Collections Procedure

DAF Wood Reference Collection Procedure

Version: **[2.1]**

1 Procedure statement

The Department of Agriculture and Fisheries has managed an historical, reference collection of wood samples since the 19th century, when the first samples of Queensland's commercially important timbers were collected. Together with a unique assemblage of microscope slides of timber microstructure sections, it is currently the only publically-held collection used to identify wood. DAF strives to maintain a high standard in conserving, studying and using the collection and to make it available to the wood-science community.

2 Background and context

The DAF wood collection dates from the1880s when the colonial botanist, Frederick Manson Bailey began collecting Queensland timbers, which became the first, state-based scientific reference collections of wood. Maintained during successive identities of the Queensland Department of Forestry, the Queensland Forestry Research Institute and Department of Primary Industries, the DAF wood collection is the only Australian public collection that is still in use for identifying specimens of wood. The microscope slide collection was developed between 1934 and 1977. This is the first attempt to document the procedures required to conserve and manage the collections in a way that is concomitant with their cultural and resource value.

3 Scope

This procedure applies to all DAF business groups responsible, currently or in future, for any aspect of managing the wood and microscope slide collections.

4 Abbreviations, acronyms and definitions

ASQ. Agri-Science Queensland.

CITES. Convention of International Trade in Endangered Species.

CSIRO. Commonwealth Scientific and Industrial Research Organisation.

Curator. The DAF staff member responsible for managing the wood collection and activities associated with it.

DAF. Department of Agriculture and Fisheries, Queensland.

H&FS HR Officer. Horticulture and Forestry Science Human Resources Officer.

H&FS. Horticulture and Forestry Science.

IAWA. International Association of Wood Anatomists.

KE EMu®. Software for building a collection database by recording a pre-set of data pertaining to each, individual record.

RLS. Radial longitudinal section of a timber specimen.

The collection. Includes both the collections of wood specimens together with the collection of timber microstructure section microscope slides.

The timber microstructure section collection. Timber microstructure sections mounted on glass microscope slides. Each glass microscope slide holds three sections from the same timber: a transverse section (TS), a radial longitudinal section (RLS) and a tangential longitudinal section (TLS).

The wood reference collection. Includes both the collections of wood reference specimens together with the collection of timber micro-section slides.

TLS. Tangential longitudinal section of a timber specimen.

TS. Transverse section of a timber specimen.

The wood reference collection. The collection of wood reference specimens (small wood blocks).

Wood anatomist. Scientist trained in identifying plant species using the anatomical characteristics of their wood.

WoodID. Software key for identifying timber species.

Xylaria. Several wood collections.

Xylorium. A single wood collection, recognised by collection type, date, method or collector.

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5 Key principles

5.1 Significance of the collection

5.1.1. The importance of the collection.

The collection includes a substantial **wood specimen collection (xylorium)** and a **microscope slide collection of timber microstructure sections**. There are also several card-sorting keys, including a key to North Queensland rainforest woods, that are irreplaceable and of considerable heritage value. It is currently the only publically-held collection that is used to identify wood for a variety of commercial, legal and forensic purposes in Australia.

Supporting legislative requirements and international obligations

The collection is a reference library for wood identification services offered by the Queensland Government to national and state authorities as well as commercial businesses and private individuals.

The collection potentially supports requests for wood identification under the *Illegal logging Prohibition Act 2012; the Illegal Logging Prohibition Regulation 2012, (Department of Agriculture and Water Resources),* the Convention of International Trade in Endangered Species (CITES); and in relation to the federal *Biosecurity Act, 2015*, the Queensland *Biosecurity Act, 2014* and on behalf of the Queensland Police Service.

The collection is a recognised part of the International Xylaria collections and is listed as the Queensland Xylorium in the international Index Xylariorum 4.1.

It is a unique collection of mainly Queensland timbers, assembled by botanists collecting plant materials since the 1880s and never likely to be replaced.

5.1.2. Research, resource and education values of the collection.

The collection has considerable research and resource value.

The DAF wood collection dates from the colonial era, when Australian colonies sent wood samples to international exhibitions to promote their timber exports. In the 1880s, Queensland started the first, state-based scientific reference collections of wood and the Commonwealth developed two national collections in the 1920s. The DAF wood collection is the only Australian public collection that is still in use for identifying specimens of wood.

