

FORECAST OF FOREST SERVICE NEEDS FOR SCIENTISTS TRAINED IN WOOD SCIENCE AND TECHNOLOGY

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INTRODUCTION

For this discussion, we will confine our attention to people trained in wood science and technology, who work for the Forest Service in that field. (For those who want a more careful definition, these people are classified Forest Products Technologist, Series 1380, in Civil Service parlance.) Almost all individuals who meet this criterion work in Forest Service research; a few are in state and private forestry.

There are a number of other jobs and individuals in the Forest Service that do not meet this definition, but are nonetheless important for this discussion. They include people with at least one degree in WST, but who have other, usually later degrees in another field (say, engineering) and are now classified in that field. There are those trained wholly in other fields who occupy jobs that could be held by selected, well-qualified Forest Products Technologists. These are individuals who, by mixture of training and/or experience, could have been classified in more than one Civil Service series, and where a nearly arbitrary choice was necessary to finally select a series. I've chosen to neglect all of these complicating factors, and assume (without any evidence) that they all balance out; that is, if we had a more precise system for categorizing people, we would still find about the same fraction of Forest Products Technologists in the work force.

Perhaps more problematical than definition for forecasting future needs, it is not clear how the curricula, perspectives, goals, and other circumstances may change to affect the work force fraction. It is hard enough to confidently predict the role wood will play in the community of materials, as a function of time. It is far more difficult to guess how the Forest Service will respond to whatever role wood comes to play.

For example, if as Saeman (Johnston 1977) predicts, the pressures of material needs, energy scarcities, environmental concerns, and economics give rise to a surprisingly larger role for wood, then we can reasonably predict something of a technological vacuum. That is, there will be periods when the public will demand considerably more technology of US than we have on the shelf and some of the gates that inhibit program growth—primarily attitudes of gatekeepers and dollars—will swing open. This would probably translate into more jobs in the Forest Service for both research and technology transfer, but who would fill them? Would we likely increase the fraction of WST types in filling the vacuum?

Of course, no one knows. However, my best guess, for the above scenario, is guardedly pessimistic. Many of our current and past jobs classified Forest Products Technologist could have been filled by other disciplines. Ellis (1964) points

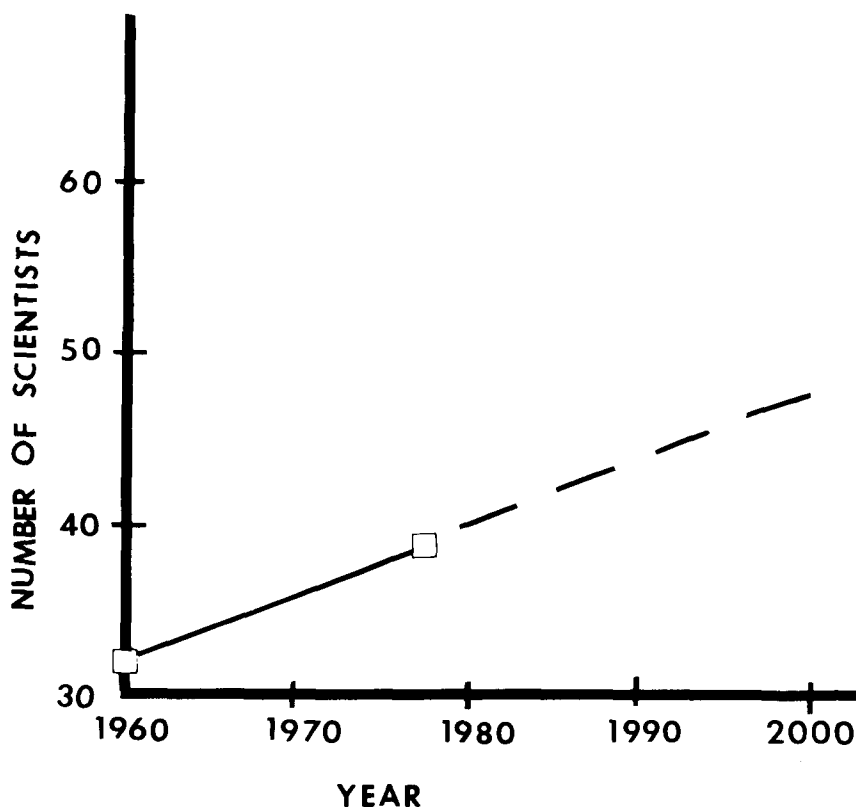


FIG. 1. Forest Products Technologists at FPL (Madison)—projected to year 2000.

out: "Scattered attempts to interest schools of engineering, science, and other related disciplines, in offering curricula in wood science and technology either independently or cooperatively, failed . . ." More than half the forces that lead to filling most vacancies come from the candidate who is seeking, and there has historically been relatively little interest in wood from other disciplines. But given the circumstances Saeman describes, I believe interest from engineering, science, and related disciplines is bound to develop. And those disciplines represent a talent pool so much larger than WST that it is much more capable of filling a vacuum.

FORECASTS

I have managed to delay, perhaps for an interminable amount of time, actually forecasting Forest Service needs. Perhaps the simplest approach to forecasting is to find something to project. The pitfalls are well known.

Ellis (1964) noted, "Research predictions call for increased basic research spending and will greatly increase demand for the production of qualified wood scientists . . ."

