

# Advancement in State Government Involvement in Urban and Community Forestry in the 50 United States: Changes in Program Status From 1986 to 2002

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**Abstract.** This study investigated changes in state urban and community forestry (U&CF) programs since expansion of the federal U&CF program in 1990. Baseline data from 1986 compared with state U&CF program data in 2002 demonstrated significant expansion in state U&CF program capacity and assistance to local urban forestry efforts within the 50 United States. Use of Federal Cooperative Forestry Assistance Grants more than doubled, two additional state U&CF staff were employed within the program, time allocated to statewide coordination and regional implementation of the U&CF program approximately doubled, and a 111% national increase in the amount of state money used to finance the program occurred. In contrast, a similar minority of state coordinators in 1986 (40%) and 2002 (42%) believed adequate attention was given by the state agency housing the U&CF program. State coordinators in 2002 also had a similar outlook on the long-term future through expansion, reduction, or elimination of the state U&CF program reported in 1986 with slightly over 60% in both years believing expansion will occur. A significantly similar percentage of state U&CF program coordinators in 2002 (68%) compared with 1986 (77%) thought the state U&CF program would continue if federal funding was eliminated, however with a reduction in local assistance. Study findings suggest many positive changes in state U&CF program capacity occurred between 1986 and 2002 with various indicators suggesting dependence within some states on federal funding to maintain their current capacity.

**Key Words.** Financial and technical assistance; program capacity; state and federal urban and community forestry; urban forestry.

The urban forest is a vital component of built environments and includes the present and potential vegetation that provides benefits within a land area associated and influenced by urban populations (Miller 1997; Dwyer et al. 2000; Kuser 2000; Konijnendijk and Randrup 2004; McPherson 2004). Urban forestry is the management of the urban forest and as a discipline continues to move forward at many levels (Miller 1997; Konijnendijk et al. 2006). Advances in basic and applied research and practical application of science-based knowledge continue to occur (Campana 1999; Dwyer et al. 2002; Konijnendijk and Randrup 2004). Educational opportunities at workshops, conferences, and university settings have greatly increased since the 1970s (Andresen 1978; Andersen et al. 2002; Elmendorf et al. 2005). Even with these advances, in many United States locales, adequate urban forestry efforts were lacking and federal and state programs were created to help foster local urban forestry efforts and the urban forest (Hortscience and Aslan Group 2004; U.S. House of Representatives 2004; Hauer and Johnson 2007).

A significant expansion in funding and activities within state and federal urban and community forestry (U&CF) programs occurred since the U.S. Federal Farm Bill of 1990 (P.L. 101–513) and an enhanced federal role with U&CF (Deneke 1992; Hortscience and Aslan Group 2004; Hauer 2005). The federal assistance role was created with the understanding that the general health of the urban forest was declining, urban tree populations improve quality of life and economic value of urban land, and a mission to encourage tree planting and develop an ability or capacity within states to undertake U&CF programs was desirable (Biles and Deneke 1982; USDA-FS 2002). Urban for-

estry funding at the federal level has increased (tripled when adjusted for inflation) from \$3.5 million in 1978 to \$31.95 million in 2005 (Grey 1978; Biles and Deneke 1982; Deneke 1983, 1992; Hauer 2005). Of this, approximately 50% to 60% in a given year moves directly to state U&CF programs (U.S. House of Representatives 2004; Hauer 2005; Hauer and Johnson 2007). As a result, this provides financial resources for state programs to increase technical and financial assistance to local urban forestry programs (Andresen 1978; Casey and Miller 1988; Hortscience and Aslan Group 2004; Hauer 2005; Hauer and Johnson 2007). State and federal U&CF programs use their existing capacity to increase the ability or capacity locally to develop and expand urban forestry programs and activities (Hauer 2006). Ideally, sustainable local programs result (Clark et al. 1997; Dwyer et al. 2003; Elmendorf et al. 2003; USDA-FS 2004a; Hauer 2005; Hauer and Johnson 2007).

State U&CF forestry programs use technical assistance, financial assistance, and technology transfer to assist local urban forestry programs (Hauer 2005; Hauer and Johnson 2007). Financial assistance provides money for activities to inventory tree and natural resources, develop management plans, purchase trees, conduct tree risk assessment, develop and implement urban forest health activities, and develop and conduct workshops to train community members. Technical assistance ideally develops a skill or ability to conduct an urban forestry activity at a local level. Potential areas involve pest identification and management methodologies, tree selection based on site characteristics, selecting tree and natural resource techniques best suited for a question or need at hand, developing management plans,

and others. Technology transfer uses demonstration projects, printed and electronic media, conferences and workshops, and tree celebrations such as Arbor Day. These assistance mechanisms from higher levels of government and other outside assistance sources (e.g., nonprofits, universities, extension service, consulting foresters/arborists, professional organizations, U&CF advisory councils) ideally provide the assistance recipient with the means to overcome a limitation(s) (Hortscience and Aslan Group 2004; U.S. House of Representatives 2004; USDA-FS 2004b).

