



Revisiting the Status, Needs, and Knowledge Levels of Mississippi's Governmental Entities Relative to Urban Forestry

Stephen C. Grado, Marcus K. Measells, and Donald L. Grebner

Abstract. In 2004, Mississippi State University researchers determined the status, needs, and knowledge levels of Mississippi's community leaders and communities relative to urban and community forestry benefits, programs, funding opportunities, and program implementation. As a result, this project's goals were to build on past research and identify trends for past and current involvement and future interest levels among Mississippi's small (<2,000 people) to large (>10,000 people) communities for urban and community forestry programs and assistance. This current effort revisited these communities, previously surveyed in 2004, and highlighted changes in knowledge levels and various activities and programs undertaken. A mail survey was sent to 293 Mississippi communities with 163 surveys returned for a response rate of 55.6%. In general, communities responding indicated that a sizable number of officials have increased their awareness or interest in urban and community forestry. Communities that wanted to establish programs the most again cited a lack of funding as the reason for not initiating projects or sustaining existing programs. Greater effort in disseminating information on funding opportunities was seen as necessary, given that most Mississippi communities were only aware of a few national programs. Participation in statewide or local urban forestry programs and activities was minimal. The authors' previous study found that without quality, updated information on urban and community forestry and reliable funding, communities are limited in undertaking systematic planning and associated programs utilizing arboreal resources. Good information distribution, which has improved, and reliable funding are still limiting communities in undertaking systematic planning and associated urban and community forestry programs.

Key Words. Large Communities; Medium-sized Communities; Mississippi; Reassessment; Small Communities; Survey Research; Urban and Community Forestry.

Implementing urban and community forestry activities is an important consideration for many small, medium, and large communities across the United States, as well-managed urban and community forestry programs can derive many economic, environmental, physiological, and sociological benefits from the urban forest. Some commonly known benefits are improved aesthetics, erosion reduction, recreation, increased real estate values, noise pollution reduction, health benefits, and improved air and water quality (Dwyer et al. 1992; Wolf 2005, Grado et al. 2006; Nowak and Dwyer 2007). However, reassessing community knowledge and activity levels is important to implementing an urban and community forestry program to take advantage of these benefits. In 1992 and 2004, two surveys were performed in Oregon, U.S. for such purposes (Ries et al. 2007). The 2004 survey was designed to gain insight into the scope and extent of Oregon's urban forest resources, measure local program accomplishments since 1992, and measure statewide impacts of urban forestry assistance programs. With a similar intent, this type of reassessment has also taken place in Mississippi, U.S. where urban and community forestry is growing in importance.

Not all community or government leaders, however, have a clear and thorough understanding of urban and community forestry. Reasons for this lack of understanding about urban forestry may be traced to an information gap on the subject or absence of educational materials and resources among communities (Grado et al. 2006). Information that is well understood and programs

based on this knowledge level that are executed correctly can lead to successes, while achieving continual cost-effectiveness. Lack of a program, or mistakes generated upon implementation, can incur greater costs while reducing benefits (Dwyer et al. 1992; Nowak and Dwyer 2007; Stevenson et al. 2008). Stevenson et al. (2008) found in several Pennsylvania, U.S. municipalities that the consequences for local officials with an incomplete understanding of urban forestry benefits and practices resulted in lower public support, along with inadequate funding, personnel, and equipment.

There are communities familiar with the benefits of urban and community forestry but are not actively managing their resources (Grado et al. 2006). When managing the resource, ineffectiveness can sometimes be attributed to an idle or improperly managed program by government (Grey 1978). Both of these may be attributed to funding or personnel issues. Lack of activity has been attributed to population sizes; a community's size (e.g., large versus small) may influence available funding and budgeting for a program (Grado et al. 2006). Population size also influences the available tax base of a community for programs, and thus the potential for instituting activities (Miller and Bate 1978). A 12-city case study in the United States (Johnson 1982) found that unsuccessful urban forestry programs were traced to a lack of funding and city budgeting, since most local governments have been underfunded in favor of more essential services or civic responsibilities (e.g., police protection, fire control) (Tate 1982; Stevenson et al. 2008). In a Wisconsin, U.S. study,

government leaders felt that more developmental activities in urban forestry programs would have occurred if outside governmental assistance was provided to their city or town (Miller and Bate 1978). In these cases, government funding via grants was needed; however, finding information about available grants was the issue facing many city leaders. Tate (1982) found that two-thirds of those communities surveyed within the United States felt they had insufficient information (in regard to grants) to make application. Also, a portion did not know of any potential sources to obtain funding. Almost all surveyed communities claimed they would apply for the necessary funding if information were available about the application process (Tate 1982).

