TIMBER HARVESTER
REGISTRATION, CERTIFICATION, AND LICENSING
PROGRAMS:
A REVIEW OF PROGRAM STATUS
IN CANADA AND THE UNITED STATES

D. G. MacKay, P. V. Ellefson, C. R. Blinn, and S.J. Tillmann

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Contents

INTRODUCTION

Program Types and Definitions 1
Rationale for Programs 2
Information Sources
  Questionnaire 4
  Literature 5

PROGRAM PERCEPTIONS 6

Perceptions Nationwide
  Importance of Programs 6
  Attributes of Programs 6

Perceptions of Program Managers
  Number of Programs 9
  Initiators of Programs 10
  Attributes of Programs 11
  Growth of Programs 15

TIMBER BUYER PROGRAMS 15

TIMBER HARVESTER REGISTRATION PROGRAMS 16

TIMBER HARVESTER CERTIFICATION PROGRAMS 17

  Attributes of Programs 18
  State and Province Profiles 18

TIMBER HARVESTER LICENSING PROGRAMS 22

  Attributes of Programs 23
  State Profiles 24

SUMMARY AND OBSERVATIONS 26

  Program Perceptions 27
  Significant Issues 27
  Program Design 29

REFERENCES AND LITERATURE CITED 30

APPENDIX: SURVEY QUESTIONNAIRE 33
### Tables

<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Negative Attributes of Registration, Certification and Licensing Programs as Perceived by Program Administrators and Facilitators in States and Provinces. 1993. (Percent).</td>
<td>8</td>
</tr>
<tr>
<td>3. Organizations Taking Lead to Develop a Registration, Certification, or Licensing Program for Timber Harvesters or Timber Buyers in Canada and the United States. 1993. (Percent).</td>
<td>11</td>
</tr>
<tr>
<td>5. Negative Attributes of Registration, Certification and Licensing Programs as Perceived by Program Administrators and Facilitators in States and Provinces with Programs. 1993. (Percent).</td>
<td>13</td>
</tr>
<tr>
<td>6. States and Provinces Having Active Registration, Certification or Licensing Programs for Timber Harvesters or Timber Buyers in Canada and the United States, by Type of Program. 1994.</td>
<td>14</td>
</tr>
</tbody>
</table>
INTRODUCTION

As of May 1995, at least 27 states and provinces in the United States and Canada had implemented programs to register, accredit, certify, or license timber harvesters. These programs have a variety of purposes, including the identification of persons engaged in timber harvesting activities, promotion of credible timber harvesters to private forest landowners, provision of continuing education opportunities to timber harvesters, and fostering greater compliance with regulated forest practices. In many cases, these programs represent timber harvester and the forest products industry responses to various contemporary issues, including occupational injuries, high workers' compensation costs, negative public perceptions of timber harvesting, and general public concerns over the quality of forest environments. In this respect, safety is a particularly important issue because nationally the mortality rate for persons engaged in timber harvesting is over 200 deaths per 100,000 workers. The U.S. Bureau of Labor Statistics estimates there are approximately 300 lost work days per 100 timber harvesters due to occupational injury or illness related to timber harvesting (Mason 1994). Whatever their purpose, registration, certification and licensing programs focused on timber harvesters have substantial implications for the management of forest lands and for the occupational activities engaged in by timber harvesters.

Program Types and Definitions

The occupational programs adopted by states and provinces can be categorized in a number of ways. For purposes here, three major program types are considered, namely registration, certification, and licensing (Young 1987). Registration involves individuals listing their names on an official roster that is managed by either a private (e.g., logger association) or public (e.g., state forestry agency) organization. Certification involves identification of individuals that meet certain qualifications, including work experience and training programs. Certification is not exclusionary in that such programs do not restrict who may harvest timber, rather they confer a title on those who have been awarded a certified status. To become certified, an individual may be required to successfully pass an exam (often involving written and in the field questions). Certification programs typically have a strong emphasis on continuing education. In some states, timber from state-owned forest land is sold only to certified timber harvesters. A related term, accreditation, has been applied to purely voluntary, privately-run certification programs. The term has gained significant popularity, especially in the west and southeastern United States. The third category, licensing involves individuals that have

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2 The manner in which the U.S. Internal Revenue Service views an occupational program may also influence the title assigned to an occupational program. Although not entirely clear, some suggest that a 501(c)(6) organization (e.g., an association), which is granted limited tax status, be identified as an accreditation organization. In contrast, a 501(c)(3) organization, which has greater tax exempt status, be identified as a certifying organization.
an authorization from a state or province to engage in a trade or a profession, including timber harvesting. Licensing is exclusionary; lack of a license means an individual cannot engage an activity which is the focus of the licensing program. ³

The choice of program -- registration, certification, or licensing -- is influenced by a variety of issues, including voluntary versus mandatory program implementation, administration by a private or a government entity, level of financial investment to made in the program, and the most appropriate source (or sources) of program funding. Also influencing the choice of program can be the degree of desired government influence over timber harvester activities. Since a license may be revoked if a timber harvester does not meet certain standards, licensing tends to give government the most control over a timber harvesters' activities. In contrast, registration provides little state control, rather it simply provides a means of keeping track of individuals or organizations within an occupation. Certification is a useful means by which government (or certain private organizations) can increase timber harvester access to continuing education opportunities. Without specific knowledge and skills, harvesters are not conferred the title of certified. Certification programs can also be used by government to improve compliance with certain state and federal regulations (e.g., proof of workers compensation insurance).

Rationale for Programs

Registration, certification and licensing programs are established in large measure as a means of assuring the public that only competent persons are allowed to provide a service or practice a trade. Traditionally, proponents of such programs have argued that they are necessary to protect the public's interest in matters of safety and public health. The assumption being that consumers of a service or product lack the information necessary to discern among poor quality providers and poor quality services (i.e., a failure has occurred in the market system). Similarly, such programs are often suggested as a means of addressing various negative externalities such as poorly supplied services or unwanted products that are imposed on consumers (e.g., polluted air and water). Occupational registration, certification and licensing programs are common in Canada and the United States. In the United States during the mid 1980s, nearly 1,200 occupations were subject to registration, certification and licencing programs implemented in some form in all 50 states. Of this total, over 640 occupations required registration; 65 occupations required certification; and 490 required licensed (Young 1987, pg. 5)

Registration, certification and licensing of various occupations has been traditionally viewed as a rather benign activity. It has been generally accepted that certain trades and

³ Occupational regulation can also be categorized according to output regulation (entry to an occupation is not restricted, but exit is forced for lack of compliance with certain performance standards) and input regulation (entry to an occupation is restricted by required compliance with certain standards (education, experience, examination), but forced exit is not a necessarily condition) (Wolfson et al. 1980).
professionals restrict entry and restrain competition in their fields in order to serve the public interest. There have been few challenges to the notion that such actions could deter from or be incidental to serving the public interest. With the advent of strong public sentiment for downsizing government institutions and for reducing their involvement in the affairs of the private sector, arguments against occupational regulation programs have been variously set forth. Examples are as follows (Gellhorn 1976, Gross 1978, Hogan 1983, Young 1987):

- consumers have ready access to information about product and service quality, so there is no need for government protection (e.g., consumers learn from repeated purchases, experiences of friends and neighbors, and seller-provided information).
- consumers have an opportunity for recourse against providers of inferior goods and services in courts of law.
- consumers that desire lower-priced, lower quality goods and services are worse off because suppliers of such goods and services are not permitted to practice.
- higher entry standards to an occupation reduce the supply of persons engaged in the occupation, thus increasing the price of goods and services.
- self-promotion of occupational regulations by members of an occupation (restricting access to an occupation); consumers rarely engage in campaigns to secure occupational regulation.
- licensing and certification boards strengthen the competitive position of persons already regulated, doing so at the expense of potentially new entrants to an occupation.
- occupational experts sit in judgement of themselves and sometimes fail to aggressively discipline persons already granted permission to practice, but that do so in a manner contrary to the public interest.
- occupational experts are presumed to be only persons in a position to judge a service or a product's performance.
- occupational regulatory programs inhibit professional innovations in practice, education and organization of products and services; unregulated persons frequently develop many advances in an occupation's field.

Registration, certification or licensing of timber harvesters and related occupations is subject to much conjecture and allegation. Careful assessment of the need for occupational regulation generally, and timber harvesters in particular, is often lacking, as is the thoughtful design of programs that can best address such needs. The history of program establishment in many states is often grounded on individual and isolated occurrences of poor forestry practices that have been applied for a variety of reasons. Furthermore, few states, if any, have systematically assessed whether or not the implementation of such programs (however administered) have made a positive contribution to the public's interest (however defined).
This is not to minimize cases where the activities of individual timber harvesters are a cause for concern. In Maine, for example, a timber harvester was banned from conducting forestry operations until December 1998 (5 years) because of a long history of environmental violations, including using streams as skidder roads. Similarly in New York, a logger was permanently banned by court order from conducting timber harvesting operations, even selling firewood ("cut more trees than agreed to and left property literally in ruins, with deep ruts, fallen logs, ugly stumps and unsightly debris") (American Pulpwood Association 1994, 1995a). These cases are clearly evidence that some timber harvesters are unwilling to comply with commonly accepted standards of professional conduct and may indicate more widespread problems given that professional foresters supervise less than one-third of all the area harvested annually in the United States. However, before a comprehensive public or private occupational program is established, the number and significance of these problems and the programmatic options for dealing with them should be systematically assessed.

