This year marks the third straight year of record enrolment in the Faculty. Along with 217 new undergraduates (about the size of the entire student body in 1988!), 381 returning students make a total undergraduate population of 598. In addition, we have 207 graduate students (another Faculty record) and 131 post-baccalaureate students enrolled in the Diploma in Forestry (Advanced Silviculture) we offer in collaboration with the Silviculture Institute of B.C. (page 6 provides a more detailed report on this year’s enrolment).

This increase in enrolment reflects steady demand from young people for our professional forestry programs (both Forest Resources Management and in Forest Operations), nearly the full rollout of the B.Sc. in Natural Resources Conservation, and the first steps toward full implementation of the new B.Sc. program in Wood Products Processing. With these increased student numbers comes a substantially increased responsibility for providing high-quality instruction and student services. We are responding to this responsibility in several ways:

- We have created three new administrative positions in the Faculty, called “Program Directors” whose responsibility is to advise and assist undergraduate students. Prof. Sue Glenn has accepted this role for the Natural Resources Conservation program, Prof. Simon Ellis for the Wood Products Processing program, and Prof. Peter Marshall for the professional forestry programs. Along with our Coordinator of Student Services Helen Driscoll, these three faculty members will help work out schedule conflicts, bring course problems to the formal curriculum review process, and generally work to improve student esprit de corps.

- We have hired additional faculty members who will assist in various aspects of undergraduate and graduate instruction (page 5 introduces these individuals). In addition, we currently have twelve faculty searches active to strengthen further our capacity to deliver these programs.

- In our “Growing for the Future” campaign we are emphasizing projects which directly serve student needs, for instance, improved financial assistance, high-quality teaching equipment for the new Forest Sciences Centre, and improvements at the University Research Forests. (The Forestry Campaign insert to this issue of Branch Lines describes the campaign in more detail.)

- We have substantially revised the Natural Resources Conservation program by strengthening core learning in land management, streamlining program options and introducing an innovative fourth-year field course featuring fully integrated instruction throughout the fall term.

- We will, this year, put in place substantial revisions to the professional forestry program. Although the task force headed by Prof. Gordon Baskerville is not due to report until later this fall, some themes are already emerging: a need to strengthen linkages among elements of the program to forge a coherent body of usable knowledge in the student’s mind, a need to provide more structure in how students move through the program while retaining flexibility to enter from a number of routes, and a likely need to lengthen the program to five years to incorporate all of the thoughtful changes suggested by our survey of government, industry and environmental organizations. In the context of modern post-secondary education, lengthening the program implies that the initial degree may end up being a Master of Forestry rather than a B.S.F.

- We are planning three symposia this year. One will focus on bringing First Nations perspectives and issues more firmly into the forestry and natural resource conservation curricula. Because there is a deficiency in university curricula world-wide, other universities from the United States, New Zealand and South America are also involved in this project, headed in the Faculty of Forestry by Gordon Prest and Beverly Bird. A second will deal with contemporary issues in forest hydrology as a means to assist with our searches for the Forest Renewal BC Professors in that field (Prof. Olav Slaymaker from the Geography Department is leading that search committee, and is responsible for the symposium as well). The third, a joint initiative of the Faculty of Arts and the Faculty of Forestry, will examine the cultural meaning of forests with special emphasis on the social constructionist views asserting the absence of any objective reality called “nature” (more on this in a later Branch Lines).

The challenges facing contemporary forest management can be solved only through human ingenuity. Education—whether undergraduate, graduate, diploma or continuing studies — is a most powerful means for honing that ingenuity and bringing it to bear on society’s problems. We welcome your comments and suggestions on how we can do a better job in meeting this challenge.

You can reach me by letter, fax (604) 822-8645 or by e-mail binkley@unixg.ubc.ca.