Many states had emerging U&CF programs with few strong state programs by the mid-1970s (Andresen 1978; Davis 1993). Casey and Miller (1988) documented that many state U&CF programs took a variety of approaches to provide technical and financial assistance in the 1980s. They further established many states had rudimentary and developing, rather than well-established, urban forestry program capacity before the 1990 expansion of the federal U&CF program. A building body of knowledge suggests that technical assistance and financial assistance to local urban forestry programs were associated with greater local capacity and U&CF activity (Still et al. 1996; Vitoth and Thompson 2000; Bird 2002).

This study investigated areas of change within state U&CF programs between 1986 and 2002. A set of indicators of state U&CF programs were derived through state U&CF program staff responses depicting programs in 1986. These same program indicators in 2002 were reevaluated through information supplied by state U&CF coordinators. We used these to document changes in state U&CF programs after expansion of the federal U&CF program since 1990 and subsequent greater monetary support for state U&CF programs. We also asked if state capacity and agency support for state U&CF programs has significantly changed between 1986 and 2002 using these indicators as measures of program sustainability.

## METHODS

### Study Questions

Study questions were created *a priori* to the design of this study. Self-reported data from state U&CF program coordinators through a questionnaire were used to answer research questions. Specifically, this study sought to answer the following questions:

1. Has financial assistance through state U&CF programs increased in the United States between 1986 and 2002? ( $H_0$ : No difference in financial assistance exists between 1986 and 2002.)
2. Has technical assistance through state U&CF programs increased in the United States between 1986 and 2002? ( $H_0$ : No difference in technical assistance exists between 1986 and 2002.)
3. Have state government or federal government funding of state U&CF programs increased? ( $H_0$ : No increase occurred for actual and inflationary adjusted federal or state monies.)
4. Has greater overall sustainability of state U&CF programs occurred as detected through coordinator perception of agency support, program direction, and decreased reliance on federal funding suggesting greater capacity to conduct state U&CF program? ( $H_0$ : No increase in agency support, program direction, or nonreliance on federal funding is

detected suggesting no change in sustainability of state U&CF programs.)

5. Have indicators of program background capacity changed since 1986? ( $H_0$ : No difference exists between the two time periods.)

### Data Collection

Data used in this study were collected for 1986 through a questionnaire sent to the state forester who typically delegated the task to those who were most familiar with the state U&CF program (Casey 1988; Casey and Miller 1988). In brief, 49 of 50 states responded to that questionnaire found in Casey (1988). These questions were included within a larger study of state U&CF program capacity in 2002 (Hauer 2005). A complete accounting of methods used to acquire state U&CF program data from the recent questionnaire is described elsewhere (Hauer 2005; Hauer and Johnson 2007). In brief, 42 of 50 (84%) state U&CF coordinators responded. All but one questionnaire was included in this study because one state returned a questionnaire with no data. The questionnaire was delivered using methods consistent with the tailored design method (Dillman 2000). The high response rate and comparative *t* tests revealed no significant differences between responding and nonresponding states for all data elements within the USDA–Forest Service Performance Management and Accountability System database for the year 2002; thus, we assume there is no nonresponse error. Conclusions from this study were representative of all 50 state U&CF programs within the United States (Hauer 2005; Hauer and Johnson 2007). In addition, non-response error (response to a question) was very low with 100% or near response to each question in both questionnaires.

### Statistical Procedure

Descriptive statistics, *t* tests, Pearson's correlation, and  $\chi^2$  analyses used SPSS version 14.0. A paired *t* test was used to test for differences in parametric data indicators of state U&CF program capacity between 1986 and 2002. A nonparametric two-sided  $\chi^2$  test of independence was used to test for differences within categorical data. Significance for all tests, except where noted, was set at  $\alpha \leq 0.05$  significance level as evidence to reject a null hypothesis. Program money sources and financial assistance used the Consumer Price Index (CPI) from the U.S. Department of Labor, Bureau of Labor Statistics (<http://data.bls.gov/cgi-bin/cpicalc.pl>) to adjust for inflation. All adjustments occurred from 1986 to 2002 as a base year using nonseasonally adjusted values with a 1.64 CPI adjustment occurring between 1 January 1987 and 1 January 2002.

