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EXTERNAL FACTORS SHAPING THE 2010 FORESTER: CONTINUING EDUCATION FROM AN ACADEMIC POINT-OF-VIEW

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INTRODUCTION

Professional obsolescence is a danger facing all foresters. All too many foresters consider their educational commitment to terminate when they earn their degree. The competency of the professional forester can quickly erode if the forester does not develop a personal continuing education program.

Professional obsolescence develops from new technology growth and a loss of knowledge attributed to forgetting. The discovery and application of new knowledge is a dynamic process which creates an exponential growth in the new knowledge gap of the forester who chooses not to continue his education. At the same time, a retention gap results from the forester's simple process of forgetting. Together, the new knowledge gap and retention gap account for the process of professional obsolescence. Figure 1 (adapted from Beardsley 1972) illustrates this general relationship.

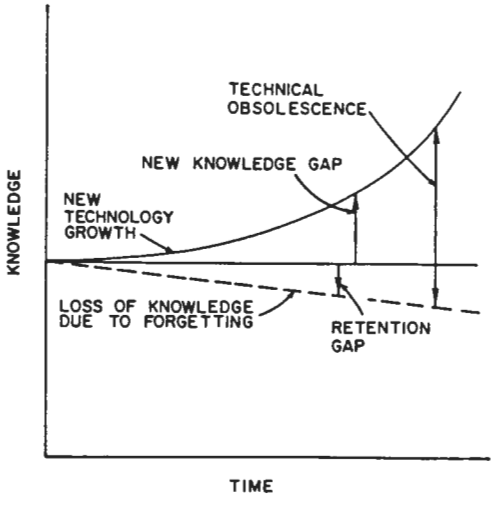

Figure 1. Potential for increasing technical obsolescence over time.

We referred to the simple process of forgetting. Is it really a simple process? We suspect the process for a forester may differ from that of other professionals. Two factors may contribute to a higher degree of forgetting by foresters than for other types of professionals. First, the diversity of subject matter in professional forestry education (economics, biology, biometry, harvesting, etc.) is unusually high.

Second, most foresters begin their career at the entry-level and spend 3-5 years as "field foresters." The broad forestry curriculum and early-career minimum-use of their professional education may contribute to foresters having a much larger retention gap than other professionals.

Technical obsolescence is a rapid process. A forester could easily find his education obsolete in less than a decade. For example, the half-life of a natural resource education (the time following graduation in which professional competency is reduced by one-half) has been estimated to be as low as eight years for natural resource managers (George and Dubin 1971). It is interesting to note that no data on this relationship are available for professional forestry education. Continuing forestry education is essential to prevent or minimize technical obsolescence.

SURVEY OF CONTINUING FORESTRY EDUCATION NEEDS

Survey Description

In 1981, the Mississippi Society of American Foresters Forest Science Committee surveyed 800 Mississippi foresters to determine specific continuing education needs. One hundred ninety-six usable responses were obtained.

Foresters rated each of 62 subjects by continuing education need. Straka and Richards (1984a) published complete results on each of the 62 subjects. Here, we discuss results for each of seven SAF subject areas: (1) forest mensuration/biometrics (statistical concepts and regression, computer procedures, growth and yield equations and simulation models), (2) forest resources protection (e.g., from fire, insects, and disease), (3) forest biology and ecology (e.g., soils, wildlife ecology, physiology), (4) silviculture (e.g., tree genetics, fertilization, site preparation and regeneration methods), (5) managerial and decision sciences (e.g., forest economics, taxation, land use mapping, and systems analysis), (6) social and related arts and sciences (e.g., public relations and communication skills), and (7) forest products utilization (e.g., cost analysis for harvesting operations, road construction, marketing and forest products, and wood procurement for manufacturing facilities).

Respondents placed continuing education into one of four categories of need: Don't Need (not mandatory for professional progress), Already Have (already fully competent in the subject area), Would Help (would help professional progress), and Must Have (necessary for professional progress). Respondent's age, years of experience and type of employer were also recorded. Thirteen public and private employers of Mississippi foresters were also surveyed. Respondents ranged from a forest products company regional manager responsible for over 100 foresters, to a forestry consultant with only 3 employees. The 13 employers were responsible for the performance and professional development of 448 foresters.