Hauer and Johnson (2008) indicated that nearly 60% of urban and community forestry program coordinators claimed that funding for their state programs was inadequate and that if federal funding was eliminated, their programs would decline. However, Hauer et al. (2011) also found strong evidence that technical assistance, more so than financial assistance, translated into increased local urban and community forestry activities. In this case, it appeared that providing local communities the necessary training on technical aspects will generate greater implementation of urban forestry programs.

The study's main objective was to understand and identify how community needs and issues, relative to urban forestry and the knowledge level of community leaders (e.g., urban forestry program identification, funding sources), have changed since 2004 (Grado et al. 2006). Since the previous study divided communities into small, medium, and large, the same approach was taken in this study. This included assessing knowledge levels about opportunities to gain information and take advantage of outreach programs relating to urban and community forestry as well as finding funding sources. The study also focused on programs already in place, documenting success levels and the vehicles used to obtain funding for existing programs and for their implementation; the study would see if these have changed since 2004.

METHODS

Discovery and documentation of pertinent information and data related to urban and community forestry issues cannot occur without contacting key elected officials. The study authors received a complete listing of all community mayors in Mississippi from the Mississippi Municipal League. All survey questions were reexamined for the purpose of determining the success of existing community programs and intentions directed toward future programs and opportunities.

Surveys were accompanied by a cover letter, explaining confidentiality, project goals, and end-products. The formal survey process (Dillman 2000) consisted of mailing the survey on March 25, 2011, and then one week later sending a thank-you/reminder postcard. Approximately three weeks after mailing the initial survey, a second survey was mailed on April 19, 2011. Finally, a third survey was mailed three weeks later on May 12, 2011. Survey responses were tabulated and analyzed using bivariate analysis during the remainder of 2011. Specific findings from the 2011 survey process were summarized and compared to the 2004 survey results.

In some cases, results were disaggregated for those issues related to community size. Similar to 2004, the communities were divided between small (population <2,000), medium (2,000–10,000), and large (>10,000). The survey questionnaire

used was almost identical to that used in 2004 by Mississippi State University (MSU) researchers (some items within questions were updated) with the exception that one question asking for the job title of the person completing the survey was added (Grado et al. 2006). Questions relating to job title, years of involvement with urban and community forestry projects or programs, and why projects or programs were discontinued had open-ended responses. Respondents could select 'yes' or 'no' on questions regarding the following: familiarity with urban and community forestry; if they felt there was a need for urban and community forestry projects or programs; if their community previously had urban and community forestry projects or programs; whether they employed an urban or community forester, similar specialist, or firm; if they intended to hire an urban or community forester, similar specialist, or firm; and if they planned to initiate any future urban and community forestry projects or programs. Respondents could select among multiple responses for questions concerning topics of urban and community forestry they were familiar with; types of urban and community forestry personnel they currently employed or planned to hire; the urban and community forestry resources they were aware of, types of funding sources available, types of current projects they have; and preferred communication methods for receiving information on urban and community forestry. Respondents could rank their level of interest for establishing projects and programs on a 1 to 5 scale, where 1 indicated not very interested and 5 indicated very interested. They could rank factors considered the greatest hindrance to program adoption in their community on a 1 to 5 scale, where 1 indicated greatest hindrance and 5 indicated least hindrance. Likewise, they ranked the factors they considered most important for their community on a 1 to 5 scale, where 1 indicated least important and 5 indicated most important.

RESULTS

A total of 293 communities were represented on the mailing list (versus 296 in 2004). Of these 293, there were 188 small (versus 186 in 2004), 64 medium (versus 73 in 2004), and 41 large communities (versus 37 in 2004). All surveys were deliverable. One hundred sixty-three surveys were returned (versus 159 in 2004) for an overall response rate of 55.6% (versus 53.7% in 2004). The response rate was 48.9%, 60.9%, and 78.1% for small, medium, and large communities, respectively (versus 46.7%, 54.8%, and 89.5%, respectively, in 2004).

In 2011, the survey asked for the position title of the individual completing the survey. Results showed that 62.6% of respondents were mayors. The next two highest positions completing the survey were city clerk (11.0%) followed by city planner (3.7%). This question was not asked in 2004.

Familiarity or Awareness with Urban and Community Forestry

In 2004, 62.3% of respondents were aware of urban and community forestry. However, in this study, the awareness level grew to 77.9% (Table 1). Overall, 71.7% of small communities (versus 48.3% in 2004) indicated awareness with the term urban and community forestry. For medium-sized communities, 76.9% were familiar (versus 72.5%), while in large communities, 96.9% were familiar (versus 87.5%). The five highest categories of familiarity pertained to drainage, 56.4%

(versus 33.3%); wildlife habitat 52.1% (versus 43.4%); air quality, 51.5% (versus 42.8%); erosion reduction, 51.5% (versus 46.5%); and recreation, 51.5% (versus 42.8%) (Table 1).