Information Sources

Questionnaire. This profile of registration, certification, and licensing programs in the United States and Canada was developed from a variety of sources. Much of the information was gathered via a questionnaire (see Appendix) that was distributed in late 1993 to persons in all 50 states, 11 Canadian provinces, Guam, and Puerto Rico. It was sent to forestry program administrators and other public or private officials considered likely to be responsible for or knowledgeable about occupational programs focused on timber harvesters. At a minimum, a questionnaire was sent to the individual heading the lead forest management agency in each state or province. As appropriate, follow-up questionnaires and telephone calls were made to other individuals suggested by those initially contacted. A request was also made for copies of laws, program reviews, and annual reports that describe relevant registration, certification and licensing programs.

Timber harvesters were defined broadly to be a "person or business directly involved in logging operations from the initial stumpage purchase to the final delivery to the mill." The definition was purposefully broad so as to capture all the occupations that might have some impact on a timber harvesting site or its environs. In this respect, potential occupations included harvest operation owner, leader or supervisor, feller, skidder operator, road builder, truck driver, silvicultural worker, and timber buyers. Scaling, an occupation involving measurement of harvested wood, was not considered by this review. Many states and provinces have specific laws related to scaling activities.

Sixty-one questionnaires were returned, including all states except South Carolina. In addition, 10 Canadian provinces returned completed questionnaires, namely Alberta, British Columbia, Manitoba, New Brunswick, Newfoundland, Nova Scotia, Ontario, Prince Edward Island, Saskatchewan, and Yukon. A respondent from British Columbia returned a letter stating that there were no registration, certification, or licensing programs in the province, but that such programs may be considered in the near future. Questionnaires were also returned from respondents in Guam and Puerto Rico. Responses from these
territories are included as states. The vast majority of respondents (93 percent) were employed by government agencies. The remaining respondents were from extension services at universities or from private organizations (7 percent). Information about programs administered by private or quasi-private organizations was often obtained by follow-up telephone phone calls.

Programs involving occupational registration, certification, and licensing can be contentious since they often involve increased government involvement in the activities of private individuals and corporations. They may also cause program participants to incur additional operating costs, often without tangible and immediate benefits. Therefore, it is no surprise that some respondents were vague about the specifics of programs operating in their states and provinces, and in some cases were reluctant to answer certain questions. This was particularly true if a program was new or was in its formative development stage. A review of the returned questionnaires revealed that especially sensitive issues were whether a program was mandatory or voluntary and whether a program was administered by a public or private concern. The emergence of the term accredited, which is generally used to describe a purely voluntary certification program, is one response to these tensions. Accreditation programs stand in contrast to the mandatory certification programs found in some states.

**Literature.** Descriptions of various aspects of registration, accreditation, certification, and licensing programs are available from a variety of literature sources. Readers are referred to the References and Literature Cited section of this review. An example of forestry literature concerning occupational licensing is the American Pulpwood Association’s recently published *An Interim Report on the Status of Logger Training and Education Programs in Thirty Forested States* which contains especially useful background information about certification and accreditation programs (American Pulpwood Association 1995b). *The Rule of Experts: Occupational Licensing in America* contains a useful discussion of the theory and potential impacts of licensing programs (Young 1987), and *Certification of Silvicultural Workers in Canada* contains a discussion of the benefits and drawbacks of certification (Rugo 1993). Other more generic sources of information about occupational registration, certification and licensing programs are *Legal Aspects of Certification and Accreditation* (Langsley 1983) and *The Law of Tax Exempt Organizations* (Hopkins 1992).

The literature also suggests that the extension and outreach elements of timber harvester registration, certification and licensing programs has only recently begun to focus on topics other than safety and production. In the United States, it was not until the advent of the LEAP (Logger Education to Advance Professionalism) Program administered by the USDA Cooperative Extension Service (Cooperative Extension Service [n.d.]) that environmental topics were systematically incorporated into educational activities. Modeled after Vermont’s Silviculture Education for Logger Project, the Program (through the teaching of subjects such as forest ecology and silviculture) seeks to inform timber harvesters about both the potential positive and negative environmental consequences of timber harvesting activities. States may modify the program to be more appropriate to their
unique needs; for example, include subjects such as safety and business management. However, there are universal minimum requirements that participating timber harvesters must meet if they are to successfully complete the program. For example, they must be able to (Anonymous 1994):

- describe environmental factors influencing the forest site,
- describe successional strategies of major local timber species,
- understand the silvicultural basis of stand prescriptions,
- predict the impacts of different silvicultural prescriptions on forest succession,
- understand timber harvesting impacts on tree physiology,
- assess the risks and opportunities associated with harvesting under common species-site situations,
- apply practices that protect site productivity and mitigate the negative impacts of harvesting, and
- communicate the importance of silvicultural practices to other timber harvesters.

Implementation of the LEAP program among states is facilitated by The LEAP Guide to Successful Logger Education Materials and Methods. The Guide is a directory of resources available to support timber harvester education programs. Thirteen states have participated in the program: Idaho, Michigan, Minnesota, Mississippi, Missouri, North Carolina, Oregon, Pennsylvania, South Dakota, Tennessee, Virginia, Washington, and West Virginia.

PROGRAM PERCEPTIONS

Perceptions Nationwide

Importance of Programs. All respondents, regardless of whether a registration, certification or licensing program existed in their state or province, were asked a number of questions regarding their perception of these programs. Of the 61 respondents, 16 percent were of the opinion that it was very important for timber harvesters be registered, certified, or licensed, while 36 percent considered such to be important. Thirty-three percent and 10 percent answered that registration, certification, and licensing was not too important or not at all important, respectively, in their state or province. Five percent did not respond to the question. The overall pattern of responses was similar for Canada and the United States: roughly 50 percent in each country considered registration, certification, or licensing of timber harvesters to be important or very important.

Attributes of Programs. All respondents were asked to state their perception of the advantages and disadvantages of registration, certification, and licensing programs (Table 1). Given an opportunity to cite as many advantages as they wished, respondents most commonly indicated (79 percent of respondents) that these programs tended to improve
the image of the timber and wood products industries -- a response echoed by a variety of miscellaneous, open-ended comments offered by respondents. Nearly as commonly a cited advantage was that the programs improve protection of forest environments (74 percent). Improving compliance with various government regulations was the third most cited response (59 percent).

Table 1. Positive Attributes of Registration, Certification and Licensing Programs as Perceived by Program Administrators and Facilitators in States and Provinces. 1993. (Percent).

<table>
<thead>
<tr>
<th>Conditions Improved</th>
<th>Cited by Respondent as:</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Advantage&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Most Important Advantage</td>
<td>Second Most Important Advantage</td>
</tr>
<tr>
<td>Image of Timber Industry</td>
<td>79</td>
<td>15</td>
<td>16</td>
</tr>
<tr>
<td>Environmental Protection</td>
<td>74</td>
<td>33</td>
<td>13</td>
</tr>
<tr>
<td>Compliance with Regulations</td>
<td>59</td>
<td>15</td>
<td>16</td>
</tr>
<tr>
<td>Operator Safety</td>
<td>57</td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td>Private Property Protection</td>
<td>54</td>
<td>7</td>
<td>15</td>
</tr>
<tr>
<td>Continuing Education Participation</td>
<td>54</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>Business Management Activities</td>
<td>34</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>Promptness of Payment to Landowners</td>
<td>13</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Other Conditions</td>
<td>20</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>No Response/no attributes cited</td>
<td>5</td>
<td>11</td>
<td>20</td>
</tr>
</tbody>
</table>

Note: Information from 61 respondents in lead forestry agencies. Columns may not add to 100 percent due to rounding.
<sup>a</sup> Respondents permitted to cite more than one advantage.

Respondents were limited to citing a single most important advantage (Table 1). Greater levels of environmental protection was most commonly cited as the most important advantage (33 percent of respondents). The ability of the program to improve the image of the timber industry and to enhance compliance with regulatory standards were each cited by 15 percent of the respondents as being a single most important advantage. These three advantages were also frequently cited as being the second most important advantage.
The 61 respondents also cited a variety of disadvantages associated with registration, certification and licensing programs (Table 2). Most commonly cited was limited availability of resources for administering and enforcing such programs (84 percent).

Table 2. Negative Attributes of Registration, Certification and Licensing Programs as Perceived by Program Administrators and Facilitators in States and Provinces. 1993. (Percent).

<table>
<thead>
<tr>
<th>Problem Conditions</th>
<th>Cited by Respondent as:</th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Disadvantage&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Most Important</td>
<td>Second Most</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Disadvantage</td>
<td>Important</td>
</tr>
<tr>
<td>Resources for Program Enforcement and Administration</td>
<td>84</td>
<td>51</td>
<td>18</td>
</tr>
<tr>
<td>are Limited</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standards for Recognition by Program are Arbitrary</td>
<td>52</td>
<td>15</td>
<td>21</td>
</tr>
<tr>
<td>Standards Fail to Measure Ability to Conduct Safe and</td>
<td>46</td>
<td>7</td>
<td>13</td>
</tr>
<tr>
<td>Effective Operations</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating Cost to Harvesters is Increased</td>
<td>38</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>Harvester Mobility Between States or Provinces is</td>
<td>30</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Constrained</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Entry to Timber Harvesting Business is Restricted</td>
<td>20</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Timber Harvester Numbers are Reduced Leading to Higher</td>
<td>18</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Consumer Costs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Conditions</td>
<td>16</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>No Response/no attributes cited</td>
<td>3</td>
<td>13</td>
<td>25</td>
</tr>
</tbody>
</table>

Note: Information from 61 respondents in lead forestry agencies. Columns may not add to 100 percent due to rounding.

