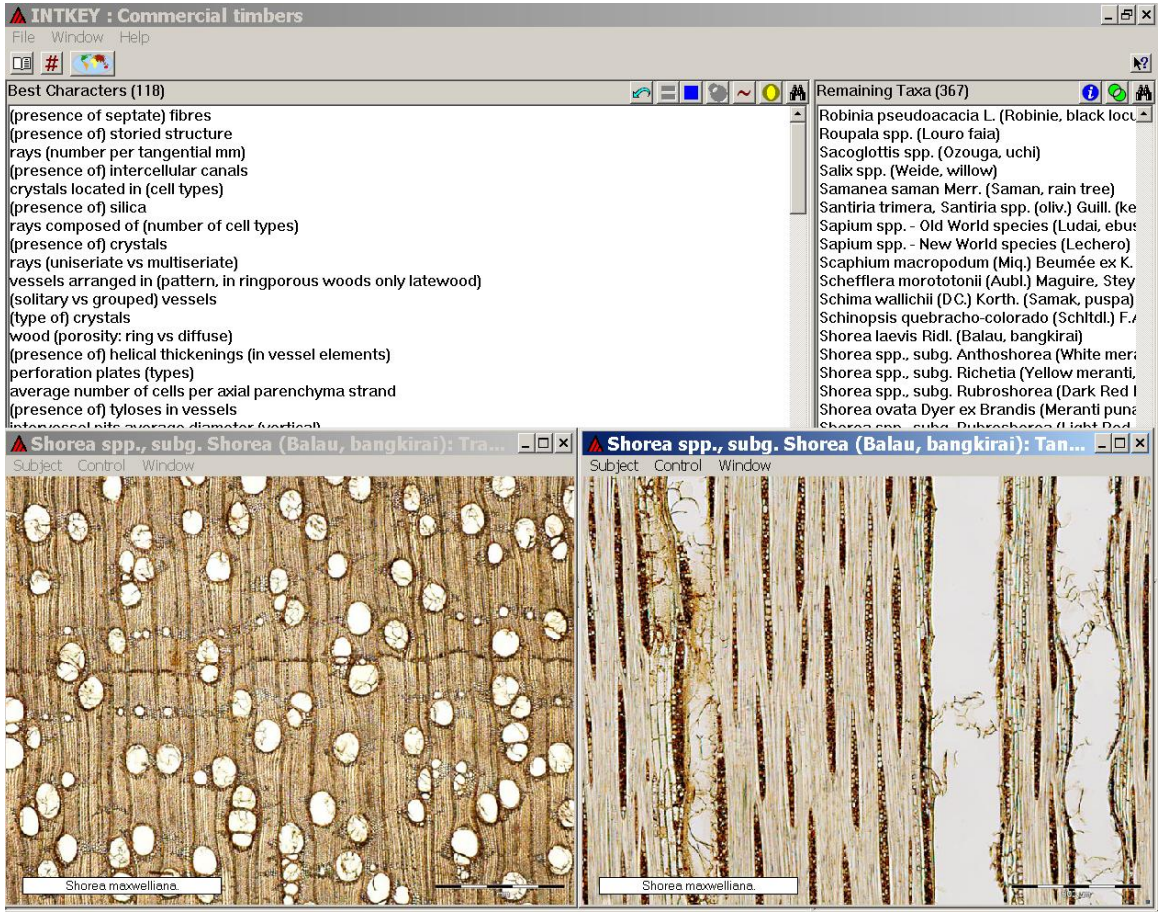




Photos ©: I. Hendel, H.G. Richter

Databases and programs for wood identification





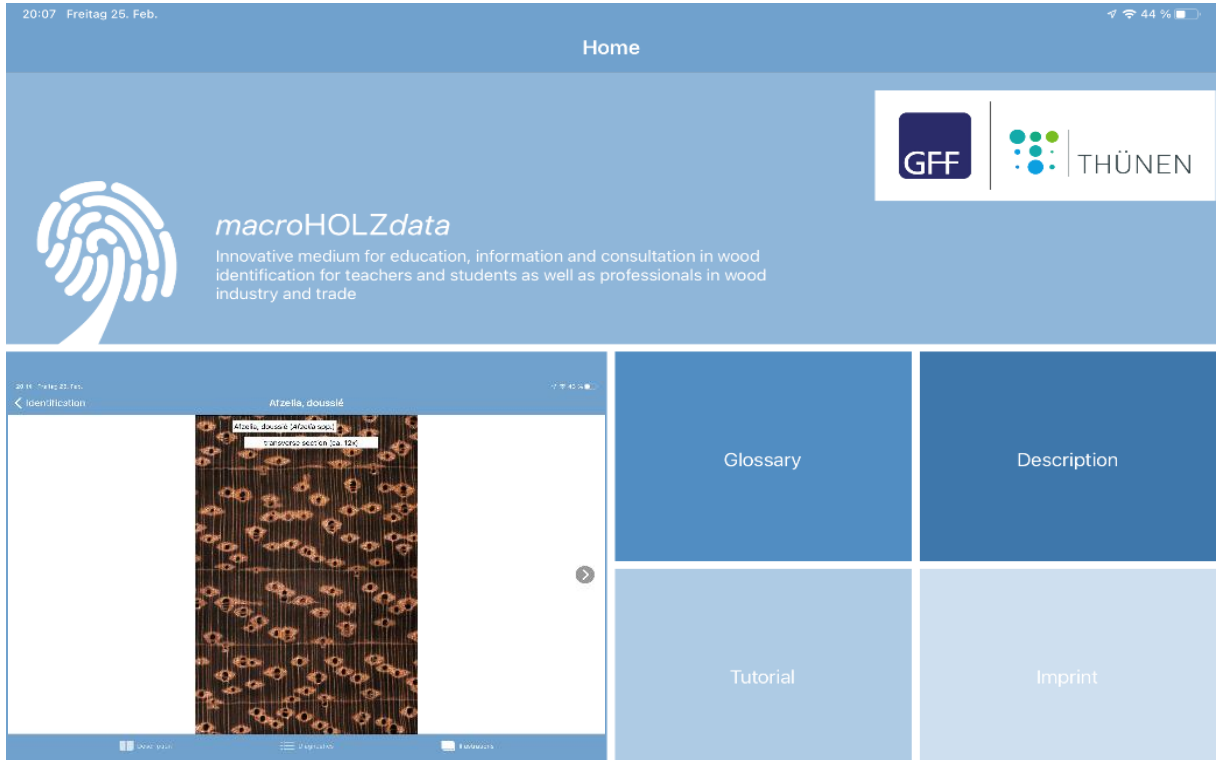
- Description and illustrations of **Bangkirai/Yellow Balau** for the microscopic wood identification

