1991
Annual Report

Faculty of Forestry
University of British Columbia
Vancouver, B.C.
Canada

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ANNUAL REPORT

Faculty of Forestry

University of British Columbia

April 1, 1991- March 31, 1992

Editor: Susan B. Watts, Ph.D., R.P.F.
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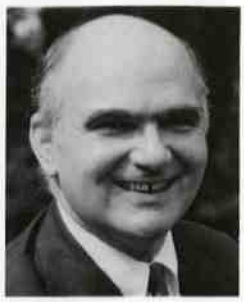
DEAN'S MESSAGE



THE Faculty of Forestry has made tremendous progress during the last several years. Student enrolments are up, we have implemented new undergraduate and graduate degree programs, the faculty have greatly increased their research activities, and we have launched major new activities in international forestry, continuing studies and applied conservation biology. With our quarterly newsletter **Branch Lines** and this annual report — our first — we are providing you with a better understanding of the Faculty.

This report covers the Faculty's activities for the period April 1, 1991 through March 31, 1992. Individual sections for each of the Departments (Forest Sciences, Harvesting and Wood Science, and Forest Resources Management) introduce their faculty and staff, and describe departmental plans.

The Faculty is among the most research-intensive academic forestry units in North America. A section on research gives the title, investigator and supporting agency for all externally sponsored research projects currently underway within the Faculty. These now total about $5.6 million, or close to $140,000/full-time equivalent faculty member, second only to the Faculty of Medicine at UBC. To help sustain and manage this important activity, I recently appointed Prof. John McLean as an Associate Dean of the Faculty, responsible for graduate studies and research.

The research enterprise results in a large number of publications. We list these alphabetically by first author. Please write to the UBC author directly if you would like to receive a copy of any of these.

Clark S. Binkley
Dean
Faculty of Forestry

The Faculty includes four units that support our teaching and research activities: the University Research Forests, International Programs, the Forestry Continuing Studies Network, and the Centre for Applied Conservation Biology.

- The Malcolm Knapp Research Forest (on the Coast) and the Alex Fraser Research Forest (in the Interior) provide locations for field studies, research and the Faculty's two field schools required in the undergraduate forestry program.
- The international forestry program works from our strengths in education, and seeks to build collaborative relationships with other institutions similar to the Faculty. Because of the importance of the Pacific Rim to British Columbia, our efforts centre on countries of this region — Japan, Taiwan, the People's Republic of China, the Russian Far East, Korea, South East Asia, Australia, New Zealand, and countries of Pacific Latin America. Over the next several years, we plan to build a more significant program of training, research and collaboration in this region.
- The Forestry Continuing Studies Network works through the regional colleges in B.C. to bring high-quality continuing education programs to forestry professionals and technicians, and the public more broadly. Forestry Canada and the B.C. Forest Service provide the majority of the support for this program.
- The Centre for Applied Conservation Biology brings the theories of conservation biology to bear on problems of land management in British Columbia and other locations sharing similar ecosystems. In addition to its research mission, the Centre has a major program designed to inform the public, the media and politicians about the scientific aspects of conservation.

The report closes with a discussion of our academic programs and students. Both graduate and undergraduate enrolments have seen trend-line increases during the past five years, and total student enrolment (computed on a weighted full-time equivalent basis) is approaching the peak levels of the early 1980's. We recently introduced a new B.Sc. program in Natural Resources Conservation, and substantially revised our B.S.F. program. For the first time in the Faculty's history, we now have a quota on first-year enrolments.

I am personally interested in your thoughts on our programs and plans, and especially on this annual report, our first. You can reach me by telephone at (604) 822-2467, fax at (604) 822-8645 or E-Mail at clark_binkley@mtsg.ubc.ca. I look forward to hearing from you.

OFFICE OF THE DEAN

FACULTY AND STAFF

KOZAK, Antal (Tony) — B.S.F. (Sopron), M.F., Ph.D. (Brit. Col.), D.Sc. *Honoris causa* (Sopron)
Associate Dean, Undergraduate Programs and Academic Affairs
Responsible for administering academic programs including curriculum and calendar changes, admissions, transfers, advancements and for disciplining undergraduate students.
Phone: (604) 822-3545
E-Mail: tony_kozak@mtsg.ubc.ca

McLEAN, John A. — B.Sc., M.Sc. (Auckland), Ph.D. (Simon Fraser), F.R.E.S.
Associate Dean, Graduate Studies and Research (July 1, 1992)
Responsible for administering all aspects of Forestry graduate and post-baccalaureate programs and for promoting externally sponsored research activities.
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E-Mail: john_mclean@mtsg.ubc.ca

WATTS, Susan B. — B.Sc. (N. Wales), M.F., Ph.D. (Brit. Col.), R.P.F.
Coordinator of Special Projects
Responsible for coordinating project proposal development, for assisting in promoting research and for producing Faculty Newsletters and Annual Reports.
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E-Mail: sue_watts@mtsg.ubc.ca

GOSS, Donna E. — B.S.F. (Brit. Col.)
Coordinator of Student Services
Responsible for advising prospective and incoming undergraduate students, for school and college liaison, for undergraduate admissions and for job placement.
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E-Mail: donna_goss@mtsg.ubc.ca

AKAI, Heather — Secretary to the Dean
ALIVOJVODIC, Barbara — Administrative Assistant
COLE, Natalie — Graduate Programs Secretary
LAI, Charles — Clerk
LIEW, Lily — Undergraduate Programs Secretary, B.A. (Brit. Col.)
QUAY, Patsy — Word Processing Coordinator
TURNER, Ron — Technician, B.Sc. (Brit. Col.)

FOREST SCIENCES DEPARTMENT

Denis Lavender
Head

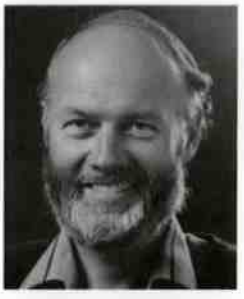
Fred Bunnell

Philip Burton

Edith Camm

John Carlson

Chris Chanway



Michael Feller

Robert Guy

J.P.(Hamish) Kimmins

Karel Klinka

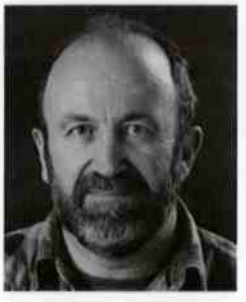
John McLean

Tom Northcote

Tom Sullivan

Bart van der Kamp

Gordon Weetman



John Worrall

FOREST SCIENCES DEPARTMENT

FACULTY AND STAFF

LAVENDER, Denis P.
Professor and Head
B.Sc. (1949) Washington, M.Sc. (1958), Ph.D. (1962) Oregon State
• *Coniferous Seedling Physiology.*

BUNNELL, Fred L.
Professor and Director, Centre for Applied Conservation Biology
B.Sc. (Hon.) (1965) Brit. Col., Ph.D. (1973) Berkeley
• *Wildlife Population Dynamics, Influences of Forestry Practices on Wildlife.*

BURTON, Philip J. — Assistant Professor
B.Sc. (1978) Saskatchewan, M.Sc. (1980) Hawaii, Ph.D. (1988) Illinois
• *Regeneration Ecology.*

CAMM, Edith L. — Assistant Professor
(Forest Sciences, Botany)
B.Sc. (Hon.) (1966) Queen's, M.Sc. (1968), Ph.D. (1973) Brit. Col.
• *Biochemistry.*

CARLSON, John — Assistant Professor
(Forest Sciences, Biotechnology Laboratory)
B.Sc. (1974) Pittsburgh, M.Sc. (1978), Ph.D. (1983) Illinois
• *Molecular Biology.*

CHANWAY, Christopher P.
Assistant Professor
B.Sc. (1978) Winnipeg, B.S. Ag. (1980) Manitoba, M.Sc. (1983), Ph.D. (1987) Brit. Col.
• *Ecophysiology.*

DEMARCHI, Michael W.
Sessional Lecturer
B.Sc. (1988) Victoria, M.Sc. (1992) Brit. Col.
• *Forest Wildlife.*

FELLER, Michael C.
Associate Professor
B.Sc. (1968), M.Sc. (1969) Melbourne, Ph.D. (1975) Brit. Col.
• *Fire Science/Water Quality.*

GUY, Robert D. — Assistant Professor
B.Sc. (1977), Ph.D. (1984), Calgary
• *Plant Physiology.*

KIMMINS, J.P. (Hamish) — Professor
B.Sc. (1964) N. Wales, M.Sc. (1966) Berkeley, M. Phil. (1968), Ph.D. (1970) Yale
• *Forest Ecology, Nutrient Cycling.*

KLINKA, Karel — Professor and V.J. Krajina Chair in Silvics and Silviculture
For. Eng. (1960) Prague, Ph.D. (1976) Brit. Col., R.P.F.
• *Forest Ecology, Silvics.*

McLEAN, John A. — Professor
B.Sc. (1965), M.Sc. (1968) Auckland, Ph.D. (1976) Simon Fraser, F.R.E.S.
• *Forest Entomology.*

NORTHCOTE, Thomas G. — Professor
(Forest Sciences, Zoology, Westwater)
B.A. (1950), M.A. (1952), Ph.D., (1960) Brit. Col.
• *Lake and Stream Ecology, Effect of Forestry Practices on Fish Habitat.*

SULLIVAN, Thomas P.
Associate Professor
B.Sc. (Hon.) (1973), M.Sc. (1975), Ph.D. (1978) Brit. Col.
• *Forest Wildlife.*

VAN DER KAMP, Bart J.
Associate Professor
B.S.F. (1964) Brit. Col., Ph.D. (1967) Aberdeen
• *Forest Pathology.*

WEETMAN, Gordon F. — Professor
B.Sc.F. (1955) Toronto, M.F. (1958), Ph.D. (1962) Yale, R.P.F., F. Eng.
• *Silviculture.*

WORRALL, John G.
Associate Professor
B.Sc. (1959) Durham, B.S.F. (1963) Brit. Col., M.F. (1964), M. Phil. (1967), Ph.D. (1968) Yale
• *Tree Physiology, Tree Growth Mechanisms and Climatic Influence.*

FACULTY AND STAFF

Forest Sciences Department

Research Associates

CARTER, Reid (Hon.)
B.Sc., M.Sc. (Brit. Col.)
• *Forest Ecology and Management.*

GALINDO, Carlos — B.Sc. (U. Autonoma Metropolitana), M.Sc., Ph.D. (Brit. Col.)
• *Animal Ecology.*

ORBAY, Laszlo — Wood Ind. Engr. (Sopron), Engr. Eco. (Budapest), Ph.D. (Brit. Col.)
• *Forest Entomology.*

PRESCOTT, Cindy
B.Sc. (Brock), M.Sc., Ph.D. (Calgary)
• *Forest Nutrition.*

THOMPSON, William A.
B.A. (Pomona Coll.), Ph.D. (Brit. Col.)
• *Silviculture.*

WATTS, Susan B.
B.Sc. (N. Wales), M.F., Ph.D. (Brit. Col.)