## RESULTS

### Technical and Financial Assistance

State U&CF programs provided significantly more technical and financial assistance in 2002 than in 1986 (Table 1). A 161% increase in the mean number of community assists occurred during that time. These assists could be either technical and/or financially related. A mean of 70 (range, 0 to 300) assists were reported in 1986 compared with a mean of 183 (range, 16 to 689) reported in 2002.

States significantly increased financial assistance to local urban forestry programs. State U&CF programs that used Federal Cooperative Forestry Assistance Grants significantly increased (154% greater) from 32.7% of states in 1986 to 82.9% in 2002.

**Table 1. Comparison between state urban and community forestry program attributes from 1986 and 2002 within the 50 United States.**

Research questions	1986	2002	Significance tests
<b>Technical and financial assistance</b>			
Does your agency administer federal Cooperative Forestry Assistance (CFA) grants to qualifying communities? (percent yes)	32.7 ( <i>n</i> = 49)	82.9 ( <i>n</i> = 41)	$\chi^2(1) = 21.139, P = 0.000, n = 81, \phi = 0.511$
Amount of federal CFA grants (mean)	17K	161K	$t(34) = 5.189, P = 0.000$
Does your agency have a program of community forestry assistance in addition to the administering of federal grants? (percent yes)	93.9 ( <i>n</i> = 49)	100.0 ( <i>n</i> = 41)	$\chi^2(1) = 3.193, P = 0.074, n = 81, \phi = 0.199$
Frequency of offering technical assistance (percent yes)	57.1	91.9	$t(31) = 9.556, P = 0.000$
Approximately how many communities do you assist each year? (total number)	70, range 0-300	183, range 16-689	$t(27) = 3.385, P = 0.002$
Does your agency provide financial assistance to communities from state monies? (percent yes)	11.1 ( <i>n</i> = 45)	39.0 ( <i>n</i> = 41)	$\chi^2(1) = 7.768, P = 0.005, n = 77, \phi = 0.318$
<b>Funding sources</b>			
How is your program funded? (percent yes, dollars)			
Federal funding (percent yes) (means of all states, \$ CPI adjusted 2002 base)	85.7 31K	100.0 370K	$\chi^2(1) = 8.865, P = 0.003, t(39) = 10.653, P = 0.000$
State funding (percent yes) (means of all states, \$ CPI adjusted 2002 base)	63.3 96K	61.0 204K	$\chi^2(1) = 0.201, P = 0.654, t(38) = 2.052, P = 0.047$
Federal and state funding combined (% yes) (means of all states, \$ CPI adjusted 2002 base)	139K	574K	$t(35) = 6.343, P = 0.000$
<b>Program background</b>			
How long has your program been in existence? (mean years, 1986, <i>n</i> = 44, 2002 <i>n</i> = 41)	11; range, 0–25	17; range, 10–35	$t(32) = 3.770, P = 0.001$
Does your state have enabling legislation specifically authorizing urban forestry assistance? (percent yes)	32.6 ( <i>n</i> = 46)	41.5 ( <i>n</i> = 41)	$\chi^2(1) = 1.791, P = 0.181, n = 78, \phi = 0.152$
Approximately how many work hours are spent by your agency on urban and community forestry (U&CF) assistance each year?	4600; range, 80–35,000	8723; range, 2080–24,000	$t(31) = 3.141, P = 0.004$
Does your agency employ an urban forester or similar specialist? (percent yes)	71.7 ( <i>n</i> = 46)	100.0 ( <i>n</i> = 41)	$\chi^2(1) = 13.089, P = 0.000, n = 77, \phi = 0.412$
Does the U&CF program have a staff of district urban foresters? (percent yes)	37.5 ( <i>n</i> = 48)	73.2 ( <i>n</i> = 41)	$\chi^2(1) = 7.833, P = 0.005, n = 77, \phi = 0.319$
Approximately what percent of each person's workload is devoted exclusively to forestry and related administration?			
State coordinator/urban forester/urban forestry specialist (percent of full-time)	45.7 ( <i>n</i> = 49)	95.4 ( <i>n</i> = 41)	$t(25) = 3.000, P = 0.006$
Full-time urban forestry staff (percent of full-time)	37.6 ( <i>n</i> = 23)	85.4 ( <i>n</i> = 34)	$t(15) = 3.773, P = 0.002$
<b>Program sustainability</b>			
Do you feel that the urban forestry program is given adequate attention by your agency? (percent yes)	39.5 ( <i>n</i> = 43)	42.5 ( <i>n</i> = 40)	$\chi^2(1) = 0.048, P = 0.826, n = 75, \phi = 0.025$
What do you feel is the long-term future of your program? (percent yes, 1986 <i>n</i> = 46; 2002 <i>n</i> = 25)			
Expansion	61.4	64.0	$\chi^2(1) = 2.102, P = 0.147$
Reduction	2.3	12.0	$\chi^2(1) = 1.105, P = 0.293$
Elimination	2.3	4.0	$\chi^2(1) = 0.000, P = 0.986$
Uncertain	34.1	20.0	$\chi^2(1) = 2.933, P = 0.087$
If federal funding were eliminated, would your program be likely to continue? (percent yes)	77.3 ( <i>n</i> = 44)	68.3 ( <i>n</i> = 41)	$\chi^2(1) = 0.869, P = 0.351, n = 77, \phi = -0.106$

CPI = Consumer Price Index, K = thousand.