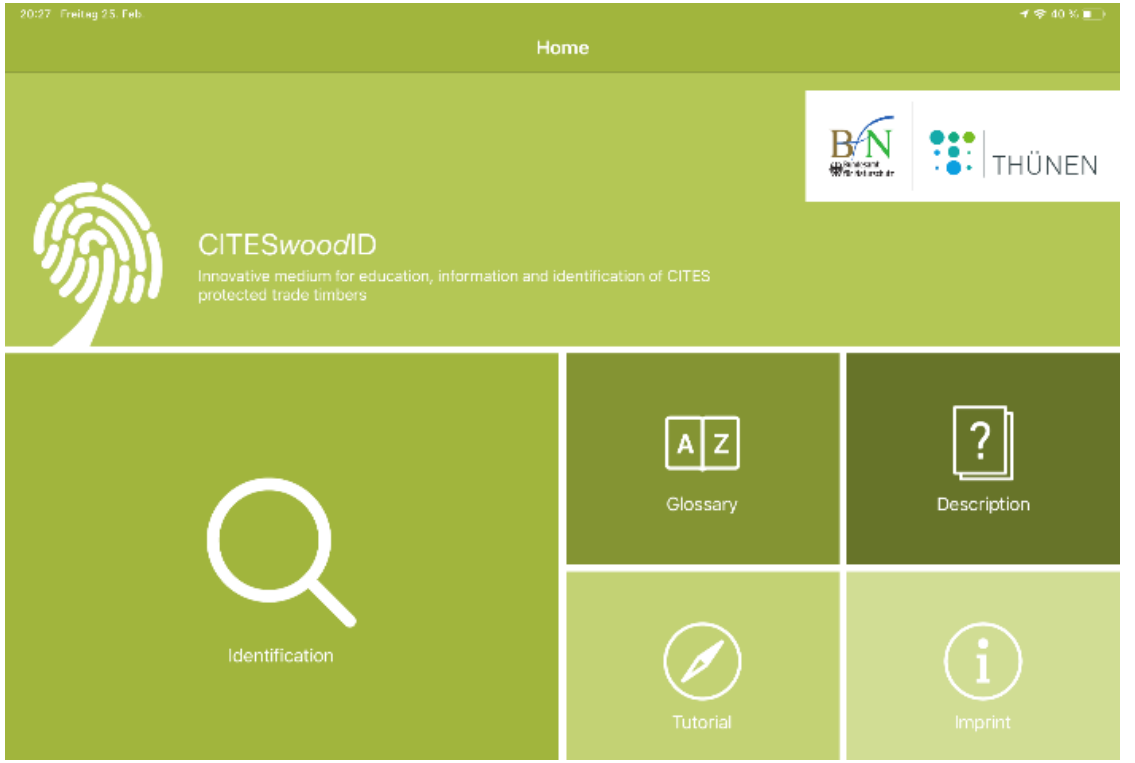
(database: Commercial timbers - https://www.delta-intkey.com/wood/en/index.htm)

