Few issues in forestry over the past 50 years have been at once as pervasive or as perplexing as that of policy toward nonindustrial forest lands. On one hand, nonindustrial forests have been recognized as the key to future timber supplies and have been earmarked as a focus of public policy because of the host of market imperfections and competing objectives that limit their use for fiber production (U.S. Department of Agriculture 1978). But on the other hand, doubt has recently been cast on whether the productivity of nonindustrial lands is actually below that of industrial and public ownerships, and thus deserving of public action (Clawson 1977, McComb 1975, Sedjo and Ostermeier 1977). As economists and policy analysts, we thus face the challenge of providing a contemporary view of the so-called "small woodland problem" -- one that either eclipses or verifies past views.
Several events of the past couple of years indicate we may indeed be ready to address the nonindustrial forest land situation in earnest. In May 1977, President Carter's Environmental Message included a directive to the Secretary of Agriculture to "consider the need for measures to...improve the capability of private lands to meet the nation's need for wood" (U.S. Department of Agriculture 1978, Appendix A). Later in 1977, the Airlie House Conference sponsored by Resources for the Future and the Society of American Foresters rekindled interest in identifying and evaluating alternative policies aimed at nonindustrial ownerships (Sedjo and Ostermeier 1977). More recently, a Society of American Foresters' Task Force identified numerous program enhancements to improve outputs from nonindustrial private forests (Society of American Foresters 1979). We even now see a bill before Congress that would require the Secretary of Agriculture to periodically report on the "...status, condition, and productive potential of privately-owned forest land" (H.R. 11782 95th Congress, 2nd Session).

These and other recent activities suggest the time is indeed propitious for carefully and critically reviewing the seeming multitude of past landowner surveys that comprise our knowledge of nonindustrial forest ownerships. Such a review was the task we at the Center for Resource and Environmental Policy Research set before ourselves last fall when we initiated a new research program on rural land policy and land use planning. Having reviewed some 105 surveys and summary studies to date, we have drawn several conclusions about past analyses. My purpose in this paper is to highlight some of our findings.
The approach we took in our review was to focus on landowner behavior and how it has been related to timber supplies. Conventional wisdom in forestry holds that landowner behavior, if left unfettered or unencouraged, can and will lead to either shortages of timber or increases in the relative prices of stumpage. Neither of these situations is deemed desirable from a public viewpoint; thus nonindustrial private forests have been targeted for public policy. In reviewing nonindustrial owner surveys, we sought to discern what dependent variables have been used to judge landowner performance; what independent variables have been identified as determinants of landowner behavior; and how landowner behavior, overall, has been related to timber supplies.

Our general conclusions from the review suggest that past surveys may be highly misleading to policymakers. Gaps in landowner performance have been unwittingly, but frequently, highlighted in past studies because dependent variables typically have been derived from publicly desirable rather than individually rational levels of performance. Moreover, past surveys have been inordinately preoccupied with identifying psychogenic determinants of land owner behavior, while ignoring important sociogenic determinants. This has led to vast literature on landowner characteristics and attitudes, but has provided little conclusive evidence on the relationship between landowner behavior and the availability of timber. Asset position seems to be an important prerequisite for investment in forestry, but studies have not yet demonstrated that opportunities to profit from forestry are being widely foregone. In recent studies, attitudes and objectives of landowners have been shown to have little, if any, effect on the long-term availability of fiber from nonindustrial lands.
Thus we face a confusing situation when looking at past surveys. On the positive side, we are fortunate to have nearly 50 years of owner studies to peruse. But on the negative side, it is not entirely clear that the highly fragmented and narrowly focused collection of past surveys can be viewed cumulatively to provide a composite of nonindustrial forest landowner behavior; nor is it clear that we have properly formulated the small woodland owner problem. It is therefore important to elaborate on the setting, design, and results of past studies, with a view toward discerning their relevance and importance to the policy debate currently shrouding nonindustrial forest land. Let me expand on our observations, beginning with the setting in which landowner studies have taken place.

During the first half of this century, concern for timber supplies nationwide centered on the possibility of shortfalls caused by exploitive cutting practices. We see evidence of this in the Capper Report of 1920, one of the earliest national appraisals of forestry problems which recommended that "All timbered and cut-over land in state or private ownership...not ...required for uses other than timber growing should be classed as 'forest land' and placed under the control of state forestry organizations as far as [they] deem measures of control necessary to prevent devastation" (U.S. Forest Service, 1920). In 1933, then Secretary of Agriculture, Henry A. Wallace, further reflected on private forestry writing in his letter of transmittal to the Copeland Report that "...practically all of the major problems of American forestry center on, or have grown out of, private ownership" (U.S. Congress 1933). The Copeland report further concluded, "...there is nothing in past experience or definitely in sight for the future which gives reason or
hope that private ownership can be depended upon for anything approaching
the contribution to American forestry that has been expected of it during
the past 20 years". In 1945, a Forest Service Reappraisal Report described
the problem of finding practical means to bring private forest land under
good management as "...one of the knottiest problems in American forestry"
(U.S. Forest Service, 1945). Our earliest concern for forestry on private
lands thus focused on the threat to supplies caused by devastating cutting
practices and gross mismanagement of private lands.