<sup>a</sup> Respondents permitted to cite more than one disadvantage.
of respondents). Such was followed by concern that standards for recognition by the program could be arbitrarily developed and applied (52 percent) and that the standards fail to measure abilities that are critical for safe and effective timber harvesting (46 percent). Other important disadvantages that were identified included increased costs to timber harvesters (38 percent) and reduced mobility between states or provinces (30 percent). Mobility refers to the ease with which timber harvesters might move from one state or province to another, given that different states and provinces might have differing program requirements and policies. When asked to identify the single most important disadvantage, limited resources for program enforcement and administration was most frequently cited (51 percent).

**Perceptions of Program Managers**

States having active registration, certification and licensing programs focused on timber harvesters were subject to special review to determine how such programs are performing. What follows reflects conditions and opinions in these states.

**Number of Programs.** Respondents from 13 states (including Guam) and three provinces indicated that they had a program to register, certify, or license timber harvesters or timber buyers. States with programs directed at timber harvesters include California, Connecticut, Guam, Maine, Maryland, Massachusetts, Pennsylvania, Rhode Island, Tennessee, and West Virginia. In addition, Illinois, Indiana, and Iowa had programs directed at timber buyers. The three provinces with harvester focused programs were Nova Scotia, Ontario, and Prince Edward Island.

A wide variety of different harvester occupations were registered, certified, or licensed in these states or provinces. For instance, harvest operation leaders or supervisors, fellers, and skidder operators are registered in Rhode Island. California's licensing program focuses on any person who acts as a contractor, such as harvest operation owners, road builders, and truck drivers. Some states have more than one type of program within the state. For instance, in West Virginia, harvest operation owners were licensed, while on-site harvest operation leaders or supervisors were certified. Classification of programs is further complicated because some certification programs are voluntary while others are mandatory. In some states, mandatory certification programs

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4When two different programs were aimed at different timber harvester occupations within the same state, there was no conflict and information about each program was retained. However, when two programs were directed at the same occupation, the program with greater regulatory power was reported (licensing has the greatest regulatory power, followed by certification, then accreditation, and finally registration). For example, the California respondent indicated that a registration and a licensing program existed. However, the licensing program greatly overshadows and has essentially replaced the registration program. For purposes of this review, data about California's registration program were discarded.
are similar to licensing programs in other states. Because respondents identified these programs as certification programs, their response has been honored and is included the certification section of this review. The program classification problem is well illustrated by Maryland's Forest Harvest T*E*A*M program which focuses on the state's timber harvesters (Maryland Department of Natural Resources [n.d], p 5):

A Memorandum of Understanding has been developed for loggers and forest consultants to sign stating they will voluntarily follow established BMPs [Best Management Practices]. This agreement is not binding, but will increase awareness of correct practices used to control erosion and sedimentation and the responsibility of government agencies has to the private sector when administering these programs. It will serve as a social contract, stating that although BMPs may be mandatory, they choose to enforce them of their own free will.

**Initiators of Programs.** Respondents were asked to identify the organizations that fostered or initiated efforts to develop registration, certification, or licensing programs in their province or state. Of the 16 provinces and states with at least one program, 15 responded to the question (Table 3). Respondents typically stated that there was more than one type of organization that was involved in efforts to develop occupational programs. Provincial or state agencies were cited by 87 percent of the respondents as being the organizations that initiated the programs. Environmental groups were the next most frequently cited group (40 percent of respondents), followed by conservation organizations, forest products companies, and forest products industry organizations (33 percent each). Timber harvester organizations and timber harvesters were infrequently cited as initiators. With recent growth of timber harvester administered accreditation and certification programs (largely in response to timber harvesters and timber harvester associations), this latter frequency may not be representative of current conditions.

Some of the growth in accreditation and certification programs is fueled by logger or industry perceptions that if they do not initiate development of such a program, a more restrictive program may be imposed on them by various forestry interests. Responses from the four states with licensing programs tend to reinforce this view. The respondents reported that neither timber harvesters nor timber harvester organizations were involved in efforts to formulate the licensing programs in California, Guam, Massachusetts, and West Virginia. Instead, state agencies and environmental organizations were cited by all respondents in these states and territory as initiators of licensing programs, as well as conservation organizations by three of the respondents. Forest products companies were also active as formulators in half the states and forest product company organizations in one.

Of the 16 states and provinces with programs, ten used some form of enabling legislation to establish or legitimize the activities of the registration, certification or licensing program. The year enabling legislation was established varied from 1932 (Rhode Island) to 1991 (Connecticut and West Virginia).
Table 3. Organizations Taking Lead to Develop a Registration, Certification or Licensing Program for Timber Harvesters or Timber Buyers in Canada and the United States. 1993. (Percent).

<table>
<thead>
<tr>
<th>Organization</th>
<th>Percent of Respondents Citing as a Program Initiator&lt;sup&gt;a&lt;/sup&gt;</th>
</tr>
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<tbody>
<tr>
<td>Provincial or State Government Agency</td>
<td>87</td>
</tr>
<tr>
<td>Environmental Interest Group</td>
<td>40</td>
</tr>
<tr>
<td>Forest Product Company</td>
<td>33</td>
</tr>
<tr>
<td>Forest Product Association</td>
<td>33</td>
</tr>
<tr>
<td>Conservation Interest Group</td>
<td>33</td>
</tr>
<tr>
<td>Federal Government Agency</td>
<td>27</td>
</tr>
<tr>
<td>Local Government Agency</td>
<td>27</td>
</tr>
<tr>
<td>University or College</td>
<td>27</td>
</tr>
<tr>
<td>Nonindustrial Private Forest Owners</td>
<td>20</td>
</tr>
<tr>
<td>Timber Harvester Association</td>
<td>7</td>
</tr>
<tr>
<td>Timber Harvesters</td>
<td>0</td>
</tr>
<tr>
<td>Tourism Industry</td>
<td>0</td>
</tr>
<tr>
<td>Other</td>
<td>20</td>
</tr>
</tbody>
</table>

Note: Three provinces and 12 states responded to this question. The other category includes farm bureau, non-timber company, and a worker compensation board.
<sup>a</sup> Respondents permitted to cite more than one initiator.

**Attributes of Programs.** Respondents from states and provinces with registration, certification, and licensing programs were also given an opportunity to cite advantages and disadvantages of these programs (Table 4). As was the case when inquiries were made of all respondents, these respondents cited most frequently that such programs tend to improve the image of the timber industry (94 percent of respondents) and that they improve compliance with various government regulations (94 percent). Also a commonly cited advantage was that these programs improve protection of forested environments (75 percent). When asked to identify the single most important advantage, improving environmental protection was most frequently cited (44 percent). As for program disadvantages in states with registration, certification and licensing programs, the most frequently cited was the limited availability of resources to administer and enforce the programs (Table 5).
Table 4. Positive Attributes of Registration, Certification and Licensing Programs as Perceived by Program Administrators and Facilitators in States and Provinces with Programs. 1993. (Percent).

<table>
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<td></td>
<td></td>
<td>Most</td>
<td>Second</td>
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<tr>
<td></td>
<td></td>
<td>Important</td>
<td>Most</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Advantage</td>
<td>Important</td>
</tr>
<tr>
<td>Compliance with Regulations</td>
<td>94</td>
<td>19</td>
<td>6</td>
</tr>
<tr>
<td>Image of Timber Industry</td>
<td>94</td>
<td>13</td>
<td>25</td>
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<tr>
<td>Environmental Protection</td>
<td>75</td>
<td>44</td>
<td>6</td>
</tr>
<tr>
<td>Operator Safety</td>
<td>63</td>
<td>19</td>
<td>0</td>
</tr>
<tr>
<td>Private Property Protection</td>
<td>56</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Continuing Education Participation</td>
<td>50</td>
<td>0</td>
<td>13</td>
</tr>
<tr>
<td>Business Management Activities</td>
<td>38</td>
<td>0</td>
<td>13</td>
</tr>
<tr>
<td>Promptness of Payment to Landowners</td>
<td>25</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Other Conditions</td>
<td>44</td>
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<td>0</td>
</tr>
<tr>
<td>No Response/no attributes cited</td>
<td>0</td>
<td>6</td>
<td>30</td>
</tr>
</tbody>
</table>

Note: Information from 16 respondents in states or provinces that have a timber harvester registration, certification or licensing program. Columns may not add to 100 percent due to rounding.

* Respondents permitted to cite advantage more than once.