For those categories mentioned in Table 1, small communities had a range in awareness of 42.4%–55.4% (versus 24.1%–35.6%). For medium-sized communities the range in awareness was 41%–53.8% (versus 35%–55%), whereas large communities demonstrated a range of 65.6%–81.3% (versus 71.9%–81.3%) concerning a familiarity with multiple benefits derived from urban and community forestry programs.

nity forestry projects. Similar to 2004, there were four communities (2.5%) that had projects or programs, but were discontinued. In some cases, these projects or programs may have been completed rather than dropped. The remaining 30.1% of respondents (versus 22.1%) either did not know if they had projects in the past or they did not respond to this question.

Of communities with past experience in urban and community forestry projects, only 32 (versus 45) responded to the question concerning years of involvement with projects or programs. Their involvement ranged from one to

Table 1. Percentage of Mississippi community leaders familiar with the term ‘urban and community forestry’ and different aspects of urban and community forestry as indicated by community size during 2004 (n = 159)^z and 2011 (n = 163)^y.

	<2,000		Inhabitants 2,000–10,000		>10,000		Total	
	2004	2011	2004	2011	2004	2011	2004	2011
Urban and community forestry	48.3	71.7	72.5	76.9	87.5	96.9	62.3	77.9
Erosion reduction	35.6	48.9	42.5	41.0	81.3	71.9	46.5	51.5
Wildlife habitat	34.5	48.9	35.0	41.0	78.1	75.0	43.4	52.1
Aesthetics	24.1	*	55.0	*	81.3	*	43.4	*
Recreation	31.0	45.7	45.0	53.8	71.9	65.6	42.8	51.5
Air quality	27.6	42.4	50.0	48.7	75.0	81.3	42.8	51.5
Drainage	*	55.4	*	41.0	*	78.1	*	56.4

^z In 2004, responses by community size were 87, 40, and 32, respectively.

^y In 2011, responses by community size were 92, 39, and 32, respectively.

Note: Asterisk (*) indicates these terms were not in the top five categories reported during that survey period.

Table 2. Mississippi community leaders’ interest in promoting local urban and community forestry projects and programs as indicated by community size during 2004 (n = 159) and 2011 (n = 163), where 1 indicates the least interest and 5 the most.

	Inhabitants			
	<2,000 Mean	2,000–10,000 Mean	>10,000 Mean	Total Mean
2004	3.4	3.9	4.4	3.7
2011	3.7	3.9	4.3	3.9

Need and Interest in Promoting an Urban Forestry Program

Of the respondents, 66.9% (versus 73.6%) indicated a need for urban and community forestry projects in their municipality. Only 4.9% (versus 6.3%) did not see a need, while 28.2% (versus 20.1%) did not, or were unable to answer the question. When asked about their interest in promoting urban and community forestry projects in their community, the mean response was 3.9 (versus 3.7) indicating most communities (62% versus 53.4%) had an avid interest and enthusiasm for promoting urban forestry projects or programs (Table 2). When disaggregating the interest by community size, the mean response was 3.7 for small communities (versus 3.4), 3.9 for medium-sized communities (flat versus 2004), and 4.3 for large communities (versus 4.4).

Past and Present Perspectives on Urban and Community Forestry Experiences

Only 27.6% (versus 31.4%) indicated they had initiated an urban and community forestry project or program prior to receiving this survey. Approximately 40% (versus 44%) of communities indicated there were no past urban and commu-

27 years (versus one to 25 years) with a fairly uniform distribution. Twenty communities (versus 12) indicated they had discontinued urban forestry projects or programs. However, responses indicated that a number of projects still existed. There were also a large number of one-time projects, such as tree plantings. Several communities had more than one of these. Responses indicating a discontinuation varied, from a lack of leadership, to the impact of Hurricane Katrina (which occurred in 2005), to a lack of funding and volunteers.

Communities were queried on whether they employed an urban or community forester, similar specialist, or firm. Of those communities responding, 85.3% (versus 50.9%) said no, whereas 12.3% (versus 8.2%) indicated they had one, and 2.5% (versus 10.1%) did not respond to this question. Among the 20 communities that stated they had engaged a forester, similar specialist, or firm, most hired several, and this included landscape architects (n = 8), arborists (n = 7), land-use planners (n = 6), grounds maintenance (n = 5), and a multitude of other entities (n = 14). Only one community stated they were employing a full-time urban forester. In 2011, a total of 40 entities (versus 14 for 2004) were hired by all those indicating they had engaged an urban or community forester, similar specialist, or firm.