Post-doctoral Fellows

DANG, Qing-Lai — B.Ag. (Ji Lin For. Coll.), M.Sc., Ph.D. (Alberta)
• *Ecophysiology.*

HONG, Yong-Pyo — B.Sc., M.Sc. (Korea), Ph.D. (Oregon State)
• *Molecular Forest Genetics.*

QIAN, Hong — B.Sc. (Anhui Ag. Coll.), M.Sc. (NW For. Coll.), Ph.D. (Chinese Acad. of Sci.)
• *Forest Ecology.*

SILIM, Salim N. — B.Sc. (Makerene), M.Sc. (New Brunswick), Ph.D. (Brit. Col.)
• *Tree Physiology.*

Adjunct Professors

ALFARO, Rene I. — B.S. (U. Chile), M.S., Ph.D. (Simon Fraser).

AXELROOD, Paige E. — B.Sc., M.Sc. (Oregon State), Ph.D. (California).

BARKER, John E. — B.Sc. (Brit. Col.), M.Sc., Ph.D. (California).

DOST, Frank — B.Sc. (Washington), M.Sc. (Kansas), D.V.M. (Washington).

EDWARDS, David George
B.Sc. (Aberdeen), M.F., Ph.D. (Washington).

EL-KASSABY, Yousry A. — B.Sc. (Alexandria), M.Sc. (Tanta), Ph.D. (Brit. Col.).

GROSSNICKLE, Steven C. — B.Sc. (S. Illinois), M.Sc., Ph.D. (Colorado. State).

HAWKINS, Christopher D.B.
B.Sc.(Hon.), M.Sc (Simon Fraser), Ph.D. (Aust. Nat. Univ.).

KLENNER, Walt — B.Sc., M.Sc. (Manchester), Ph.D. (Brit. Col.).

LEADEM, Carole L. — B.Sc. (California), Ph.D. (Brit. Col.).

LESTER, Donald T. — B.Sc. (Maine), M.F., Ph.D. (Yale).

LOUSIER, J. Daniel — B.Sc. (Notre Dame (B.C.)), M.Sc., Ph.D. (Calgary).

McLELLAN, Bruce N. — B.Sc., M.Sc., Ph.D. (Brit. Col.).

MILLER, Gordon E. — B.Sc., M.Sc., M.P.M., Ph.D. (Simon Fraser).

MORRISON, Duncan J. — B.S.F., M.Sc. (Brit. Col.), Ph.D. (Cambridge).

PRESTON, Caroline M. — B.Sc. (McMaster), M.A. (Carlton), Ph.D. (Brit. Col.).

ROCHELLE, James A. — B.Sc., M.Sc. (Washington State), Ph.D. (Brit. Col.).

SAFRANYIK, Laszlo — B.Sc., M.Sc., Ph.D. (Brit. Col.).

SAVARD, Jean-Pierre — B.Sc. (Laval), M.Sc. (Toronto), Ph.D. (Brit. Col.).

SEIP, Dale R. — B.Sc. (West Ont.), M.Sc. (Simon Fraser), Ph.D. (Brit. Col.).

SMITH, Nicholas J. — B.Sc. (N. Wales), M.Sc. (Brit. Col.), Ph.D. (Oregon State).

SUTTON, Benjamin S. — B.Sc. (Reading), Ph.D. (Brit. Col.).

VAN DEN DRIESSCHE, Robert J. — B.Sc. (N. Wales), M.Sc. (Toronto), Ph.D. (Wales).

VAN SICKLE, G. Allan — B.Sc., M.Sc. (Brit. Col.), Ph.D. (Pennsylvania State), R.P.F.

Staff

CHANG, Joseph — Res. Assist./Tech.
B.A. (Washington), M.B.A. (Brit. Col.).

DAUST, Dave — Res. Assist./Tech.
B.S.F. (Brit. Col).

DWORAKOWSKA, Irena
Res. Assist./Tech.
M.Sc., Ph.D. (Warsaw Univ.).

DYCK, Wanda — Secretary

GUO, Xiling — Res. Assist./Tech.
B.Sc. (NE For. Univ.).

JOHNSON, Jacklyn — Office Manager
B.S.Ed. (Minn.).

KACHUR, Linda — Secretary

KIDD, Joanne — Res. Assist./Tech.

KREMSATER, Laurie — Res. Assist./Tech.
B.S.F., M.Sc. (Brit. Col.).

KWAN, Ying — Programmer Analyst
B.Sc. (Taiwan), M.A. (Math), M.Sc. (Brit. Col.).

LAM, Desmond — Research Scientist
B.Sc. (Brit. Col.).

LEE, Eric — Departmental Clerk

LOTZ, Sarah — Res. Assist./Tech.
B.Sc. (Simon Fraser).

MERKENS, Markus — Res. Assist./Tech.
B.Sc., M.P.M. (Simon Fraser).

O'SHEA-STONE, Maureen
Res. Assist./Tech.
B.A., M.A. (Colorado).

OLANSKI, Penny — Res. Assist./Tech.

SETO, Carrie — Departmental Secretary

SHAO, Qingling — Laboratory Assistant

SPROUT, Sharon — Res. Assist./Tech.
B.Sc. (Brit. Col.), M.Sc. (Saskatchewan).

SREJIC, Zika — Res. Assist./Tech.
B.Sc. (Univ. of Belgrade).

STALEY, Candis — Res. Assist./Tech.

THOMAS, Keith — Res. Assist./Tech.
B.Sc. (Brit. Col.).

TSZE, Min — Res. Assist./Tech.

New Faculty Appointments

NAMKOONG, Gene
B.Sc. (1956), M.Sc. (1958) SUNY,
Ph.D. (1963) N. Carolina State Univ.

For the past 34 years Dr. Namkoong has been employed by the USDA Forest Service and since 1972 he has held the position of Pioneer Research Scientist on Population Genetics in Raleigh, North Carolina.

He will join the Department as Professor and Head in the fall of 1992.

Retirements

LAVENDER, Denis P.

After more than seven years as Head of the Forest Sciences Department.

Dr. Lavender's research has encompassed many aspects of the biology of north temperate conifers, including studies on germination, mineral nutrition, growth regulators, shoot dormancy, stress resistance, photoperiodic responses and development of cold hardiness. His findings have resulted in improvements in nursery and silvicultural practice. In this context, we particularly note his involvement in the formation of the Silvicultural Institute of British Columbia.

Dr. Lavender is returning to Corvalis, Oregon, where he intends to continue some work with the College of Forestry at Oregon State University.

NORTHCOTE, Thomas G.

After more than thirty years of service to UBC where his principal research interest was in the ecology of fish species in coastal streams and lakes. Dr. Northcote's research also involved significant contributions to knowledge of fish habitat in Europe, New Zealand, and in Peru, where he led a team of scientists investigating the effects of man's activities on the water quality and fish populations of Lake Titicaca.

ACHIEVEMENTS IN 1991-92

- We have broadened the undergraduate curriculum to increase its attractiveness to science students.
- Department members helped revise campus plant physiology offerings so that an undergraduate course is now cross-listed in Botany, Plant Science and Forest Sciences.
- The initial stages of the development of a Centre for Applied Conservation Biology have been successfully completed.

PLANS FOR 1992-93

- The Faculty will be asked to approve a final proposal for block instruction in silviculture.
- Further departmental programs depend upon policies developed by the incoming department head, Dr. Gene Namkoong.

HARVESTING AND WOOD SCIENCE DEPARTMENT

Paul Steiner
Acting Head

Stavros Avramidis

David Barrett

Colette Breuil

David Cohen

Simon Ellis

Jonathan Fannin

Andrew Howard

Joseph McNeel

Thomas Maness

John Nelson

Laszlo Paszner

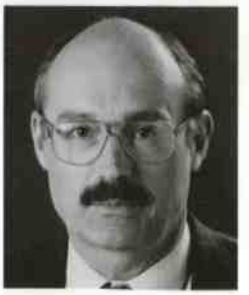
Helmut Prion

John Ruddick

Jack Saddler

S.E. (Tim) Salcudean

David Tait



Glen Young

STEINER, Paul R. — Associate Professor and Acting Department Head
B.Sc. (1966), M.Sc. (1969), Ph.D. (1971) Brit. Col.
• *Wood Adhesives and Composite Products.*

ANGUS, Stirling — Sessional Lecturer
B.Sc.(For) (1982) Brit. Col.
• *Forest Harvesting Systems.*

AVRAMIDIS, Stavros
Assistant Professor
B(For) (1981) Thessaloniki, M.S. (1983), Ph.D. (1986) SUNY, Syracuse
• *Wood Physics/Drying.*

BARRETT, J. David — Professor
B.A.Sc. (1965) Brit. Col., Ph.D.(1973) Berkeley
• *Wood Engineering.*

BREUIL, Colette
NSERC/Industrial Associate Professor
B.Sc. (1971) Lyon, M.Sc. (1974) Ottawa, Ph.D. (1977) Lyon
• *Forest Products Biotechnology.*

COHEN, David H. — Assistant Professor
Dipl. For. Tech. (1976) Selkirk, B.Sc. (1986) Idaho, Ph.D. (1989) Virginia Tech.
• *Forest Products Marketing/Management.*

ELLIS, Simon — Assistant Professor
B.Sc.(Hons.) (1983) N. Wales, M.Sc. (1986), Ph.D. (1989) Brit. Col.
• *Wood Anatomy and Composites.*

FANNIN, R. Jonathan
Assistant Professor *(Harvesting and Wood Science, Civil Engineering)*
B.Sc.(Hon.) (1983) Belfast, Ph.D. (1987) Oxford
• *Forest Harvesting Transport.*

HOWARD, Andrew F.
Associate Professor
B.Sc. (1976) Massachusetts, M.F.Sc. (1979), M.Sc. (1981), M.Phil. (1981), Ph.D. (1985) Yale
• *Forest Engineering Economics and Sawmill Operations Analyses.*

McNEEL, Joseph F. — Assistant Professor
B.S.F. (1979) West Virginia, M.Sc. (1980), Ph.D. (1984) Virginia Tech.
• *Forest Harvesting Systems.*

MANESS, Thomas — Assistant Professor
B.S.F. (1979) West Virginia, M.Sc. (1981) Virginia Tech., Ph.D. (1989) Washington
• *Wood Products Processing.*

NELSON, John D. — Assistant Professor
B.S.F. (1980), M.B.A. (1982) Brit. Col., Ph.D. (1988) Oregon State
• *Forest Engineering.*

PASZNER, Laszlo — Professor
B.S.F. (1958) Sopron , M.F. (1963), Ph.D. (1966) Brit. Col.
• *Chemical Utilization of Wood, Reconstituted Wood Products.*

PRION, Helmut — Assistant Professor *(Harvesting and Wood Science, Civil Engineering)*
B.Eng. (1974) Stellenbosch, Ph.D. (1987) Toronto
• *Engineered Timber Structures Design.*

RUDDICK, John N.R.
NSERC/Industrial Professor
B.Sc. (1965), M.Sc. (1966) Newcastle, Ph.D.(1970) London
• *Wood Preservation.*

SADDLER, Jack N.
NSERC/Industrial Professor
B.Sc.(Hon.) (1975) Edinburgh, Ph.D. (1978) Glasgow
• *Forest Products Biotechnology.*

SALCUDEAN, S.E. (Tim)
Assistant Professor *(Harvesting and Wood Science, Electrical Engineering)*
B.Eng. (1979), M.Eng. (1980) McGill, Ph.D. (1986) Berkeley
• *Robotics/control.*

TAIT, David E.N. — Assistant Professor
B.Sc. (1968), M.Sc. (1970), Ph.D. (1983) Brit. Col.
• *Optimization Techniques, Forest Planning.*