After the questionnaire was administered (late 1993), a number of new programs to register, certify, or license timber harvesters were established in many states. Most common among the new programs are voluntary certification programs (often called accreditation programs) administered by private or non-profit groups. When information from the questionnaire is combined from various other sources, including *An Interim Report on the Status of Logger Training and Education Programs in Thirty Forested States* (American Pulpwood Association 1995b) and personal correspondence from various knowledgeable individuals, it appears that at least 27 states and provinces currently have programs to register, accredit, certify, or license timber harvesters (Table 6). Some states employ more than one program. Three states and one province have registration programs, 17 states and 2 provinces have accreditation or certification programs, and 6 states have licensing programs.
Table 5. Negative Attributes of Registration, Certification and Licensing Programs as Perceived by Program Administrators and Facilitators in States and Provinces with Programs. 1993. (Percent)

<table>
<thead>
<tr>
<th>Problem Conditions</th>
<th>Cited by Respondent as:</th>
<th>Disadvantage(^a)</th>
<th>Most Important Disadvantage</th>
<th>Second Most Important Disadvantage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resources for Program Enforcement and Administration are Limited</td>
<td></td>
<td>81</td>
<td>38</td>
<td>25</td>
</tr>
<tr>
<td>Operating Costs to Harvesters are Increased</td>
<td></td>
<td>44</td>
<td>13</td>
<td>0</td>
</tr>
<tr>
<td>Standards for Recognition by Program are Arbitrary</td>
<td></td>
<td>44</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>Standards Fail to Measure Ability to Conduct Safe and Effective Operations</td>
<td></td>
<td>38</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Entry to Timber Harvesting Business is Restricted</td>
<td></td>
<td>25</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Harvester Mobility Between States or Provinces is Constrained</td>
<td></td>
<td>13</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Timber Harvester Numbers are Reduced Leading to Higher Consumer Costs</td>
<td></td>
<td>13</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Other Conditions</td>
<td></td>
<td>13</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>No Response/No condition cited</td>
<td></td>
<td>0</td>
<td>31</td>
<td>50</td>
</tr>
</tbody>
</table>

Note: Information from 16 respondents in states or provinces that have a timber harvester registration, certification or licensing program. Columns may not add to 100 percent due to rounding.

\(^a\) Respondents permitted to cite more than one disadvantage.
Table 6. States and Provinces Having Active Registration, Certification or Licensing Programs for Timber Harvesters or Timber Buyers in Canada and the United States, by Type of Program. 1993.

<table>
<thead>
<tr>
<th>State or Province</th>
<th>Registration</th>
<th>Certification</th>
<th>Licensing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alabama</td>
<td></td>
<td>•</td>
<td></td>
</tr>
<tr>
<td>California</td>
<td></td>
<td></td>
<td>•</td>
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<tr>
<td>Connecticut</td>
<td>•</td>
<td></td>
<td></td>
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<tr>
<td>Guam</td>
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<tr>
<td>Illinois</td>
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<tr>
<td>Iowa</td>
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<tr>
<td>Indiana</td>
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<tr>
<td>Kentucky</td>
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<tr>
<td>Maine</td>
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<tr>
<td>Maryland</td>
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<tr>
<td>Massachusetts</td>
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<tr>
<td>Michigan</td>
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<tr>
<td>Montana</td>
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<tr>
<td>New Hampshire</td>
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<tr>
<td>North Carolina</td>
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<td></td>
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<tr>
<td>Nova Scotia</td>
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<tr>
<td>Ohio</td>
<td>•</td>
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<tr>
<td>Ontario</td>
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<td></td>
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<tr>
<td>Oregon</td>
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<td></td>
<td></td>
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<tr>
<td>Pennsylvania</td>
<td>•</td>
<td></td>
<td></td>
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<tr>
<td>Prince Edward Island</td>
<td></td>
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<tr>
<td>Rhode Island</td>
<td>•</td>
<td></td>
<td></td>
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<tr>
<td>South Carolina</td>
<td></td>
<td>•</td>
<td></td>
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<tr>
<td>Tennessee</td>
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<td></td>
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<tr>
<td>Vermont</td>
<td>•</td>
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<tr>
<td>Washington</td>
<td>•</td>
<td></td>
<td></td>
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<tr>
<td>West Virginia</td>
<td>•</td>
<td>•</td>
<td></td>
</tr>
</tbody>
</table>

TOTAL: 4 19 6

Note: Certification program category includes accreditation programs. Maryland and West Virginia use more than one type of program.
Growth of Programs. The number of states with programs, particularly certification and accreditation programs, may continue to grow. Minnesota and Oregon have programs under development and Vermont has considered a registration or licensing program for timber harvesters. Also, many states are in the process of developing or formalizing a curriculum for delivering continuing education to loggers. For instance, the Florida Forestry Association is considering the development of a logger training program that may involve certification (American Pulpwood Association 1995b, p.7). Part of this growth in programs has been fueled by the American Forest and Paper Association's sustainable forestry initiative.

Information from the questionnaire used to gather information for this review also indicates that growth in program numbers is likely. Of the states reporting no occupational programs, respondents from three such states indicated that there were plans to implement a program to register timber harvesters in their state within the next five years. Nine states indicated that there were plans to implement some type of certification program within five years, however two of these respondents were somewhat uncertain about the future of these plans. Three states indicated that a licensing program was a possibility in their state, but, again, one of the respondents was quite uncertain. Some of these planned implementations of certification programs have already occurred. There is, however, no direct evidence that new registration or licensing programs have been implemented since the questionnaire was administered. In Vermont, a program that might be interpreted as a timber harvester licensing program was proposed and, subsequently, rejected by the Vermont legislature (American Pulpwood Association 1995c).

TIMBER BUYER PROGRAMS

Registration, certification and licensing programs directed at timber buyers are substantially different from programs directed at timber harvesters. An Iowa statute defines a timber buyer as "a person engaged in the business of buying timber from the timber growers for sawing into lumber, for processing or for resale, but does not include a person who occasionally purchases timber for sawing or processing for the person’s own use and not for resale" (Iowa Stat. 456A.36 Section 1b.). Programs directed at timber buyers have been developed for two main reasons: 1) to reduce timber theft of high value hardwood trees and 2) to ensure that landowners will be paid for harvested timber through bonding of timber buyers.

Five states have experience with programs directed at timber buyers, namely Connecticut, Illinois, Indiana, Iowa, and West Virginia. Illinois, Indiana, and Iowa, focus their programs solely on timber buyers; they do not have programs directed at timber harvesters. Timber buyers in Iowa are registered while Connecticut certifies buyers (Connecticut’s program will be formally implemented in the summer of 1995). Timber buyers are licensed in Indiana, Illinois, and West Virginia.
All timber buyer programs are mandatory, state-funded initiatives with enabling legislation. Several make use of certification or licensing fees levied on timber buyers. Despite access to these sources of funds, four of the five respondents describing timber buyer programs indicated that limited resources to administer such programs was a major problem. Two respondents indicated that arbitrarily defined compliance standards was the most important disadvantage of registration certification and licensing programs focused on timber buyers. Despite these disadvantages, four of the five respondents indicated that these programs were having a positive impact in their state. The program in the other state had yet to be implemented.

TIMBER HARVESTER REGISTRATION PROGRAMS

Registration involves the listing of timber harvesters on an official roster. Five respondents indicated their state or province had a registration program for timber harvesters. These states were California, Iowa, Maryland, and Rhode Island and the province of Prince Edward Island (Table 6). Two of the four states (California and Maryland) also had certification or licensing programs. All the registration programs in the United States are mandatory; Prince Edward Island’s registration program is voluntary. While California may technically also have a timber harvester registration program, it is substantially overshadowed by California’s mandatory licensing program (established as a program in the mid-1940’s, California timber operators pay a one dollar fee to be registered). Two key advantages of registration cited by respondents are improved ability to monitor the forestry harvest activities and operators and improved compliance with existing forest practices laws.

Registration programs may be voluntary or mandatory and may be directed at a variety of different timber harvester occupations. For instance, Maryland registers forest products operators (the state certifies timber harvesters that practice sediment control) while Iowa registers timber buyers. Prince Edward Island’s program is a voluntary program administered primarily by the provincial government, but with some federal government involvement. Harvest operation owners, road builders and timber stand improvement contractors are registered. Registered timber stand improvement contractors may qualify for a contractor bonus which involves higher rates of pay. If contractors do not meet established timber stand improvement standards, they may continue to work but at a lower wage rate. The program was initiated primarily by federal and provincial agencies, workmen’s compensation boards, and non-industrial private forest landowners.

The registration program in Rhode Island is overseen by the state and is mandatory. Registration must be renewed each year and only registered woods operators can bid on state land timber sales. No general competencies or standards are required in order to be registered. The official list of registered timber harvesters is made available to interested parties (e.g., landowners). The program is funded by state general funds and registration fees. The respondent from Rhode Island reported that the registration program was not too effective at fulfilling the program’s goals, a condition which is in part due to inadequate
resources for the personnel that are needed to fully implement the program. Stronger penalties for noncompliance were also cited as a way to strengthen the program. Respondent-cited benefits to timber harvesters participating in the program increased liability protection, ability to circumvent certain wetlands permits, and increased access to information regarding silvicultural, managerial, and legal issues.

TIMBER HARVESTER CERTIFICATION PROGRAMS

Certification (and related accreditation programs) are the most common forms of occupation programs directed at timber harvesters. Certification programs have more requirements than registration programs and typically have a substantial continuing education component. To be certificated, timber harvesters meet some minimum requirements as attested to by work or continuing education experience or by acceptable scores on a required examination. Once the requirements a certification program have been met, a title is conferred upon complying timber harvesters (e.g., master timber harvester, professional timber harvester). Certification is granted for a specific period of time during which the program may require participation in certain continuing education activities (e.g., 90 hours of continuing education over a three-year period).

Certification programs do not necessarily prevent non-certified timber harvesters from harvesting timber. However, in some states the certification program is mandatory, thereby making it exclusionary as occurs with licensing programs. Certification programs for timber harvesters are generally very closely allied with continuing education programs. The latter may involve subjects such as logger safety training, cardiovascular pulmonary resuscitation (CPR), first aid, harvesting systems, public relations and communications, forest management and silviculture, and business management. In general, however, a program that confers certification on a timber harvester because of knowledge is a single very narrow subject area (e.g., first aid) is generally not considered to be a full-fledged certification program.

