

Branch LINES

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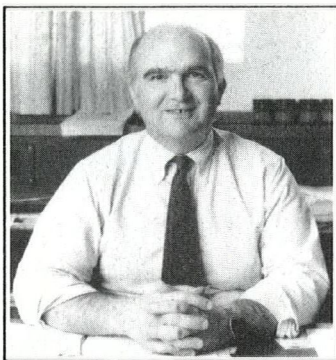
From the Dean's Desk

Around this time of year, the question I am asked most frequently is "How are enrolments this year?" The exact figures will become available later this week, but as we go to press (16 September 1991) are not certain. Counts in key first and second year classes, however, suggest that new enrolments are about the same as last year. As a consequence, total enrolment will increase slightly, since last year's very small graduating class will be replaced with a considerably larger first year class.

These short-run trends are quite consistent with the history of the past two decades. As seen in the accompanying figure, first-year enrolments fluctuate significantly from year to year. Fluctuations in the health of the forest products industry apparently cause these fluctuations: when times are good for the industry, students see forestry as a sensible career choice and come to UBC; when times are bad, they choose another field of study or shun university altogether.

The relationship between enrolments and forest products industry revenues follows a two- to three-year lag. Career expectations apparently adapt only slowly to short-run economic factors. Some students may commit to a forestry education by entering, in good economic times, a two-year program such as the excellent one at Cariboo College, or a technical school program and go on to finish at UBC despite current economic signals.

Regression analysis of these two series indicates an elasticity of about 0.7, meaning that a 1% change in forest



products industry revenues produces a 0.7% change in enrolments. Given that some students come to UBC from outside the province, and some come for reasons unrelated to BC's forest products industry, this low elasticity is not surprising.

What about the future? Without structural shifts in the way foresters are employed in the province, enrolments are apt to follow past trends. Since 1951, enrolments have averaged about 1.25 students/million m³ of harvest. This suggests total new enrolments of 80-110 per year.

Fluctuations in the economic health of the forest products industry will continue to produce substantial year-to-year fluctuations in this average. The two- to

three-year lag provides some capacity to anticipate changes in enrolment, but our administrative capacity to react to these short-run fluctuations is quite limited.

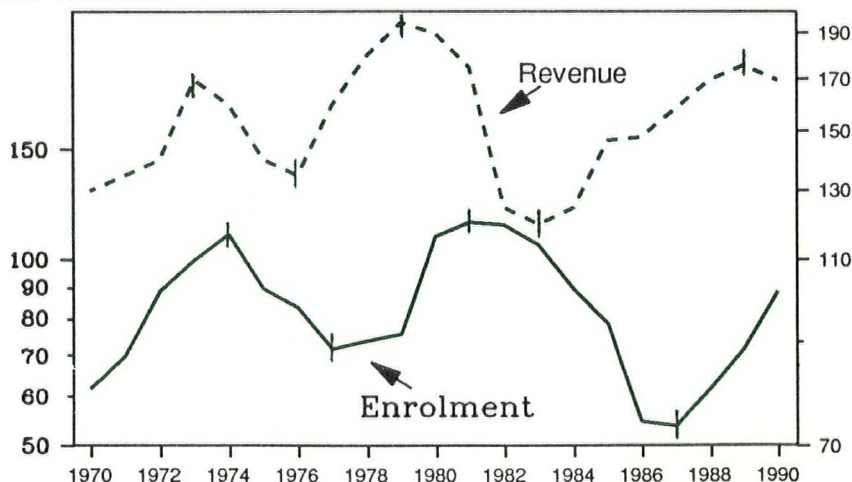
The management challenge is to reduce the year-to-year variations. Strategies such as counter-cyclical recruitment, recruitment from locations outside B.C., and recruitment into programs other than forestry (e.g. the proposed B.Sc. in Conservation of Parks and Natural Areas) will help achieve this objective. Greater emphasis on graduate education—both professional and scientific—will also probably help to reduce the annual variation in student numbers.