Clark S. Binkley
The fixation of ammoniacal copper preservatives

Over the past decade, the wood processing industry has been increasingly involved in strategies to minimize the environmental impacts of treated wood. One sign of this is the dramatic increase in the use of preservatives based on inorganic metal oxides, which "fix" in wood. The most common of these, chromated-copper-arsenate (CCA) is widely used for preserving utility poles, decking and fencing for the Do-It-Yourself market. As products treated with these "fixed" preservatives are more frequently used by the general public, there has been an interest in considering alternative preservative formulations. Several have been developed, based upon copper solubilized in either ammonium hydroxide or monoethanolamine. Examples include, ammoniacal copper citrate, ammoniacal copper borate, ammoniacal copper quat, and copper azole. Studies have shown that wood treated with these preservatives is highly resistant to leaching of the preservative (similar to the currently used CCA) — a highly desirable quality. One aspect that is not understood is the actual fixation chemistry and how/whether the fixation process of these new formulations can be accelerated. This is an important commercial consideration, particularly in Canada, where the low temperatures of winter slow fixation processes.

The NSERC/Industrial Chair in Wood Preservation at UBC has been researching the fixation chemistry of ammoniacal copper systems for almost four years. Our research has uncovered several important observations.

The fixation of the ammoniacal copper systems were thought to be based upon the simple precipitation of the copper chemical (copper carbonate in these nonarsenical formulations) as the ammonia evaporated from the wood surface following treatment. Our studies revealed that in addition to precipitation reactions, stable diamminecopper(II) complexes were formed between the copper and the heartwood extractives (such as taxifolin in Douglas-fir). This process can be beneficial, since it can significantly reduce the loss of these extractives, which are often responsible for the characteristic properties of the heartwood. However, we concluded from the research, that these reactions can also induce negative effects, such as causing the treated Douglas-fir to become very dark in colour.

Recent research by the wood preservation team at UBC has confirmed that lignin also plays a key role in binding copper in ammoniacal copper systems. Using vanillin to model the abundant guaiacyl units found in lignin, we were able to prepare a single crystal of the copper complex. Spectroscopic studies together with a crystallographic study of the crystalline solid clearly confirmed the presence of a stable diamminecopper(II)vanillin complex.

As part of this ongoing research program, we plan to investigate techniques for accelerating the fixation reaction of ammoniacal and amine copper preservatives, as well as investigate the influence of post-treatment fixation processes on the surface cleanliness of the treated wood.

Further information is available from Dr. John N.R. Ruddick at (604) 822-3736 or e-mail ruddick@unixg.ubc.ca.

DEPARTMENT NEWS

In August a six-member team visited Japan as part of a 9-year joint research project with International Environmental Institute, Hokkaido, Japan. This group included David Cohen (Group Leader), David Barrett and Helmut Prion from the Department of Wood Science and Raymond Cole, Sherry McKay and Linda Brock from the School of Architecture. This long term, multi-million dollar cooperation agreement will examine philosophies and technologies for the full exploitation of wood. This first project, which examined traditional Japanese carpentry and its current use in modern residential construction, will be reported in the next Branch Lines.

Dr. Thomas Maness has returned from a year in Europe working with the Swiss School of Engineering for the Timber Industry in Switzerland and the Fachhochschule Rosenheim in Germany. While in Europe he developed extensive information about European woodworking programs, equipment manufacturers and the wood industry. As a result of his trip, the Department has developed a knowledge transfer plan for obtaining European teaching and curriculum design assistance for the new Wood Products Processing Program.

Drs. Frank Lam and Helmut Prion attended the International Council for Building Research Studies and Documentation Working commission W18-Timber Structures in Bordeaux, France August 26-29, 1996, where they presented two papers: "Lateral resistance of wood based shear walls with oversized sheathing panels" (Lam, Prion, He); and "The effect of edge knots on the strength of SPF MSR lumber" (Courchene, Lam, Barrett).
Stand structure and dynamics of uneven-aged interior Douglas-fir

UNNEVEN-AGED interior Douglas-fir stands form an important portion of the harvest in the Cariboo Region of British Columbia. This forest type is structurally complex due to a history of disturbances from partial cutting, insects, and fire. In addition to being important from a timber perspective, many interior Douglas-fir stands provide important winter habitat for mule deer. At the present time, partial cutting is widely employed in this forest type to maintain winter range structure and encourage successful regeneration of the Douglas-fir. However, there is little information on the impact of various residual stand structures on stand growth.

Large trees are essential to good mule deer winter range. Recruitment of sapling-sized trees to larger diameters is necessary to replace large trees which die from various causes or which are harvested. Recruitment is especially necessary in areas that meet other criteria for good winter range, but presently lack sufficient numbers of large trees, often because of diameter-limit logging in the past. Spacing of dense patches of smaller trees is one possibility for increasing the growth rate of individual trees. However, the impacts of spacing on this stand type are not well understood.