Programs certifying timber harvesters have grown rapidly in number, especially programs administered by non-profit organizations. In the Fall of 1993, six states and two Canadian provinces had programs to certify timber harvesters (because California’s program requires education focused primarily on the provisions of the state’s forest practices law in order to become certified (licensed), it was considered a licensing program), namely, Connecticut, Maine, Maryland, Pennsylvania, Tennessee, West Virginia, Nova Scotia and Ontario. According to respondents, four of the certification programs were mandatory and administered by provincial or state governments (Connecticut, Maryland, West Virginia, and Ontario), while four programs were overseen by private organizations or partnerships of public and private organizations (Maine, Nova Scotia, Pennsylvania, and Tennessee). In Maine, for example, the Certified Logging Professional Program is under the sponsorship of the Maine Tree Foundation in cooperation with the Maine Forest Products Council and the American Pulpwood Association. In Nova Scotia, Pennsylvania,
and Tennessee, certification programs are overseen by a council made up of a variety of public and private organizations.

Certification programs generally require timber harvesters to possess some general competencies or to meet certain standards. For instance, the certification program in Maine requires competencies and standards in areas such as safety, experience, silvicultural practices and best management practices, and First Aid and CPR. Maryland's program requires knowledge of best management practices. Some states only certify certain timber harvester occupations. For example, West Virginia certifies only harvest operation leaders or supervisors.

Attributes of Programs

Respondents identified a number of advantages and disadvantages of certification programs. An improved timber industry image and greater compliance with forest practice laws were cited by every respondent as an advantage. Three-quarters of the respondents from states with certification programs indicated certification programs improve timber harvester participation in continuing education programs, improve the protection of forested natural environments, and increase operator safety generally. Most commonly mentioned as a program benefit was improvements in the degree of protection afforded natural environments.

Inadequate resources to fully implement a certification program was considered a major problem by respondents from all six states and both provinces having a timber harvester certification program. Increased costs to timber harvesters was cited by half of the respondents as a disadvantage, as was the concern that the required standards may fail to measure abilities that are critical for safe and effective timber harvesting. Surprisingly, only two of eight respondents thought that certification programs reduced the mobility of timber harvesters between states or provinces, and only one of eight thought such programs restricted entry into timber harvesting businesses.

State and Province Profiles

Connecticut. Mandatory certification program for timber harvesters to be implemented in the summer of 1995. Program requires supervising harvesters to have a knowledge of silvicultural practices, while other timber harvesters must meet standards or have competencies in safety and knowledge of best management practices. The state's program also has continuing education requirements and requires that timber harvesters pass a written examination. The fee for certification (or renewal) is $76.00; examination fee is $13.00. Certification is valid for four years and may be renewed. Renewal requires evidence of participation in continuing education programs and a re-examination if statutes or regulations concerning forestry, forest practices, wetlands or watercourses have been revised or newly adopted. The respondent from Connecticut indicated that it is very important that timber harvesters be certified and that the state's program increases the credibility of timber harvesters with landowner groups.
Maine. Voluntary timber harvester certification program called the Certified Logging Professional Program (CLP). The program is designed to train loggers in safe, environmentally friendly and efficient logging practices via attainment of the following goals:

- enhancement of professionalism among loggers,
- improvement of logger's quality of life,
- provision of a continuing flow of goods and services, and
- protection of the environmental qualities of Maine's forests.

The program is sponsored by the Maine TREE Foundation, in cooperation with the Maine Forest Products Council and the American Pulpwood Association. As of April 1994, 637 of the estimated 3,000 loggers in Maine had participated in the program (Mason 1994).

The CLP program consists of both training and evaluation. Using existing educational materials when possible, the training portion (taught in French or English) consists of four parts, namely first aid, forest management/silviculture, safe and efficient timber harvesting, and logging business management. Certification candidates are interviewed in the field to determine if they understand principles presented in class. If the logger fails the first field interview, they have another opportunity to complete an interview. Interview team members represent a variety of interests, including landowners, environmental groups, foresters and safety experts sanctioned by a Certification Board made up primarily of loggers and logging contractors. Loggers that pass the interview receive a title, a card, a certificate, and a code of ethics which they must sign. Finally, the Maine Bureau of Insurance reduces by 10 percent workers' compensation rates charged to certified timber harvesters (Mason 1994).

Maryland. Maryland has a combination registration/certification program. In some respects, the program may be considered a licensing program (Potter-Witter 1995). All harvest operation owners harvest operation leaders or foreman in the state must be registered ($10.00 annual fee). Furthermore, timber harvesters must be certified in order to obtain certain permits required for the harvest of timber on public and private forest land in the state (sedimentation control programs). Focused on the states forest practices regulatory requirements, education in water quality and best management practices is supplied by the Maryland Forest, Park and Wildlife Service in cooperation with the Maryland Easter Shore RC&D and the Maryland Forests Association (Master Logger Program). Strictly voluntary, the educational program has a number of objectives, including (Maryland Department of Natural Resources [n.d.]):

- Improve visual impact of forest harvests by instructing timber harvesters in the importance of forest aesthetics and techniques that lessen harvest effects on aesthetics.
- Lessen environmental impact of forest harvests by instructing timber harvesters in forestry best management practices.
- Improve safety by instructing timber harvesters in first aid, CPR, and safe forest harvest practices.
Approximately 750 timber harvesters, foresters and landowners have attended training sessions (including recently developed Master Logger Program) in Maryland during 1984 through 1993 (Potter-Witter 1995).

**Michigan.** In March 1994, Michigan initiated implementation of the Logger Education to Advance Professionalism program. The intent of doing so was “to increase the understanding of participants with respect to ecological principles applicable to forestry and associated wildlife in the state; increase participants’ understanding of silvicultural prescriptions; identify problems and solutions in the application of silvicultural prescriptions and heighten awareness of practices that contribute to a poor image of logging and what can be done to prevent environmental degradation” (Koelling and Lantagne 1992). Support for the program comes from more than 12 public and private organizations. Via a steering committee, representatives of these organizations guide the program’s operation. To date, 136 timber harvesters have completed the program and have been awarded certificates. No formal marketing of a certified logger directory has been undertaken. In 1994, program costs were $45,000, which included significant startup costs. Once fully operational, annual program expenses are expected to be about $28,000. Timber harvesters pay no tuition (Potter-Witter 1995).

**Montana.** The Montana Logger Association began an accreditation (certification) program in the Spring of 1994 when it graduated and awarded certificates to 74 timber harvesters known as Accredited Logging Professionals (ALPs). Directed by the Logger Accreditation Steering Committee composed of independent timber harvesters, the program consists of two phases:

- **training:** education in subjects such as water quality, harvesting, and inventory for stewardship values, and
- **monitoring:** audits of timber harvesting operations by teams of landowners and natural resource professionals.

Plans are to annually conduct both phases, with continuing certification contingent on a continuing education requirement and a successful audit. The Independent Board of Review has been established to hear disputes and to consider de-certification when audits are unsatisfactory. Participation in the certification program is limited to 600 timber harvesters (Ellingson 1994, Potter-Witter 1995).

**Nova Scotia.** Implements a program of voluntary certification of silvicultural workers and is actively considering a voluntary program to certify timber harvesters. The former is the "Approved Silvicultural Contractor" program which fosters the development of a skilled, stable, silviculture workforce. The program is not available to pulp and paper companies, civil servants, and "large landowners." Unlike many certification programs, the Nova Scotia program is not formally tied to continuing education requirements. The respondent indicated, however, that Approved Silviculture Contractors are encouraged to take business management training and to attend operational efficiency training programs. Some on-site training is offered. An educational background or training in working in the
forest is also required. Instead of focusing on continuing education, Nova Scotia focuses on requiring a minimum level of experience, letters of reference from landowners, demonstrated good management capabilities, registration with the Nova Scotia Workers Compensation Board and Revenue Canada, meeting minimum operational and capital requirements, and maintaining adequate skills and equipment to undertake a variety of silvicultural treatments.

Nova Scotia provides a number of tangible benefits to Approved Silvicultural Contractors. For instance, an official list of participants in the program is made available to interested parties. Approved Silvicultural Contractors may not, however, claim or imply any level of endorsement by any level of government in any advertisement. A major program benefit is a preferential rate for work conducted on certain non-industrial private forest land and Crown lands. The program is funded by the provincial and federal governments. Approved Silvicultural Contractor status may be revoked under certain circumstances.

The Nova Scotia respondent indicated that the program could be strengthened by more stable funding for the informal educational program, inclusion of more timber harvesting occupations in the program, and expansion of educational and training opportunities. Nova Scotia’s program has not been formally evaluated.

**Pennsylvania.** Pennsylvania’s Logger Certification Program (PLCP) is a voluntary training and certification program established by the Pennsylvania Timber Harvesting Council (THC). The THC is a non-profit corporation made up of government organizations, the forest products industry, Cooperative Extension, and the NORTIM Corporation. NORTIM is a logging risk-management company and a prime sponsor of training opportunities for timber harvesters. Revenue to conduct the program is obtained from a variety of sources, including: grants, donations, memberships, and workshop registration fees. As of 1993, over one thousand timber harvesters had participated in the safety training aspects of the program, representing an estimated 30 percent of the timber harvesters operating in the state. In Pennsylvania, certification leads to lower worker compensation rates (Bihun 1993).