YOUNG, G. Glen — Associate Professor
B.A.Sc. (1965), M.A.Sc. (1971) Brit. Col., P. Eng.
• *Operations Research, Microcomputers in Logging and Forest Management.*

FACULTY AND STAFF

Harvesting and Wood Science Department

Visiting Professors

BROWN, David — B.Sc. (Brit. Col.), M.Sc., Ph.D. (California)
• *Forest Products Biotechnology.*

MASUDA, Minoru — B.Ag., Ph.D. (Kyoto)
• *Wood Engineering.*

YAMAMOTO, Koichi — B.Ag., M.Ag., Ph.D. (Hokkaido)
• *Wood Preservation.*

Research Associates

WONG, Ken — B.Sc. (Carlton), M.Sc. (Ottawa), Ph.D. (Laval)
• *Forest Products Biotechnology.*

Post-doctoral Fellows

CUI, Futong — B.Sc. (Nankai Univ.), Ph.D. (Brit. Col.)
• *Wood Preservation.*

LIU, Jing — B.S. (Nanjing Forestry Univ.), M.S. (Iowa State), Ph.D. (Maine)
• *Wood Physics/Drying.*

McBAIN, Adam — B.Sc., Ph.D. (Strathclyde)
• *Wood Preservation.*

QUINDE, Augusto
B.Sc. (National Agravian), M.Sc. (New York), Ph.D. (Brit. Col.)
• *Wood chemistry.*

YU, Alex Hou-Cheong
B.Eng. (McMaster), Ph.D. (Toronto)
• *Forest Products Biotechnology.*

ZHUANG, Jun-Ming
B.Sc. (Fudan), M.Sc. (Shanghai Org. Inst.), Ph.D. (Simon Fraser)
• *Wood adhesives and composite products.*

HUANG, Jinghou
B.Sc., M.Sc. (Huanghong Agric. Univ.), Ph.D. (Dublin Univ.)
• *Forest Products Biotechnology.*

Adjunct Professors

CHOW, Suezone — B.Sc. (Taiwan), M.Sc., Ph.D. (Brit. Col.), O.B.C.

COTTELL, Philip L.
B.S.F., M.F. (Brit. Col.), Ph.D. (Yale), R.P.F.

KELLOGG, Robert M. — B.Sc.F. (Maine), M.Sc., Ph.D. (Yale), F.I.A.W.S.

KIRBACH, Eberhard D.
Dipl.-Holzwirt (Hamburg), Ph.D. (Brit. Col.).

SMITH, Roger S. — B.Sc., Ph.D. (London).

VAROGLU, Erol — M.Eng. (Istanbul), M.Sc., Ph.D. (Stanford).

Honorary Lecturers

SAUDER, Brent J.
B.S.F., M.F. (Brit. Col.).

Staff

AQUINO, David — Res. Assist./Tech.
B.Sc.F. (National Agrarian), M.F. (Brit. Col.).

BERNALDEZ, James — Res. Assist./Tech.
B.A.Sc. (Brit. Col.).

CHESTER, Michael — Res. Assist./Tech.
B.Sc.(Hons.) (Waterloo).

DUBOIS, Joel — Res. Assist./Tech.
B.Sc. (Laval), M.F. (Brit. Col.).

COULTAS, M. Joan — Secretary
B.A., B.Ed. (Memorial Univ.), M.A. (AST).

FOLEY, Dallas — Res. Assist./Tech.

HAFER, Mark — Computer Research Analyst
B.Eng. (Carleton).

HARTSON, Donna — Secretary

HASTINGS, Diana — Res. Assist./Tech.
B.Sc. (Brit. Col.).

HE, Qiyi — Res. Assist./Tech.
B.Eng. (China), M.Eng. (Brit. Col.).

HO, Alan — Res. Assist./Tech.
Dipl. in Robotics Automation (B.C.I.T.).

JOHNSON, Robert — Elec./Auto. Analyst
Dipl. of Technology (B.C.I.T.).

JOHNSTON, Wendy — Admin. Assist.

LAM, Frank — Scientific Research Engineer
B.A.Sc., M.A.Sc. (Brit. Col.).

LAU, Wilson — Wood Mechanics Engineer
B.A.Sc., (Windsor), M.A.Sc. (Brit. Col.).

LEE, George — Res. Assist./Tech.
B.Sc. (China), M.Sc. (Oregon State).

LENZ, Richard — Res. Assist./Tech.
B.Sc. (Victoria).

MYRONUK, Robert
Research Support Services Supervisor
Dipl. of Technology (B.C.I.T.).

ROTH, Aaron — Res. Assist./Tech.
B.Sc.(Hons.), M.Sc. (Brit. Col.).

SIDHU, Avtar — Res. Assist.
B.Sc. (Brit. Col.).

THOMPSON, Nancy — Secretary (Part-time).

WAN, Diane — Departmental Clerk

WANG, Yin Tang — Res. Assist./Tech.
B.Eng., M.Eng. (China).

XIONG, Pingbo — Res. Assist./Tech.
B.Agric., M.Eng. (China), M.Sc. (Brit. Col.).

New Faculty Appointments

BREUIL, Colette

Formerly a group leader in the Biotechnology Department of Forintek Canada and now the junior chairholder in the NSERC/Industrial Forest Products Biotechnology Program. Her research interests focus on biological control of sapstain fungi and enzymatic degradation of lignocellulosic substutes.

PRION, Helmut

A joint faculty appointment between this department (one-third) and Civil Engineering (two-third). His research activity is in the area of engineered timber structures design with emphasis on connections.

SADDLER, Jack

Holds the senior chair position in the NSERC/Industrial Forest Products Biotechnology Program. He was formerly Special Advisor, Industrial Biotechnology, Forest Directorate, Ottawa and Manager of Biotechnology and Chemistry at Forintek Canada. His research interests involve micro-organisms and enzymes for pulp and bleaching techniques and microbiological treatment of pulp effluent.

Retirements

KENNEDY, Robert

Former Dean of the Faculty of Forestry from 1983-1990. A Fellow of the Academy of Wood Science and internationally recognized for his contributions in the field of Wood Anatomy. During his 38-year career as a wood scientist he has made outstanding contributions in the areas of education, government and professional service.

ACHIEVEMENTS AND PLANS

Harvesting and Wood Science Department

ACHIEVEMENTS IN 1991-92

We can cite achievements in a number of areas. These include:

- Academic review of the Harvesting and Wood Science curriculum.
- Restructuring the Harvesting program to enhance the integrated resource management component.
- Opening a wood products laboratory that provides new teaching and research facilities for wood composites, wood physics and wood mechanical properties.
- Establishing a Biotechnology Chair with research facilities in the Paprican building.
- Significantly increasing research funding because of Faculty expansion over the last three years using Funds for Education Excellence and NSERC/Industrial chair programs.
- Substantially increasing graduate enrolment.
- Installing several major equipment items including a dry kiln, hot press, lumber stress grader and geotextile test bed.

PLANS FOR 1992-93

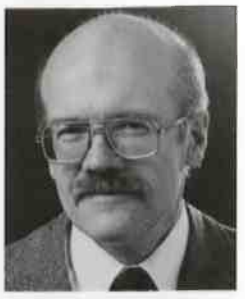
A full Department review will be undertaken prior to the appointment of a permanent head. As part of this review process we propose to change the Department name to Forest Operations and Wood Science to reflect the changing scope of activities beyond that of traditional Forest Harvesting.

Academic plans include developing a non-thesis Masters program in Forest Operations and considering of a cooperative program option within the Department. Both issues are important for increasing undergraduate and graduate enrolment.

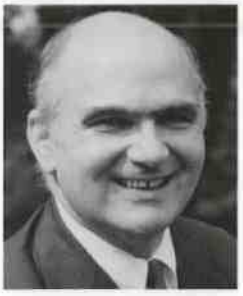
Plans are underway to develop a Chair in Wood Construction with linkages between this department, Civil Engineering and Architecture. We will promote enhanced research opportunities by encouraging integrated skills within the Department and by expanding cooperative programs with industry and government.

FOREST RESOURCES MANAGEMENT DEPARTMENT

Antal Kozak
Acting Head

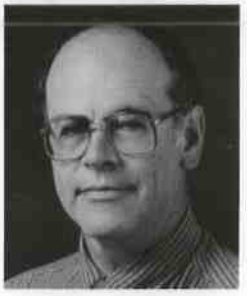


Timothy Ballard



Clark Binkley

Alan Chambers



Peter Dooling

Douglas Golding

David Haley

Brent Ingram

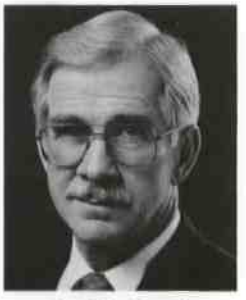
Valerie LeMay

Peter Marshall

Don Munro

Peter Murtha

Peter Pearse



Leslie Reed

Peter Sanders

Casey van Kooten

KOZAK, Antal — Professor,
Associate Dean and Acting Department Head
B.S.F. (1956) Sopron, M.F. (1961),
Ph.D. (1963) Brit. Col., D.Sc. *Honoris causa* (1989) Sopron.
• *Biometrics, New Methodology for Forest Inventory.*

BALLARD, Timothy M. — Professor
(Forest Resources Management, Soil Science)
B.S.F. (1961), M.F. (1963), Ph.D. (1968) Washington
• *Forest Soils, Management Impacts, Tree Nutrition, Forest Fertilization.*

BINKLEY, Clark S. — Professor and Dean
A.B. (1971), M.S. (1976) Harvard,
Ph.D. (1979) Yale
• *Forest Economics.*

CHAMBERS, Alan D.
Associate Professor
B.S.F. (1964) Brit. Col., M.F. (1967) Duke,
Ph.D. (1971) Brit. Col., R.P.F.
• *Social Forestry, Natural Resources Management.*

DOOLING, Peter J. — Associate Professor
B.A. (Hons) (1960), B.P.E. (Hons) (1962),
M.A. (1967) Alberta, Ph.D. (1973) Colorado
• *Recreation, Landscape and Land Use Planning, Recreation Land Management, Recreation and Tourism Economics.*

GOLDING, Douglas L.
Associate Professor and Director of Graduate Studies (1990-92)
B.Sc. (1953) New Brunswick, M.S. (1961) Purdue, Ph.D. (1968) Brit. Col., R.P.F.
• *Watershed Management and Forest Hydrology.*

HALEY, David — Professor
B.Sc. (1962) Aberdeen, M.F. (1964),
Ph.D. (1966) Brit. Col., R.P.F.
• *Forest Economics, Role of Forestry in Development.*

INGRAM, G. Brent — Assistant Professor
(Forest Resources Management, Plant Science)
B.A. (1976) Evergreen State Coll., B.F.A. (1980) San Francisco Art Inst., M.Sc. (1980) Antioch Univ. West, Ph.D. (1989) Berkeley
• *Landscape Architecture.*

LeMAY, Valerie M. — Assistant Professor
B.Sc.F. (1981), M.Sc. (1982) Alberta,
Ph.D. (1989) Brit. Col., R.P.F.
• *Biometrics/Mensuration.*

McWILLIAMS, Eleanor
Sessional Lecturer
B.S.F. (1984) Brit. Col., M.Sc. (1991) Minnesota
• *Biometrics, Forest Mensuration.*

MARSHALL, Peter L.
Assistant Professor
B.Sc.F. (1976), M.Sc.F. (1979) Toronto,
Ph.D. (1984) Brit. Col., R.P.F.
• *Growth and Yield, Forest Management.*