Photos ©: C. Waitkus, H.G. Richter

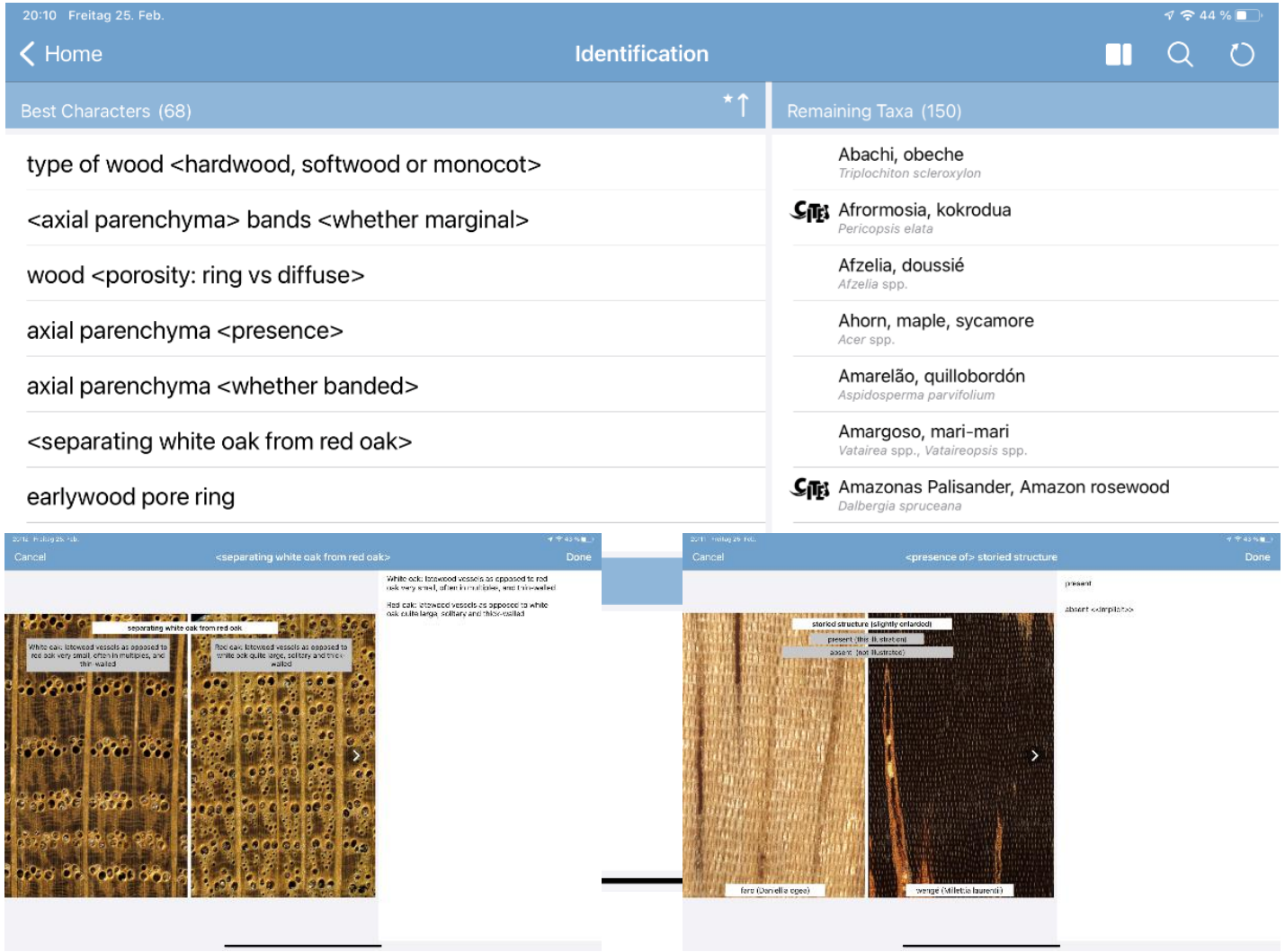
Macroscopic wood identification - Identification guides