Clark S. Binkley

If you are interested in more information on trends in enrolments at UBC, write or call (604) 822-3542 and we will send a copy of "Forecasts of First-Year Forestry Enrolments at UBC" which includes a more complete analysis than the space here permits.

Enrolment

Revenue



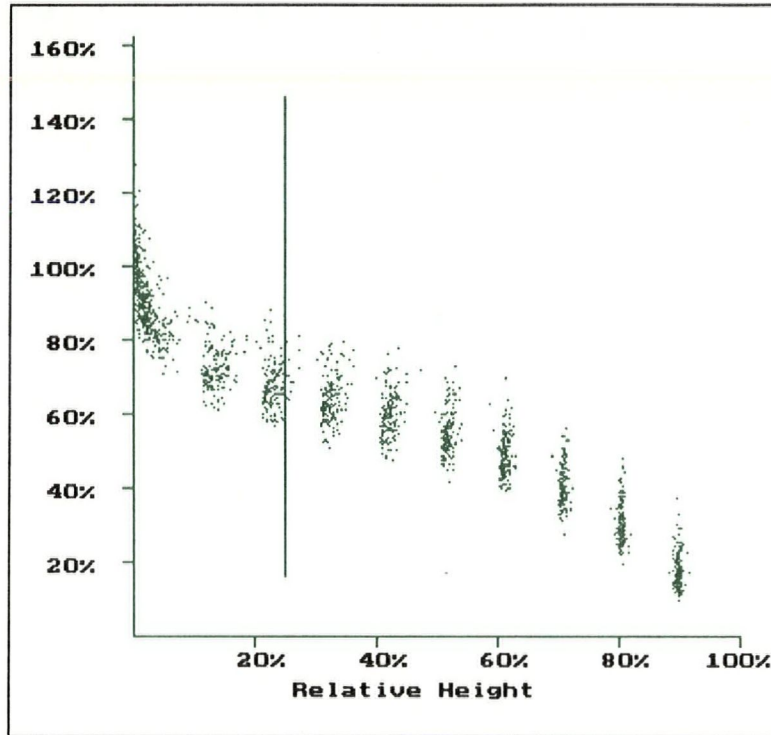
Trends in Enrolment and Real Gross Industry Revenues, 1970-1990. The left-hand scale refers to enrolment and the right-hand scale refers to the index of industry revenues; both are logarithmic. The short vertical lines mark peaks and troughs in the series. The data are three-year moving averages of the variables.

User-friendly Forest Mensuration and Biometrics Software Developments

TAPER equations allow diameter inside bark to be estimated at any height up a tree if the diameter at breast height (dbh) and the height of the tree are known. These equations are primarily used to estimate the height of a given diameter on a tree and to estimate the volume between any two diameters on a tree. For example, a taper equation can be used to hypothetically divide a standing tree into 5 m logs up to a top diameter of 10 cm, and estimate the volume of each log.

Many different types of taper equations have been proposed. In general, these equations have proven to be either too simplistic to represent adequately the shape of a tree or too complicated to easily fit. A few years ago, Dr. Tony Kozak of the Forest Resources Management Department developed a "variable exponent taper equation" that represents the shape of a tree quite well using a single equation.

In order to simplify the fitting and testing of the variable exponent taper equation, a computer program called VTAPER was developed to automate the necessary procedures. VTAPER also can be used to estimate the volume and plot the predicted profile of any tree. The program is designed to run on IBM-



Relative diameter vs. relative height

compatible microcomputers with EGA/VGA graphics and 640 kilobytes of RAM. Testing and documentation of VTAPER have been completed and it will soon be available to interested individuals and organizations.

VTAPER is one example of the computer programs that are being developed through a project funded by the B.C. Science Council. The objective of the project, currently in the second year of a three-year program, is to develop, test, and document user-friendly, forest mensuration and biometrics software for

microcomputers. The intent is to provide computer programs, tailored to forestry needs, that incorporate statistical techniques that are not easily accessible to the practicing forester. The software developed should prove to be an effective means of transferring recent advances in mensuration and biometrics to operational applications.