- It is used mainly as a reference library for wood identification. Named wood specimens are the main resource for identifying wood that is separated from other botanical structures. The wood specimen collection is supported by a microscope slide collection of timber microstructure sections.
- Wood identification is used in the disciplines of anthropology, archaeology, palaeobotany, ethnography and art history and wood anatomy. Wood identification and provenance are also needed by timber importers, furniture dealers/importers, furniture restorers, antique dealers, heritage conservators and planners, urban archaeologists, architects, timber recyclers, utilities companies (power poles), musical instrument makers, insurance investigators, workplace incident investigators, police (for forensic examination), and the federal Department of Agriculture (for quarantine and cargo integrity, and in compliance with the Convention of International Trade in Endangered Species, CITES).
- Wood identification is provided on a fee-for-service basis. The identification procedures use macro-anatomical features (from the xylorium reference collection) and micro-anatomical features (from the microscope slide collection) with relevant literature. A microscope system is used to examine section specimens, prepared with a standard microtome. Wood identification keys actively in use include Inside Wood (http://insidewood.lib.ncsu.edu/search) and WoodID (a customised, but old, software, developed by CSIRO). There are also several card-sorting keys, including a key to North Queensland rainforest woods. Recent wood identifications have been made for historical buildings, bridges, water pipe, ship wrecks, antique collectors, furniture importers, timber-in-service failure, and forensic evidence.

Wood collection description

The DAF collection is the 3rd largest collection in Australia, with 12,633 specimens representing 200 plant genera, including 9,061 Queensland tree specimens. There are 21 individual collections of small wood block specimens. It complements the Queensland Herbarium wood collection, managed by the Department of Environment and Heritage, and which houses 3,000 specimens.

Australian species:

1. Pettigrew Collection (1899): The Government Botanist F.M. Bailey collected named wood remnants from W. Pettigrew, Brisbane's first commercial sawmiller (382 large billets).
2. FM Bailey Collection (pre-1900): Two sets of 382 smaller, labelled specimens (taken from the billets).
3. CJJ Watson Collection (pre-1970): 8,297 commercial timber specimens representing commercial timbers i.e. trees that attain 30 cm in diameter. 1,079 have been labelled with genus and species names; 7, 218 have been labelled with family, genus and species names.
4. Timbers from states other than Queensland (pre-1970): 478 specimens from New South Wales (209), South Australia (57), Victoria (145), Western Australia (42) and Tasmania (25).

International species (pre-1970). 3,158 specimens:

5. New Zealand (95)
6. Papua New Guinea (259)
7. Pacific Islands: Fiji (67), Solomon Islands (31), Western Samoa (25)
8. Malaysia (73), Sarawak (40), Sabah (72)
9. Philippines (81)
10. Vietnam (77)
11. Japan (209)
12. Taiwan (103)
13. Indonesia (69)
14. India (175)

15. Bangladesh (79)
16. North America: United States of America (135), Canada (106)
17. Central America: Mexico (73)
18. South America: Colombia (52), French Guiana (55), Brazil (169), South America-mixed (164)
19. Africa: Uganda (137), former 'French Colonies' (89), 'Portuguese Africa' , including Mozambique (63), 'West Africa' (18), 'Central Africa' (47), South Africa (52)
20. Europe: France, Poland (47), Italy (71), Spain (68), Portugal (70), Austria (47), Germany (37), UK (25), Europe-mixed (53), Belgium-Israel (61)
21. Unknown (64)

There have been no acquisitions to the wood collection since 1970.

Microscope slide collection of timber microstructure sections description
The microscope slide collection includes 4,703 slides of stained timber microstructure sections from 108 plant families. It was developed between 1934 and 1977, most having been prepared between 1940 and 1960 to a very high standard by skilled technicians, CSIRO, Melbourne. Each glass slide holds three sections from the same timber: a transverse section (TS), a radial longitudinal section (RLS) and a tangential longitudinal section (TLS).

There have been no acquisitions to the slide collection since 1977.

5.1.3. Responsibilities for implementing the procedures.

The Horticulture and Forestry Science business group (ASQ, DAF) manages both the wood and glass slide collections.

5.2 Standards for maintaining the collection

5.2.1. Standards for managing and maintaining the collection.

The wood and slide collections are in active use and professionally conserved and staffed.

The wood specimens are grouped by collection on dedicated shelving in a secure building at DAF's Salisbury Research Facility in Brisbane, as are the dedicated filing drawers that contain the timber microstructure slides. The wood specimens retain their original labels and a digital record is still to be developed. Although many wood specimens appear to retain a herbarium reference number, they have not yet been matched to herbarium voucher specimens.

Pest management

The most serious potential pest risk to the wood collection is from termites. Regular inspections check that there are no signs of termites in the collection or collection storage areas. The card sorting keys and the paper labels on the microscope slides risk damage from silverfish (*Lepisma* spp*.)* and booklice (*Liposcelis* spp.) which feed on paper and glue. Damage from these pests would make the labels and cards unreadable. Both the key cards and the microscope slides are subject to regular, visual checks.

Fire management

Fire is a low level risk to the collection, which is stored in a building with no sources of potential ignition and standard fire prevention procedures apply to the site.

5.2.2. Processes for maintaining the quality of the collection.

The quality of the collections is not subject to significant, general deterioration and so they are maintained through regular, visual checks. Standard fire risk procedures apply to the areas where the collections are kept.