Pennsylvania’s program is directed at a variety of different occupations, including logging contractors, fellers, cutters, skidder operators, and log truck drivers. Certification requirements for the logging operation owner includes 70 hours of training in subjects such as business management, erosion control, production layout, safety and silviculture, forest ecology, and wetland ecology. Certification for other occupations involves 40 hours of training. As of 1993, 75 timber harvesters had completed the pilot workshops in ecology and silviculture (Bihun 1993).

**New Hampshire.** Although resembling Maine’s Certified Logging Professional Program, the New Hampshire program does not have the preferred risk Workers’ Compensation pool incentive used in Maine and other states. The New Hampshire program has four stated objectives:
• provide training standards for timber harvesting industries,
• conduct training programs that benefit loggers through improving work efficiency, safety, and environmental awareness,
• provide public and professional recognition for loggers completing training programs, and
• improve awareness of and compliance with laws and regulations concerning timber harvesting and wetlands.

New Hampshire's program requires loggers to complete four day-long courses that address topics such as safety and first aid, harvesting practices, timber harvesting law, and the fundamentals of forestry. The program is overseen by the New Hampshire Timber Harvesting Council, which is made up of the New Hampshire Timberland Owners Association, University of New Hampshire Cooperative Extension, and the University of New Hampshire Thompson School (a vocational school). Anyone gainfully employed in timber harvesting, truck operation, owning or running a timber contracting operation, or employed by a business involved in timber harvesting is eligible for the program. Residents of nearby states that conduct 20 percent or more of their business in New Hampshire. Successful completion of the program certifies participants for four years. To maintain certification, timber harvesters must participate in 24 hours of forestry-related continuing education courses (American Pulpwood Association 1995b).

North Carolina. North Carolina's ProLogger program was officially launched in October 1994. Awarded the designation Professional Logger, the program's first class of 18 timber harvesters graduated on January 14, 1995. The state's program is implemented under cooperative arrangements with community colleges around the state. The program focuses on safety, environmental concerns, and business management. The North Carolina Forestry Association sponsors the program. It hopes to eventually reach all of the state's 2,500 to 3,000 loggers (American Pulpwood Association 1995d).

Vermont. Vermont's Logger Education to Advance Professionalism (LEAP) program has been in existence for over five years. Almost half of the state's timber harvesters have participated in the program and received certificates of recognition and listing in a statewide directory. Since the program's inception, the number of complaints about the timber harvesting operations and water quality violations in the state have declined from 50 in 1989 to 22 in 1992. Professional foresters that evaluate graduates of the state's program are very favorably impressed with the program (McEvoy 1993).

TIMBER HARVESTER LICENSING PROGRAMS

Four states have licensing programs (reported by respondent on survey questionnaire) for timber harvesters, namely California, Guam, Massachusetts, and West Virginia. Three states indicated they had licensing programs for timber buyers, namely Illinois, Indiana, and West Virginia. No Canadian provinces reported licensing programs. All of the licensing programs were implemented by state governments under the authority
of state enabling legislation. Annual license renewals were required, and, in some cases, renewal involves some training and educational activities. However, unlike most accreditation and certification programs, the focus of the educational activities was on furthering understanding and compliance with a state's forest practice regulations. In some cases, a minimum qualification, such as a test, was required to obtain a license. One respondent reported that truck drivers were required to obtain a driver's license, however, this license was generally required of all truck drivers (the response was discarded).

Attributes of Programs

Respondents cited a variety of advantages and disadvantages associated with licensing of timber harvesters. Three-fourths indicated that the programs increased operator safety, and half indicated they improved timber-related business management, including increased participation in continuing education programs. Two of the respondents indicated that the most important advantage associated with licensing was ensuring or improving compliance with existing forest practice regulatory laws. The other two respondents indicated that improved environmental protection was the most important benefit of licensing. Three states reported that their program had a positive impact in their state (Guam did not respond to the question).

Respondents identified a number of benefits that accrued to timber harvesters as a result of a state licensing program. For example, the respondent from Massachusetts suggested that timber harvesters gained increased market exposure, greater credibility with landowner groups, and increased access to information about silvicultural, managerial, and legal issues. Similarly in California, licensed timber operators were informed (by mailings) of changes in state forest practice regulations and how and when to apply them. Respondents generally indicated that their state seldom took promotional activities on behalf of licensed timber harvesters. The exception was California which did so indirectly by making a list of program participants available to interested parties, including forest landowners.

Respondents also cited disadvantages associated with licensing. Limited resources to administer and enforce the program was cited (three of the four respondents) as one of the most important problems with licensing program. California was an exception in this respect. Guam and Massachusetts rely solely on state funds for their licensing program, while California and West Virginia rely on a combination of state funds and licensing fees. A disadvantage cited by three of the four respondents was that licensing programs may require standards that are arbitrarily defined. Other less frequently cited disadvantages were that licensing procedures raised costs to timber harvesters, and that such programs restricted mobility of timber harvesters between states that have different regulatory requirements. None of the statewide licensing programs had been formally evaluated for effectiveness.
State Profiles

California. Formally implanted in 1973, California's timber harvester licensing program forms a basis for implementing the state's forest practice regulations. The licensing program is directed at any person who works as a contractor, including harvest operation owners, road builders, truck drivers, and certain related occupations. The program is not directed at timber harvesters that work for wages, operations that are conducted on timberland under the control of a federal agency, or at persons conducting operations solely for their personal use on their own property. To obtain a license, a contractor must be familiar with the California Forest Practice Act and the regulations of the state's Board of Forestry. In California, silvicultural decisions are the statutory responsibility of the Registered Professional Forester. However, the respondent from California indicated that some knowledge of silvicultural practices and forestry best management practices are required to obtain a timber harvester license.

California has two classes of licenses: (1) a full license required for the removal of timber products generally, and (2) a limited license for harvest of Christmas trees, firewood, and other minor forest products. The cost of a full license is $75 (renewal cost $50 annually) while the limited license costs $35 (renewal cost $25 annually). Designed to primarily familiarize a timber harvester with forest practice laws and regulations, the full license requires 16 hours of training over two days. Other aspects of forestry, including silviculture, may be part of the training process. Timber harvesters that were operating before licensing was required in 1973 have been "grand-fathered" into the program without training. The limited license requires the study of eight pages of regulations that apply to these operation and the successful completion of a two-page open book quiz on such regulations. In 1992, the California Board of Forestry issued 1,828 timber operator licenses, of which 1,453 were “limited” and 375 were “full” licenses. Between 1986 and 1992, the number of “full” licenses increased by 592, and reflected by the following (Ellefson, Cheng and Moulton 1995):

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Licenses</th>
<th>Limited Licenses</th>
<th>Full Licenses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1981</td>
<td>1,483</td>
<td>423</td>
<td>1,060</td>
</tr>
<tr>
<td>1982</td>
<td>1,462</td>
<td>549</td>
<td>923</td>
</tr>
<tr>
<td>1983</td>
<td>1,469</td>
<td>538</td>
<td>931</td>
</tr>
<tr>
<td>1984</td>
<td>1,380</td>
<td>469</td>
<td>911</td>
</tr>
<tr>
<td>1985</td>
<td>1,340</td>
<td>444</td>
<td>896</td>
</tr>
<tr>
<td>1986</td>
<td>1,288</td>
<td>427</td>
<td>861</td>
</tr>
<tr>
<td>1987</td>
<td>1,408</td>
<td>409</td>
<td>999</td>
</tr>
<tr>
<td>1988</td>
<td>1,385</td>
<td>356</td>
<td>1,029</td>
</tr>
<tr>
<td>1989</td>
<td>1,431</td>
<td>358</td>
<td>1,073</td>
</tr>
<tr>
<td>1990</td>
<td>1,666</td>
<td>406</td>
<td>1,260</td>
</tr>
<tr>
<td>1991</td>
<td>1,683</td>
<td>401</td>
<td>1,282</td>
</tr>
<tr>
<td>1992</td>
<td>1,828</td>
<td>375</td>
<td>1,453</td>
</tr>
</tbody>
</table>
The California respondent indicated that the licensing program was achieving its goals, and that it has had a positive impact on forestry conditions in the state. However, suggested was that the program could be strengthened by increasing the availability of educational activities (especially in video cassette form) to more timber harvesters, and by increased opportunities for participation in educational programs by timber harvesters that have already be awarded a license.

**Guam.** Guam's timber harvester licensing program focuses on harvest operation owners. The program does not require continuing education or training courses, nor does it require any general competencies or standards to obtain a license. Licensed harvest operation owners receive increased liability protection and increased access to information regarding silvicultural, managerial, and legal issues. Guam's program has never been formally evaluated for effectiveness, but the respondent suggested that the program could be strengthened by increasing funding available for education and program monitoring.

**Massachusetts.** Massachusetts licenses a variety of timber harvester occupations, including harvest operation owners, harvest occupation supervisors, fellers, and skidder operators. A variety of competencies and standards are required by the licensing program, including knowledge of silvicultural practices and forestry best management practices. Continuing education and training courses are regularly offered as part of the licensing program. However, participation in these continuing education and training courses is voluntary. The state monitors timber harvesters for compliance with the licensing program.