To help address these issues, two growth and yield research installations were established in uneven-aged Douglas-fir stands on the Knife Creek Block of UBC’s Alex Fraser Research Forest, near Williams Lake. Funding for establishing these installations and making subsequent measurements was provided by the Alex Fraser Research Forest, the Community Forestry Program (Williams Lake District), and FRDA II. Both installations are comprised of permanent sample plots, in which all trees greater than 1.3 m in height within the confines of the plot are tagged, measured, and their locations mapped.

Installation 88-3 is designed to provide data for exploring relationships between stand structure and various components of tree and stand growth. It is comprised of 6 permanent sample plots, located across a range of stand structures. These plots were established and initially measured in 1988 and remeasured following the 1992 growing season. Installation 88-11 is designed to provide data for assessing the impact of three different spacing regimes on the dynamics of stands with a predominance of small diameter trees. Two plots were established and measured in dense areas in each quarter of three 40 ha blocks, for a total of 24 plots during 1989 and 1990. Treatments (the three spacing regimes plus a control) were randomly assigned and applied to each quarter block during the winter of 1990-91. Plots were relocated and the trees were tagged and measured again in 1992.

Although it is too early to draw firm conclusions from either of these installations, analysis of the first remeasurements on 88-3 indicated some differences in growth among the various stand structures examined. Stronger growth differences may become evident with future remeasurements. The post-spacing measurements in 88-11 showed that spacing reduced the variability in stand structures among the plots. The diameter distributions for the spaced plots formed bell-shaped curves rather than the classical inverse-J shaped distributions that existed prior to spacing. The number of trees and basal area removed by spacing appeared to be as much a function of the previous diameter and spatial distribution on the plots as it was a function of the spacing method.

Present plans are to remeasure the plots on each of these installations in the next few years as funding becomes available.

For further information, please contact Dr. Peter Marshall at (604) 822-4918 or e-mail marshall@unixg.ubic.ca.

DEPARTMENT NEWS

We have three new members of the Department. Dr. Joe McNeel will be teaching forest operations courses in both the Operations program and the Forest Management program. Joe returns to the Department after several years of teaching at the University of Washington in Seattle. Don Luymes has taken a joint position with the Forest Resources Management Department and the School of Landscape Architecture. He will be teaching courses in both the management and landscape architecture programs. Dr. Paul Wood rejoins the Department to teach in the Natural Resources Conservation program. For further information on these new appointments see the article 'New Appointments' on page 5 of this newsletter.

Dr. Valerie LeMay will be on sabbatical leave for this academic year. This past summer has seen two retirements from the Department. Dr. Doug Golding retired after 18 years of teaching and research in the area of forest hydrology. Dr. Al Chambers took early retirement this year and is now devoting his time to community involvement in fishery, forestry and wildlife management.

Searches are gearing up for three Chairs in the Department, all funded through Forest Renewal BC. For further information see the article 'Faculty Searches' on page 5 of this newsletter.
The science behind riparian management

In recent years countries such as Denmark and Japan have begun, at great expense, to purchase streamside areas back from private landowners. These countries have realized that protection of stream environments for fish and other resources depends on wise management of riparian areas. In B.C., the Forest Practices Code has incorporated guidelines to protect the hydoriparian system from potentially adverse effects of some forest practices. The term “hydoriparian” is increasingly used to reflect the tight linkage of the aquatic environment and the riparian area. In spite of these guidelines we’re a long way from knowing how to best manage forest landscapes to protect the full range of functions that hydoriparian areas provide.

Riparian management is nothing if not controversial. Headwater streams are especially problematic. Riparian reserve zones for small streams can have an immense impact on the Annual Allowable Cut. Still, any effects of forest practices on these small channels, however subtle, may have cumulative impacts on downstream environments. These small streams are the home of cutthroat trout, young bull trout and coho salmon, along with many other organisms.

There are numerous questions about riparian management. Should the same guidelines be used irrespective of biogeoclimatic zone? The riparian management area is made up of a reserve zone and a management zone (RMZ), but how that RMZ should be managed is not clear. Should the RMZ be partially harvested, topped, or left intact? Are the guidelines inadequate or unnecessarily onerous? Are we trying to protect just salmonids or a broader set of forest ecosystem values?