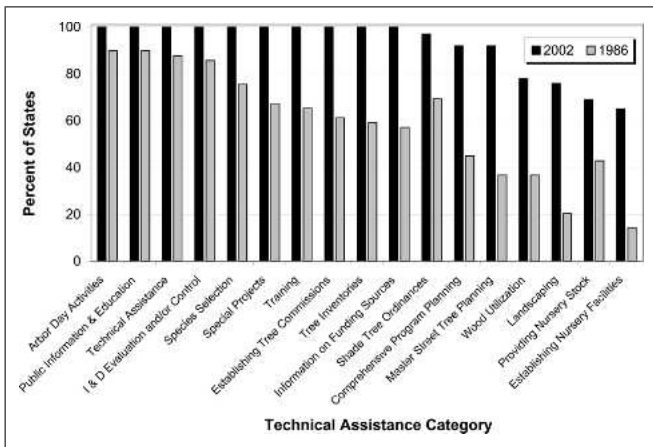
The amount of federal money distributed locally through grants increased significantly from an adjusted (CPI) mean \$28,510 (range, \$0 to \$164,000) per state to \$160,568 (range, \$9000 to \$535,000) in 2002. Strong and similar correlations were found for federal money allocated to a state and that subsequently granted to local urban forestry programs in 1986 (0.695) and 2002 (0.704). A significant 251% increase in programs using state monies occurred with only 11.1% of states doing so in 1986 and 39.0% of states in 2002.

Most states (94%) provided technical assistance in 1986. This was not significantly different from the 100% of states who did so in 2002. However, a significant increase in the frequency of

technical assistance, public education, and technology transfer provided by states occurred in all 17 areas (Figure 1). Overall, state U&CF programs in 1986 offered 57.1% of 17 different technical assistance areas. This significantly rose to a mean 91.9% of these areas being offered in 2002. Thus, although states routinely offered technical assistance, education, and technology transfer mechanisms within a state, the variety of ways was much more limited in 1986 than 2002.

All states in 2002 provided assistance in 10 of 17 areas that included Arbor Day activities, public information and education, technical assistance, insect and disease evaluation and/or control, species selection, special projects, training, establishing tree





**Figure 1. State urban and community forestry (U&CF) program technical assistance to local U&CF programs in 1986 and 2002 within the 50 United States.**

commissions, tree inventories, and information on funding sources. No technical assistance area had 100% of states providing it in 1986. Arbor Day activities, public information and education, and insect and disease assistance were commonly provided in 1986 and also in 2002 with significant, albeit small, increases from 11% to 17%. Species selection, special projects, training, establishing tree commissions, tree inventories, information on funding sources, and shade tree ordinances were offered by states in 1986 with 32% to 75% increases to the present in states offering these assistance forms. Comprehensive program planning, master street tree planning, wood utilization, landscaping, providing nursery stock, and establishing nursery facilities were offered in a minority of states in 1986 but were offered by the majority of states in 2002. The significant increase for these ranged from 61% to 355%.

Other agencies besides the lead agency for U&CF in a state provide assistance to local programs. Similar to 1986, both cooperative extension and the state agriculture agency provided a significantly similar level of assistance in 2002 within a state. However, a trend suggests both of these two were increasing the assistance offered with cooperative extension increasing from 78.3% of states in 1986 to 89.5% in 2002 and state agriculture agency increasing from 21.7% of states in 1986 to 30.3% in 2002. However, caution is needed with interpreting this statistical difference because the 1986 study did not explicitly ask for agencies beyond extension and agriculture and the 2002 study specified additional choices (e.g., resource conservation and development council, soil and water conservation districts, non-profit organizations, state land grant university, state department of transportation). These explicitly stated choices in 2002 were regarded as "other" in comparison to 1986 study findings.