But concern for private forestry shifted around the middle of the cen-
tury as inventories began to increase following World War II, and as timber
practices on private lands improved. The locus of concern then generally
became landowner disinterest and underinvestment in forestry. By 1958, the
"Timber Resources" report dismissed the possibility of acute timber famine
and further explained:

Because of their extent, potential productivity, and
location with respect to markets...[farm and miscel-
laneous private ownerships] should be expected to pro-
vide the greater part of the nation's future timber
needs. This will require solution of difficult prob-
lems, however. Most of these ownerships are of small
size, productivity of recently cut lands is low, and
for various reasons, management efforts are limited
or lacking. (U.S. Forest Service 1958).

In 1965 and 1973, subsequent national appraisals expressed more, albeit
relaxed, concern for forestry on nonindustrial ownerships. The "Timber
Trends" report in 1965 noted:

...In spite of relatively low inventory volumes per
acre, [nonindustrial private lands] continue to be
of primary importance in supplying wood to the for-
est industries...[even though] the general level of
management of these lands...is below that attained
on most public and industrial lands. Good markets
are often lacking for the low quality timber that
predominates on many such holdings, and for the small and irregular lots of forest products that are typically available from them. (U.S. Forest Service 1965).

The President's Advisory Panel on Timber and the Environment reported in 1973 that the problem on nonindustrial lands was not one of timber famine but rather a loss of "...a real opportunity for a substantial increase in timber supplies through manipulating growing stock and improving practices on nonindustrial private lands" (PAPTE Report 1973).

Thus the national assessment of the nonindustrial forest problem has changed over the past 50 years, providing a rather nebulous framework for landowner studies. A look at surveys over this period reveals two interesting trends. First, the dependent variable, where identifiable, has tended to vary with changing national appraisals of the forestry problem and changing public programs stemming from those appraisals. Second and perhaps more important, the dependent variables have consistently been derived on the basis of publicly desirable rather than individually rational behavior. That is, landowners have typically been identified for comparisons based on their conformance, or lack thereof, to a level or standard of performance that would lead to the greatest public welfare, but not necessarily to the greatest welfare of the individual landowner. Let's look at some examples.

In the earliest studies, notably those by Folweiler (1944), Folweiler and Vaux (1944), and Chamberlain et al. (1945), a numerical index of pine stocking was used to make inferences about who practiced good forestry and who practiced poor forestry. The impetus for these studies was likely some vestige of our historical concern for the quality of forestry practiced
on private lands. Landowners were evaluated on the basis of the pine stocking index, where a high index was interpreted as good forestry and a low index was interpreted as poor forestry. The assumption implicit in these studies was that all landowners could and should have high levels of pine stocking. Of course to expect this was somewhat idealistic, as economists have since pointed out, for not all landowners are in the position, economically, to invest in forestry. Thus a gap in landowner performance was identified in these studies, although not rightly so, because the dependent variable was a derivative of a publicly desirable standard of performance and not a reflection of what was rational from the individual landowner's perspective.

In the 1950's, as the national appraisal of the nonindustrial situation began to change from concern for poor forestry practices to concern for underinvestment and disinterest in forestry, the dependent variable in landowner surveys tended towards whether or not individuals engaged in forestry activities, rather than the quality of forestry being practiced. The studies of James et al. (1951), Yoho et al. (1957), and Mignery (1956), for example, sought, in addition to evaluating cutting practices, to determine who owned forest land; how owners grouped into different classes; how much forest each owned; how management differed between or among classes; and what beliefs, perceptions, and attitudes shaped forestry decisions. But even though the dependent variable changed somewhat in these studies, it continued to be a derivative of a publicly desirable level of performance, i.e. the management of forests for timber production. Thus, once again, a gap in landowner performance was identified in the survey evaluations.
When public assistance programs became fully operational in the late 1950's and early 1960's, the use of land owner participation as a dependent variable became a common approach to landowner studies (for example see Muench 1965, Webster and Stoltenberg 1959, and Anderson 1968). But as in prior studies, this approach assumed all landowners should participate in public assistance programs. Again this led to gaps in landowner performance being highlighted and elaborated.