Other software currently being developed includes a computer program for fitting multiple regressions that tests for violation of the distributional assumptions of least squares regression. If

any of the assumptions appear to be violated, routines will be available to assist the user in trying to correct the violation. A program for assisting in the design (choice of sample size, setting significance levels, etc.) of simple random and stratified random samples is also being developed. All the software will be designed to run on IBM-compatible microcomputers.

For further information on this research project contact Dr. Peter Marshall at (604) 822-4918.□

DEPARTMENT NEWS

Dean Binkley has approved the appointment of Dr. A. Kozak as Acting Department Head for a term of up to one year while the search for a new Department Head continues.

Dr. Tim Ballard was the recipient of the 1991 University Teaching Prize in Forestry.

Dr. Valerie LeMay has been awarded a grant from the Science Council of B.C. for the continuation of the dynamic taper function research project. Drs. LeMay,

Marshall and Kozak will be collaborating on the project.

Dr. M. Mohseni Savari from the University of Mazandaran, Iran, will join the Department in early September as a visiting professor for a year and will be working with Dr. Golding in Forest Hydrology.□

RESEARCH HIGHLIGHT

Slashburning and Soil Fertility in Wetter Engelmann Spruce – Subalpine Fir Forests

CLEARCUTTING in wetter Engelmann spruce–subalpine fir forests in southern central B.C. is often followed by slashburning then planting of Engelmann spruce seedlings. Subsequent failure of these spruce plantations has been quite common.

A newly-planted spruce seedling in these forests is confronted with severe competition from vigorously growing shrubs (particularly herbs), as well as a short growing season due to a prolonged snowpack and relatively low soil temperatures. Slashburning can help seedling establishment by temporarily removing competing vegetation and by increasing growing season soil temperatures. The more severe the burn, the greater will be the setback to competing vegetation and the increase in growing season soil temperatures. However, the more severe the burn, the greater is the likelihood of adverse effects on soil fertility through destruction of beneficial soil organisms and loss of soil organic matter and nutrients.

Should we be concerned about the effects of slashburning on soil fertility? Is there an optimum type of slashburn, given the tradeoffs between effects on competing vegetation and soil temperature on the one hand, and soil fertility on the other? These questions have led to a major on-going study of the ecological effects of slashburning in wetter Engelmann spruce – subalpine fir forests, primarily in the Clearwater Forest District, but to some extent also in the McBride Forest District.



Slashburning in the ESSF

High severity slashburns in these forests are very unlikely as slash and soil remain relatively moist the entire summer. The greatest average depth of burn for 20 slashburns studied has been only 2.9 cm, corresponding to a moderate severity burn.

Ecosystem type is a major determinant of fire impact. Slash and forest floor consumption in mesic ecosystems averages approximately 1.6 times that in moister subhygric ecosystems. The lower organic matter losses from subhygric ecosystems, combined with the greater quantities of organic matter in these ecosystems suggests that slashburning is unlikely to have any major adverse effects on soil fertility. Slashburning-induced nitrogen

losses in the subhygric ecosystems (average approx. 240 kg/ha) should be replaced by precipitation nitrogen inputs in about 45 years.

In the case of mesic ecosystems, the greater organic matter and nutrient losses resulting from slashburning, together with lower mineral soil organic matter and nutrient reserves suggests that slashburning has the potential to degrade soil fertility. The results of assessments of tree seedling and competing vegetation responses to burning are needed in order to complete this picture.

For further information on this research project contact Dr. Mike Feller at (604) 822-3729.□

DEPARTMENT NEWS

Dr. Denis Lavender has been reappointed as Department Head for one more year, or until such time as a successor can be recruited.

Dr. J.P. Kimmins has been appointed Chairman of the National Round Table on the Environment and Economy – Dialogue in Forestry.