Needs Ranked By Foresters

Figure 2 illustrates the continuing education needs of Mississippi foresters by subject area and by the "Would Help" and "Must Have" categories. Mississippi foresters perceive a high need for continuing education in the managerial and decision-sciences subject area. They also have a strong need for forest products utilization, social and related arts and sciences (especially communication skills) and silviculture.

The needs expressed for specific subjects are interesting. If a very high need is defined as two-thirds or more of the foresters rating a subject "Would Help" or "Must Have," 25 of the 62 subjects qualify as "very high need." Nine out of ten subjects in the managerial and decision science subject area qualify as "very high need" (the exception is international forestry). Seven out of the ten subjects in the forest products utilization subject area qualify, and those tend to stress cost analysis and marketing types of utilization problems. Six of twelve in the social and related arts and sciences qualify, and those tend to stress communication skills. Two subjects in the silviculture subject area (fertilization and herbicides) and only computer procedures in the forest mensuration/biometrics subject area qualify.

In general, managerial/economics, communications, and new technology-type subjects were identified as areas of greatest continuing education need. A forester's age or years of experience had little effect on subject area rankings. Type of employer does not tend to change need rankings by subject areas, but the level of continuing education need varies by type of employer. Consultants and self-employed foresters expressed the highest need, followed by forest industry employees, then government employees (Straka and Richards 1984b).

Needs Ranked By Employers

Foresters and their employers generally agree on the relative importance of different subject areas (Straka and Richards 1984a). Employers frequently rated the importance of specific subjects higher than did their forester employees (employers had a higher need on 44 of the 62 subjects). Tables 1 and 2 list the ten most needed and least needed subjects by foresters and their employers. Foresters tend to stress managerial and current technical subjects; employers stress the same type of subjects, but place a stronger emphasis on quantitative and communication skills. Both foresters and their employers find forestry subjects on the nonmarket valued forest resources least important. Employers do not see a need for subjects in basic forestry field skills (e.g., scaling timber products and cruising).