MUNRO, Donald D. — Professor,
Director of University Research Forests and Director of International Forestry Programs
B.S.F. (1960) Brit. Col., M.Sc. (1964) Oregon,
Ph.D. (1968) Brit. Col., R.P.F.
• *Forest Yield Sciences, Inventory Design and Analysis.*

MURTHA, Peter A. — Professor
(Forest Resources Management, Soil Science)
B.Sc.F. (1961) Toronto, M.Sc. (1964),
Ph.D. (1968) Cornell
• *Remote Sensing and Geographic Information Systems, Forest Damage Detection and Evaluation, Land Classification.*

PEARSE, Peter H. — Professor
B.S.F. (1956) Brit. Col., M.A. (Hon.) (1959),
Ph.D. (1962) Edinburgh, R.P.F., C.M.
• *Forest Economics.*

REED, F. Les C.
NSERC/Industrial Professor
B.A. (1954), M.A. (1959) Oregon
• *Forest Policy.*

SANDERS, Peter R.W. — Lecturer and Resident Silviculturist, Malcolm Knapp Forest
B.S.F. (1974), M.F. (1982) Brit. Col.
• *Silviculture, Forest Management.*

VAN KOOTEN, G. Casey
Associate Professor *(Forest Resources Management, Agricultural Economics)*
B.Sc. (1972), M.A. (1974) Alberta,
Ph.D. (1982) Oregon
• *Economics of Natural Resources.*

VAN RYSWK, Roy J.
Sessional Lecturer
B.A.Sc. (1964) Brit. Col., M.Sc. (1972) Illinois
• *Remote Sensing and Photogrammetry.*

WONG, Frank — Sessional Lecturer
B.Eng. (1969) McGill, M.Sc. (1971) Queen's,
Ph.D. (1984) Brit. Col.
• *Computer-based Image Analysis.*

ACHIEVEMENTS AND PLANS

Forest Resources Management Department

Adjunct Professors

BONNOR, G. Michael — B.S.F., M.S.F. (Toronto), Ph.D. (State Univ. of New York).

HALL, Thomas H. — B.A., M.Sc. (Indiana), M.Sc.F. (N. Brunswick), Ph.D. (Brit. Col.), R.P.F.

ILES, Kimberley — B.S., M.Sc. (Oregon), Ph.D. (Brit. Col.).

MITCHELL, Kenneth J. — B.S.F. (Brit. Col.), M.F., Ph.D. (Yale), R.P.F.

WILLIAMS, Douglas H. — B.Sc. (Simon Fraser), M.Sc., Ph.D. (Brit. Col.).

Honorary Lecturers

HEGYI, Frank — B.Sc.F. (Edinburgh), M.Sc.F. (Toronto), R.P.F.

Staff

LAI, Charles — Departmental Clerk

MAEDEL, Jerry
Computer Systems Analyst
B.F.A. (Victoria), M.Sc. (Brit. Col.).

RAE, Kuochi — Technician
B.A. (Chung Hsing), M.A. (Tokyo)

TURNER, Ron — Departmental Technician
B.A. (Brit. Col.).

WONG, Sally — Departmental Secretary
B.A. Hons. (Hong Kong).

ACHIEVEMENTS IN 1991-92

We have changed the B.S.F. (Forest Resources Management Major) program to include social and cultural considerations in forestry. First and second year students will start in this modified program in September 1992.

We plan to launch a newly developed undergraduate program in Natural Resources Conservation (B.Sc.) in September 1992.

The work to develop a professional non-thesis M.F. program is now completed and will be submitted to Senate for final approval during the summer of 1992.

Vacancies resulting from retirements in 1989 and 1990 have not been filled. Sessional lecturers have been used during 1991-92 to meet the Department's heavy teaching requirements.

PLANS FOR 1992-93

The objectives of the Department for 1992-93 are to increase the number of graduate degrees granted, increase research productivity and launch the new Natural Resources Conservation and the professional non-thesis M.F. programs, while continuing to improve the quality of the professional (B.S.F.) undergraduate education. To accomplish these objectives the Department will:

- Either late in 1992-93, or early in 1993-94, recruit new faculty members to fill the outstanding vacancies in the Department.
- Recognize as "growth nodes" for research and graduate studies certain areas that are of critical importance to Canadian forest management and in which the Department has a potential for excellence. These include: Forest Economics and Policy Analysis; Forest Biometrics (forest mensuration, inventory, growth and yield); Geographic Information Systems for Forest Management (GIS, remote sensing); and Natural Resources Conservation.

OFFICES, AWARDS AND DISTINCTIONS

AVRAMIDIS, S.

- Committee Member, American Society for Testing and Materials, D4444.
- Committee Member, Society of Wood Science and Technology, Membership Committee.

BALLARD, T.M.

- 1991 University Teaching Prize.

BARRETT, J.D.

- Member, Editorial Board, Wood Science and Technology.

BINKLEY, C.S.

- Member, Marcus Wallenberg Prize Committee.
- Member, Board of Directors for Forintek, FERIC, West Fraser Ltd.
- Member, Advisory Board Ecotrust Inc.
- Member, Management Committee, Nelson Forests Joint Venture.

BUNNELL, F.L.

- Old-growth Task Force — partial leave to work on Task Force funded by Vancouver Foundation.

BURTON, P.J.

- Member, B.C. Ministry of Forests Reforestation Information Bank (RIB) Technical Support Committee.
- Member, Carmanah Valley Forest Management Area Advisory Committee.
- Member, committee to review and amend the "Health, Safety and Reclamation Code for Mines in B.C."
- Member, B.C. Forest Land Use Liaison Committee.

CARLSON, J.

- President, Canadian Society for Plant Molecular Biology.

CHANWAY, C.P.

- Membership Chairman, Vancouver Section of the Canadian Institute of Forestry.

COHEN, D.

- Chairman, Marketing Technical Interest Group, Forest Products Research Society.
- Member, Committee for International Program Planning FPRS.
- Deputy Leader (North America) Project Group VI, Marketing, International Union of Forest Research Organizations.

DOOLING, P.J.

- Member, Commission on National Parks & Protected Areas for World Conservation Union (Gland, Switzerland). Re-appointed to second term: 1991-94.
- Advisor to Council, the Executive Board of Directors, Outdoor Recreation Council of British Columbia.

FANNIN, R.J.

- Chairman, Canadian Geotechnical Society, Task Group on Sampling Requirements for Geoenvironmental Works.

HALEY, D.

- Elected member to Council of Association of B.C. Professional Foresters — appointed Director of Discipline and Ethics.

KIMMINS, J.P.

- Chairman, National Forestry Round Table.
- Special Achievement in Forestry Award, Western Forestry and Conservation Association.
- Honorary Life Member for service to forestry, Association of B.C. Professional Foresters.
- Invited lecturer, Chinese Academy of Sciences, October 1991.
- Acting Director, Sustainable Development Research Institute.
- Forest Industry Lecturer, University of Alberta, Edmonton.
- Green Plan Proposal Coordinator, West Coast Forests.

LAVENDER, D.P.

- UBC Professor Emeritus of Forest Sciences.
- Executive Secretary, Northwest Scientific Association.
- Honorary President 1991/92, Forestry Undergraduate Society.

MARSHALL, P.L.

- Vice-Chair, Forest Science and Technology Board, Canadian Institute of Forestry.
- Member, Board of Directors, Silviculture Institute of British Columbia.
- Member, Board of Examiners, Association of B.C. Professional Foresters.

OFFICES, AWARDS AND DISTINCTIONS

- Member, B.C. Growth and Yield Technical Advisory Committee.
- Associate Editor, the Forestry Chronicle.

McLEAN, J.A.

- Member, Editorial Advisory Board, Forest Ecology and Management.

McNEEL, J.F.

- First Place Award for Technical Writing, Southeastern Division of the American Plywood Association.

NELSON, J.D.

- Appointed member, Advisory Committee for the Forest Resources Program, B.C. Institute of Technology.

PASZNER, L.

- Member, Editorial Board, Holzforschung.
- Board Member and Canadian representative, Expert Council for Vegetable Resources Conversion.

REED, F.L.C.

- Member, National Advisory Committee on Model Forests.
- Board of Directors, Forest Alliance of B.C.
- Member, Governing Council, Commonwealth Forestry Association.

RUDDICK, J.N.R.

- Senior Editor - Material und Organismen.
- Chairman, Working Group III, Preservatives and Processes (International Research Group on Wood Preservation).
- Chairman, Special Subgroup, Wood Protection S5.03 (IUFRO).
- Vice-Chairman, CSA Wood Preservation Committee.
- President, Canadian Wood Preservation Association.
- Committee Member, Special Research Committee (American Wood Preservers' Association).
- Vice-Chairman, Committee T-7 Quality Control (American Wood Preservers' Association).

SADDLER, J.N.

- Member, Board of Directors, B.C. Biotechnology Alliance.
- Activity Leader, International Energy Agency (IEA) Network "Biotechnology for the Conversion of Lignocelluloses."
- Coordinator, Forestry Canada Green Plan, "BIOCOND" Network (Biotechnology for the Control of Forest Diseases).
- Steering Committee, BIOFOR Network (ISTC Network), Biotechnology for the Forest Industry.

SALCUDEAN, S.E.

- Advanced Systems Institute Fellowship, awarded for five years starting July 1991.

STEINER, P.

- Acting Head, Department of Harvesting and Wood Science.

VAN KOOTEN, G.C.

- Canadian Agricultural Economics and Farm Management Society Outstanding Journal Article Honourable Mention (with John Spriggs).

WEETMAN, G.F.

- 1991 Gold Medal for Scientific Achievement, Canadian Institute of Forestry.
- Member, 1992/93, NSERC Plant Biology Committee Operating Grants.
- Member, Board of Directors, Silviculture Institute of B.C.