- **App macroHOLZdata:** Innovative digital tool for macroscopic wood identification and information retrieval for educational facilities and professionals in wood industry and trade
- **App CITES*wood*ID:** Innovative medium for education, information and identification of CITES protected trade timbers





Macroscopic wood identification - Identification guides

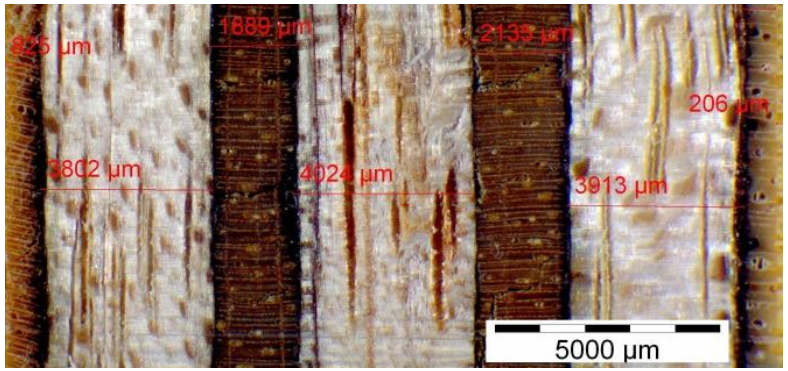


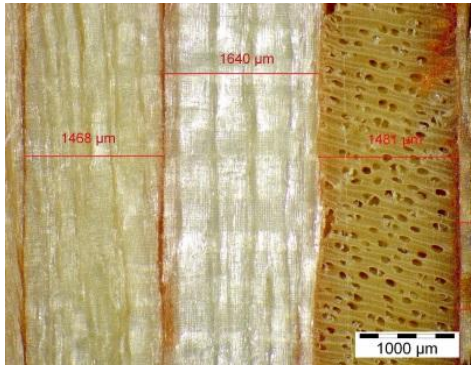
What have the databases to offer:

- interactive identification of common **150 trade timbers** (**macroHOLZdata**) including **53 CITES-protected** species (**CITES*wood*ID**) based on macroscopic features to be observed with the unaided eye or with a hand lens
- high **quality colour illustrations** of wood characters and timbers featuring transverse (10x) and longitudinal planes (natural size)
- pertinent information on **wood properties, processing**, and **utilization** (**macroHOLZdata**)
- Free access: AppStore and Google Play