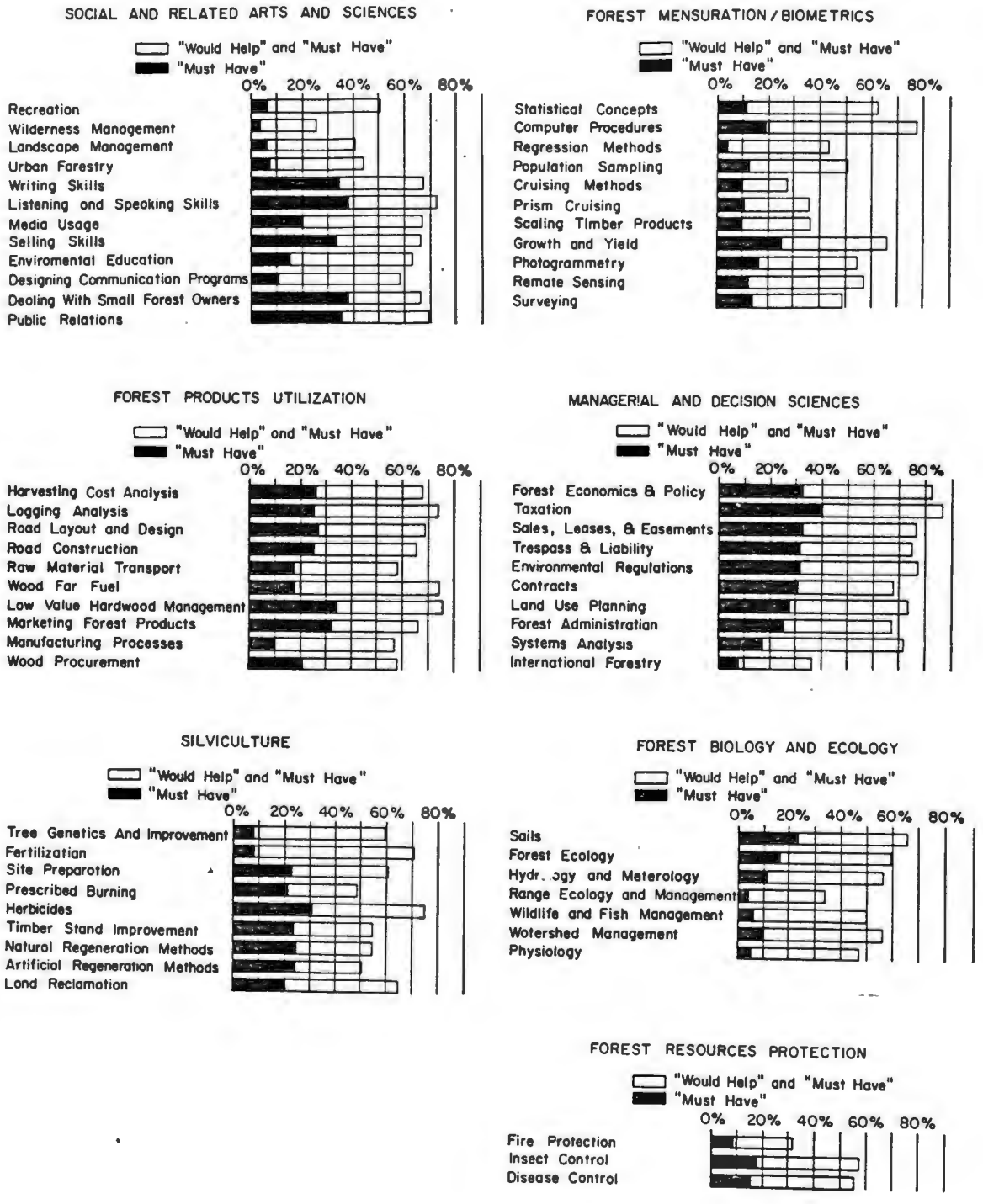

Figure 2. Continuing education needs of Mississippi foresters, as perceived by foresters, by subject and "would help" and "must have" categories.

Table 1. The ten most needed subjects by foresters and their employees, in order of need (need defined as percentage responses in the "would help" and "must have" categories).

Rank	Foresters	Employers
1	Taxation	Computer Procedures
2	Forest Economics, Policy/Law	Media Usage
3	Computer Procedures	Systems Analysis
4	Sales, Leases/Easements	Soils
5	Environmental Regulation	Statistical Procedures
6	Low Value Hardwood Mgmt.	Forest Economics, Policy/Law
7	Herbicides	Writing Skills
8	Trespass and Liability	Listening & Speaking Skills
9	Wood for Fuel (Energy)	Environmental Education
10	Raw Material Transport	Herbicides

Table 2. The ten least needed subjects by foresters and their employers, in decreasing order of need (need defined as percentage responses in the "would help" and "must have" categories).

Rank	Foresters	Employers
1	Wilderness Mgmt.	International Forestry
2	International Forestry	Landscape Mgmt.
3	Range Ecology & Mgmt.	Range Ecology & Mgmt.
4	Landscape Mgmt.	Urban Forestry
5	Regression Modeling Techniques	Wilderness Mgmt.
6	Urban Forestry	Regression Modeling Techniques
7	Physiology	Manufacturing Processes
8	Recreation	Cruising Methods
9	Wildlife & Fish Mgmt.	Point Sampling & Prism Cruising
10	Designing Communication Prgms.	Scaling Timber Products

NEED CATEGORIES

Foresters' continuing education needs can be separated into three categories:

- updating basic forestry skills
- upgrading technical abilities
- developing managerial capabilities.

Updating basic forestry skills involves the retention gap in Figure 1. Basic forestry knowledge is sometimes forgotten with time. These updating needs are not a high priority; both foresters and their employers give them a low priority. Besides the nontimber utilization subjects, cruising methods had one of the lowest need levels in the survey. Other updating subjects, like prism cruising, scaling timber products, surveying, and fire protection, also rated a low need level.

Foresters and their employers recognized updating as a moderate continuing forestry education need.

Upgrading technical abilities addresses the new knowledge gap in Figure 1. New technology growth creates this need. Foresters and their employers give upgrading a priority. Areas of recent technology growth consistently rated a very high need level (e.g., computer procedures, fertilization, and herbicides). Foresters generally rated the need to upgrade technical abilities very high (in areas like site preparation and road construction). As a general rule, employers rated upgrading as a higher need than their forester employees.

Developing managerial capabilities rated a very high need level by both foresters and employers. Both rated the need for almost all managerial and decision sciences subjects very high. Foresters rated communication skills very high, but employers rated communication skills as one of the highest needs in the survey. The age of the forester, years of experience, and type of employer did not have much of an effect on perceived managerial and decision sciences needs by foresters.

TO THE YEAR 2010

The survey indicated a very high level of interest by foresters and their employers in continuing forestry education (CFE). As academicians we are involved in the delivery of continuing education. The assigned title of this paper focuses on the next 25 years. We do have our own crystal ball and have several observations on future trends in CFE.