Dr. Karel Klinka participated in the recent IUFRO symposium in South Africa, "Intensive Forestry: The role of Eucalypts",

where he presented a paper on the use of ecological site classification in the prediction of forest productivity and response to fertilization. Dr. Klinka was also involved in the initiation of plans for a symposium on site classification in British Columbia in 1993.□

Market Research for Technology Transfer

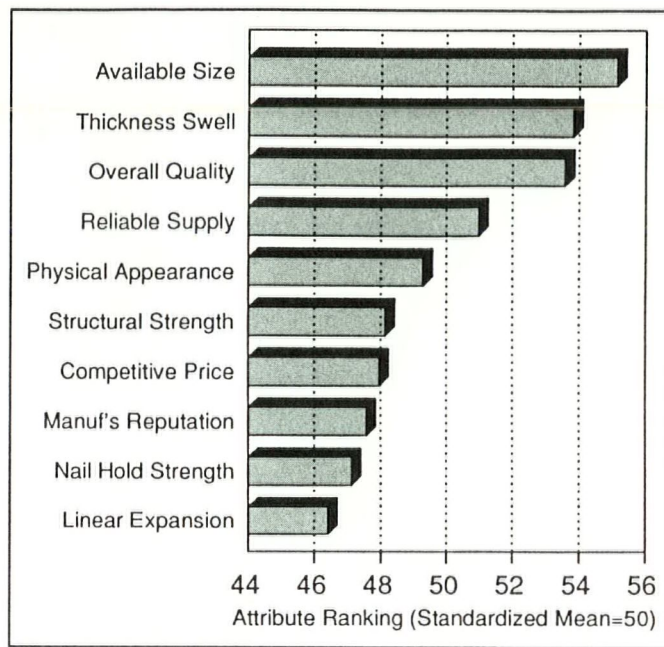
A MARRIAGE of science (represented by new processing technologies) and customer requirements (represented by market research) can help British Columbia establish an international competitive position in producing value-added wood products. Research is currently underway utilizing an alliance of technology and marketing. New technologies to produce non-veneered panels (NVP), such as oriented strand board, provide opportunities for British Columbia to increase the utilization of second growth forest resources without increasing the land required for industrial forest use. This can occur because producing NVP uses timber resources, that due to size or species, are not economically viable for manufacturing solid wood products.

The rapid expansion of NVP processing facilities in North America during the 1980's has greatly increased the volume of low-cost, low-value, commodity panels for residential construction. Recent "second generation" processing technologies can improve NVP product attributes and performance. This provides British Columbia with an opportunity to become a pioneer in developing value-added, non-veneered, panel products for the Japanese market. Currently, Japan uses high quality panels made from S.E. Asian hardwood and uses very little NVP. Over the next decade both log supply for Japanese manufacture and S.E. Asian plywood volumes are expected to decrease creating a window of

opportunity for a high quality NVP.

As the Japanese market increases its use of British Columbia wood products, an opportunity exists to build on current market successes and develop a NVP of the quality necessary to penetrate this specific offshore market. Research is currently underway to match the appropriate processing technology with Japanese market requirements. Ensuring high-value offshore markets will encourage the transfer of appropriate technology and promote the production of value-added wood products in British Columbia.

An assessment of technologies (both existing and developing) for the manufacture of non-veneered structural panels has been completed. Each technological advance impacts panel attributes differently. Interviews and research completed in Japan during February, 1991 determined product requirements for panels and the Japanese willingness to pay for these requirements. Linking the impact of "new" technologies with Japanese customer requirements (and their willingness to pay) can provide



Relative importance of panel attributes

information needed to facilitate the transfer of appropriate technology. Rather than develop processing facilities utilizing all possible new technologies, those technologies appropriate to satisfy specific customer requirements can be used. This should improve the international competitive position of the B.C. wood industry.

This research project, which is supported by Forintek Canada Corporation, Ainsworth Lumber Company, FEPA Research Unit, and Forestry Canada, is scheduled for completion by the beginning of 1992.

For further information contact Dr. David Cohen at (604) 822-6716.□

DEPARTMENT NEWS

Dr. Paul Steiner has been appointed Acting Department Head as of July 1, 1991. Former Head, Dr. David Barrett will resume his position as Professor of Wood Engineering within the Department.

Dr. Andy Howard is presently on sabbatical leave in Costa Rica. While

there he will participate in a project comparing manual and mechanized harvesting methods in tropical forests. This study is funded by the World Wildlife Fund.