When communities were asked if they intended to hire an urban or community forester, similar specialist, or firm in the future, only 2.5% (versus 12.2%) indicated so, while 52.8% (versus 53.7%) had no intention. Fifty-five communities (versus 28) were still debating the issues. In 2004, 77 communities did not respond or indicated the question was not applicable. In 2011, 18 communities did not answer the question, while ‘not applicable’ was not given as a response choice. Of communities that intended to hire in the future, there was a narrower set of responses limited to a landscape architect, horticulturalist, or arborist. This was in contrast to 2004, where there was a wider array of responses focusing on a

part- or full-time urban forester, landscape architect, land-use planner, or arborist to meet their urban and community forestry needs.

Although several communities did not have existing urban or community forestry programs, 30.7% (versus 34.6%) indicated a desire to implement one in the future (Table 3), while 53.4% (versus 48.4%) were still considering the option. Examination of responses by community size revealed that 65.6% of large communities (versus 62.5%) planned to initiate forestry projects compared to only 17.4% (versus 19.5%) of small communities. For medium-sized communities, 33.3% (versus 45%) planned to initiate these types of projects.

Table 3. Percentage of Mississippi community leaders' intentions to initiate future urban and community forestry projects or programs as indicated by community size during 2004 (n = 159)^z and 2011 (n = 163)^y.

	<2,000	Inhabitants 2,000–10,000	>10,000	Total
2004	19.5	45.0	62.5	34.6
2011	17.4	33.3	65.6	30.7

^z In 2004, responses by community size were 87, 40, and 32, respectively.

^y In 2011, responses by community size were 92, 39, and 32, respectively.

Program Implementation and Maintenance

Similar to 2004, the factors considered the greatest hindrance to program adoption were lack of funding with a mean response of 1.4 (versus 1.6), budget restrictions at 1.4 (versus 1.7), and staff limitations at 1.7 (same) (Table 4). Medium and large communities felt all three factors were a greater hindrance in 2011 than they did in 2004, while small communities ranked funding and staff limitations the same and budget restrictions as a slightly greater hindrance than in 2004.

Likewise, factors considered the most important for communities in regard to their urban and community forestry needs were lack of funding with a mean response of 4.3 (versus 4.4), budget restrictions at 4.1 (versus 4.3), and staff limitations at 3.8 (versus 4) (Table 5). Small and medium communities ranked them similar or slightly less important as compared to 2004. However, large communities ranked funding and budget restrictions as more important than in 2004.

Table 4. Mississippi community leaders' ranking of the top three factors causing greatest hindrance to program adoption as indicated by community size during 2004 (n = 159) and 2011 (n = 163) (1 being greatest hindrance; 5 being least hindrance).

	<2,000 Mean	Inhabitants 2,000–10,000 Mean	>10,000 Mean	Total Mean
Funding				
2004	1.5	1.6	1.8	1.6
2011	1.5	1.1	1.5	1.4
Budget restrictions				
2004	1.7	1.6	1.8	1.7
2011	1.5	1.2	1.5	1.4
Staff limitations				
2004	1.7	1.6	2.0	1.7
2011	1.7	1.5	1.8	1.7

Table 5. Mississippi community leaders' ranking of the top three factors most important to urban and community forestry needs as indicated by community size during 2004 (n = 159) and 2011 (n = 163) (1 being least important; 5 being most important).

	<2,000 Mean	Inhabitants 2,000–10,000 Mean	>10,000 Mean	Total Mean
Funding				
2004	4.3	4.7	4.4	4.4
2011	4.1	4.7	4.5	4.3
Budget restrictions				
2004	4.2	4.6	4.1	4.3
2011	3.9	4.4	4.3	4.1
Staff limitations				
2004	4.0	4.2	3.9	4.0
2011	3.6	4.2	3.6	3.8

Awareness of Resources and Funding Opportunities

For communities, the most recognizable resource or industry contact was the Mississippi Forestry Commission (MFC), with 57.1% of surveyed communities (versus 57.9% in 2004) aware of the agency. The Mississippi State University (MSU) Extension Service was next at 56.4% (not included in 2004 survey), followed by National Arbor Day at 55.2% (versus 67.9%), Earth Day at 50.3% (versus 55.3%), and Tree City USA, which was identified by 39.3% (versus 49.1%) of surveyed communities. Other programs or resources, such as the USDA Forest Service at 36.2% (not included in 2004 survey), the National Urban Forestry Council at 19% (versus 11.3%), and the Mississippi Urban Forestry Council at 19% (versus 11.9%) were also noted. Additional programs or resources were identified at lower levels of recognition.