5.3 Standards for information recorded about the collection

5.3.1. Standards used for storing information about the collection.

Information **about** the collection is stored on the DAF network. It is being developed for publication, and will be available from the DAF Biological Collections portal, and include a description of the collection, key contacts, procedures for managing and using the collection.

5.3.2. Database used for recording the collection.

Resources will be sought to develop a **digital records catalogue** (Stage 1) for both the wood specimen and timber microstructure section collections. This will form the basis for a searchable, digital **database of records and images** (Stage2) hosted by the DAF Biological Collections database, which currently uses KE EMu® software.

5.3.3. Managing approvals to use the collection.

Approvals to access or use the collection

Currently, there are no facilities available for non-staff members to use the physical collection; there is no demand from the general public to exercise the high level skills required to work with wood anatomy. Written records and reports may be supplied to suitably-skilled researchers, and there is a wood identification service available for standard, government fees. Special arrangements may be made for visiting researchers and students to access the collection for research and training. Visits are arranged by contacting the Curator through the DAF Customer Service Centre by phone (13 25 23) or email (callweb@daf.qld.gov.au). The standard visitor procedures are followed, (including completing the Visitor Agreement) and approved by the General Manger Horticulture and Forestry Science, Agri-Science Queensland.

Loans procedure

Specimens of the wood blocks and the slide collection may be available to researchers and teaching professionals. These requests are rare and limited by strict conditions on how the loans are transported and managed. Requests are made in writing to the Curator through the DAF Customer Service Centre by phone (13 25 23) or email (callweb@daf.qld.gov.au). A successful loan proposal is approved by the Director, Forestry Science, Agri-Science Queensland.

Wood pieces on loan are packaged securely in bubble-wrap and boxed, together with relevant information and instructions in hard-copy; digital copies of the information are emailed to the recipient. The loan pieces may be posted, using registered post (fees may apply) but local (Brisbane) recipients are requested to collect the loans. The glass slide collection is not available for loans by post; recipients are requested to collect the slides, which are packaged in customised, metal slide holders, bubble-wrap and boxed, and with relevant documentation.

Loans are limited to 4 weeks. In some cases, written records and reports only will be supplied to researchers. Digital records are not currently available. Requests to lend specimens to other, non-research, external parties have not been received and are not approved at this stage.

5.3.4. Managing volunteers in the wood collections

Volunteers may be engaged periodically to clean, photograph or scan the wood blocks collection or manage digital records of these and the timber microstructure slides.

Volunteers are engaged using DAF standard processes for volunteers and work experience students. The volunteer agreements are approved by the General Manger, Horticulture and Forestry Science and the procedures and documents are available on the DAF intranet.

Volunteer recruitment is considered if:

- suitable work is identified
- a suitable supervisor is accessible and
- suitable facilities, including a work station, are available

If volunteer placement is requested, the responsible officer completes the required process:

- Obtains approval from the H&FS General Manger with the HR Officer
- Completes the Volunteer Deed documents with the volunteer
- Assigns a supervisor to the volunteer
- Conducts the appropriate, online induction and Code of Conduct awareness
- Conducts on-the-job training
- Compiles and secures all the documentation appropriately.

At the conclusion of the volunteer engagement period, the responsible officer will have developed a report of the work period, including achievements, issues that have arisen and other learnings from the experience. The responsible officer will also note the value of the volunteer's contribution and training as a basis for further volunteer proposals.

5.4 Standards for improving public access

5.4.1. Improving access to members of the research community.

Wood collection

Resources are being sought to develop the collection records catalogue and the database, with appropriate access:

Stage 1. Once completed, the **digital records catalogue** will be available to the research community on request. This will be advertised in the revised, published information about the collection. When available, documentation characterising the collection and the digital records will be made available on the open data portal in a machine-readable and open format.

Stage 2. Once developed, the **database of records and images** will be accessible from the DAF Biological Collections web portal.

Stage 3. Eventually, it is planned to make the collection records and images publically available through a suitable**, searchable, online facility**, such as the Atlas of Living Australia.

Timber microstructure section collection

Resources are being sought to scan the glass slides and create a digital record of images and metadata, available to the wood anatomy research community on request. Once developed, the **database of records and images** would be accessible from the DAF Biological Collections web

portal (http://collections.daff.qld.gov.au) and the international community of wood anatomists via the web resource: Inside Wood (http://insidewood.lib.ncsu.edu/search.

5.4.2. Improving access to digital files and associated records and documentation.

When available, high resolution digital images (and associated metadata) of the wood collection and the timber microstructure section slide collection will be accessed freely from the DAF Biological Collections web portal, and potentially, a searchable online facility, such as the Atlas of Living Australia.