### Funding Sources

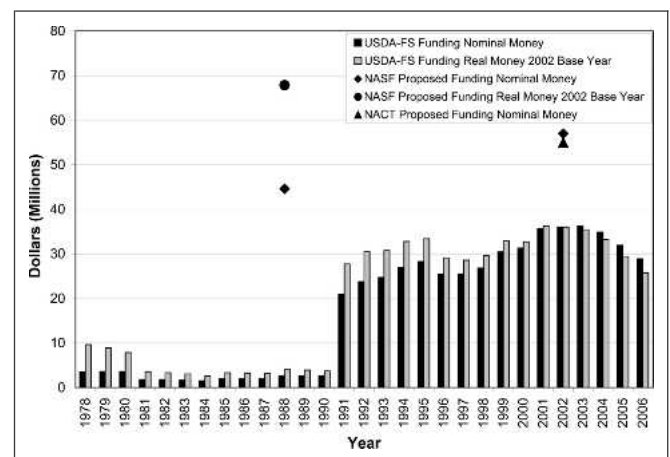
Most states (85.7%) received federal funding in 1986 (Table 1). Now, all states receive federal assistance, which was significantly greater than in 1986. The level of federal funding received (nonadjusted and adjusted by CPI) by states was also significantly greater in 2002 (mean, \$370,000; range, \$180,000 to \$1,082,000) than 1986 (mean, \$31,000; range, \$0 to \$164,000). Federal funding of state U&CF programs increased greatly after 1990 (Figure 2). The number of states that use state government

funding to partially support the state U&CF program was not significantly different between 1986 and 2002. Slightly more than 60% of states used state money in 1986 (63.3%) and 2002 (61.0%). Overall 39% of states funded their program in both 1986 and 2002 with state funds, 22% had no state funding in either time period, 22% used state funding in only 2002, and 17% used state funding in 1986 only. States that use state government funding to support the U&CF programs, however, had significantly greater funding (adjusted by CPI) in 2002 (mean, \$204,000; range, \$0 to \$1,330,000) than in 1986 (mean, \$96,000; range, \$0 to \$756,000). Total money (adjusted by CPI) per state used by the U&CF program was also different between the two dates. The 1986 total mean of \$139,000 (range, \$0 to \$805,000) increased to a mean of \$574,000 (range, \$180,000 to \$2,223,000) in 2002.

### Program Background

State U&CF programs receive enabling legislation from the legislative and executive branches of state government (Table 1). This was not significantly different in 1986 (32.6%) and 2002 (41.5%). Although a minority of states had enabling legislation specifically authorizing U&CF assistance, all states in 2002 provided assistance mechanisms to local urban forestry programs. We found a significant increase in the number of hours spent providing assistance between 1986 (mean, 4600; range, 80 to 35,000) and 2002 (mean, 8723; range, 2080 to 23,920).

All states now have a state U&CF coordinator, which was not surprising considering this is a requirement of receiving federal funding. This was significantly greater than the 71.7% of states in 1986. In states with a state U&CF coordinator, the percentage staffing level significantly increased from 69.9% in 1986 to 95.4% of full-time in 2002. In comparison, if all states were considered, the coordinator position was only 45.7% full-time in 1986. State programs with district/regional urban foresters also nearly doubled, increasing from 37.5% of states in 1986 to 73.2% in 2002. The percentage of time allocated for U&CF duties by full-time U&CF staff also significantly increased from



**Figure 2. Nominal and real funding of the USDA-Forest Service (USDA-FS) urban and community forestry program (U&CF) in 1978 to 2006, National Association of State Foresters (NASF)-proposed U&CF funding, and National Alliance for Community Trees (NACT)-proposed U&CF funding. Real funding inflationary adjustment used Consumer Price Index for base year 2002.**

37.6% in 1986 to 85.4% full-time in 2002. Fire management and rural forestry assistance were both common additional duties performed by the coordinator and full-time staff in 1986. Fire management was also the number one additional duty performed by the coordinator and full-time staff in 2002. Rural forestry management was also an additional duty, but to a much lesser extent in 2002.

State U&CF programs have evolved since the mid-1960s. The reported initiation of programs ranged from 1967 to 1992 for both studies in 1986 and 2002 (Figure 3). The mean start was reported as 1984 (median, 1990) in 2002, which was different from the reported mean of 1977 (median, 1977) program start in 1986. Approximately one-third (34.1%) of respondents in 2002 considered that their state U&CF program started before 1980. Comparatively, nearly 75% in 1986 considered a program start by 1980.

State U&CF program membership in professional organizations significantly increased since 1986 from 80% to 95% of program staff in 2002 a member of the International Society of Arboriculture, the Society of American Foresters, and/or American Forests. Membership in the International Society of Arboriculture increased significantly from 56.5% in 1986 to 85.0% membership in 2002. No significant change was found within American Forests membership in 1986 (67.4%) and 2002 (75.0%) or for membership within the Society of American Foresters in 1986 (54.3%) and in 2002 (42.5%).