The preoccupation of survey researchers with identifying deviations from some ideal behavior has probably, more than any other factor, seriously distorted assessments of the small woodland owner problem. By their very design, past surveys have highlighted a gap in landowner performance which has undoubtedly fueled the mismanagement percept while simultaneously masking more vital questions. No survey research has yet attempted to differentiate landowners on the basis of individually rational (economic) behavior. Such a survey would likely yield very different groups of landowners from those yielded in surveys using public norms as standards of performance. Thus our failure to address heterogeneity in opportunities to profit from forestry is perhaps our single greatest flaw. Until new surveys are conducted to overcome this deficiency, we must exercise caution in interpreting landowner studies, lest we foster the argument that major gaps exist in landowner performance.

A second major observation we made in reviewing past studies was that most have been inordinately preoccupied with determining psychogenic determinants of land owner behavior, while subordinating or ignoring important sociogenic determinants. The typical landowner study has used a dependent
variable such as those described above, and has then related to that variable a long list of landowner characteristics, objectives, and attitudes. This "clinical" look at owners has not surprisingly revealed that asset position is an important determinant of landowner behavior. Asset position has been variously measured, but it usually has included indicators such as income, education, occupation, and size of landholdings. The higher the asset position reflected by the indicator variables, the greater the practice of forestry or participation in assistance programs. In short, the theory behind asset position is as follows: the higher the asset position of a landowner, the lower his expected alternative rate of return and thus the greater the chance that his expected rate of return is in line with that possible from forestry. Here are many other ramifications of this argument which have been well documented elsewhere, so I won't dwell on them here. The point to be made is that through many "clinical" studies of landowners, a group of variables, which can be collectively defined as the landowners' asset position, have repeatedly been shown to be an important prerequisite to the practice of forestry.

Our understanding of the relationships between asset position and small woodland forestry probably reached its peak in the late 1950's or early 1960's, through the works of Duerr, Barraclough, Worrell, Coutu and others. But about that time yet another concern for nonindustrial ownerships arose -- that of landowner motivations and objectives. Most economic analyses of landowners assumed the landowner to be a producer, but researchers in the 1950's began to recognize that many landowners were, in fact, consumers. That is, they had objectives for holding land other
than timber production. Mignery (1956), Christensen (1957), Keniston (1958), McClay (1961), and others focused on non-timber outputs of nonindustrial lands and the maximization of utility therefrom rather than profit. Of course these two goals are not easy to sort in many cases, thus the conclusions in the literature about their relative importance have varied. The central quotation at issue here is the possibility of supply shortfalls caused by landowners subordinating timber production to other landholding objectives.

A cursory look at the proportion of landowners placing non-timber goals above timber goals shows a range from 99 percent in a New Jersey study (Kingsley 1975) to about 40 percent in a Louisiana study (Marlin 1978). Recognizing diverging objectives among forest alnd owners, several observers have alluded to the possibility that major differences may exist between timber inventory and timber supply (Canham 1973, Kingsley and Birch 1977, Morler and Graves 1974).

The validity of the argument that landowners "lock up" timber supplies by pursuing non-timber objectives was specifically addressed by two researchers in the past decade, and their results are intriguing. Stone (1969) used a follow-up study of landownerships in Michigan to find that after a seven year interval, 46 percent of the original owners of forest land no longer owned that land, and 50 percent of the landholders who had not identified timber production as an objective in the initial survey had harvested a forest product from their land during the seven year interval. Finley and Turner (1975) found similar discrepancies between landowner intentions and practice in a Delaware study.
The results of these studies suggest that the dynamics of land ownership and the ambivalence of owner’s objectives, over time, act to reduce any threat of shortages resulting from the subordination of timber to non-timber objectives. This further suggests that psychogenic determinants, such as landowner characteristics, objectives and attitudes, may simply be interesting diversions we have pursued in landowner research. The key determinants of landowner behavior and thus timber supply are likely to be broader socioeconomic variables such as land turnover rates, tax policies, and markets, which, from a geographical or social distance, impart value on the forest resources of a given landholding. These variables have been largely ignored in landowner research, suggesting once again that by design landowner studies have been deficient. Studies which more fully explore sociogenic determinants of landowner behavior will be needed before the true effects of landowner behavior on timber supply can be understood.

In summary then, we can conclude that past surveys have fostered the percept of substandard landowner performance by repeatedly evaluating landowner behavior in terms of deviations from publicly desirable actions, and moreover have been inordinately preoccupied with profiling extraneous characteristics of landowners. Thus past surveys, at best, "explain" only part of observed landowner behavior. Important sociogenic determinants such as turnover in landownership and changing attitudes have been largely ignored. I would suggest that we have only just begun to sort through the maze created by past survey efforts, and that new surveys, periodically and systematically administered on a regional or national scale, should be conducted to provide a contemporary view of nonindustrial, private forest ownerships.


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