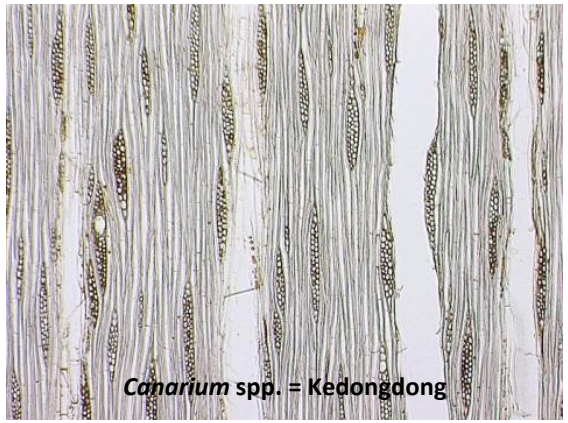
Wood identification in practise - plywood

Identification of individual veneer layers in plywood - Various wood species compositions






Canarium spp. = Kedongdong

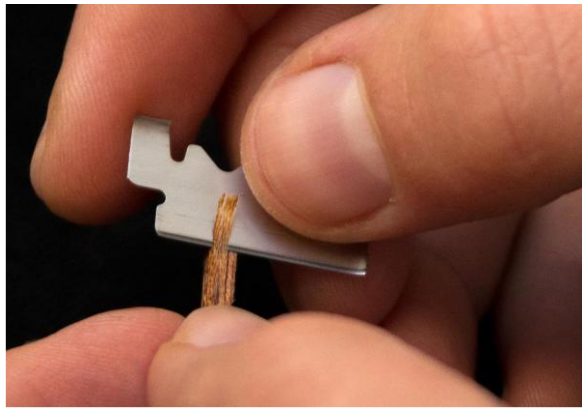

Canarium spp. = Kedongdong

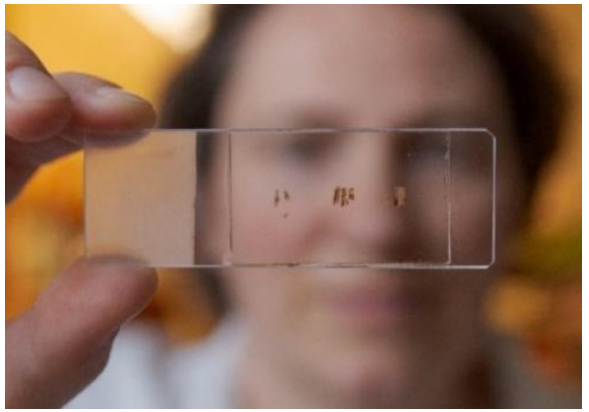
Selection of regularly identified wood taxa from tropical Asia

Botanical Taxa	Trade names
Alstonia spp. / APOCYNACEAE	**Pulai**
Beilschmiedia spp. / LAUARACEAE	**Medang**
Campnosperma spp. / ANACARDIACEAE	**Terentang**
Canarium spp. / BURSERACEAE	**Kedongdong**
Endospermum spp. / ANACARDIACEAE	**Sesendok**
Octomeles sumatrana / DATISCACEAE	**Binuang**
Palaquium spp. / SAPOTACEAE	**Nyatoh**
Pentaspadon spp. / ANACARDIACEAE	**Pelaju**
Swintonia spp. / ANACARDIACEAE	**Merpauh**

Wood identification in practise - particle boards

- Preparation and microscopic identification of individual chip fractions in **particle boards**