### Program Sustainability

No indicators of program sustainability were significantly different between 1986 and 2002 (Table 1). A similar majority (60.5% in 1986 and 57.5% in 2002) of state U&CF program managers/coordinators reported that they did not believe the urban forestry program was given adequate attention by their agency. They also were similarly optimistic in 1986 (61.4%) and 2002 (64.0%) that the long-term future of expansion of the state program would occur. Some state U&CF programs were also highly dependent on federal funding. State U&CF coordinators/program staff similarly indicated in 1986 (77.3%) and 2002 (68.3%) that if federal funding were eliminated, the state U&CF

programs would still continue, albeit at a reduced level. Budget and staffing limitations were the primary factors described as limiting the state U&CF programs in both 1986 and 2002. Budget and staffing in 20 states were given as the primary factors limiting the state U&CF program in 1986. These factors were also the primary limitations in 2002 with 17 states indicating budget and 13 indicating staffing in 2002. Lack of administrative support or awareness within an agency was similarly reported as limiting the program in 1986 and 2002.

### DISCUSSION AND CONCLUSIONS

State U&CF program capacity since 1986, especially since passing the 1990 Federal Farm Bill, has increased. Several indicators of capacity involving technical and financial assistance, including administration and funding of Cooperative Forestry Assistance Grants, state funding of grants, frequency of technical assistance, and number of communities assisted, were significantly greater. States have a U&CF coordinator near one full-time equivalent (FTE) and an additional mean 3.2 FTEs of staff associated with U&CF activities. Comparatively, states had a mean 2.2 FTEs associated with the state U&CF program with the U&CF coordinator accounting for 0.4 FTE of the total in the late 1980s (Casey and Miller 1988; NASF 1988). Only 20% of states had a full-time U&CF coordinator in 1988 compared with 100% of states currently having a full-time coordinator with most work urban forestry-related (Reichenbach 1988; Hauer and Johnson 2007).

Results from this study suggest that states without a coordinator before 1990 would likely not have a full-time coordinator today without federal financial support. In these states, respondents suggested a 0.25 FTE position would be likely, and this was consistent with the status of state U&CF programs before 1990 (NASF 1988; Reichenbach 1988). Overall, state U&CF coordinators suggested a national 46.6% FTE within the coordinator position would exist in 2002 without additional federal support after the 1990 farm bill (Hauer 2005). This was also consistent with the 45.7% FTE level in the U&CF coordinator position nationally before 1990 (Casey 1988). Interestingly, the national mean of 4.2 FTEs in 2002 matches the staffing level need the NASF (1988) recommended in 1988 for states to implement effective U&CF programs.

State U&CF programs historically have been subject to state and federal funding and agency priorities. For example, some state U&CF programs have experienced episodes of state funding reallocation with U&CF positions eliminated and later reestablished (Harrell 1978; Gornicki and Harrell 1983; Sinclair 1993). In some cases, state U&CF programs were informal before establishing a more developed program. For example, Wisconsin initiated a state U&CF program in 1990; however, an informal role was taken through administering federal U&CF grants and participation in the DED Federal Demonstration from 1978 to 1982 (Casey 1988). Enabling legislation presumably instills a recognized need for U&CF within a state; however, in 2002, only 42% of states had enabling legislation, which was not significantly different than the 32.6% in 1986. Enabling legislation provides authority for carrying out U&CF activities.

State U&CF programs have progressively increased their capacity to provide local-level U&CF assistance since the 1970s. Andresen (1978) documented state U&CF program capacity in the early 1970s and found most states had emerging U&CF programs. Few state programs were rated as "strong" when de-

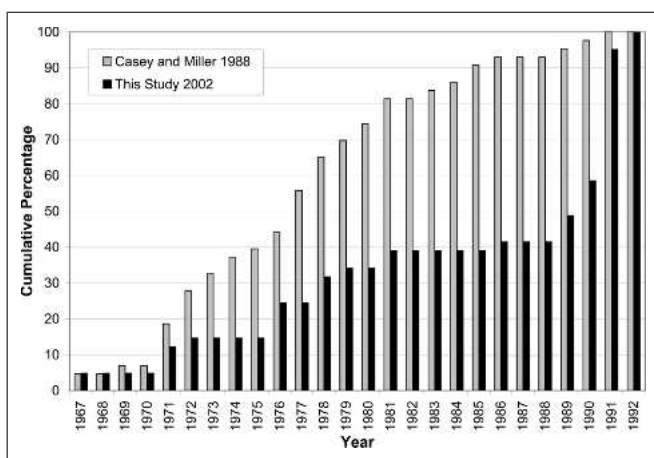


Figure 3. Cumulative percentage of states reporting the start of their urban and community forestry program in 1986 and 2002. (Start of program since 1986 for Casey and Miller study (gray bars) extrapolated from this study (black bars).)

defined as a function of historical precedent, public demand and support, funding, legislation, vision of leadership, and dominance of personalities. Examples of early programs in states by starting year include Georgia (1967), Missouri (1967), Florida (1971), Kansas (1971), California (1978), and Ohio (1979). However, these were the exception with many states providing limited or no U&CF assistance (Casey and Miller 1988; NASF 1988). An assessment by Casey and Miller (1988) found most states (93.9%) were conducting some form of U&CF programs by the late 1980s.

