The Queensland Government Xylaria

History and use

Gaz Hopewell
Forest Products Innovations, Salisbury
Xylaria

Xylaria are collections of wood samples

- *xylos* (Greek) wood
- *arium* (Latin) separate place

Singular form- *xylorium*

Scientist- *xylologist*
Xylaria

The key resource for wood identification, where wood has been separated from other botanical structures and there is a need to find out the provenance of an object.

Wooden sewer tunnel
Xylaria

- 1,000,000 samples in 164 xylaria globally (56 countries)

- 1931: the International Association of Wood Anatomists IAWA (journal published quarterly)
Xylaria

Often supported by botanical vouchers and to a lesser extent stained sections mounted on glass slides for microanalysis.
Xylaria

- **Largest**
  - National Herbarium of the Netherlands, Leiden
    - 105,000 samples
    - amalgamation of three collections: 1913, 1946, 1955
  
  - USDA Forest Products Lab Wisconsin
    - 103,000 samples
    - amalgamation of three collections: 1896, 1905, 1911
    - Ms Eloise Gerry, the first female scientist in the US Forest Service.

- **Oldest**
  - St Petersburg Botanical Museum
    - founded 1823, 14,000 samples and 1,000 slides
## Australia

- 12 xylaria (113,691 samples).
- 11% of the world’s xylaria specimens.

<table>
<thead>
<tr>
<th>Xylarium</th>
<th>Date of origin</th>
<th>Size</th>
</tr>
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<tbody>
<tr>
<td>CSIRO Forest Products Clayton Melbourne, Victoria</td>
<td>1929</td>
<td>47,720</td>
</tr>
<tr>
<td>NSW Herbarium, Royal Botanic Gardens, Sydney</td>
<td>1881</td>
<td>30,000</td>
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<tr>
<td>DAF, Forest Product Innovations, Salisbury, Qld.</td>
<td>1922</td>
<td>12,633</td>
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<td>ANU Fenner School, Canberra, ACT</td>
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<td>1930</td>
<td>708</td>
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<td>Forest Products Commission, Western Australia</td>
<td>1916</td>
<td>700</td>
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<tr>
<td>Northern Territory</td>
<td>1960</td>
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<tr>
<td>Powerhouse Museum, Sydney, NSW</td>
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Queensland

- two xylaria comprising 15,633 samples.
- 13.7% of Australia’s xylaria specimens.
- DAF holds 80% of the Qld specimens.

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Qld Herbarium xylaria

Australia’s oldest xylarium

• 1880

• 3,000 specimens

• Specialising in:
  • PNG (1,100 from the 1940s)
  • NQ (1,300 from Dr P Forster 1996)
DAF xylaria- four collections

DAF collection-
• Swain appointed as A/Director of Forests

• Using wood samples left on his desk by outgoing NW Jolly he devised a system of anatomically classifying wood-
  • Universal Wood Index (250 species)

• Established the Forest Products Laboratory, first of its kind in Australia
  • Suitability of timbers for specific purposes
  • Published *The timber and forest products of Qld* (200 species; 1928)

• Distinct forestry collection since 1922

• Dept. of Forestry, Qld Forest Service, QFRI, DPI, DPI&F, DEEDI, DAFF.

• DAF AgriScience Queensland, Horticulture & Forestry Science
DAF xylaria

12,633 specimens, 3rd largest in Australia; 9,061 Queensland samples

• Pettigrew Collection- remnants of the original sample boards provided to the Government Botanist FM Bailey from W. Pettigrew - Brisbane’s first commercial sawmiller (1853)- in 1899.
• W. Pettigrew read a paper ‘The habitat and peculiarities of some of our timbers’
• Before the Qld Philosophical Society in the Brisbane Museum on 2nd September 1877.
DAF xylaria

The FM Bailey collection two sets @ 382 samples
DAF xylaria

- CJJ Watson Collections
- representing trees that attain 30 cm diameter ~ ‘commercial’ timbers.
  - genus-species: 1,079
  - family-genus-species: 7,218
DAF xylaria

- Australian States’ xylaria (478 samples)
- International xylaria (3,158)
DAF xylaria

- Stained microscope slides (4,703 slides, 108 families)
- 1934 – 1977
- Mostly 1940-1960
- High quality sections
- Approx. 300 per drawer
Primary use- wood identification

Wood identification is a dying profession, yet offers a valuable tool to a wide range of scientific disciplines and fields of humanities.

- anthropology, archaeology
- palaeobotany
- art history (frames, antiques, sculptures)
- forensics
- quarantine, cargo integrity

Material for use of future generations of natural scientists, technologists, archaeologists and historians.
Wood identification


Last of its kind offered by a public institution

Several retired wood technologists offering consultancy service.

Anatomical features, density, burning splint, origin

Micro-
transmitted and reflective light
microtome sections rarely used

Macro-
razor knife and hand lens (10X)
key (cards, computer, online)

Xylarium reference samples and literature
Wood identification

- Freemasons Grand Lodge
- Georgetown Lodge
- Salvation Army Riverview Homestead
- Roma Street Station
- Whitty Building
- Wickham Terrace Tower Mill
- Petrie Barracks
Wood identification

*Cutty Sark*

*Maheno (Fraser Island 1935)*

Phantom galleons

*Cato (Wreck Reef 1803)*
Wood identification

Forensic evidence, client: Queensland Police Service, Ballistics Unit
Wood identification

Heritage listed timber bridge, client: Beaudesert Regional Council
Wood identification

Timber water pipe, client: Museum of Brisbane
Wood identification

Antique rifle, client: private collector
Wood identification

Imported furniture, client: Eureka Furniture
Wood identification

Timber-in-service failure, client: Workplace Health & Safety Qld
Wood identification

Sleeper audit, client; Queensland Railways
Wood identification

Decking failure, client: private homeowner

Retaining wall sleeper failure, client: private homeowner
Wood identification

Forensic evidence, client: Queensland Police Service, Ballistics Unit
Wood identification

Wooden sewer tunnel, client: Urban Utilities
Wood identification

Imported bi-fold door, client: Cargo Integrity Unit
Next job

The timbers of *Bankfoot House*

- First homestead in the Glasshouse Mountains
- 1866
- Roadside accommodation on the new road from Brisbane to the Gympie goldfields.
Thank you

*Mastixiodendron pachyclados*, garo-garo, PNG; failed decking sample