When examining responses by community size, large municipalities had a high recognition level for the MFC at 68.8% (versus 78.1%), MSU Extension Service at 65.6% (not included in 2004), National Arbor Day at 75.0% (versus 78.1%), Earth Day at 75% (versus 62.5%), and Tree City USA at 78.1% (versus 87.5%). For small and medium communities the awareness levels were MFC at 50% and 64.1%, respectively (versus 42.5% and 75.0% in 2004, respectively); MSU Extension Service at 51.1% and 61.5%, respectively (not included in 2004), National Arbor Day at 52.2% and 46.2%, respectively (versus 62.1% and 72.5%, respectively), Earth Day at 45.7% and 41%, respectively (versus 49.4% and 62.5%, respectively), and Tree City USA at 22.8% and 46.2%, respectively (versus 25.3% and 70%, respectively).

Regarding awareness of potential funding sources, 28.2% of respondents (versus 35.8%) were aware of funding opportunities through the Transportation Enhancement Tree Planting Program (T-21 Money), and 14.1% (versus 28.9%) knew of the Urban and Community Forestry Assistance Challenge Grants (Table 6). Disaggregating this data by community size indicated that larger communities were better informed on funding availability for programs, such as the T-21 at 53.1% (versus 78.1%), Challenge Grants at 37.5% (versus 71.9%), and Federal Cooperative Grants at 12.5% (versus 25%), than small or medium communities. Few com-

Table 6. Percentage of Mississippi community leaders aware of funding sources for urban and community forestry projects or programs as indicated by community size during 2004 (n = 159)^z and 2011 (n = 163)^y.

	Inhabitants			Total
	<2,000	2,000–10,000	>10,000	
Transportation Enhancement Tree Planting Program (T-21)				
2004	16.1	45.0	78.1	35.8
2011	19.6	28.2	53.1	28.2
Urban and Community Forestry Assistance Challenge Grants				
2004	10.3	35.0	71.9	28.9
2011	4.3	17.9	37.5	14.1
Federal Cooperative Forestry Assistance Grants				
2004	12.6	17.5	25.0	16.4
2011	16.3	7.7	12.5	13.5
Partnership Enhancement Monetary Grants				
2004	3.4	2.5	9.4	4.4
2011	2.2	2.6	6.3	3.1
Other funding				
2004	2.3	2.5	6.3	3.1
2011	1.1	0.0	3.1	1.2

^z In 2004, responses by community size were 87, 40, and 32, respectively.

^y In 2011, responses by community size were 92, 39, and 32, respectively.

munities, regardless of size, were aware of other programs, such as the Partnership Enhancement Monetary Grants at 3.1% (versus 4.4%). In addition, tallied responses across all communities indicated little awareness of other existing funding sources, coming in at 1.2% (versus 3.1%) for adopting urban and community forestry programs (Table 6).

Categorization of Current Versus Past Urban Forestry Programs

The top five urban and community forestry projects or activities in which communities previously participated were similar to 2004 with the exception of mulching programs, which supplanted Christmas tree disposal activities. It was indicated that 44.8% of surveyed communities (versus 43.4% in 2004) participated in tree-planting activities. Thirty-eight percent participated in city and community park preservation (versus 35.8%), 24.5% in Arbor Day or Earth Day promotions or celebrations (versus 23.9%), 21.5% in tree protection or maintenance (versus 21.4%), and 19.6% in a mulching program (versus 17.6%). When examining the responses by community size, large communities had greater participation in these programs compared to small communities. Medium-sized municipalities were closer in their responses to small communities. Similar results were found in 2004.

Communications Media

The most preferred media in which communities would like to receive information about urban and community forestry were e-mail (44.2%), workshops (40.5%), websites (39.9%), newsletters (37.4%), and pamphlets or brochures (33.7%). This list varied somewhat versus 2004 when workshops (41.5%), pamphlets or brochures (38.4%), educational kits (37.1%), newsletters (33.3%), and County Forestry Agent contacts (32.7%) were the top categories.

DISCUSSION

Based on a similar response rate to 2004 and similarity of responses by community size, the study authors felt that the survey effort has garnered the highest response possible from this population group. Similar to 2004, this rate was higher than that of Watson (2004) with 22%, Schroeder et al. (2003) with 49%, and Ries et al. (2007) with 51%, but lower than that of Treiman and Gartner (2004) with 60%, Elmendorf et al. (2003) with 71%, Stevenson et al. (2008) with 76%, and Hauer et al. (2011) with 84%. In 2011, the survey asked for the position title of the individual completing the survey. Results showed the majority of respondents to be mayors. Since this question was not asked in 2004, it cannot be assumed that the same individuals, by position title, were responding to this survey; however, personal communication with many of the cities showed more often mayors were filling out the survey.