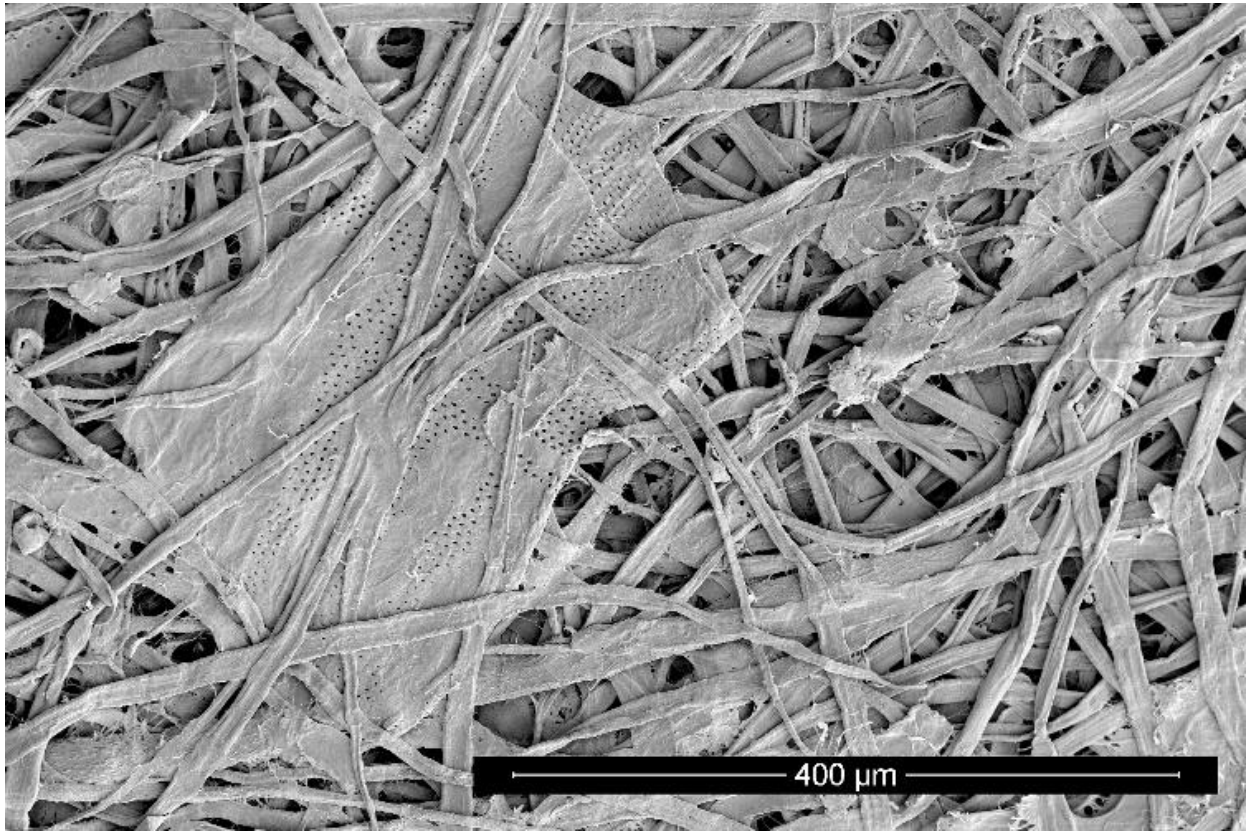
Photos ©: S. Kaschuro, I. Hendel

Wood identification in practise - particle boards

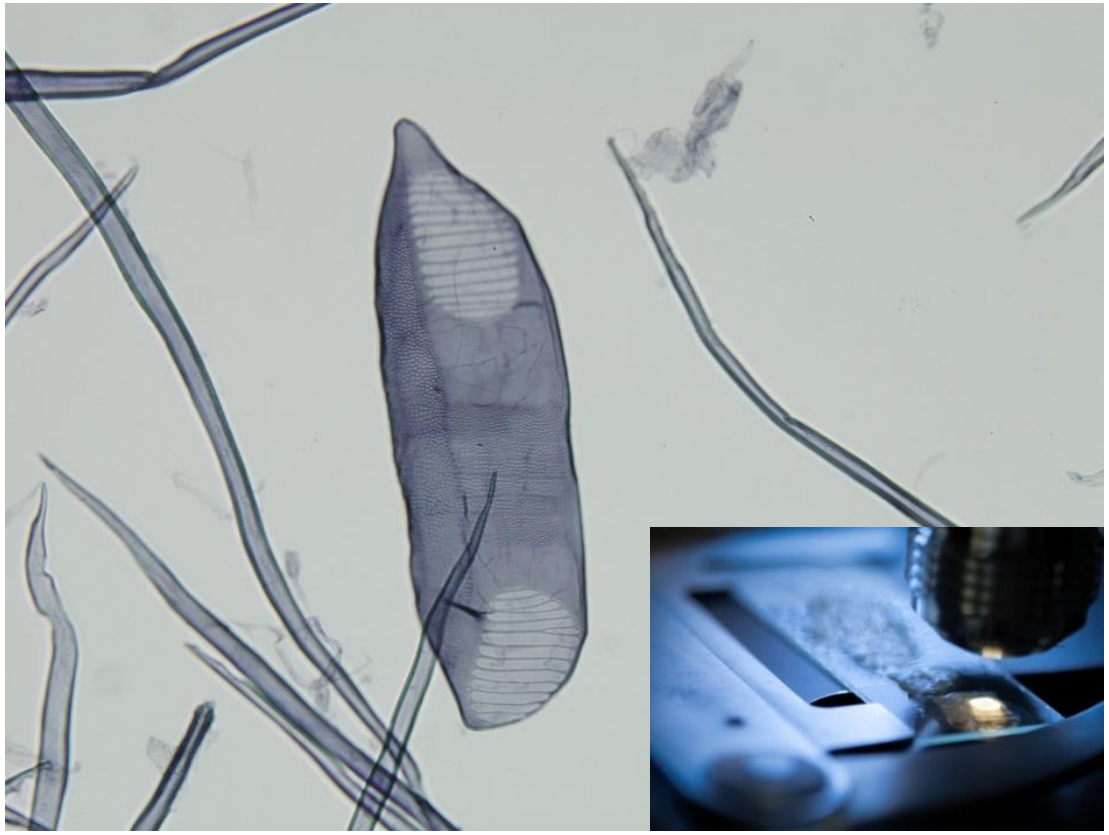
Results	botanical nomenclature / genera - family	Trade name / code EN 13 556
	Softwoods	
	Abies spp. / PINACEAE	**Tanne, Fir** / ABAL *et al.*
	Cunninghamia cf. *lanceolata* / CUPRESSACEAE	**Chinese fir** / not listed
	Picea cf. *abies* / PINACEAE	**Spruce** / PCAB *et al.*
	Pinus cf. *massoniana* / PINACEAE	**(Masson) pine** / not listed
mixture of:	**Hardwoods**	
	Alniphyllum spp. / STYRACACEAE	**Fortune's China bells** / not listed
4 softwoods und 9 hardwoods	*Casuarina* spp. / CASUARINACEAE	**She-oak** / not listed
	Cinnamomum spp. / LAURACEAE	**Medang** / not listed
	Eucalyptus spp. / MYRTACEAE	**Eucalypt** / EUGL, EUSL
	Ficus spp. / MORACEAE	**Ficus, fig** / not listed
	Magnolia spp. / MAGNOLIACEAE	**Amber** / not listed
	Liquidambar spp. / ALTINGIACEAE	**Magnolia** / not listed
	Quercus spp. / FAGACEAE	**Oak** / QCXE, QCXA
	Schima spp. / THEACEAE	**Schima, samak** / not listed

Wood identification in practise - fibre based materials

- Microscopic wood identification of individual cell elements in **fibre boards, pulp** and **paper**

