



Universität Hamburg

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Johann Heinrich
von Thünen-Institut

Wood properties of *Cumarú (Dipteryx panamensis)* harvested in the Gatún dam lake, Panama



photo by Bittner



Federal Research Institute for Rural
Areas, Forestry and Fisheries
Institute of Wood Technology and
Wood Biology (HTB)



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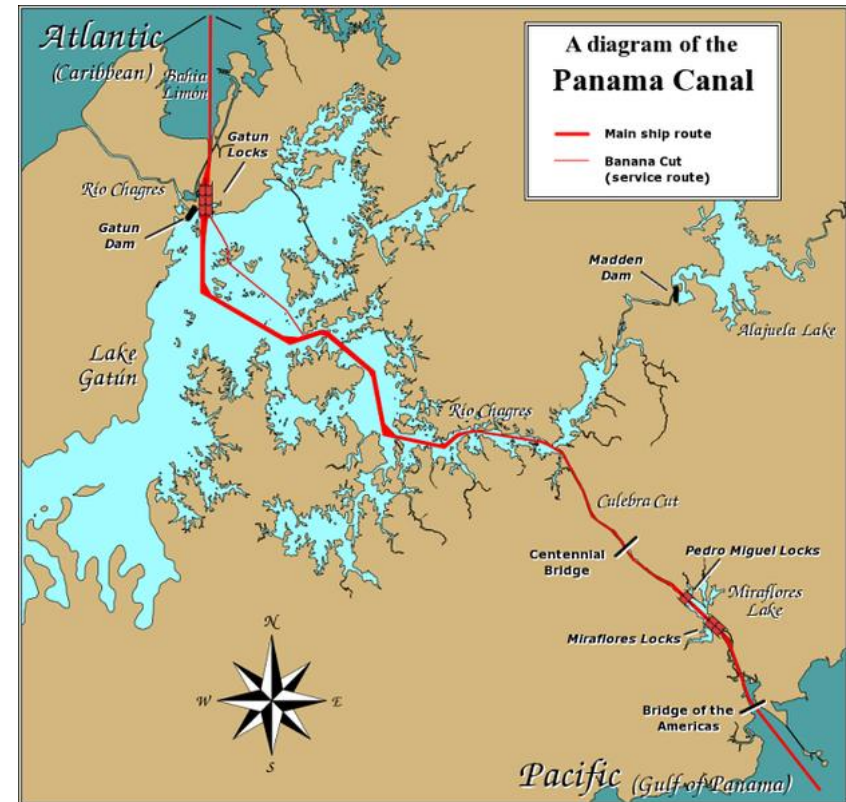
Contracted cooperation between the
vTI and the University of Hamburg in
the course of study „Wood science“.

Cooperations with numerous
research institutes in Germany and
abroad

Origin of the selected stem sections of Cumarú



www.weltkarte.com



www.lsg.musin.de



How to harvest wood under water



photos by Bittner



Advantages of harvesting wood in lakes

Ecological aspects:

- 1) No deforestation of tropical rain forest
- 2) No damage of close-by trees
- 3) Improvement of the water quality (otherwise germs decompose biomass → eutrophication, methane)



„(How) have the wood properties of Cumarú changed after having been under water for 100 years?“



Methods of wood testing

- Determination of natural durability class 1
(according to the standard DIN EN 350-2)
- Analysis of the heartwood extractives
- Determination of the strength properties
- Swelling and shrinking
- Artificial weathering

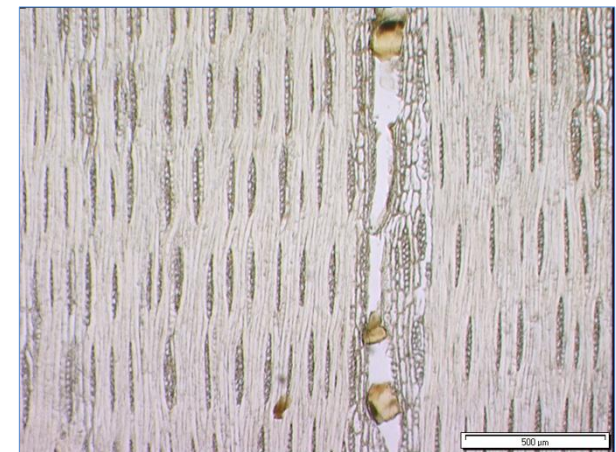
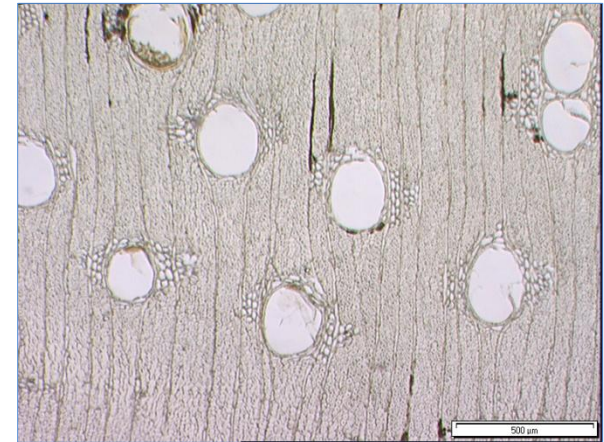
Macroscopic and microscopic structure of Cumarú