The Massachusetts respondent indicated that the licensing program has had a positive impact on harvesting operations in the state, including, increased application of best management practices, better application of silviculture principals, and improved protection of resources such as water quality, wetlands, rare and endangered species. However, the respondent suggested a number of specific steps that could be undertaken to strengthen the program: (1) redesigning, improving, and making mandatory the training program, (2) increasing the standards related to knowledge of regulations, (3) increasing the scope of the licensing program to cover more occupations, and (4) increasing monitoring with stronger penalties. The respondent also suggested that the licensing program could be improved through higher standards for knowledge of state cutting practices.

**West Virginia.** West Virginia's licensing program is a mandatory program directed at timber harvest operation owners and timber buyers. (West Virginia also certifies any individual responsible for supervising timbering operations on-site). Authorized by the state's Logging Sediment Control Act of 1991, the licensing and certification programs are funded by state general revenue and, fees from the granting of licenses and certification notices. The licensing fee is $50 per year. While the state does fund the program, the respondent noted that the West Virginia Division of Forestry has not received additional funds to implement the program.
The license held by timber harvest operators in West Virginia may be suspended or revoked by the Division of Forestry if the license violates the provisions of the state's Logging Sediment Control Act or certain other regulations. Reasons for suspension or revocation of licenses revolve around sedimentation and safety concerns. The first recourse available to the Division of Forestry is to issue a compliance order. For instance, a compliance order is issued if "a particular best management practice is causing or contributing, or has the potential to cause or contribute, to soil erosion or water pollution" (WV Stat. Section 19-1B-5(b)). A compliance order is a mandate for compliance by the person conducting the timber operation.

The West Virginia Division of Forestry can also suspend a timber operation. The Logging Sediment Control Act states:

In any circumstance where observed damage or circumstances on a logging operation, in the opinion of the director [director of the Division of Forestry], are sufficient to endanger life or result in uncorrectable soil erosion or water pollution...the director shall order the immediate suspension of the timber operation... (WV Stat. Sect. 19-1B-5(c)).

If persons conducting the timbering operations violate the Logging Sediment Control Act or certain other laws, the director of the Division of Forestry may suspend their license. A minimum of two separate violations within a two-year period are necessary for license suspension. The suspension period is for no fewer than 30 days nor more than 90 days. The director of the Division of Forestry may revoke the license of the operator if three separate violations occur in a two-year period. Any revoked license may not be reissued during the licensing period (WV Stat. Sect. 19-1B-5(d and e)). The West Virginia respondent indicated that the current enforcement method was cumbersome and limited the ability of the Division to take prompt action.

Although West Virginia's timber harvester licensing program is relatively new, the respondent indicated it was progressing well toward meeting program and legislative goals. The respondent suggested that the operator licensing program and the logger certification program (only logging crew supervisors must be certified) together had a positive impact on the state through increased application of forestry best management practices and a reduction in valid complaints involving stream sedimentation. However, the respondent indicated that the program could be further strengthened through increased monitoring and stronger penalties for non-compliance.

**SUMMARY AND OBSERVATIONS**

At least 27 provinces and states have active programs to register, certify, or license timber harvesters or timber buyers. Nineteen provinces and states implement certification (or accreditation) programs; four states have a registration program; and six states engage in licensing activities. Two states, Maryland and West Virginia, make significant use of
more than one of these program types. In these states, different programmatic options were directed at different timber harvester occupations (e.g., West Virginia employed licensing for forest harvest operation owners and certification for logging crew supervisors).

Program Perceptions

Of the many advantages cited by program administrators, the most commonly mentioned were improved public image of the timber and timber harvesting industries; enhanced protection of forest environments (e.g., application of forestry best management practices); and increased timber harvester safety. The most common problem with such programs was the inadequate resources available for their administration (13 of 16 respondents cited this as a disadvantage). A closely related problem was lack of foresters available to communicate or enforce a registration, certification or licensing program.

Significant Issues

The establishment and implementation of a registration, certification or licensing program focused on timber harvesters and related occupations raises a number of important issues. For example, judging by the respondents comments, a major concern exists over voluntary versus mandatory program implementation. The programs in 11 of the 16 states and provinces examined with information derived from the 1993 questionnaire were mandatory, the remainder were voluntary. Voluntary programs are, however, growing most rapidly -- 11 new programs in the last two years. This growth is being driven in part by timber harvester organizations, perhaps as a means of warding off onerous mandatory certification or licensing programs. Such is a break from the past where typically timber harvesters were less involved as program initiators. Also a factor in the development of voluntary programs is the sustainability initiative of the American Forest and Paper Association. The recently formed American Logging Council, a national logger organization, passed a resolution that affirmed "voluntary, state-by-state, professional training and continuing education programs designed by loggers, for loggers". It also called for "strong support from public, private and industrial landowners in encouraging, rewarding and recognizing those loggers committed to that training" (Anonymous 1994).

Also often at issue in registration, certification and licensing programs is whether they should be administered by government, private organizations or a consortium of private and public entities. All of the government implemented programs reviewed here were mandatory, with the exception of Prince Edward Island's registration program. The trend toward voluntary programs administered by a private organization or consortium may have a salutary effect on government administering agencies (e.g., state forestry agencies) since they may not be required to provide a substantial portion of the resources to support such programs, although they may contribute some resources.

The need for and the role of advisory boards, steering committee or councils that guide voluntary certification programs has also become an issue in some states. If such
units are to have a role, what should be the make-up of their membership. In some states, environmental groups have expressed an interest in sitting on an advisory board to a voluntary certification program (e.g., Minnesota). In several states, notably Pennsylvania and Maine, forest industry, governmental, higher education institutions, and extension services have representation on advisory committees to certification programs.

A critical ingredient of many occupational programs focused on timber harvesters is opportunity for training and education. Who should provide such opportunities? What subjects should be the focus of educational programs? How often should contact with a formal educational experience be required of timber harvesters? How effective are training programs in changing behavior and forestry practices applied? And who should be responsible for providing the financial resources necessary to implement such programs. As of early 1995, timber harvester training and educational programs were being offered in some form in more than 30 states within the United States (American Pulpwood Association 1995b) and in nearly all provinces in Canada. As for the material to be presented in a timber harvester educational program, the American Pulpwood Association (1995e) suggests the following as core subject material:

- Enhance business skills, image and professionalism with training in personnel management, law and contracts, insurance, and business management.
- Enhance familiarity with sustainable forestry principles with training in environmental regulations, state forestry best management practices, principles of forest regeneration, and harvest operation planning.
- Reduce fatalities and injuries with training in OSHA logging operation regulations, loss control techniques, and safety requirements (including hazardous materials).
- Enhance response to on-the-job medical emergencies with access to information about accident response plans, CPR training, first aid training, blood-borne pathogen programs, and OSHA hearing conservation program.

The above are some of the more pointed issues that have often arisen as consideration is given to the establishment of timber harvester occupational registration, certification and licensing programs. Other issues are:

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• what interests should be responsible for developing (and enforcing) the standards for certification of timber harvesters?
• should mills pay more or give preference to wood harvested by certified or accredited timber harvesters?
• should public agencies give preference to registered, certified or licensed timber harvesters when selling timber from public land?
• how should timber harvesters that are unwilling to participate in a voluntary registration or certification program be treated, especially those that are the source of major complaints regarding timber harvesting practices?
• what tangible benefits should be offered to timber harvesters that are registered, certified or licensed? These benefits might include decreased insurance rates (e.g., workman’s compensation rates), or increased access to information, increased market exposure. Respondents from only two states (Guam and Rhode Island) indicated that greater liability protection was available to timber harvesters participating in an occupation program.

Program Design

The design of occupational registration, certification or licensing programs to be focused on timber harvesters and related occupations is complicated. In a general sense, program developers should seek to make such programs efficient and effective, and worthy of the public trust that they aspire to accommodate. As is true of all public and private forestry programs, occupational programs must be sufficiently flexible to accommodate the variety of conditions found in forest environments, and should be capable of accommodating the variety of administrative conditions and audiences that program implementors are likely to encounter. All this must be accomplished without detracting from the intent for which a state or provincial program may be established. Other more specific attributes of a well designed registration, certification and licensing programs include (Jacobs 1983, Potter-Witter 1995, Rugo 1993, Shimberg 1982):

• Funding: adequate and sustained levels of program funding.
• Standards: consistent and verifiable standards for confirming the registered, certified or licensed status on timber harvesters. Standards should be based on sound technology and related directly to the forestry activities that are to be influenced or changed.
• Benefits: tangible benefits to timber harvesters and related occupations that are asked to participate (or required to participate) in a program.
• Education: adequate opportunity for training and continuing education, making available the best information that is directly relevant to the performance desired of an occupational category.
• Examinations: carefully designed performance examinations directly related to performance in actual timber harvesting environments. Clear and relevant questions
• *Boards*: review and advisory boards composed of both practitioners and persons that are consumers of the practitioner's products or services (e.g., conservation groups, mill operators, general public)
• *Complaints*: process available for handling consumer and general public complaints about products or services. The process is easy to understand and well publicized.
• *Support*: public support for programs based on trust between practitioners and consumers.
• *Procedures*: fair, equitable and open procedures for becoming registered, certified and licensed. Opportunity for periodic review of procedures. Notification of denial quickly reported and appeal procedure specified.
• *Monitoring*: monitoring of and subsequent rigorous action to address problem timber harvesters (including revoking of registration, certification or license).