In Ellis's reference, 1960 Forest Products Laboratory statistics were given that, coupled with current information about Forest Products Laboratory staffing, per-

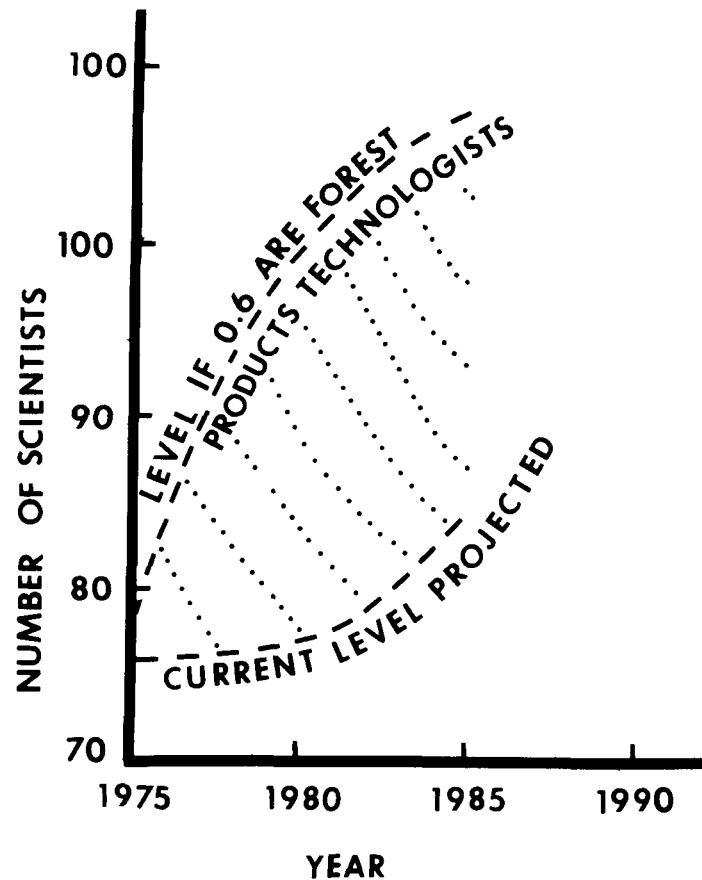


FIG. 2. Forest Products Technologists in Forest Service Research (all programs)—projected to 1985.

mit projections. Figure 1 shows a small, but increasing number¹ up to the year 2000.

A separate forecast of Forest Service involvement in Forest Products Utilization Research has been developed as part of the National Conference of Research on Forestry and Associated Rangelands.² This forecast is not the work of one individual, and involves more of a modified delphi process, in which first estimates were adjusted using the wisdom of teams of guessers. It is conditioned by the assumption that program growth through the year 2000 will take place in the ratio $\frac{2}{3} : \frac{1}{3}$ between the land-grant institutions and the Forest Service. Figure 2 shows the projected trend. Certainly not all of those scientists will be WST-

¹ According to Ellis' data, 20 scientists were classified as FPT in 1960; another 12 were research foresters, who at that time did similar work. In 1977, 35 were classified FPT; 4 were research foresters.

² Joint Task Force, USDA and NASULGC. National Reference Document. National program of research for forests and associated rangelands.

trained. Therefore a range is shown from the present fraction of the work force (.47) up to six-tenths, which surely must be a reasonable goal.

The projections in Fig. 1 can be adjusted for comparison with Fig. 2 if we assume that the Forest Products Laboratory will maintain a constant fraction of FPT's in Forest Service Research. (That fraction currently is .51.) Not surprisingly, the staffing trend projected in the national planning effort, assuming we maintain a constant fraction of the scientific work force as FPT's, is similar to the straight line projection of hard data on Forest Products Laboratory staffing between 1960 and 1977.

My best guess about Forest Service needs for additional forest products technologists by 1985 stacks up as shown below:

Retirements of FPT's	12
FPT's leaving Service	8
New positions created	7
Moves from research to administration	3
Needs outside Research	<u>5</u>
	35

This is not a large number, but I believe it provides a reasonable expectation. Figure 2 demonstrates that there is a much greater opportunity to place FPT's if they are somehow trained to compete with other disciplines that fill jobs in Forest Service Research. Thus, some attention might be paid to the nature of training.

What kind of person is the Forest Service likely to seek? This is somewhat easier to forecast than numbers, but no doubt we could call for a superhuman. (Most professors have probably been frustrated by constituents who want many years of particularized training stuffed into a 4-year curriculum.) However, if I were advising WST students, I would urge them to be strong-suited in one or more of the disciplines probably not taught in depth in their home department. If preparing for Forest Service Research, that would surely be a branch of engineering, chemistry, or the like.

At the same time, I would encourage as much breadth as is reasonably possible, in philosophy if not in curriculum. Without getting into those debates about whether research should be more "basic" or "applied," two things seem apparent to me. These are: (1) we will be pushed more in the future than in the last two decades by those who hold the purse strings to do relevant research (Bosman 1977) and (2) major national (or world) problems will pull us in the same direction.

Surely, for a successful career, it will be important to have enough depth to solve difficult problems, and enough breadth to move flexibly from one kind of problem to another. Not surprisingly, we hear new professionals opting for a career in particleboard research, or fracture mechanics, or some other fairly specialized field. It seems unlikely to me that such a luxury will be possible for most Forest Service scientists, although the distinction is admittedly a matter of degree, for our staffing is only likely to increase dramatically if there is the pull of major national problems. If that happens, the participants will be those who can be pulled from what they would like to do to what needs to be done.

CONCLUSIONS

Almost all Forest Service employees trained in wood science and technology initially work in research. There are currently about 75 active research scientists so trained. Roughly half that many more will be needed in the period from now until 1985, either for new positions or for replacement. A significant number of additional opportunities exist only if prospective employees have credentials highly competitive with other disciplines.

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