An interesting difference between results from Casey and Miller (1988) and this study occurred with the year that respondents considered the program started. Differences could be explained in different wording used in the two studies, incomplete respondent knowledge of past efforts within a state, or perception of what comprises a U&CF program. Presumably, some states were conducting urban forestry activities (reflective in 1986 results and published reports) before the date given in this study but at levels typically lower than at present and with activities at a staff rather than functional organizational level. For example, the state of Maine responded the start of their current U&CF program as 1991; however, the agency was providing cost-share assistance to communities for Dutch elm disease (*Ophiostoma ulmi*) control before 1973 (Archibald 1973). The state of Ohio dated the start of their U&CF program at 1979 in this and in the Casey and Miller (1988) work; however, staff appointment of an urban forester was documented as early as 1973 for the Columbus, Ohio, area (Ryan 1973). In addition, the state of Vermont U&CF program considered their start in 1991, yet the state hired a U&CF specialist in 1971. The position was terminated in 1978 as a result of budget concerns, reestablished later that year through a federal grant, to be eliminated again in 1981 until 1991 when it was reestablished a second time. Finally, respondents may have indicated what they perceived as a program of systematic efforts rather than an activity or nonsystematic approach taken before 1990.

The levels of U&CF assistance through state programs varied with 70% of states implementing a more formalized approach. The remaining states provided informal assistance defined as use of nonspecialized forestry personnel, received limited or no state funding, and often consisted of nothing more than administration of Federal Cooperative Forestry Assistance. In most states, assistance to local urban forestry programs was limited, even in states with more formal approaches. The National Association of State Foresters in the late 1980s found similar results with state U&CF programs ranging from a full-time coordinator to no U&CF program (NASF 1988).

State U&CF programs provided financial assistance through grants to support local capacity building through activities such as tree inventories, strategic planning, tree risk assessment, education, tree planting, tree removal, equipment, and other urban forestry activities (Hauer and Johnson 2007). Technical assistance was found by Hauer (unpublished data) to have the strongest effect (2.4 to 3.5 times greater) followed by financial assistance on influencing an increase in local U&CF activity. State U&CF coordinators believe as a whole that technical assistance has the greatest effect at increasing local U&CF capacity. This study found a 164% increase in the number of states that offer technical assistance since 1986 and more states were offering technical assistance in all 17 indicators. We also found an increase in the percent of states offering Cooperative Forestry

Assistance (154%) and state (254%) grants. Other U&CF studies (Still et al. 1996; Vitosh and Thompson 2000; Bird 2002) and rural forestry studies (Henly et al. 1988; Gaddis et al. 1995; Haines 1995; Cabbage et al. 1996; Kilgore and Blinn 2003) have found technical and financial assistance leads to greater activity and effective outcomes.

Finally, even with the increases discussed here, this study suggests state U&CF programs were still reliant on federal funding from several indicators. Although the percentage of states receiving federal funding increased from 85.7% to 100%, the percentage of state programs receiving state funding was constant between 1986 (63.3%) and 2002 (61.0%). Furthermore, real federal funding increased more than tenfold; however, state funding of programs only experienced just over a onefold increase. State U&CF coordinators also responded similarly that only 40% of programs were given adequate attention by their agency. Overall, however, state U&CF programs continue to advance toward becoming sustainable programs. Older state U&CF programs also tend to be more advanced.