In conclusion, various private interests and a number of state and provincial governments are actively pursuing the establishment of programs to register, accredit, certify, or license timber harvesters. These occupational programs are being developed in response to a variety of issues, including community-wide concern over the quality of the natural environments over which timber harvesters have substantial influence, and concern among professional timber harvesters over conditions of safety, health and business methods. The design, development and administration of occupational programs focused on timber harvesters pose significant challenges to public and private organizations. If well crafted, however, registration, certification and licensing programs represent a significant opportunity to positively influence the management of forest lands and the occupational activities engaged in by timber harvesters.

REFERENCES AND LITERATURE CITED


Maryland Department of Natural Resources. [n.d.] Forest Harvest T*E*A*M Program. Public Lands and Forestry. Annapolis, MD.


SURVEY OF REGISTRATION, CERTIFICATION, AND LICENSING PROGRAMS FOR TIMBER HARVESTERS

Before completing the questionnaire, please read the following definitions. They will be used throughout the survey.

Timber harvester: Person or business directly involved in logging operations from the initial stumpage purchase to the final delivery to the mill. Potential occupations include: harvest operation owner, leader or foreman, timber buyer, feller, skidder operator, road builder, and truck driver.

Registration: Only requires listing on an official roster.

Certification: Minimum qualifications are required. While certification does not restrict anyone from the practice of timber harvesting, it does limit the use of certain titles (e.g., skidder operator) to those who have a certificate.

Licensing: Qualifications for licensure are similar to those required for certification except that a license is required to practice timber harvesting.

1. How important do you think it is that timber harvesters are registered or certified or licensed in your state?
   [ ] Very important
   [ ] Important
   [ ] Not too important
   [ ] Not at all important

2a. What do you think are the main advantages of registering or certifying or licensing timber harvesters? Please check all items that apply and add other appropriate advantages.
   [ ] Ensure prompt payment to landowners
   [ ] Improves environmental protection
   [ ] Enhances the protection of landowner property
   [ ] Increases operator safety
   [ ] Improves the image of the timber industry
   [ ] Improves timber-related business management
   [ ] Ensures compliance with existing forest practice regulatory laws
   [ ] Increases participation at continuing education programs for timber harvesters
   [ ] Other advantages (List in the space below)

Please return this survey by November 22, 1993 to:
Stephen Tilmann
Department of Forest Resources
University of Minnesota
1530 North Cleveland Avenue
St. Paul, MN 55108-1027

Thank you for your participation
2b. Which of the advantages that you listed Q-2a are most important and second most important to you?

MOST IMPORTANT
SECOND MOST IMPORTANT

3a. What do you think are the main disadvantages of regulating timber harvesters? Please check all that apply and add other appropriate disadvantages.

- Requires who may enter into timber harvesting
- Required standards can be arbitrarily defined
- Required standards can fail to measure what abilities are critical for safe and effective timber harvesting
- Higher entry standards reduce the supply of professional services, resulting in higher costs to consumers
- Mobility between states that have different regulatory requirements is restricted
- Higher standards raise costs to timber harvesters
- Limited resources to administer and/or enforce the program
- Other disadvantages (List in the space below)

4a. Does your state currently have programs for timber harvesters that require any of the following?

REGISTRATION ___ YES ___ NO
CERTIFICATION ___ YES ___ NO
LICENSING ___ YES ___ NO

If you answered "YES" to any of the three entries above, please continue to Q-5 and include a summary of your program(s) with this survey.

If you answered "NO" to all three entries, please answer Q-4b and then return this questionnaire in the self-addressed envelope provided. Thank you for your help.

4b. Are there plans to implement a timber harvester registration or certification or licensing program in your state within the next five years?

REGISTRATION ___ YES ___ NO
CERTIFICATION ___ YES ___ NO
LICENSING ___ YES ___ NO

5. What timber harvester occupations are registered or certified or licensed under your program(s)? Please check all that apply and add other appropriate occupations.

- Harvest operation owner
- Harvest operation leader or foreman
- Fellers
- Skidder operators
- Road builders
- Truck drivers
- Timber buyers
- Other occupations (List in space below)

6a. Is your state's registration or certification or licensing program mandatory or voluntary?

- Mandatory (Please answer Q-6b before continuing to Q-7)
- Voluntary (Please continue to Q-7)

b. Does your program(s) have enabling legislation such as a state forest practices act?

- NO
- YES (Please fill in the blanks below)

TITLE OF LEGISLATION
YEAR LEGISLATION WAS PASSED
7. Who were the principal parties that initiated efforts to formulate policies and to implement programs leading to registration or certification or licensing of timber harvesters in your state? Please check all items that apply and add other appropriate principal parties.

- Non-industrial private forest landowners
- Timber harvesters
- Logger organizations
- Forest products companies
- Forest products industry organizations
- Environmental organizations
- Tourism industry
- Conservation groups
- Federal agencies
- State agencies
- Local governments
- Universities or colleges
- Other principal parties (List in the space below)

8a. What governing bodies are responsible for administering your state's timber harvester registration or certification or licensing program(s)? Please indicate by placing an "R" for registration, "C" for certification, "L" for licensing and "NA" for not applicable in front of each response.

- State
- County or Parish
- Municipality or Township
- Private organization (please specify in the space below)

- Consortium (please identify membership in the space below; e.g., names of government agencies, private organizations)

- Other governing bodies (List in the space below)

8b. If multiple groups are involved, which has the primary responsibility for administering each of the following programs?

- Registration
- Certification
- Licensing

9. Are timber harvesters in your state monitored for compliance (e.g., review of forms, on-the-ground site visits) with your registration or certification or licensing program(s)?

- YES (please send a copy of your monitoring program summary which includes report forms, who monitors the program, monitoring methods, inspection frequency, penalties and statistics concerning complaints and corrective actions)
- NO

10. What are the benefits to timber harvesters from your state's registration or certification or licensing program? Please check all items that apply and add other appropriate benefits.

- Increased market exposure
- Increased liability protection
- Decreased insurance rates (e.g., workers compensation, equipment/operator insurance)
- Increased access to information regarding silviculture, managerial, and legal issues
- Increased credibility with landowner groups
- Mills only purchase from program participants
- Other benefits (List in the space below)

11. What is the renewal period for your program(s) in years?

- Registration _______ years
- Certification _______ years
- Licensing _______ years
12. What general competencies or standards are required by your state's timber harvester registration or certification or licensing program(s)? Please check all items that apply and include a summary of your competency requirements with this survey.

- Safety
- Experience
- Past job performance
- Financial resources
- Insurance
- Bonding
- Knowledge of Silvicultural Practices
- Knowledge of Best Management Practices
- Minimum initial training standards
- Continuing education requirements
- Other standards (List in space below)

14a. Are promotional activities undertaken in your state on behalf of timber harvesters who are enrolled in your state's registration or certification or licensing program(s)?

- YES (Continue to Q-14b)
- NO (Skip to Q-15)

14b. In what ways are timber harvesters promoted in your state? Please check all items that apply and add other appropriate promotional mechanisms.

- Landowner workshops on selecting timber harvesters
- Ad campaigns
- Promotional association for timber harvesters
- Official list of participants is made available to interested parties
- Other promotional activities (List in the space below)

13. Which entities provide funds for timber harvester registration or certification or licensing programs in your state? Please check all items that apply and add other appropriate entities.

- State
- County or Parish
- Municipality or Township
- Timber harvesting firms
- Individual timber harvesters
- Registration fees
- Certification fees
- Licensing fees
- Private non-timber harvesting organization (please specify in the space below)

- Other entities (List in the space below)

15. Has your registration or certification or licensing program(s) been formally evaluated for effectiveness or success on a statewide basis?

- YES (Continue to Q-16 and include a copy of the evaluation along with this survey)
- NO (Skip to Q-17)

16. Which of the following measures do you use to evaluate your program's effectiveness or success? Please check all items that apply and add other appropriate evaluation items.

- Effectiveness towards achieving goals
- Benefits to timber harvesters
- Costs to timber harvesters
- Benefits to landowners
- Costs to landowners
- Costs of administering programs
- Other measures (List in the space below)
17. Are continuing education and training courses offered as part of your state's registration or certification or licensing program for timber harvesters?

- YES If YES please include a summary of your education requirements that outline course titles, content, number of hours required, and frequency of attendance for each course.
- NO

18. How effective do you think your current program is toward fulfilling its goals. Please select one choice below.

- Very effective
- Effective
- Not too effective
- Not at all effective

19. Do you think your program could be strengthened by any of the options below? Please check all items that may apply and add other appropriate options.

- Redesign the educational curriculum to better reflect goals
- Increased frequency of training courses
- Offer additional courses related to timber harvesting (please specify which courses in the space below)
- Higher training standards
- Increased funding for education
- Increased regulation of timber harvesters
- Increased monitoring
- Stronger penalties for non-compliance
- Include more timber harvesting occupations in program
- Other options (List in the space below)

20. Generally, has your timber harvester registration, certification or licensing program had a positive impact on harvesting operations in your state?

- YES it has had a positive impact
- NO it has not had a positive impact

Please explain:

21. What would you do to improve registration or certification or licensing programs for timber harvesters in your state?

Please explain:

REMINDER Please include the following materials with this survey:

> Overview of registration or certification or licensing program(s) (Q-4a)
> Monitoring program summary (Q-9)
> List of program competencies or standards (Q-12)
> Evaluation of overall effectiveness or success (Q-16)
> Education program summary (Q-17)

Please return this survey, including program summary materials by November 22, 1993 to:

Stephen Tillmann
Department of Forest Resources
University of Minnesota
1530 North Cleveland Avenue
St. Paul, MN 55108-1027

Thank you for your participation