

Alberta Biodiversity  
Monitoring Institute

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# Processing Tree Core Samples

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**Contact Information**

If you have questions or concerns about this publication, you can contact:

ABMI Information Centre  
CW-405 Biological Sciences Centre  
University of Alberta  
Edmonton, Alberta, Canada, T6G 2E9  
Phone: (780) 492-5531  
E-mail: [abmiinfo@ualberta.ca](mailto:abmiinfo@ualberta.ca)

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## Summary

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This report describes the methods presently being used by the Alberta Biodiversity Monitoring Institute (ABMI) to process tree cores collected at terrestrial sites. Crews collect samples in the field and these are forwarded to the Canadian Forest Service where analysis occurs. In their lab the cores are mounted, polished or treated otherwise if required. Annual rings are counted to provide an age estimate.

## Sample Transfer from Field Crews to Temporary Storage

- Field crews collect and preserve tree cores in well labeled plastic straws that are grouped by site with an elastic band or tape.
- To facilitate transport/prevent damage of the tree cores, the ABMI field technician places the samples in a well-ventilated PVC tube.
- Crews hand in tree cores and electronic shipping manifests to Field Supervisors at the end of each field shift.
- After completion of both Summer protocol shifts, the Monitoring Center (MC) groups the samples, removes them from the PVC tubes, visually inspects them, re-sorts them if necessary, and verifies that all samples are dry.
- A detailed log of the samples is electronically prepared by the Information Centre at the University Of Alberta, See Appendix 1.
- The data in the log includes information about the ABMI sites: site number, who collected the samples, the number of tree cores, and a detailed listing about each sample.
- The MC ensures that all tree cores from each ABMI site are present and cross referenced with the electronic log.
- If tree cores are moved to a different location for temporary storage, the new location and the date of movement are verified and noted by the MC.

## Tree Core Analysis

Prior to analysis, already air dried tree cores are stored in a well-ventilated moisture free environment.

### Moving Samples from the Storage Facility to the Canadian Forest Service Analyzing Laboratory

- To facilitate transport of the tree cores, the MC places the samples in a hard wall tote or similar style box to prevent damage.
- Tree cores are logged out of the storage location and into the analyzing laboratory. The MC records the new location and the date of transfer.
- Cores and the electronic spread-sheet are either delivered in person or by courier to the dendrologist at Natural Resources Canada/Canadian Forest Service (Catherine McNalty, Tree Ring Technician - Northern Forestry Centre, 5320-122 Street Northwest, Edmonton, Alberta, T6H 3S5).
- Personnel at the CFS analyzing lab re-confirm that all tree cores from each ABMI site have been received.

### CFS Analysis of Tree Cores

These analyses are designed to determine age of the forest stand for each ABMI site. Cores are analyzed by Canadian Forest Service to verify each individual tree age and determine growth rate of trees for the National Forest Inventory (NFI). The growth rate information is supplementary to the ABMI, and is maintained solely by NFI

#### *Laboratory Equipment:*

*Mounting boards for cores (5/8" hardwood)*

*Sand paper (various grit sizes, up to 420) if required*

*Sander*

*Carpenter's glue*

*Mineral oil or other compounds if required*

*Computer, Scanner, and analysis software*

- Cores are glued onto mounting boards and labeled with unique identification number, collection date, ABMI site number, quadrant, tree species, and tree type.
- After the cores have dried on the mounting boards, additional analysis preparation may be necessary that includes sanding.
- Using a computer and specialized software, trees are aged by counting the number of rings present excluding bark.

- Cookies that have been collected from small trees are not mounted, but are labeled, sanded when required, and counted similar to the cores.
- The analyzing laboratory coordinator ensures the tree ages for all cores are entered into the electronic spreadsheet (see Appendix 1 for a copy of the spreadsheet format).
- The electronic spreadsheet is emailed to the ABMI Monitoring Center. All values obtained by the laboratory are given a coefficient that determines how confident they are in the tree age estimate.
- Monitoring center staff check the spreadsheet to ensure all the required information has been collected, and then email the analyzing lab coordinator to confirm receipt of the information.
- After the analyzing lab coordinator has heard back from the Monitoring Center he/she stores the completed tree cores/cookies at the Canadian Forest Service.
- In addition, the lab coordinator creates an electronic spreadsheet that amalgamates ABMI tree age data with DBH of similar-height trees from tree data collected at the ABMI sites.

## Literature

- Canadian Forest Inventory Committee. 2002. National Forest Inventory – NFI Ground Sampling Guidelines Version 1.1. Canadian Forest Inventory Committee. Canada. 137 pp.
- National Forest Inventory Staff. 2004. Canada's National Forest Inventory Ground Sampling Guidelines Version 4.1. Canadian Forest Service. Northern Forest Center, Edmonton, Alberta. 97 pp.

### Appendix 1. Data Sheets for Tree Core Presence and Analysis

ABMI Site	Field Date	Crew Member	Plot	Tree Core Type	Unique Specimen Number (Post-Field)	ABMI Species Code	Tree Height (metres)	DBH (cm)	Significant Tree Damage	Age	Identification Date (Post Field)	Identification Analyst (Post Field)	Comments