Similar to the 2004 study, there may be a number of contributing reasons for a lack of a greater response or interest on the part of some communities. Large cities in Mississippi possessed the resources to conduct urban and community forestry programs. Small cities or communities with smaller fiscal budgets usually do not have the needed monetary or technical resources. This result was consistent with studies by Groninger et al. (2002), Elmendorf et al. (2003), Ries et al. (2007), and Stevenson et al. (2008). Groninger et al. (2002) found that many rural communities in Illinois, U.S., lack technical expertise in tree maintenance, inventorying of existing tree resources, and were less likely to participate in state and federal urban and community forestry programs. Elmendorf et al. (2003) reviewed several studies and provided ample evidence that smaller communities in Pennsylvania, spent far less than larger communities and employ limited or no urban and community forestry programs. Ries et al. (2007) found that only 26% of small Oregon cities had access to ISA Certified Arborists, compared to 100% of larger cities with access to them. Stevenson et al. (2008) indicated that lack of technical assistance was more important to smaller municipalities than larger ones.

The downturn in the economy, which occurred in 2008, may have impacted this survey research, as well as many of the study results. This may account, in part, for the lower response rate from smaller communities, as they could not see urban and community forestry as a priority, given other constraints. In addition, some communities may have chosen not to participate because it seemed as though their constituents were not interested in urban and community forestry. Similar to 2004, among all communities that submitted responses, few community leaders felt that the majority of their community thought urban and community forestry was important.

In general, the survey sample of Mississippi's communities indicated an increase in the number of community leaders with a level of awareness or interest in urban and community forestry. Also, when queried on the five highest categories of familiarity, wildlife habitat, erosion reduction, and recreation were all ranked during both survey periods. This survey has established these categories and their association with urban and community forestry among community leaders in Mississippi.

There were Mississippi communities that did want to establish urban and community forestry programs, but they lacked the funding resources. Similar to 2004, community officials indicated that

funding was the most important issue for initiating and sustaining projects and/or programs. Stevenson et al. (2008) also indicated that Pennsylvania respondents (86%) cited insufficient funding as a major barrier to starting or improving tree programs.

Communities can get their information from a variety of sources. Chief among them is the Mississippi Urban Forest Council (MUFC), which provides no-cost or low-cost programs for any community in the state. The MFC facilitates urban forestry programs and grants. The MSU Extension Service allows individuals and communities to take advantage of assorted, free services. MSU also conducts teaching and research programs in the areas of urban and community forestry. Many communities have tree boards and are designated as Tree City USA communities. It should be noted that while all entities were in operation, the pace of activity had increased from 2004.

Given that the dissemination of information about urban and community forestry is paramount for informing communities about urban and community forestry and updating those participating in activities, greater efforts in disseminating knowledge of funding opportunities were necessary given the low number of Mississippi communities who were aware of them. This was true across community size. Those that were aware knew only of a few funding opportunities. Communities facing funding obstacles for implementing urban and community forestry programs could potentially pool their limited resources and sponsor active participation by local community groups. Numerous communities engaged in tree planting activities through organizations, such as the Boy Scouts, garden clubs, school groups, and volunteers. Contacting the MUFC is also key to receiving guidance and information of various activities and programs.

Outreach by MFC, MUFC, and MSU has familiarized communities with the wildlife habitat, erosion reduction, and recreational aspects of urban and community forestry, but less so for its other benefits, such as in fire protection, water quality, social issues, and carbon sequestration to name a few. Many of these are vitally important issues for communities, and similar to 2004, the lack of association with urban and community forestry continues to present opportunities to initiate and direct outreach activities.

It was the intention of this study to acquire information and analyze trends that can further aid in disseminating and publicizing results to local communities, the general public, and to professionals and non-professionals in all disciplines related to urban and community forestry. Uncovering this information about Mississippi communities and distributing it will enable professionals, governmental organizations, agencies, and their communities to initiate or better promote their own urban and community forestry programs. This survey was more detailed than previous statewide efforts, was improved over the 2004 effort, and provided an awareness of specific activities and programs being undertaken, or not, by local governments. Using this information and distributing it to governmental leaders and agencies, communities, professionals and non-professionals in urban forestry, and the general public will enable the initiation and/or promotion of urban and community forestry activities, projects, and programs in areas that are not currently implementing them. For example, this information can now be used by the MFC and MUFC to further determine the focus of educational programs and the magnitude of the efforts required. The intent remains

that the impact will be widespread in developing more effective programs and providing services where needed.