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**Résumé.** Cette étude fait une enquête à propos de l'évolution dans les programmes U&CF d'état, et ce depuis l'expansion du programme U&CF fédéral en 1990. Les données de base de 1986 comparées aux données du programme d'état U&CF de 2002 démontrent une expansion significative de la capacité du programme d'état U&CF ainsi que de l'assistance aux efforts locaux en foresterie urbaine au sein des 50 états des États-Unis. L'utilisation des subventions fédérales à l'assistance coopérative en foresterie a plus que doublé, deux professionnels ont été employés au sein du programme U&CF d'état, le temps alloué à la coordination à l'échelle de l'état ainsi qu'à l'implantation régionale du programme U&CF a pratiquement doublé, et une augmentation de 111% des montants d'argent utilisés pour financer le programme à l'échelle de l'état s'est produite. Par opposition, une minorité similaire de coordonnateurs d'état en 1986 (40%) et en 2002 (42%) croit qu'une attention adéquate a été accordée par l'agence de l'état qui gère le programme U&CF. Les coordonnateurs d'état en 2002 ont aussi une vue similaire à propos de l'expansion future à long terme, de la réduction ou de l'élimination du programme d'état U&CF qui avait été rapportée en 1986, et ce avec un peu plus de 60% dans ces deux périodes qui croyaient qu'une expansion allait se produire. Un pourcentage significatif similaire de coordonnateurs du programme d'état U&CF en 2002 (68%) comparativement à 1986 (77%) pensaient que le programme d'état U&CF allait se poursuivre si le financement fédéral était éliminé, cependant avec une réduction dans l'assistance locale. Les résultats de cette étude suggèrent que plusieurs changements positifs dans la capacité du programme U&CF d'état sont survenus entre 1986 et 2002, et ce avec plusieurs indicateurs suggérant une dépendance de certains états envers les fonds fédéraux pour maintenir leur capacité courante.

**Zusammenfassung.** Diese Studie untersucht die Veränderungen in staatlichen U&CF Programmen seit der Expansion der bundesweiten Programme in 1990. Die Basisdaten von 1986, verglichen mit den staatlichen U&CF-Programmen in 2002 demonstrierte deutlich die Expansion der staatlichen U&CF-Programm-Kapazität und Unterstützung der Anstrengungen der lokalen Forstwirtschaft in den 50 Bundesstaaten. Die Nutzung der Bundesforst-Kredite hat sich mehr als verdoppelt, zwei zusätzliche U&CF-Mitarbeiter wurden innerhalb des Programms eingestellt, die aufgewendete Zeit für bundesweite Kooperation und regionale Implementierung von U&CF-Programmen hat sich verdoppelt und die

staatlichen Aufwendungen zur Finanzierung steigerten sich national auf 111 %. Im Gegensatz dazu hat eine ähnliche Minderheit von Bundes-Koordinatoren in 1986 (40%) und 2002 (42%) geglaubt, dass eine adäquate Aufmerksamkeit durch die Bundesbehörde, die das Programm beherbergt, gegeben wurde. Die Bundes-Koordinatoren hatten 2002 eine ähnliche Einschätzung der langfristigen Zukunft bezüglich der Expansion, Reduktion oder der Elimination des U&CF-Programms, die 1986 berichtet wurde, mit etwas über 60 % in beiden Jahren gegeben mit dem Glauben, dass es Expansion geben wird. Eine signifikant ähnlicher Prozentsatz (68%) der U&CF-Programm-Koordinatoren glaubte 2002, verglichen mit 1986 (78%), dass das Programm weiterlaufen würde wenn die Kredite gestrichen würden, mit einer Reduktion der lokalen Unterstützung. Die Studienergebnisse zeigen, dass viele positive Veränderungen zwischen 1986 und 2002 aufgetaucht sind und es zeigt verschiedene Indikatoren, die die Abhängigkeit einiger Bundesstaaten von Bundesmitteln, um ihre gegenwärtige Kapazität aufrecht zu halten.

**Resumen.** Este estudio investigó los cambios en programas estatales de U&CF desde la expansión del programa federal en 1990. Los datos base de 1986 compararon el programa de 2002 demostrando expansión significativa en la capacidad y asistencia del programa a los esfuerzos dentro de los 50 Estados Unidos. El uso de los apoyos del Federal Cooperative Forestry Assistance Grants fueron más del doble, dos staff estatales de U&CF fueron empleados dentro del programa, el tiempo e implementación del programa y un 111% de incremento nacional en cantidad de dinero usado para financiar el programa. En contraste, un minoría de coordinadores estatales en 1986 (40%) y 2002 (42%) creyeron que una atención adecuada fue dada por la agencia estatal al programa. Los coordinadores estatales en 2002 también tienen un punto de vista similar viendo a largo a plazo en cuanto a expansión, reducción o eliminación del programa estatal de U&CF reportado en 1986, levemente sobre el 60% en ambos años. Un porcentaje similar de coordinadores en 2002 (68%) comparado a 1986 (77%) anotó que el programa podría continuar si los fondos federales fueran eliminados, sin embargo con una reducción en asistencia local. Los resultados del estudio sugieren muchos cambios positivos en la capacidad de los programas de U&CF entre 1986 y 2002, con varios indicadores sugiriendo dependencia dentro de algunos estados sobre los fondos federales para mantener su capacidad actual.