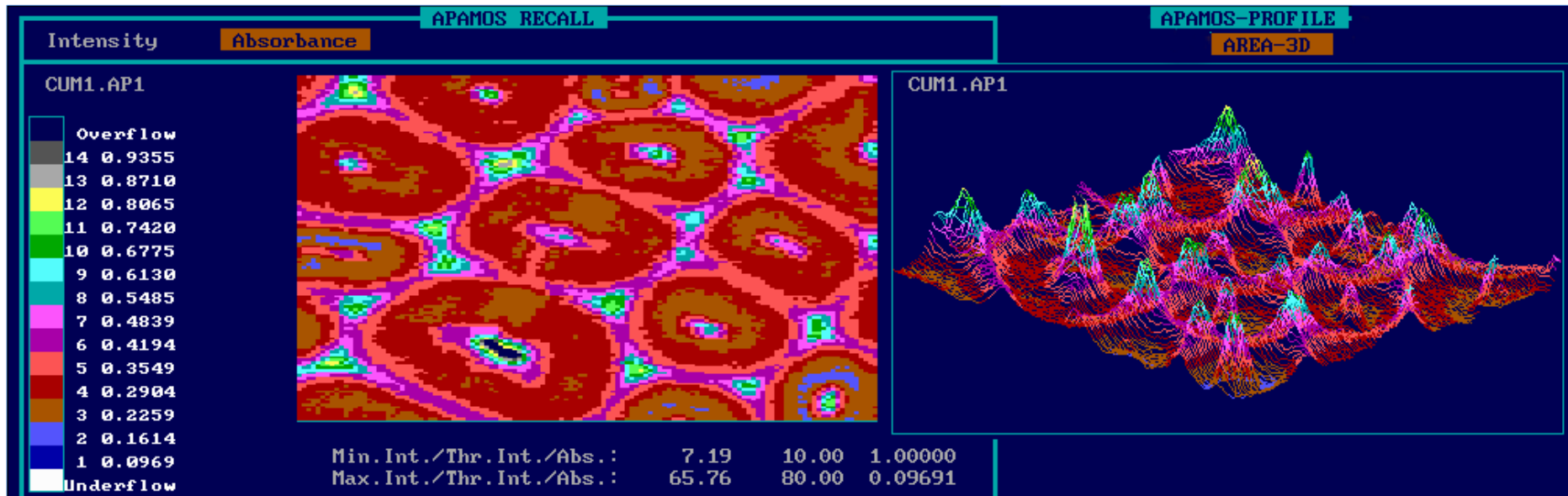


Cross section



Tangential section





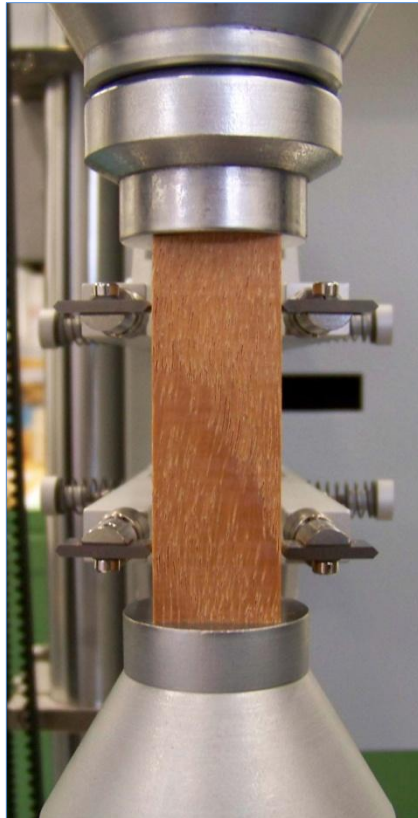
UV spectroscopic scanning profile of *Dipteryx* fibres (very thick cell walls) for the topochemical detection of lignin