There are many projects underway to provide the scientific basis for riparian protection. Many of the projects involve personnel from UBC. Two of the larger programs in hydoriparian research in B.C. are the Stuart-Takla project (Prince George) and CAREX (Cariboo Riparian Experiments) around Williams Lake. And studies are underway in Clayoquot Sound and the Malcolm Knapp Research Forest. All of these programs involve integrated studies by large groups of researchers to evaluate riparian management practices. The B.C. government has launched a Riparian Ecosystems Research Program with the support of FRBC to help coordinate and communicate hydoriparian research in B.C.

Many of the guidelines are based more on expert opinion than rigorous science. Some ecosystems such as lakes, wetlands, and estuaries have had little study from which to advise current practice. In the language of science we can view the current guidelines as hypotheses that require testing. There are multiple objectives and each may require different levels of riparian management, for instance, protection of salmonid rearing habitat only, to protecting most riparian-dependent species, to meeting landscape-level biodiversity objectives.

Further information is available from Dr. John Richardson at (604) 822-6386 or e-mail jrichard@unixg.ubc.ca.

DEPARTMENT NEWS

Our NSERC Industrial Research Chairs in Population Genetics have been funded at about $400,000 a year. Dr. Kermit Ritland has been appointed to the Senior Chair and Dr. Sally Aitken to the Junior Chair. Dr. John Richardson, senior scientist with the B.C. Ministry of Environment, Lands and Parks, has been appointed as a part-time Assistant Professor in the field of riparian zone ecology.

Dr. Fred Bunnell was appointed to the recently endowed Forest Renewal BC Chair in Applied Conservation Biology.

In August, Forest Sciences hosted an international conference of two IUFRO Working Groups on “Diversity and Adaptation in Forest Ecosystems in a Changing World.” The local organizer was Dr. John Carlson.

Dr. Scott Hinch presented two papers at the International Congress of Fish Biology in San Francisco, California and the American Fisheries Society Annual Meeting in Dearborn, Michigan.
New Appointments

Dr. Sally Aitken has joined the faculty as Assistant Professor in Forest Sciences and NSERC/Industry Junior Research Chair in Population Genetics. After obtaining a Ph.D. at Berkeley in 1989, Sally was Associate Director of the Pacific NW Tree Improvement Research Coop. at Oregon State University. Her research will focus on genecology and physiological genetics of forest trees, and conservation genetics of forest dwelling species.

Mr. Don Luymes has degrees in landscape architecture from UBC and Guelph. For the past 4 years he worked as Assistant Professor at Penn State. His new Assistant Professor appointment is held jointly between Forest Resources Management and Landscape Architecture. His research interests focus on the interface between forested lands and urban society: recreation, parks and landscape design.

Dr. Joe McNeel has joined Forest Resources Management as an Associate Professor in forest operations and engineering. He obtained his Ph.D. in industrial forest operations from Virginia Tech. in 1984, and worked most recently with the U.S. Forest Service as a research engineer. His research will focus on forest operations and strategies for partial harvests and systems that mitigate the impact of harvest systems on forest sites.

Dr. John Richardson completed his Ph.D. in Zoology here at UBC in 1989, and has been working in the Westwater Research Centre’s program on prospects for sustainability in the lower Fraser basin. His research in hydoriparian systems addresses the linkages between stream and riparian ecosystems. His appointment as Assistant Professor in Forest Sciences is by MoU with BC Environment.

Dr. Kermit Ritland obtained his doctorate in Genetics from the University of California in 1982. Prior to joining the Forest Sciences Dept. as Professor and NSERC/Industry Senior Chair in Forest Genetics, Kermit held a Faculty position in the Dept. of Botany at the University of Toronto. His research interests are in population and quantitative genetics.

Dr. Paul Wood has joined the Forest Resources Management Dept. as an Assistant Professor in conservation policy. Following a 15-year career as both a biologist and professional forester, Paul obtained his Ph.D. from UBC in 1994. He was subsequently appointed as Assistant Professor at the University of Toronto, but has returned to UBC to continue his research on institutional mechanisms for conserving biodiversity in democratic societies.