The B.C. government has contracted Dr. Robert Kennedy and Dr. Robert Kellogg (Adjunct Professor) to develop a detailed working plan and budget for a comprehensive research proposal con-

cerning valued-based management and utilization of second-growth western hemlock forests.

Our Forest Operations group recently co-organized, with FERIC and MacMillan Bloedel, the 14th Annual Meeting of the Council of Forest Engineering in Nanaimo. Over 150 people attended this conference. Proceedings are available from Dr. Joe McNeel.□

Our Forests:

A Citizen's Survey of Current Issues

This course for the general public, which was first offered last year through UBC's Centre for Continuing Education, is being offered again this fall with an updated format. The course will feature discussions of the highly publicized and important issues surrounding the status and management of B.C.'s forests. The feature presentations by UBC forestry faculty members will be responded to by invited speakers from industry, government and the environmental sectors and then opened up for public discussion.

The course will run eight Tuesday evenings from 7:30–10:00 pm in the MacMillan Building on UBC campus and will include the following presentations:

- **October 1** – Are B.C.'s forests being managed properly for the long-run?
**F. Les C. Reed and
Bart J. van der Kamp**
 - **October 8** – Is tree farming forest management? **Karel Klinka**
Is Swedish forestry a model for B.C.? **Gordon F. Weetman**
 - **October 15** – Wildlife, old-growth and forestry: What can we do?
Fred L. Bunnell
 - **October 22** – Slashburning: Good or bad? **Michael C. Feller**
Will B.C.'s reforestation efforts produce healthy forests? **Denis P. Lavender**
 - **October 29** – Forest recreation: Opportunities and problems in B.C.'s provincial forests – What can we do?
Peter J. Doolling
 - **November 1** – Second-growth forests: What quality of wood can we expect?
Robert W. Kennedy
 - **November 12** – Public forest tenure policy at a crossroads: Where to from here? **David Haley**
 - **November 19** – Are there alternatives to clearcutting? **J.P. (Hamish) Kimmins**
- Registration for the course is \$60.00. An optional field trip is available to the UBC Malcolm Knapp Research Forest at Maple Ridge on Saturday, October 19, for an additional \$30.00.

All registration enquiries should be directed to UBC's Centre for Continuing Education at (604) 222-5238.

Forestry Continuing Studies Network

A New Initiative

FORESTRY EDUCATION is best viewed as a system, where the traditional preparation – undergraduate BSF – is only one part, albeit an important one. The overall system includes secondary schools, the regional colleges, university training outside the formal professional program, the undergraduate professional program, the forester-in-training apprenticeship, graduate education, and continuing studies. To serve this last need, we, with the financial support of the Ministry of Forests and Forestry Canada, recently initiated a new Forestry Continuing Studies Network for British Columbia.

Because no single organization has had the mandate and resources, past efforts in this area have been *ad hoc*, uncoordinated and inadequate to meet the clear and strongly felt needs. The current program rectifies this problem through a structured, cooperative approach that includes:

- **A Network Office** at UBC to provide overall support, coordination and communications (270–2357 Main Mall, Vancouver, B.C. V6T 1Z4, (604) 822-5874). Cindy Pearce, RPF, recently joined the faculty as Director of the UBC office. An office manager Shirley Sato has been hired, and a Coastal Program Coordinator will join the team shortly. The Silviculture Institute of B.C. has moved to share an office complex with the Network.
- **Regional Centres** at the University of Northern British Columbia (Mr. Al Todd, Interim Contact, Integrated Silviculture Services, 4184 15th Ave., Prince George, B.C. V2M 1V8, (604) 564-9299); Selkirk College (Ms. April Anderson, Box 1200, Castlegar, B.C. V1N 3J1, (604) 365-7292); and on the Coast (currently served from the UBC

Network office). Additional regional centres – at Cariboo College in Kamloops and Northwest Community College at Smithers will be added as additional resources become available.