SPONSORED RESEARCH

S. Avramidis

Sorption kinetics of chloropicrin in wood
NSERC $12,000

Dielectric properties of wood
COFI/MBR $39,840

Brown stain in Pacific coast hemlock: evaluation and alleviation through special drying methods (co-investigator: S. Ellis)
SCBC $58,197

Radio frequency/vacuum drying and pasteurization of wood
COFI/EMR $128,100

T.M. Ballard

Nutritional sustainability of timber harvesting - ***BC MoF $36,600***

J.D. Barrett

Structural behaviour of laminated plates under fatigue loading
NSERC/For. Can./Industry $45,000

Structural properties of Canadian lumber
Can. Wood Council $14,000

Reliability of wood-based materials
NSERC $21,000

Advanced grading technology for structural lumber - ***SCBC $113,200***

C.S. Binkley

Status of forestry research in B.C.
BC MoF $9,392

C. Breuil

Sapstain control by proteinase disruption (co-investigator: J.N. Saddler)
NSERC $106,000

Chair of Forest Products Biotechnology (co-investigator: J.N. Saddler)
NSERC/Industry $524,000

BIOCOND network - enzymes of sapstaining fungi (co-investigator: J.N. Saddler) - ***For. Can. $15,000***

Application of enzymes to wood hydrolysis and bioconversions (co-investigator: J.N. Saddler) - ***EMR $201,045***

Partnership program - pulp effluent project (co-investigator: J.N. Saddler)
NSERC/For. Can. $30,000

F.L. Bunnell

Managed stands for deer winter range
NSERC $127,480

Assessing impacts on biological diversity
BC MoF $55,195

Land use strategy for biodiversity and sustainability
Vancouver Foundation $59,405

Spatial dynamics of black-tailed deer
NSERC $27,000

Effects of thinning on birds and small mammals - ***BC MoF $18,400***

Wildlife handbook - ***BC MoF $16,500***

P.J. Burton

Effects of cold storage duration and soil temperature on seedling quality (co-investigators: E. Camm, R. Guy and D. Lavender)
NSERC/For. Can./Industry $70,000

Quantitative screening of the competitive effects of common non-crop species
BC MoF $7,500

Functional assessment of old-growth SBS population structure - ***BC MoF $25,000***

Experimental investigation of conifer germination ecology - ***BC MoF $26,566***

Interactive effects of soil moisture and light regime on conifer seedlings
BC MoF $25,050

E.L. Camm

Effects of cold storage duration and soil temperature on seedling quality (co-investigators: P. Burton, R. Guy and D. Lavender)
NSERC/For. Can./Industry $70,000

The perennial photosynthetic apparatus
NSERC $25,000

J. Carlson

Conifer developmental genetics
NSERC $29,000

DNA markers for weevil resistance
SCBC $98,000

Douglas-fir genetic map - ***NSERC $45,000***

DNA fingerprinting of seed orchard
BC MoF $15,000

C.P. Chanway

Microbial inoculation of conifers (co-investigator) - ***SCBC $73,566***

Salal competition at SCHIRP sites (co-investigator) - ***NSERC/Industry $22,500***

SPONSORED RESEARCH

Influence of microorganisms on plant competition - ***NSERC $25,000***

Availability of N and P in forest floor of cedar/hemlock cutovers in coastal B.C. (co-investigator)
NSERC/For. Can./Industry $60,000

D.H. Cohen

Matching innovative panel processing technologies with Japanese market requirements - ***Industry/For. Can. $7,500***

Market potential in Japan for fingerjoined and MSR lumber from B.C. - ***FEPA $2,500***

Analysis of North American specifiers of materials in commercial construction
UBC/Industry $27,500

P.J. Dooling

Forest landscape management project
NSERC $10,000

S. Ellis

Investigation of the efficiency of powdered phenolic resins in the production of waferboard - ***NSERC $18,500***

Brown stain in Pacific coast hemlock: evaluation and alleviation through special drying methods (co-investigator: S. Avramidis) - ***SCBC $58,197***

R.J. Fannin

Soil/geosynthetic interaction
NSERC $19,800

Sediment transport in the Tsitika watershed
BC MoF $15,000

Drainage in waste containment facilities
SCBC $55,700

Creep of geosynthetic reinforcement
NATO $3,200

M.C. Feller

Ecological effects of forest management practices
NSERC/Employ. Imm. Can. $65,470

Ecological effects of slashburning
SCBC/BC MoF $79,037

Seed germination requirements
BC MoF $58,600

D.L. Golding

Poplar plantation for sewage disposal
SCBC $25,460

Jamieson Creek experimental watershed
GVRD $17,000

Slope hydrology, Queen Charlottes
BC MoF $6,000

R.D. Guy

The comparative physiology of stress acclimation in conifers - investigations using stable isotopes - ***NSERC $35,715***

Effects of cold storage duration and soil temperature on seedling quality (co-investigators: P. Burton, E. Camm and D. Lavender)
NSERC/For. Can./Industry $70,000

Stable carbon isotopes as indicators of increased water use efficiency and productivity in white spruce (co-investigator) - ***SCBC $29,600***

Stable carbon isotopes to screen genotypes for improved drought tolerance and productivity in forest regeneration (co-investigator) - ***NSERC $30,000***

D. Haley

Allowable cut effect as a forest policy tool in Canada - ***FEPA $5,000***

G.B. Ingram

Ecology of eastern islands of Indonesia (with Dalhousie University)
CIDA $100,000

J.P. Kimmins

Vegetation management - ***NSERC $15,000***

Sludge recycling - ***SCBC $218,000***

Development of FORTOON
SCBC $30,000

Biomass of birch and aspen
BC MoF $60,000

Old-growth studies: SCHIRP
NSERC/BC MoF/Industry $38,000

K. Klinka

Growth-site relationships in lodgepole pine
NSERC $17,000

Fertilization of western hemlock
SCBC/BC MoF $50,900

Silvicultural research in the Prince Rupert region - ***BC MoF $114,000***

SPONSORED RESEARCH

D.P. Lavender

Physiology of lodgepole pine and white spruce seedlings during their dormant period
SCBC $29,000

Effects of cold storage duration and soil temperature on seedling quality (co-investigators: P. Burton, E. Camm and R. Guy)
NSERC/For. Can./Industry $70,000

V.M. LeMay

Development of a dynamic taper function
SCBC $80,000

T. Maness

Sawmill production monitoring
NSERC $22,000

Sawmill planning and control
NSERC/For. Can./Industry $35,000

P.L. Marshall

Development of biometrics software
SCBC $20,540

J.A. McLean

Transportation of Ambrosia beetles in coastal B.C. - ***Industry/SCBC $313,106***

Ambrosia beetles in the industrial milieu of B.C. - sawmill studies - ***NSERC $104,100***

Genetic variation in *Pissodes strobi*
Green Plan For. Can. $6,000

J.F. McNeel

Analysis of long-line yarding systems in Franklin River - ***Industry $40,000***

Improving value recovery in harvest operations - ***SCBC $56,900***

Improving analysis methods for harvesting systems - ***NSERC $10,500***

Impact of socially sensitive sites on operational planning - ***FEPA $2,500***

Spatially constrained planning models
FRDA $25,000

Estimating harvest system productivity and cost on second-growth sites
FERIC/FRDA $14,000

D.D. Munro

Training program for integrated intensive forest management - Phase II
Thomson Reid Collins $110,000

Remeasures of research plots on the Malcom Knapp Forest - ***BC MoF $15,531***

P.A. Murtha

Biological considerations for MEIS applications - ***For. Can. $1,000***

GIS database establishment for Pacific Spirit Park - ***GVRD $2,500***

GIS undergraduate lab implementation
UBC $45,300

J.D. Nelson

Spatially constrained forest planning
For. Can./FRDA $25,000

Development of the timber supply model plants V2.0 - ***BC MoF $20,000***

Development of a spatial approximation model for large scale forest planning
BC MoF $60,000

Harvesting and grizzly bear habitat assessment for the Khutzemayteen Valley
BC MoE $22,500

Decision support systems for forest land use planning - ***NSERC $15,000***

Spatial approximation techniques
FEPA $5,000

L. Paszner

Ketal derivatization of sugars
NSERC $26,000

Waste paper recycling: allotropy of cellulose -
NSERC/SCBC $24,000

Inhibitors in ACOS hydrolysates
EMR $174,000

F.L.C. Reed

Chair in Forest Policy - ***NSERC $23,400***

Chair - ***IWA/Industry $83,000***

J.N.R. Ruddick

Chair in wood preservation
NSERC/Industry $150,000

Pentachlorophenol bioremediation
Industry $115,000

J.N. Saddler

Chair of Forest Products Biotechnology (co-investigator: C. Breuil)
NSERC/Industry $524,000

SPONSORED RESEARCH

Partnership program - pulp effluent project (co-investigator: C. Breuil)
NSERC/For. Can./Industry $90,000

Biotechnology for the conversion of lignocellulosics - ***IEA $65,000***

Application of enzymes to wood hydrolysis and bioconversions (co-investigator: C. Breuil) - ***EMR $201,045***

Sapstain control by proteinase disruption (co-investigator: C. Breuil)
NSERC $106,000

BIOCOND network - enzymes of sapstaining fungi (co-investigator: C. Breuil) - ***For. Can. $15,000***

S.E. Salcudean

Optimization-based CAD of control systems
NSERC $19,285

Force-reflecting teleoperation control of forestry machines - ***NSERC $67,000***

Pneumatic force-reflecting teleoperation master - ***SCBC $34,900***

ASI fellowship for robotics and telerobotics
BC ASI $50,000

Vibration isolation system for micro-gravity environments - ***Can. Space Agency $20,645***

P. Steiner

Processing strategies for wood composites
NSERC $73,600

Improving wood composite bonding
NSERC $18,000

Bonding mechanisms in wood products
Industry $10,000

T.P. Sullivan

Responses of small mammals to food supplement - ***NSERC $26,000***

Voles and semiochemicals
NSERC/For. Can. $40,500

Vole population dynamics
BC MoF $36,912

Lodgepole pine stand density
BC MoF $57,800

Snowshoe hares and habitat alteration
BC MoF $19,700

Vegetation management and wildlife diversity - ***BC MoF $78,000***

Long-term response of small mammals to herbicide - ***BC MoF $39,600***

Direct seeding and small mammal predation
BC MoF $10,710

Shelterwood systems and small mammals
BC MoF $21,000

Red squirrels and supplemental feeding
BC MoF $31,330

B.J. van der Kamp

Hemlock dwarf mistletoe impact
FRDA $6,920

Resistance of larch to Armillaria root disease
FRDA II $15,000

Stem diseases of young lodgepole pine
FRDA II $11,000

Pine stem rusts - ***NSERC $11,000***

Rust of pine - ***Bo Rydin, Sweden $2,500***

G.C. van Kooten

Economic evaluation of reforestation in British Columbia when benefits of carbon sequestration are taken into account
FEPA $5,000

Economics of land degradation in Western Canada - ***Soc. Sci. & Humanities $50,000***

Cropping practices and sustainable agriculture in the Peace River Region of B.C.
BCASCC $13,000

Analysis of the Japanese market for dimensional lumber
FRDA/For. Can. $14,000

G.F. Weetman

Forest nutrition fertilization trials
NSERC $22,786

SCHIRP - Salal Cedar Hemlock Integrated Research Program
NSERC/Industry $130, 993

Controls of nitrogen availability coniferous forests (co-investigator: C. Prescott)
NSERC $99,000

Silviculture and wood supply
BC MoF $49,798

Response to operational fertilization
BC MoF $15,060

J. Worrall

Stagnation of lodgepole pine
BC MoF $1,000

FACULTY PUBLICATIONS

Arnoldo, M., C.L. Baszczynski, G. Bellemare, G. Brown, **J. Carlson**, B. Gillespie, B. Huang, W.D. MacLean, W.D. MacRae, G. Rayner, M. Rozakis, M. Wescott, and R.J. Kemble. 1992. Evaluation of transgenic canola plants under field conditions. Genome 35:58-63.

Arthur, Louise M. and **G.C. van Kooten**. 1992. Climate change impacts on agribusiness sectors of a prairie economy. Prairie Forum 17:97-109.

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SPECIAL LECTURES

H.R. MACMILLAN

Lecture in Forestry

Dr. Kenton Miller, a Senior Associate of the World Resources Institute, Washington, D.C. gave the 42nd H.R. MacMillan Lecture in Forestry on November 7, 1991. Dr. Miller's talk was entitled *"Biodiversity and the Forestry Profession: Perspectives for the 1990s and beyond."*

The H.R. MacMillan Lectureship in Forestry was established through the generosity of Mr. H.R. MacMillan, C.B.E., D.Sc., LL.D. and the H.R. MacMillan Family Fund. The Lectureship funds the presentation and publication of lectures by outstanding individuals in fields relating to forest resources management.