Faculty Searches

Searches are active for the following Faculty positions:
- Assistant Professor in silviculture
- Tenure-track Instructor in natural resources conservation
- Tenure-track position in the area of GIS applications in forest management and landscape design (joint with Landscape Architecture)
- FRBC Chairs (2) in hydrology (joint with the Department of Geography)
- Tenure-track positions (3) in advanced wood processing.

We will be starting searches in the near future for three more FRBC Chairs, one in silviculture, one in applied conservation biology and one in forest management.

For further information on any of these positions, contact Dr. Susan Watts (see Faculty address on page 6).

New Program Directors Appointed

Three new “Program Director” positions have been created to help in the advising and assisting of undergraduate students.

Dr. Sue Glenn – Program Director for the Natural Resources Conservation program;
Dr. Simon Ellis – Program Director for the Wood Products Processing program;
Dr. Peter Marshall – Program Director for the Forest Resources Management and Forest Operations programs.

Dean’s Office

Temporary Assignments

Dean Binkley has accepted an appointment to a second term as Dean and, in conjunction with this reappointment, is taking a short period of administrative leave of absence from September 1, 1996 through December 31, 1996. During this time, Prof. John McLean has agreed to serve as Acting Dean, and Prof. Chris Chanway as Acting Associate Dean for Graduate Studies and Research. You may reach any of these individuals at (604) 822-2467 or fax (604) 822-8645 and Dean Binkley by e-mail at binkley@unixg.ubc.ca.
In July, Helen Driscoll joined the Faculty as Coordinator of Student Services. Helen graduated from our Natural Resources Conservation program this past April. While attending UBC Helen worked as a Teaching Assistant for the first year dendrology class and as a research assistant on a riparian corridors study. Prior to her studies in forestry, Helen worked for Canada Trust for seven years as a Senior Loans Officer.

As Coordinator of Student Services, Helen’s responsibilities include admissions, student registration, job placement for undergraduate and graduate students, advising new and prospective students, recruitment and public relations. She will be attending career fairs and making presentations at technical schools and colleges throughout the province. Her immediate focus is student registration and the upcoming Careers Evening in October (see article below).

Helen can be reached by phone (604) 822-3547, fax (604) 822-8645 or e-mail hdriscol@unixg.ubc.ca.

The Burgess-Lane Memorial Lectureship was established in 1974 to honour Thomas E. Burgess and David E. Lane, Vice-Presidents of British Columbia Forest Products Ltd. The fund was established by Mrs. Dorothy Burgess and Mrs. Evelyn Lane and British Columbia Forest Products Ltd. for the presentation and publication of special lectures in forestry.

This year’s Burgess Lane Memorial Lecture will be held on November 6, 1996, when Dr. James Bolton, Director of the BioComposites Centre in Bangor, North Wales, will be speaking on the state of the art, issues and future opportunities for biocomposites. The lecture will be held at the Faculty of Forestry in conjunction with an evening of poster displays on faculty research. Invitations to this public event will be mailed out shortly.

Further information can be obtained from Kathy Campbell at (604) 822-1833 or e-mail kcampbel@unixg.ubc.ca.

Undergraduate Enrolment

These enrolment statistics are preliminary and will be finalized in early November.

Our undergraduate enrolment for the 96/97 session is the highest ever, with a record 598 students. This figure, which does not include exchange or non-resident students, represents a 15% increase over the previous year and a continuation of the steady enrolment increase of the past 8 years.

In total, 217 new students entered the faculty this year (compared with 225 new students in 1995). Our two B.S.F. majors continue to be the most popular, with approximately 62% of the students enrolled in this degree. Thirty-four of the new students entered into the B.Sc. (Natural Resources Conservation) degree program — our program with the highest enrolment GPA.

The new Wood Products Processing degree was offered this fall for the first time. The enrolment for this program was slightly less than anticipated, with 16 new students enrolling into first year. The Wood Science Department has been working extremely hard to promote this new program and enrolment numbers are expected to rise steadily.

The new Broader Based Admissions Policy (introduced last year to encourage students who did not meet the Faculty of Forestry entrance GPA, but were above the UBC minimum) was not used to admit any students this year. The faculty received ten applications in total, eight of the applicants qualified on their own merits and two applicants were unable to meet the UBC minimum entrance GPA.