Although some Mississippi communities may be aware of the benefits of implementing forestry programs, future communication efforts need to focus on contacting more communities and employing different venues for transferring urban and community forestry technologies and information. The overall lack of awareness and number of survey questions that went unanswered indicated that there is an enormous challenge, and yet an exciting opportunity to promote urban and community forestry in Mississippi. In fairness, mayoral offices may not have given the survey to the appropriate person in local government who might have had a higher knowledge level of the forestry activities in a given community. The authors, by chance, uncovered a few instances where key personnel in numerous communities never saw the survey. However, communication efforts need to be ongoing. Preferred venues from 2004 suggested that the top five technology and information transfer methods were, in priority order, workshops, pamphlets/brochures, newsletters, videos, and websites. However, this has slightly changed throughout the current decade with the top five items, in priority order, being e-mails, workshops, websites, newsletters, and pamphlets/brochures. Regardless of the methods used, products and programming can then be disseminated through various organizations such as MFC, MUFC, and Mississippi State University.

The impact or effectiveness of this project will be evaluated based on the number of respondents that request information and use said information to facilitate positive changes in their urban and community forestry programs or to initiate programs where they are nonexistent. For example, through this research project, MUFC and other state agencies can monitor the effectiveness, needs, and issues of local government in developing sound urban and community forestry programs. It will be a tool to develop better, more focused areas in meeting local needs. The fact that awareness increased over the 2004 results and that 44 respondents provided names and addresses desiring more information on urban and community forestry were positive signs that more municipalities are interested in urban and community forestry programs.

The survey can also affect change in the pursuit of future funding. Local impacts will be enhanced due to the focus needs uncovered by both surveys. Using the baseline of data for the state, and then surveying seven years later, better enables proponents of urban and community forestry to assess improvements in current programs or whether there is a need for new initiatives.

CONCLUSIONS

This study was a second effort aimed at evaluating knowledge levels and information needs of Mississippi's small to large municipalities. In 2004, this information was, in part, previously unknown to those providing urban and community forestry outreach in the state. With the 2011 effort, both positive and negative trends have been identified and can now be used to improve programs and activities. High response rates for both surveys serve as a solid basis for interpreting results collected over time. In general, there was interest in urban and community forestry programs in Mississippi in both large and small communities. However, the gap of interest in promoting urban and community forestry was narrowing between the larger and smaller communities. A major obstacle

or hindrance to adopting and implementing these programs was the lack of adequate funding. Budgetary constraints have limited urban and community forestry programs throughout the state, especially for the small and medium communities. This was especially acute given the downturn in the economy starting in 2008.

Potentially, many communities have failed to adopt urban and community forestry programs because they lack the necessary expertise on their staff to address existing situations and problems with program administration. Smaller budgets provide fewer resources to reach out to “experts.” However, an organization such as the MUFC will provide no-cost or low-cost programs for any community in the state. MSU Extension Service also provides free services that individuals and communities need to take advantage of. Despite these obstacles to program adoption, communities have expressed their desire for information on technical issues and fund raising opportunities to be provided to them in a variety of venues. Future research should look at case studies in relevant Mississippi communities to document lessons learned from various programs as a guide for communities interested in establishing urban and community forestry programs. In addition, geographic and demographic patterns should be analyzed to determine differences among communities. Other issues in need of further study are the public’s knowledge and attitudes toward town and/or city ordinances, land-use zoning relative to urban and community forestry, and the social or psychological aspects and benefits tied to urban and community forestry. Finally, acquiring the type of information gleaned from this study should encourage any state, desiring to promote urban and community forestry, to undertake a similar assessment of their communities.