LESLIE L. SCHAFFER

Lecture in Forest Sciences

Dr. Peter Morand, President of the Natural Sciences and Engineering Research Council of Canada gave the 9th Leslie L. Schaffer Lecture in Forest Science on December 3, 1991. His talk was entitled *"Challenges in Forestry Research."*

The Leslie L. Schaffer Lectureship in Forest Sciences was established in the memory of Leslie L. Schaffer, D. Sc., former vice-president of Western Plywood Co. Ltd. by Mrs. Leslie L. Schaffer to finance lectures and publications by visiting forest scientists at the Faculty of Forestry, UBC.

A highly successful Faculty Research Day followed Dr. Morand's talk with more than twenty poster displays and three talks covering forestry-related research from across campus.

Copies of the above two talks can be obtained by writing to:

Forestry Publications,
Faculty of Forestry,
University of British Columbia,
270 - 2357 Main Mall,
Vancouver, B.C.
V6T 1Z4.

TWO OTHER very successful ongoing Faculty lecture series offered during 1991-92 were the ***Faculty of Forestry Seminar Series*** and the ***Students for Forestry Awareness Speaker Series***. These weekly lecture series, incorporating speakers from both on and off campus, are open to the public.

On March 4, 1992, the UBC Faculty of Forestry and the Department of English jointly sponsored a seminar by Dr. Kim R. Stafford, the Director of the Northwest Writing Institute at Lewis and Clark College in Portland, Oregon. The title of Dr. Stafford's talk was *"The Cultural Meaning of Forests."*

Donald D. Munro
Director

UBC RESEARCH FORESTS

THE UBC Malcolm Knapp Research Forest at Maple Ridge and the Alex Fraser Research Forest at Williams Lake are dedicated to research, education and demonstration in the practice of forestry.

The forests are managed as outdoor scientific laboratories for graduate students and researchers. Since 1949 more than 600 projects have been initiated on the Malcolm Knapp Forest, and since 1987 fifty projects have been initiated on the Alex Fraser Forest. These projects serve as a foundation for education and demonstrations. A late summer field school is held annually at the Alex Fraser Forest for second year undergraduates while a spring field school is conducted at the Malcolm Knapp Forest for third year undergraduates.

Harvesting operations are a part of the management of both forests. We maintain harvest volumes at sustainable levels consistent with the need for research reserves and integrated use. We use revenues from the sale of forest products to partially finance the maintenance and operation of both forests. Continuing education programs in the form of short courses and field trips are offered at both forests, and the professional staff all participate in teaching academic courses in the Faculty.

ACHIEVEMENTS IN 1991-92

Malcolm Knapp Research Forest

Objectives set for 1991-92 were to establish significant research projects, to develop harvest systems other than clearcutting, and to assess long-term effects of these systems with the aid of geographic information systems. In addition to continuing the established long-term projects, researchers started a total of twelve new projects. Several alternative harvest systems were examined operationally; micro clearcuts, partial cuts, thinning and salvage operations were conducted in twelve different areas. Workers removed approximately 33 per cent of the annual harvest using these techniques. The results are very encouraging from silvicultural, aesthetic and economic points of view. We are using GIS to determine locations where these systems may be applicable and to assess the effects of these systems on sustainable timber harvests.

Alex Fraser Research Forest

Our objectives for 1991-92 were to establish significant research projects and to complete a 5-year development plan. We made good progress on attracting new research projects with nine new files opened. BC Research funded tests on embryogenesis-derived seedlings and the use of bacterial cultures to promote tree growth. The Ministry of Forests funded a study of spruce terminal weevils. A cooperative study with the Ministry and Weldwood is examining an alternative to clearcutting. In addition, the Ministry supports a variety of studies through silviculture funding. Two of these continue to examine the impacts of juvenile spacing on wildlife habitat.

By refocusing planning efforts, we completed a 20-year plan. We also made good progress on a 5-year plan with considerable interaction with the Ministry of Environment. Ongoing silviculture contracts with the Ministry of Forests funded an additional staff position for the year.

In support of the harvesting program, we had 3.5 km of new road built at a cost of $35,000. An additional 12 km of road was upgraded at a cost of $13,200.

PLANS FOR 1992-93

Our highest priority for the Research Forests continues to be to install and maintain significant research projects. We will follow management and harvesting strategies that permit flexibility to respond to research needs. Target harvest levels are 8,000 m^3 for the Malcolm Knapp and 5,000 m^3 for the Alex Fraser Forest. We will implement alternatives to clearcutting wherever feasible and will design a full resource inventory of the Alex Fraser Forest.

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INTERNATIONAL FORESTRY PROGRAMS

MUNRO, Donald D.
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Director of International Forestry Programs

MEMBERS of the UBC Faculty of Forestry possess a considerable breadth of expertise that is often in demand internationally. This range of expertise extends from forest economics, policy, marketing and management, to remote sensing, geographic information systems, ecology and integrated resource planning and management and associated subjects.

Faculty members have varied experiences internationally including foreign resident long-term project direction and short-term assignments in addition to experience gained from regular academic duties involving international travel and teaching graduate students from countries worldwide.

This expertise is coordinated and made available to interested parties (government, industry or private) through International Forestry Programs in the Faculty of Forestry.

Services include, but are not limited to, providing experts for short-term foreign assignments, designing and delivering individualized study programs on the University campus or in the host country, and organizing conferences, seminars and field trips.

Projects recently completed or currently underway include:

REGIONAL CORPORATIONS DEVELOPMENT PROGRAM

Canada (CIDA) - Colombia Human Resource Development Project

Objectives

To provide technical assistance to Colombian Regional Development Corporations to assist in preparing an advanced watershed management plan.

UBC participation *(completed)*

The Faculty of Forestry designed and delivered a 31-day instructional program for 16 professional staff of three Colombian Regional Corporations and the Colombian National Planning Department. The specially designed program included campus lectures and seminars in topics related to resource planning and sustainable development and field trips to interior and coastal British Columbia.

INTEGRATED INTENSIVE FOREST MANAGEMENT (PHASE II)

CIDA-China Forest Management Project

Objectives

To provide technical assistance to Chinese professionals in integrated intensive forest management.

UBC participation *(underway)*

The Faculty is providing theoretical and practical training to Chinese foresters sent to Canada under the terms of the CIDA-China project. A total of 53 person-months of personalized instruction in GIS, plant physiology, tree improvement and silviculture is being directed to nine foresters from China.

FOREST ECONOMICS, ADMINISTRATION AND POLICY FOR RUSSIAN PERSONNEL

Canada Department of External Affairs

Objectives

To improve management skills through academic training to encourage market-oriented reforms.

UBC participation *(proposed)*

The Faculty of Forestry will develop and deliver a program designed to increase awareness of the operation of a market forest products economy and to forge links between managers in Russia and their Canadian counterparts in forest and industrial management. A total of 25 students will complete a personalized 10-month program in Canada including language training and cultural orientation, regular University academic courses and field travel in British Columbia and Canada.

Don Munro can be contacted at (604) 463-8148, fax (604) 463-2712 or E-Mail don_munro@mtsg.ubc.ca.

Cindy Pearce
Director

FORESTRY CONTINUING STUDIES NETWORK

THE Forestry Continuing Studies Network is a new initiative for coordinating and improving forestry continuing education in British Columbia. The Network was established in response to the increasing supply of new information on sustainable forest resource management. In the past, independent agencies and organizations developed programs to make this information available to professionals, technical personnel and other individuals who are interested in forest resource management issues. No institution had the mandate to co-ordinate these initiatives. In late 1990, the Faculty of Forestry at UBC created a task force to examine the role that the university should take in improving forestry continuing education in British Columbia.

During early 1991, the UBC Faculty of Forestry joined forces with the community colleges offering forest technology programs (Selkirk, Malaspina, and Northwest), B.C. Institute of Technology (BCIT), University College of the Cariboo (UCC) and the University of Northern B.C. (UNBC) to create the **B.C. Forestry Continuing Studies Network** (FCS Network). In July 1991, a total of $393,577 was provided by Forestry Canada, through the Canada-British Columbia Partnership Agreement on Forest Resource Development: FRDA II, and the B.C. Ministry of Forests to establish the FCS Network.

The FCS Network is an independent, non-profit organization committed to bringing British Columbians quality adult education in sustainable forest resource management. The strategic objectives of the FCS Network are:

1. Encourage cooperation and partnerships among the existing providers of forestry continuing studies activities in B.C. to develop a coordinated program.
2. Provide quality activities throughout B.C. to meet the needs in local areas.
3. Provide leadership in continuing education for professional and technical personnel in forest resource management.

The FCS Network includes Delivery Centres at the cooperating educational institutions, a Provincial Office at the Faculty of Forestry at UBC and broad-based Advisory Boards for each office.

ACHIEVEMENTS IN 1991-92

- Established the Provincial Office in the MacMillan Building of the UBC Faculty of Forestry and created the Provincial Advisory Board.
- Staffed Delivery Centres at Selkirk College in Castlegar and UNBC in Prince George and created local Advisory Boards.
- Organized the first annual Forestry Continuing Studies Workshop for 161 cooperating organizations.
- Created a computerized mailing list including government agencies, forest companies, consulting firms and interested individuals.
- Produced and distributed a calendar of forestry continuing studies activities.

PLANS FOR 1992-93

- Secure $883,600 from FRDA II and the B.C. Ministry of Forests.
- Staff Delivery Centres at UCC in Kamloops and at Malaspina College in Naniamo and establish local Advisory Boards.
- Organize a minimum of two activities per month at each Delivery Centre.
- Establish a Provincial Professional/ Technical Audience Sector Working Group to define continuing education priorities for this audience and facilitate collaborative projects to address these priorities.
- Produce and distribute calendars of provincial and local activities.
- Develop databases of experts in designing, producing and delivering activities, and descriptions of available activities.
- Prepare and distribute a discussion paper on adult forestry education in B.C.
- Provide a series of workshops to train instructors and facilitators of continuing studies activities for forestry audiences.
- Diversify funding sources.

Cindy Pearce can be contacted at (604) 822-9278, fax (604) 822-3106 or E-Mail cindy_pearce@mtsg.ubc.ca.

PEARCE, Cindy
Dipl. For. Tech., B.Sc., R.P.F.
Director of Forestry Continuing Studies Network

SATO, Shirley
B.A.
Office Manager

CENTRE FOR APPLIED CONSERVATION BIOLOGY

BUNNELL, Fred L.
B.Sc., Ph.D.
Director of Centre for Applied Conservation Biology

Associate Director
(vacant)

CONSERVING biological diversity while sustaining robust economic development is a core problem facing British Columbia today. To respond to this problem the Faculty of Forestry created the Centre for Applied Conservation Biology to focus UBC's resources on the management of parks, natural areas and other kinds of forested landscapes where conservation values are pre-eminent.

This new Centre is unique in its incorporation of a strong undergraduate program, broad definition of educational targets, close links between basic and applied disciplines, and focus on forested ecosystems where the conflicts between biological diversity and economic activities are most pointed.

Education

The educational program will have three elements: an affiliated undergraduate program, a graduate program, and short courses. The target audiences are professional foresters, managers of parks and natural areas, the public and the public media.

The Centre is closely linked to the new undergraduate B.Sc. (Natural Resource Conservation) program that was recently initiated by the Faculty of Forestry. That program includes a core of natural science courses in forest, plant, and animal ecology, conservation biology and landscape ecology, and a suite of social science and management courses in economics, political science and philosophy to translate natural process into human values.