The baby-boom generation has strongly influenced education over the last few decades. In this "age of information", there seems to be an insatiable appetite for continuing education. One key characteristic of the baby-boom generation and its demand for continuing education is that persons in the group are extremely credential conscious. Those short courses which offer CFE credit tend to be more popular with foresters than those that do not. This is because many of the baby boom foresters are pursuing the Society of American Foresters' CFE certificate. A short course that offers a certificate of completion (suitable for framing, preferably with the name of a university in large script) tends to be more popular than one that does not.

One trend that will probably continue is for CFE activities to be concentrated at universities that have fully-developed continuing education complexes. In the South, one of the largest producers of CFE programs is the University of Georgia. We doubt this would be the case if the Georgia Center for Continuing Education was not on campus. The Donaldson Brown Continuing Education Center at Virginia Tech provides another good example. This trend may lead to regional CFE centers; one large CFE program in each region centered at a university that can support large conferences.

The Professional Development Degree

Professional continuing education was spearheaded by the medical and engineering professions. One innovation in continuing engineering education that we expect to see incorporated in CFE programs is some variation of the professional development (P.D.) degree. Klus (1973) fully describes this "new" degree.

The P.D. degree is a post-baccalaureate degree, not equivalent to or a stepping-stone to any other advanced degree. It is offered by over a dozen universities throughout the United States, including the University of Alabama (Birmingham), the University of Missouri (Rolla), the University of Minnesota, and the University of Nebraska. Most programs require the equivalent of 24-semester hours of "course work," but non-credit continuing education activities can make up most or all of the program. Usually 80 percent of the activities must be evaluated (i.e., some sort of grade awarded). This symposium would earn nonevaluated credit, for example. Usually 48 hours of such nonevaluated activities equal one semester hour. Course requirements are usually separated into curriculum categories, like technical updating or technical advancement. Transfer credit is allowed in P.D. programs and an independent study project is required.

Would such a program be appropriate for forestry? Perhaps P.D. degrees in forestry could be offered by the regional continuing education centers. Each forestry subject area could be reviewed and upgraded by individual forestry schools in each region (i.e., a one- or two-credit unit on silviculture, forest protection, forest economics, etc.). These would transfer to the regional university, which would finish out the program. Course work would be scheduled on weekends and as much course work as possible would be offered by independent study. If forestry continues to follow engineering's continuing education lead, some sort of a P.D. in forestry can be expected before 2010.

SUMMARY

As one would expect, the major continuing forestry education needs, as identified by both foresters and their employers, were communications and management skills. Not all foresters stress managerial needs; subject areas that have experienced recent technological advancement (like herbicides) were also identified as important needs.

Employers seem more concerned about managerial capabilities than foresters (communication skills is a good example, 90 percent of employers, but only 70 percent of foresters, consider them very important). Employers and foresters both seem equally concerned about upgrading technical abilities (like fertilization and herbicides). Foresters appear more concerned about updating basic skills than employers (employers consider cruising methods a low priority area, foresters do not).

Updating basic forestry skills is a moderate continuing forestry education need. Foresters rate the need higher than employers, but

neither identified high updating needs. Employers seemed more concerned with management development than basic technical skills. Upgrading technical abilities was a high priority, by both foresters and their employers. Areas affected by new technology growth rated the highest need. Developing managerial capabilities rated a very high need, with employers stressing communication skills.

Perhaps continuing forestry education activities might include subject area modules that start with updating material, then lead to upgrading (e.g., begin a short course on herbicides by reviewing the relevant plant physiology before discussing herbicides). Our survey indicated that upgrading must be stressed to attract foresters (or get employers to pay for a short course), but that foresters also require moderate doses of updating. Also, the more "solid" a credential a continuing education activity offers, the more attractive it will be.

Our basic finding is that both foresters and employers of foresters are highly interested in continuing education. They realize technical obsolescence is a problem and stress upgrading activities. Management development is the second major priority. The current emphasis on CFE is an encouraging sign of the development of forestry as a profession. CFE is the result of external factors that will help shape foresters. Professional development and education have become lifelong commitments in the forestry profession. From an academic point-of-view, professional forestry schools and colleges must recognize and address changing needs in forestry education. Our commitment to meeting continuing education needs is vital to the present generation of foresters, and will become increasingly important as new and exciting developments in forest science are applied in our profession.

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