Results of the mechanical tests

Compression resistance

Panama:
103 N/mm²

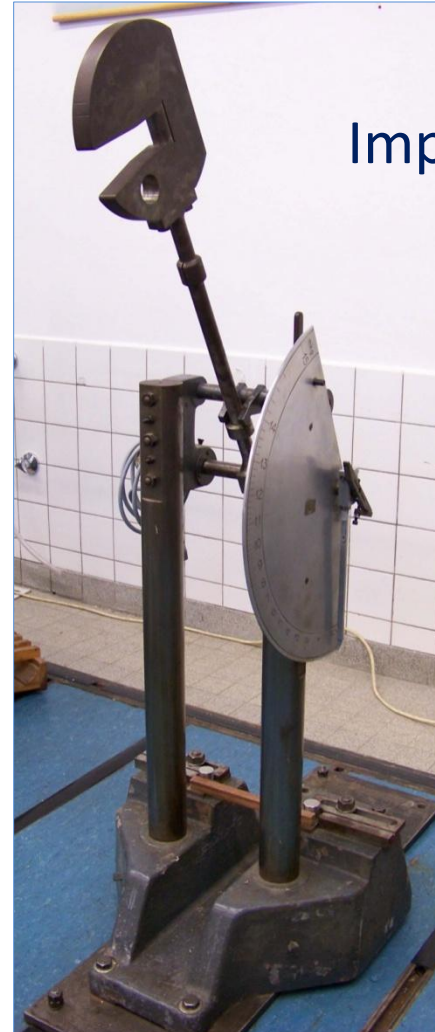
literature:
96 N/mm²



Impact strength

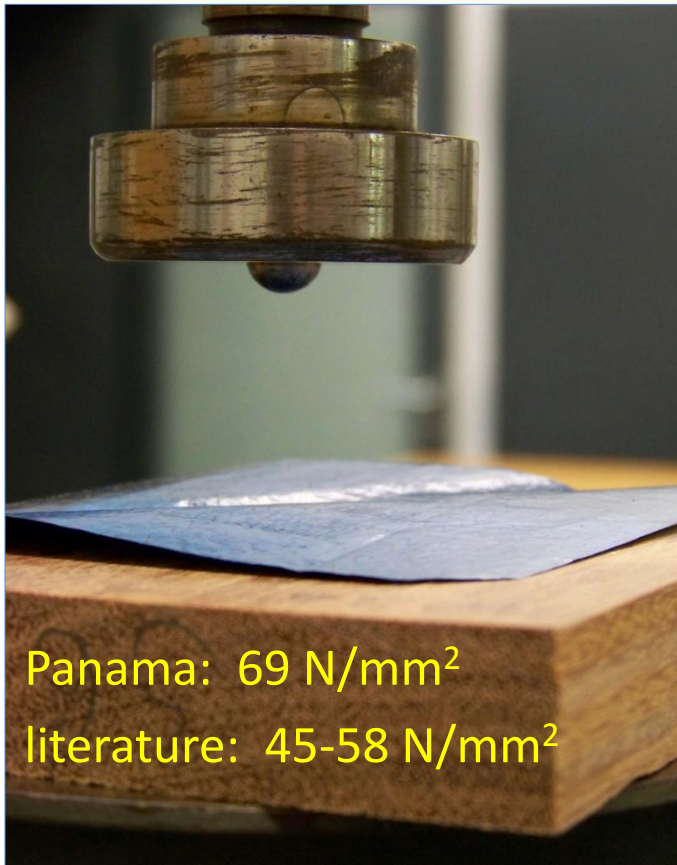
Panama:
108 kJ/m²

literature:
180 kJ/m²

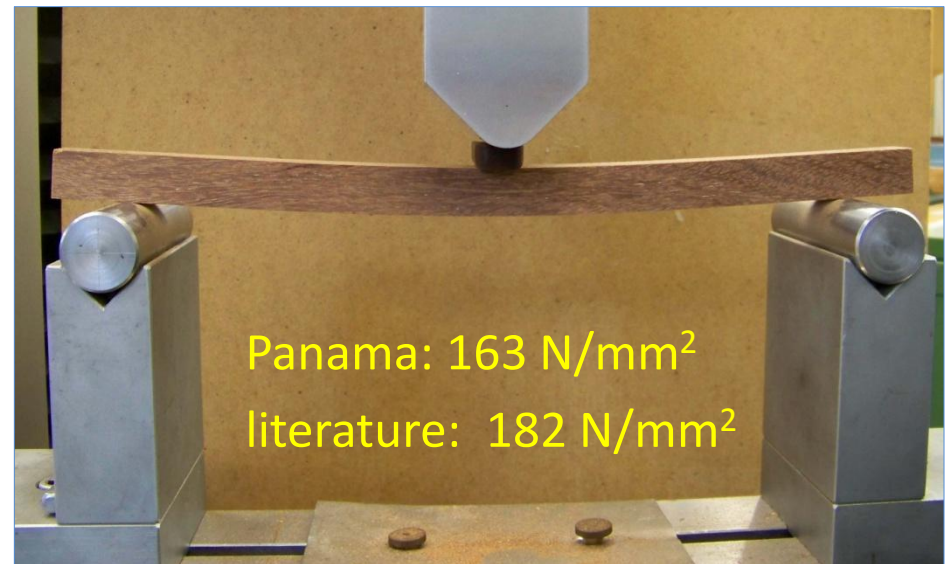


Results of the mechanical tests

Brinell hardness



Bending strength



Young's modulus (Panama): 19332 N/mm²
literature: 21500 N/mm²

Artificial weathering





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Result:

There are no negative influences on the wood properties of Cumarú due to water storage

Thank you for your attention!

Dziękuję bardzo!