With the support of the H.R. MacMillan Family Fund, we will offer a new course next year ***"Issues in Biological Conservation."*** The course will be jointly listed with the Departments of Botany and Zoology.

Policy Conferences

The University provides neutral territory to bring together the parties in the heated policy disputes that characterize resource conflict in British Columbia and elsewhere in the world. We propose to adapt a model developed by the Dahlem conferences for dealing with complex social/scientific issues. In these conferences, papers are drafted prior to the meeting and form the starting point for discussions occurring in plenary and smaller groups.

Fred L. Bunnell
Director

We are seeking funds for these conferences to be matched by one or more participating agencies, government or private. We believe that joint financial sponsorship is critical for attracting the kind of high-level attention that we seek. The Faculty of Forestry, sponsored by Forestry Canada, is currently planning the first such conference — ***"Incorporating Biological Diversity in Forest Policy and Management Decisions"*** — for the 1992-93 academic year.

Research

Interdisciplinary, cooperative research is the key to answering the broad questions of conservation biology. Currently, the necessary expertise is scattered throughout the university, the province, and even internationally. The Centre will bring these scholars together to assist collaboration and cooperation, thus hastening advances in research. The Centre will test conservation biology theories in the context of forested ecosystems, and apply this knowledge to managed forests, parks and natural areas.

The Centre will establish major long-term research projects carried out by its own staff and a network of cooperating scientists from government, industry, and academia. Three such efforts are currently underway:

- A UBC-wide proposal for a major ecological study of Vancouver Island to be funded under the Green Plan Ecosystems Research program (Prof. J.P. Kimmins).
- A major effort to establish in British Columbia a system of experimental forests (Prof. G.F. Weetman).
- UBC involvement in three of the proposed Forestry Canada Model Forests (Prof. G.F. Weetman).

Fred Bunnell can be contacted at (604) 822-5724 or fax (604) 822-8645.

Undergraduate Programs

The Faculty of Forestry offers a 4-year degree program in each of the following five areas:

- Forest Resources Management — B.S.F.
- Forest Harvesting — B.S.F.
- Wood Science and Industry — B.Sc. (Forestry).
- Forest Science — B.Sc. (Forestry).
- Natural Resources Conservation — B.Sc. (Natural Resources Conservation).

Forest Resources Management

As the most general of the five programs, this major focuses on the multidisciplinary aspects of forest resources biology and management to include resources such as timber, range, wildlife, recreation, fisheries and water. Studies deal with the unique characteristics of each resource, their interactions, and the manipulation of forests to yield a variety of desirable products in the context of the social and economic environment of Canadian society.

Forest Harvesting

This major is designed to prepare the graduate for professional forestry responsibilities, with emphasis on the planning, design and administration of forest harvesting operations. Areas of study include: design and construction of forest roads, bridges and drainage structures; selection, planning and supervision of logging systems; site protection and rehabilitation; and the design and development of computer applications for harvesting systems.

Wood Science and Industry

This major is designed to give students a strong technical background in wood as a material and a good understanding of wood products manufacture, marketing, engineering and utilization. Areas of concentration include: business management and marketing, industrial process technology, engineering and biotechnology.

Forest Science

This major is for students interested in more specialized study of the scientific principles related to the growth, development and ecology of forest species. Emphasis is placed on basic and interactional phenomena that influence the establishment, growth and development of trees and other forest resources. These include genetics, soils, weather and climate, form, function, ecology, microbiology and other foundation courses in entomology, pathology, silvics, silviculture and wood science.

Natural Resources Conservation

This new interdisciplinary program is designed to prepare students for careers in the conservation of renewable natural resources, the management of protected areas, and planning for the integrated use of forests and associated wildlands. The program provides students with an understanding of the natural and social sciences underlying the conservation and management of resources associated with wildlands. It will also provide students with an appreciation for the socio-economic environments in which decisions concerning the management of protected areas are made, and a working knowledge of technologically advanced tools and quantitative techniques available to renewable resource planners and managers.

Graduate Programs

The graduate degrees available from the Faculty of Forestry are as follows:

- Doctor of Philosophy — Ph.D.
- Master of Forestry — M.F.
- Master of Science — M.Sc.
- Master of Applied Science — M.A.Sc.

PROGRAM CHANGES IN 1991-92

Comprehensive changes to the undergraduate programs in forest resources management and forest harvesting have allowed us to incorporate more basic science, place a greater emphasis on communications, provide more complete training in environmental aspects of forest operations and foster closer articulation with regional colleges.

A new program developed for forestry graduates from B.C.'s technical institutions will allow these students to complete UBC's Forest Resources Management program in three additional years of study.

The Faculty has initiated a new interdisciplinary program in the conservation and management of parks and natural areas.

PLANS FOR 1992-93

We will continue to develop a new non-thesis Master of Forestry (M.F.) program.

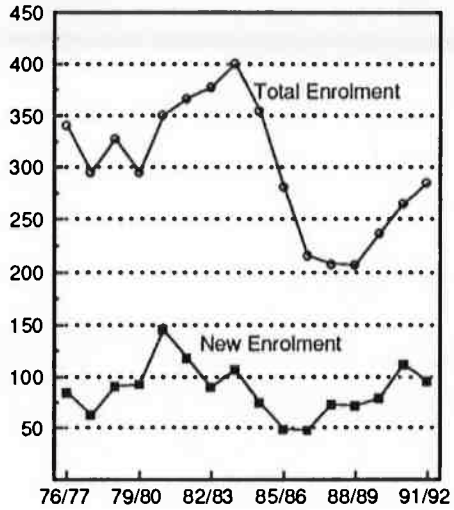
The Faculty will implement the first year of the new B.Sc. program in Natural Resources Conservation.

UNDER-GRADUATE PROGRAMS

ENROLMENT STATISTICS

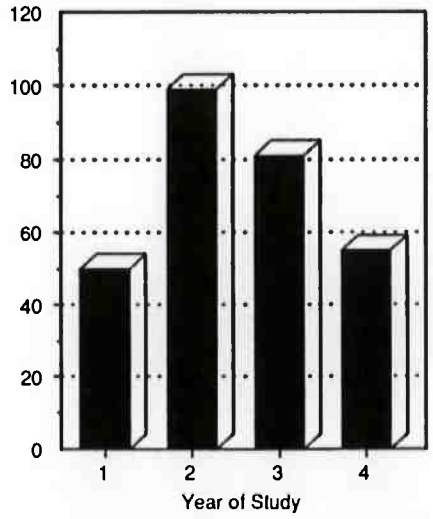
Total Enrolment Figures

Enrolment for undergraduate students (in all four years of the forestry program) reached a seven year high in 1991-92 of 285 students. This figure represents an increase of eight per cent from the previous year's total of 265 students. An indication of recent trends in enrolment figures is provided by the graph below:



Total enrolment and new enrolment 1976/77—1991/92

As a consequence of recent increases in enrolment, the number of students in the earlier year classes is larger than in later year classes. In 1992-93, we expect that transfers into second year will offset the low number of first year students.



Enrolment by year of study for 1991/92

As seen in the following table, most of our undergraduates enrol in the Forest Resources Management major:

Distribution of students among majors 1991/92

Major	Number enrolled	% of total
Forest Resources Management	169	59.3
Forest Harvesting	24	8.4
Forest Sciences	18	6.3
Wood Science	25	8.8
Undeclared	49	17.2
Total	285	100

Female students represent 20 per cent of the above total.

New Student Enrolments

Ninety-six new undergraduate students entered the faculty during 1991-92. The numbers entering into the different years is tabulated below:

New students entering the Faculty 1991/92

Year of study	Number of new students entering
I	48
II	39
III	9
Total	96

The average age of new students entering the undergraduate programs was 21.3 years. Forty per cent of the new students entered directly from high school and 60 per cent from post-secondary institutions. Forty-six per cent of the new students are from the Lower Mainland and Vancouver Island, 21 per cent are from the southern Interior, and 19 per cent are from in the northern Interior.

THIS LIST reflects scholarships and fellowships awarded at the end of the 1991 academic year.

First Year Students

Hashizume, R.Y.	Charles A. and Jane C.A. Banks Foundation Scholarship.
Lawrence, K.E.	Charles A. and Jane C.A. Banks Foundation Scholarship.
Temple, S.P.	H.R. MacMillan Prize in Forestry.
	Charles A. and Jane C.A. Banks Foundation Scholarship.
Yacyshen, T.	H.R. MacMillan Scholarship.

Second Year Students

Brewer, R.G.W.	MacMillan Bloedel Limited Scholarship.
	Charles A. and Jane C.A. Banks Foundation Scholarship.
Cuzzocrea, S.I.	Charles A. and Jane C.A. Banks Foundation Scholarship.
Friesen, H.A.	Charles A. and Jane C.A. Banks Foundation Scholarship.
Hall, M.L.R.	Galt Elkington Memorial Scholarship.
Jessee, J.L.	H.R. MacMillan Scholarship.
	Robert and Mary Wellwood Memorial Scholarship.
Roddan, C.E.	David Bell Little Memorial Scholarship.
	Charles A. and Jane C.A. Banks Foundation Scholarship.
Rouck, K.	H.R. MacMillan Scholarship.
	Kapoor Singh Siddoo Scholarship in Forestry.
Stancyk, K.J.	Machinery and Supply Companies Group Forestry Scholarship.
	Charles A. and Jane C.A. Banks Foundation Scholarship.

Third Year Students

Buss, C.T.	Kapoor Singh Siddoo Scholarship.
	Timberline Scholarship.
Chan, P.N.	Oscar Soderman Memorial Scholarship.
Decker, A.S.	Monsanto.
	Forestry Alumni.
	Oscar Soderman Memorial Scholarship.
Flinton, R.H.	Oscar Soderman Memorial Scholarship.
Frazer, S.A.	MacMillan Bloedel Limited Scholarship.
	Oscar Soderman Memorial Scholarship.
Girard, R.D.	Association of B.C. Professional Foresters.
Jobst, J.T.	Barry English Memorial Award.
	James Russell Mills Memorial Award.
	Oscar Soderman Memorial Scholarship.
Pope, J.S.	Phil Haddock Prize in Silviculture.
	Ken Haley Memorial Prize in Fire Science and Management.
Haley, K.	Backman Scholarship in Forest Resource Management.
Scherer, R.A.	Oscar Soderman Memorial Scholarship.
Skinner, J.D.	Robert E. Mills Memorial Award.
	Oscar Soderman Memorial Scholarship.
Smith, R.R.	Weldwood of Canada Limited Bursary.
	John D. Beatty Memorial Scholarship.
	Charles A. and Jane C.A. Banks Foundation Scholarship.

Fourth Year Students

Barker, M.D.	Best graduating essay - Association of B.C. Professional Foresters.
Chrobot, L.C.	Canadian Institute of Forestry Medal.
Tretheway, C.	Best graduating thesis - Association of B.C. Professional Foresters.
Webb, S.R.	H.R. MacMillan Prize in Forest Harvesting.
	H.R. MacMillan Prize in Forestry.

THIS LIST reflects degrees conferred in the May 1991 and November 1991 Congregations.