- **Provincial Advisory Committees** for specific audience sectors. The UBC office will organize and support the advisory committee for professional/technical audiences.
- **A provincial Council for Continuing Studies in Forestry** to assure that all key topics and audiences are adequately covered without excessive duplication.

The next few months will see considerable activity – a workshop in early November to inform the many agencies and organizations involved in forestry education, work to establish the advisory committees, the development of program plans, and creation of the first regional and provincial calendars. We look forward to your comments and suggestions as this program evolves.

Clark S. Binkley
Dean

FOREST NEWS from the UBC Malcolm Knapp Research Forest

Harvesting Methods at the Forest

Historically, clear cutting has been the main method of harvest at the Research Forest. However, the days of the progressive clear cuts have passed, and now the cuts are not only smaller (sometimes as little as 2 hectares) but more scattered. Some of the earlier progressive cuts have, nonetheless, provided an excellent basis for chronosequence research sites.

One of the first "partial cutting" projects was carried out when the demonstration forest was established in 1978. A form of shelterwood was established on the site. Unfortunately, a lack of a preparatory cut meant that many of the residual trees blew over.

In the late eighties a series of small shelterwood cutting projects were undertaken in an attempt to demonstrate the feasibility of the harvest method on the west coast. Visitors to the Research Forest may have noticed two such shelterwoods not far from the main gate, one in a patch of 100 year old Douglas-fir and one in a small area of 60 year old hemlock. Both areas are standing up well and are harbouring healthy regeneration.

Last year about 30% of the timber harvested on the Research Forest was from partial cutting openings. In the Blaney Lake area seven openings were made, varying in size from 0.15 to 0.45 hectares. These blocks represent the first of ten entries prescribed for this particular area over the next 150 years. The objective of this plan is to protect the aesthetics of Blaney Lake and the recreational values of the adjacent Loon Lake camp. It is also hoped that the harvesting plan will demonstrate that high quality timber can be grown and harvested in areas subject to high public use.

Future harvesting on the Research Forest will increasingly focus on partial

cutting, and it is estimated that close to 50% of cuts will soon come from operations similar to the Blaney Lake system. A new bridge scheduled for construction over the Alouette River will allow partial cutting projects to extend into some of the areas cut in the 1920's as part of the Abernethy and Loughheed railway operations. Moving into such 50-60 year old stands will help to provide a good mixture of stands for various research projects and for the demonstration of partial cutting techniques.

For further information on harvesting methods at the Research Forest, or for any other questions relating to the Forest, contact Peter Sanders (Resident Silviculturist), UBC Malcolm Knapp Research Forest, R.R. #2, Maple Ridge, B.C. V2X 7E7 ☎ (604) 463-8148.

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Vegetation Management Symposium

The Malcolm Knapp Research Forest (together with Monsanto Canada) is sponsoring a vegetation management symposium on October 3 and 4, 1991, at the Research Forest. Symposium topics will include:

- Conifer yield enhancement
- Local and global environmental issues
- Economics of intensive vegetation management
- Measuring the benefits of vegetation management
- Herbicides and safety

Registration is \$85.00 and space is limited.

For further information call Larry Taylor (Monsanto) at (604) 943-0119, or Don Munro (UBC Research Forest) at (604) 463-8148.☐

H.R. MacMillan Lecture

The H.R. MacMillan Lectureship in Forestry was initiated by H.R. MacMillan in 1950 and continues to be supported by the H.R. MacMillan Family Fund of the Vancouver Foundation. Forty-one lectures have been held since the series began.

Dr. Kenton Miller, Program Director of Forests and Biodiversity at the World Resources Institute in Washington, D.C., will be this year's MacMillan Lecturer. His talk will deal with biodiversity management strategies and will pay attention to educational needs in this area. The lecture will be held in the Frederic Wood Theatre, 6354 Crescent Road, UBC Campus, Thursday, November 7 from 12:30-1:30 p.m. For further information call (604) 822-2727.☐

Research Day

We are planning a Research Day on Tuesday, December 10, to be held in conjunction with the Schaeffer Lecture. Faculty members will be making presentations and exhibiting poster displays of their research.☐

NEWSLETTER PRODUCTION

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