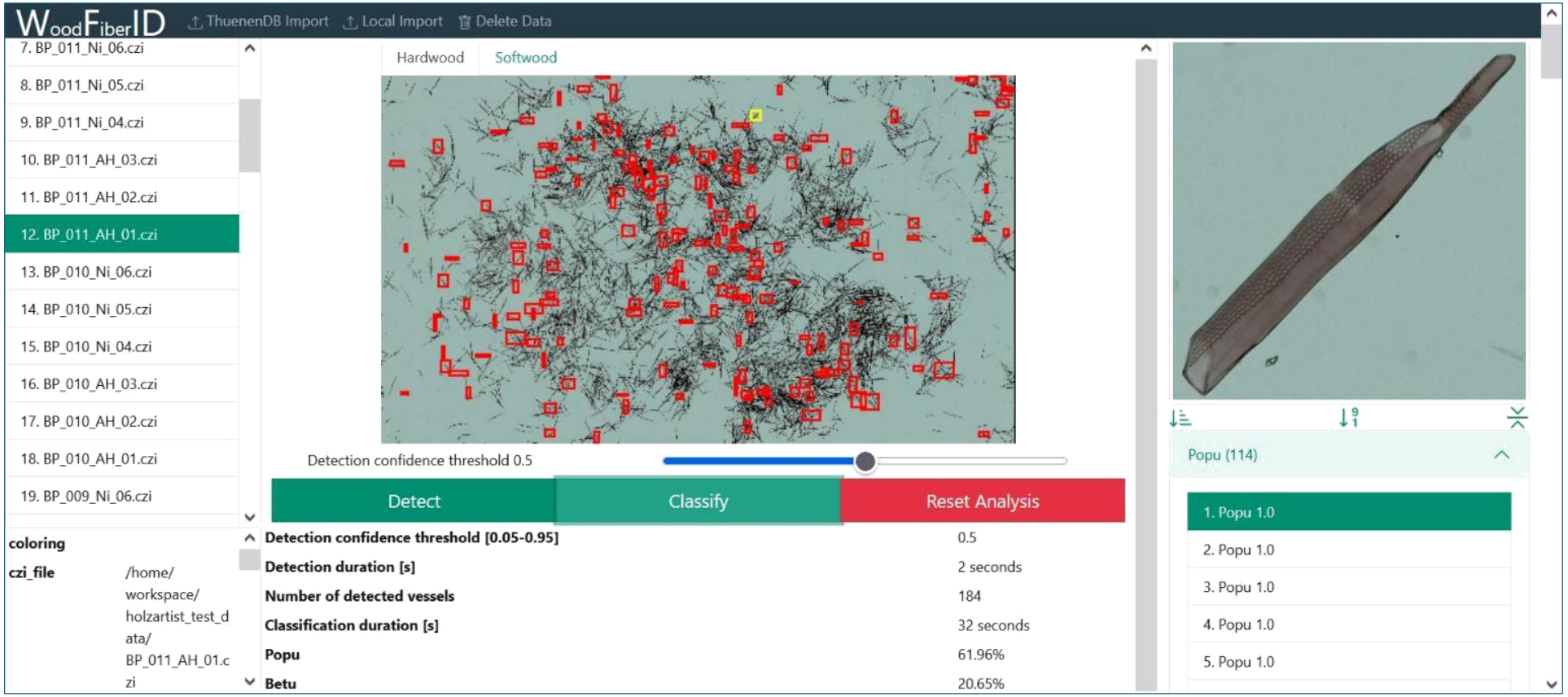


Individual vessel element of *Acacia* sp. in paper products



Individual vessel element of *Betula* sp. in MDF

Wood identification in practise - fibre based materials



WoodFiberID: Development of a user interface (AI) for automated hardwood species identification

Cooperation with the Fraunhofer Institute for Industrial Mathematics (ITWM), Germany

Photo ©: A. Olbrich

Anatomical identification of internationally traded timber and wood products

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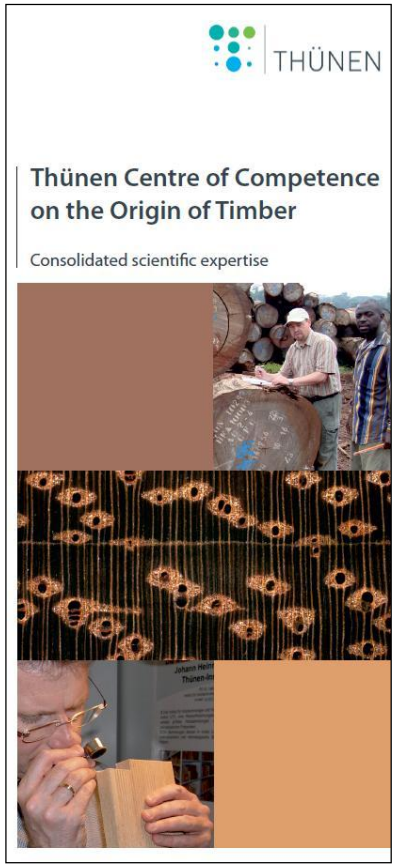

iawa

GTTN
Global Timber Tracking Network

Scientific exchange between the Thünen Institute of Wood Research and the Department of Wood and Paper Sciences (Prof. Dr. Jeong-Wook Seo) at Chungbuk National University and the National Institute of Forest Science of the Republic of Korea

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