GRADUATION STATISTICS

Undergraduate Programs

B.S.F.
Forest Resources Management Major

Barker, M.D.
Bedford, D.E.
Bell, T.D.
Bennett, S.L.
Bragg, M.P.
Brodie, J.R.
Challenger, D.A.
Chrobot, L.C.
Dobi, J.D.
Drobe, B.G.
Dunn, W.E.
Eddy, D.C.
Fidgeon, M.C.
Fletcher, N.B.
Frier, J.G.
Gage, G.P.
Gemeinhardt, K.
Gnucci, J.A.
Hale, D.L.
Halter, M.
Hawe, R.D.
Hedges, S.B.
Horsnell, K.P.
Ligtenberg, J.R.
MacKay, D.C.
Mana, M.R.
McCuaig, W.J.
Melten, P.F.
Milne, S.M.
Mitchell, S.C.
O'Hanley, J.G.
Pelletier, S.L.
Piggot, D.G.
Rushworth, C.K.
Silver, P.F.
Singbeil, R.T.
Sommerville, K.G.
Stables, D.A.
Stagg, C.J.
Sulyma, R.G.
Sweeten, J.R.
Tailleur, R.D.
Talbot, D.T.
Taylor, B.A.
Thornley, D.
Tobin, B.T.
van der Holt, J.A.

B.Sc. (Forestry)
Wood Science and Industry Major

Arnold, E.J.
Goudie, D.
Hutchinson, S.M.
Kaila, P.S.
Lum, A.G.
Mohammed, J.J.
Slim, N.R.

B.Sc. (Forestry)
Forest Science Major

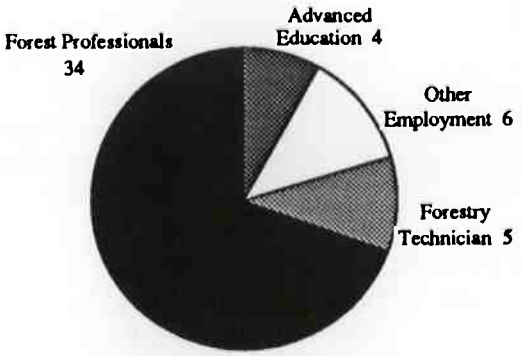
Scott, M.S.
Trethewey, C.

B.S.F.
Forest Harvesting Major

Carson, D.S.
Friesen, J.E.
Johnston, G.P.
Jukes, W.D.
Kaps, K.E.
Webb, S.R.

EMPLOYMENT SURVEY OF RECENT GRADUATES

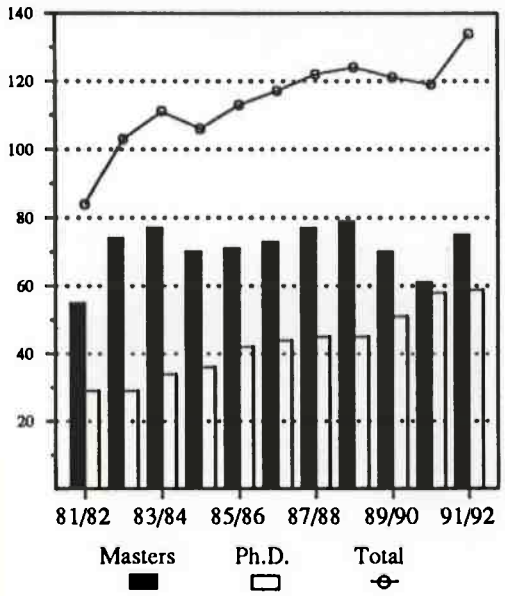
Results of the 1991 employment survey of recent graduates are presented below (49 of the 62 graduates responded to the questionnaire).



Enrolment Trends

The Forestry Graduate Program has grown in student numbers by almost 60 per cent over the past decade. Today there are 134 graduate students registered in the Faculty. The distribution of these students between the different degree programs can be seen in the table below. The greatest growth has been in the number of Doctoral students — in 1982 there were only 29 — today there are 59 students enrolled in the program. In this same period the number of Masters students has risen from 55 to 75.

Graduate student enrolment 1981/82—1991/92



The proportion of female Forestry graduate students has remained fairly constant at around 20 per cent. The following table shows enrolment data for 1991-92.

Graduate student enrolment 1991/92

Program	Male	Female	Total
Ph.D.	48	11	59
M.A.Sc.	1	0	1
M.F.	9	1	10
M.Sc.	47	17	64
Total	105	29	134

The proportion of graduate students from outside of Canada has remained fairly constant over the past few years and presently stands at 50 per cent of Doctoral and 25 per cent of Masters students representing a total of nineteen countries.

Graduate Student Funding

In the 1991-92 academic year, Forestry graduate students have been awarded over $503,000 in scholarship funding and close to $331,000 in graduate research and teaching assistantships. A further $250,000 from other agencies brings this year's total graduate support to over $1,084,000.

Graduate funding sources 1991/92

Scholarships	$503,450
Graduate teaching assistantships	$181,260
Graduate research assistantships	$150,000
Other funding sources	$250,000
Total	$1,084,710

SCHOLARSHIPS AND FELLOWSHIPS

Graduate Programs

DOCTORAL STUDENTS

Awadel-Karim, S.	**VanDusen, McPhee**
Brack, C.	**UGF**
Brown, G.	**NSERC, GREAT**
Dai, C	**Weyerhaeuser**
Doyle, A.	**CPA, McPhee**
Glaubitz, J.	**NSERC, GREAT**
Hartley, I	**Forestry Faculty**
Hudson, R.	**VanDusen, McPhee**
Jeong, C.	**McPhee, Heller**
Kischuk, B.	**GREAT**
Kozak, R.	**Forintek**
Kubasiewicz, A.	**NSERC, UGF**
Lau, P.	**Forintek**
Leitch, J.	**McPhee**
Li, X.	**UGF**
Markham, J.	**NSERC, UGF**
Matakala, P.	**VanDusen**
Mohammad-Nazhad, M.	**VanDusen, McPhee**
Muhairwe, C.	**Commonwealth**
Nercessian, G.	**McPhee**
Ni, S.	**UGF**
Rutledge, R.	**Fletcher, VanDusen**
Shishido, M.	**UGF**
Tak, K.	**Johal, McPhee**
Van Ham, M.	**GREAT**
Wang, Y.	**UGF**
Wielgus, R.	**GREAT**
Wood, P.	**Thompson**
Xu, W.	**Johal**
Zhang, D.	**UGF**

MASTERS STUDENTS

Ainsworth, D.	**VanDusen**
Andison, D.	**MacMillan**
Booth, B.	**GREAT**
Christie, D.	**VanDusen**
Craig, V.	**GREAT**
Daniels, L.	**Forestry Faculty**
Donald, S.	**Lumber**
Feng, Y.	**Cochran**
Goudie, D.	**Forintek**
Helewa, N.	**McPhee, Orchard**
Kayahara, G.	**Fletcher**
Lewis, K.	**GREAT**
MacKenzie, K.	**GREAT**
McCuaig, W.	**Allen**
Morgan, J.	**GREAT**
Neumann, M.	**GREAT**
Rusch, D.	**GREAT**
Sun, L.	**Buckland**
Szikszai, T.	**UGF**
Van Woudenberg, A.	**CFP**
Vernier, P.	**McPhee**
Wand, S.	**McPhee**
Yearsley H.	**McPhee**

Full Name of Award

George S. **Allen** Memorial Scholarship.
Don **Buckland** Memorial Scholarship in Forest Pathology.
CFP — Canadian Forest Products Ltd. Fellowship in Forest Wildlife Management.
Canadian **Commonwealth** Scholarship.
Ralph M. and Elizabeth E. **Cochran** Scholarship.
CPA — Canadian Particle Board Association Scholarship.
Fletcher Challenge Canada Ltd. Fellowship in Forest Resource Management.
Fletcher Challenge Canada Ltd. Fellowship in Silviculture.
Special **Forestry Faculty** Scholarship.
Forintek Canada Corporation Fellowship in Wood Science and Wood Products.
GREAT — Graduate Research Engineering and Technology Awards.
Paul **Heller** Fellowship.
Asa **Johal** Fellowship in Forestry.
Lumber Inspectors' Benevolent Society Scholarship.
MacMillan Bloedel Limited Fellowship in Forest Mensuration.
Donald S. **McPhee** Fellowship.
NSERC — Natural Sciences and Engineering Research Council of Canada.
Dr. C.D. **Orchard** Memorial Fellowship in Forest Management.
James Robert **Thompson** Fellowship.
UGF — University Graduate Fellowship.
VanDusen Graduate Fellowship.
Weyerhaeuser Fellowship in Wood Design Management.

THIS LIST reflects degrees conferred in the May 1991 and November 1991 Congregations.

M.A.Sc.

XIONG, Pingbo
Modelling strength and stiffness of glue-laminated timber using machine stress rated lumber. *Dr. J.D. Barrett*

M.F.

CHAI, Francis
Diameter increment models for the mixed swamp forests of Sarawak. *Dr. V.M. LeMay*

DUBOIS, Joel
The influence of conditioning on internal checking of high-temperature dried Pacific coast hemlock. *Dr. S. Avramidis*

M.Sc.

FLAVELLE, Alix
A traditional agroforestry landscape on Fergusson Island, Papua, New Guinea. *Dr. G.B. Ingram*

HEINEMAN, Jean
Growth of interior spruce seedlings on forest floor materials. *Dr. D.P. Lavender*

JIANG, Liang
Somatic embryogenesis and genetic transformation in Douglas-fir. *Dr. J. Carlson*

KOLOTELO, David
Artificial hybrids of B.C. spruce species: growth, phenology and cold hardiness. *Dr. D.T. Lester*

SWIFT, Karen
Response of interior spruce to fertilization in the interior of B.C. *Dr. G.F. Weetman*

TOMOI, Matsushima
Reliability-based design for Japanese timber structures using Canadian S-P-F dimension lumber. *Dr. J.D. Barrett*

Ph.D.

BRACHER, Grant
Detection of nutrient stress in Douglas-fir seedlings using spectroradiometer data. *Dr. P.A. Murtha*

CAZA, Caroline
The ecology of planted engelmann spruce (*Picea engelmannii* Parry) seedlings on sub-alpine forest cutovers. *Dr. J.P. Kimmins*

CISNEROS, Hector
Microscopical aspects of hardwood refiner pulps. *Dr. L. Paszner*

GADZIOLA, Robert
Investigation of the zinc and manganese status of some stands of *Tsuga heterophylla* in B.C. *Dr. T. Ballard*

HUSTED, Lynn
Low soil temperature and efficacy of ectomycorrhizal fungi. *Dr. D.P. Lavender*

LAROCQUE, Guy
Assessing competition using absolute and relative growth rates and relative density of wood for red pine. *Dr. P.L. Marshall*

MESSIER, Christian
Factors limiting early conifer growth in salal-dominated cutovers in Northern Vancouver Island. *Dr. J.P. Kimmins*

RUNESSON, Ulf
Considerations for early remote detection of mountain pine beetle in green-foliaged lodgepole pine. *Dr. P.A. Murtha*

SILIM, Salim
Regulation of cold hardiness in seedlings of western red cedar, yellow cedar and white spruce. *Dr. D.P. Lavender*

WANG, Jun
Variation in resistance and tolerance of black cotton wood to *Melamspora occidentalis* (Jacks) rust. *Dr. B.J. van der Kamp*

PRODUCTION INFORMATION

This Annual Report was prepared on an IBM PC AT compatible computer using Microsoft Word for Windows Version 2.0. A final camera-ready impression was produced using a QMS PS 815 printer.

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