5.4.3. Digital files describing the collections catalogue

Once developed, the digital catalogue and image database will be in machine-readable and open formats and accessible from the DAF Biological Collections website.

5.4.4. Collection information is presented to honour copyright, international or tribal agreements, confidentiality, privacy and other regulations.

The collection and the information about the collections is not bound by copyright, confidentiality or privacy agreements.

Digital images of the collection specimens are created and owned by DAF, whose copyright is licensed under a Creative Commons Attribution licence. In future, where information and records about the collection become incorporated into community websites, such as the Atlas of Living Australia, images not attributable to DAF may become associated with the DAF records. In this case, the assumption will be that that those images are accredited appropriately.

The genetic resources represented by the collection's specimens and slides are not associated with known commercialisation processes and as such the collection is maintained with due diligence with respect to the *Biodiscovery Act, 2014,* and the Nagoya Protocol for Biological Collections (effective 2004) which are concerned with how native, Biological Material is used 'for research and development'.

The Nagoya Protocol for Biological Collections refers to the way in which genetic resources may be accessed and how any benefits resulting from their use are shared between the users and the providers (the source communities). In relation to the protocol, 'utilisation', the wood collection is for non-commercial research and development. The collection has not been added to since the 1970s, so complies with requirements for the Nagoya Protocol.

If, in future, wood specimens or slides are transferred permanently to a new owner, a Material Transfer Agreement (MTA) will define the permitted uses of that material, and to ensure proven provenance in relation to any biodiscovery work in future.

5.5 Curation and use of the collection

5.5.1. Number of scientific staff associated with the collection.

There is one scientist associated with the collection, representing 0.05 FTE.

5.5.2. State, national and international linkages and users of the collection.

The collection curator shares written information about the collections with a network of Australian and international xylaria curators and wood anatomists. The collections are listed in the Index Xylariorum 4.1, which is maintained by the IAWA International Association of Wood Anatomists.

5.5.3. Application of modern techniques to support secondary uses of the collection.

A light microscope system is used currently to assist with wood identification requests.

5.5.4. Training in use of the collection and in expertise associated with the collection.

Two, on-site staff members are being trained to manage the collections**.**

5.5.5. Wood identification service.

The collection is currently used as a reference library for wood identification services offered by the Queensland Government to national and state authorities as well as commercial businesses and private individuals.

The Horticulture and Forestry Science business group (ASQ, DAF) oversees the wood identification service.

Application. Identification services are arranged by contacting the Curator through the DAF Customer Service Centre by phone (13 25 23) or email (callweb@daf.qld.gov.au). Clients apply in writing to the Curator, who advises the client about the current, Government fee-for-service structure and how to send in the specimen: Delivery address: Wood ID, Salisbury Research Facility, 50 Evans Road, Salisbury, Queensland 4107. Preferred specimen size: match box, sound wood (no decay).

Identification service. The wood anatomist uses the wood specimens and timber microstructure slides to complete the request. If a confident identification is made, the client is billed and issued with a wood identification certificate. The identification examination is numbered and added to the DAF wood identification register. The specimen is returned to the client or disposed of if no longer required.

5.6 Processes for budgeting for curation

5.6.1. Methods for assessing and projecting costs.

Costs associated managing the collection in its current form are projected through normal budget processes and include the revenue gained from the wood identification service. However, budgeting for developing, improving and preserving the collection will need additional funding sources.

Plans for dedicated housing for the collections in future will depend on accessing capital funding to improve the research infrastructure funding at Salisbury Research Facility. Projected costs include a dedicated space, with appropriate, secure storage conditions and laboratory space. The proposal will also include facilities that cater for visitors who wish to use the collection on-site.

Funding (from external and internal funding providers) will be sought to develop a comprehensive, digital record and database for the collection, and online access to information about the collection and the individual items.

5.6.2. Budgeting for the stewardship of scientific collections.

Staff time for collection stewardship is currently funded from the base budget of DAF, Horticulture & Forestry Science Branch.

Budgeting for any enhanced housing for the collection and facilities for science staff and visiting researchers, students and volunteers would need to be accessed through DAF Infrastructure Funding.

Budgeting for activities associated with the collection will be facilitated through DAF Horticulture & Forestry Science project processes for sourcing internal and external funding, including grant applications and capital expenditure proposals.

5.7 De-accessioning

5.7.1. Process for de-accessioning and related processes

There is no current plan to de-accession, transfer or dispose of the collection. However, an appropriate procedure will be developed if any of these processes are ever negotiated between DAF, Horticulture and Forestry Science and another party. This would include all related documentation and the approvals required by the General Manger, Horticulture and Forestry Science.

6 Responsibilities and accountabilities

The Horticulture and Forestry Science business group (ASQ, DAF) manages the wood and timber microstructure slide collections and the wood identification service.

7 Source documentation

Not applicable

8 Related and reference documents

Not applicable

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