LITERATURE CITED

- Dillman, D.A. 2000. Mail and Internet Surveys: The Tailored Design Method. Second edition. John Wiley & Sons, Inc., New York, New York, U.S. 464 pp.
- Dwyer, J.F., E.G. McPherson, R.A. Rowntree, and H.W. Schroeder. 1992. Assessing the benefits and costs of the urban forest. *Journal of Arboriculture* 18(5):227–234.
- Elmendorf, W.F., V.J. Cotrone, and J.T. Mullen. 2003. Trends in urban forestry practices, programs, and sustainability: Contrasting a Pennsylvania, U.S., study. *Journal of Arboriculture* 29(4):237–248.
- Grado, S.C., D.L. Grebner, M.K. Measells, and A.L. Husak. 2006. Status, needs, and knowledge levels of Mississippi’s communities relative to urban forestry. *Arboriculture & Urban Forestry* 32(1):24–32.
- Grey, G.W. 1978. What should be the role of state government in municipal arboriculture-urban forestry. *Journal of Arboriculture* 4(3):71–72.
- Groninger, J.W., D.D. Close, and C.M. Basman. 2002. Can small, rural communities practice urban forestry? *Journal of Forestry* 100(1):23–28.
- Hauer, R.J., and G.R. Johnson. 2008. State urban and community forestry program funding, technical assistance, and financial assistance within the 50 United States. *Arboriculture & Urban Forestry* 34(5):280–289.
- Hauer, R.J., G.R. Johnson, and M.A. Kilgore. 2011. Local outcomes of federal and state urban and community forestry programs. *Arboriculture & Urban Forestry* 37(4):152–159.
- Johnson, C. 1982. Political and administrative factors in urban-forestry programs. *Journal of Arboriculture* 8(6):160–163.
- Miller, R.W. and T.R. Bate. 1978. National implications of an urban forestry survey in Wisconsin. *Journal of Arboriculture* 4(6):125–127.
- Nowak, D.J., and J.F. Dwyer. 2007. Understanding the benefits and costs of urban forest ecosystems. In: J.E. Kuser (Ed.). *Urban and community forestry in the northeast*. New York, New York, U.S. Springer, pp. 25–46.
- Ries, P.D., A.S. Reed, and S.J. Kresse. 2007. The impact of statewide urban forestry programs: A survey of cities in Oregon, U.S. *Arboriculture & Urban Forestry* 33(3):168–175.
- Schroeder, H.W., T.L. Green, and T.J. Howe. 2003. Community tree programs in Illinois, U.S.: A statewide survey and assessment. *Journal of Arboriculture* 29(4):218–225.
- Stevenson, T.R., H.D. Gerhold, and W.F. Elmendorf. 2008. Attitudes of municipal officials toward street tree programs in Pennsylvania, U.S. *Arboriculture & Urban Forestry*, 34(3):144–151.
- Tate, R.L. 1982. Applying for federal funding grants for urban tree management activities. *Journal of Arboriculture* 8(4):107–109.
- Treiman, T., and J. Gartner. 2004. Community forestry in Missouri, U.S.: Attitudes and knowledge of local officials. *Journal of Arboriculture* 30(4):205–213.
- Watson, W.T. 2004. Status of urban forestry in the south, final report. <www.urbanforestrysouth.org/Resources/Library/TTResource.2005-01-26.0438/view>
- Wolf, K.L. 2005. Civic nature valuation: Assessments of human functioning and well-being in cities. In: *Forging Solutions: Applying Ecological Economics to Current Problems*, Proceedings of the 3rd Biennial Conference of the U.S. Society for Ecological Economics (July 20–23, 2005). Tacoma, Washington: Earth Economics.

Stephen C. Grado (corresponding author)

Box 9681

Department of Forestry

Forest and Wildlife Research Center

Mississippi State University

Mississippi, U.S. 39762

Marcus K. Measells

Department of Forestry

Forest and Wildlife Research Center

Mississippi State University

Mississippi, U.S. 39762

Donald L. Grebner

Department of Forestry

Forest and Wildlife Research Center

Mississippi State University

Mississippi, U.S. 39762

Résumé. En 2004, les chercheurs de l'Université de l'état du Mississippi ont établi le statut, les besoins et le degré de connaissance requis des communautés du Mississippi et de leurs décideurs relativement aux bénéfices associés à la forêt urbaine, aux programmes, aux opportunités de subventions et aux programmes d'implantation. Partant de là, les objectifs de ce projet étaient de bâtir des programmes de foresterie urbaine et d'assistance envers les communautés de petites (< 2000 habitants) à grandes tailles (> 10000 habitants) du Mississippi, et ce à partir de la recherche passée ainsi que des tendances actuelles ainsi que celles identifiées par le passé en regard de l'implication et des intérêts futurs. Cet effort s'est fait en revisitant les communautés vues auparavant en 2004 et a permis de mettre en évidence les changements dans le degré de connaissance, les différentes activités et les programmes entrepris. Une enquête par correspondance a été envoyée à 293 communautés du Mississippi et 163 ont répondu (55,6%). En général, les réponses obtenues indiquaient qu'un nombre accru de décideurs avait augmenté leur degré d'intérêt ou de conscience envers la foresterie urbaine. Les communautés qui avaient mentionné avoir le plus grand intérêt à instaurer des programmes en ce sens furent celles qui ont le plus mentionné un manque de subsides pour justifier la non initiation de projets ou encore la non poursuite de programmes existants. Un effort accru à faire connaître l'information à propos des subventions disponibles a donc été vu comme nécessaire étant donné que la plupart des communautés du Mississippi n'étaient au courant de l'existence que de quelques programmes nationaux. Le degré de participation à l'échelle de l'état ou locale était minimal par rapport aux programmes ou aux activités. Les auteurs de l'étude précédente avaient découvert que sans une information de qualité et mise à jour sur la forêt urbaine et les subventions disponibles, les communautés étaient limitées à entreprendre une planification systématique des ressources arboricoles avec les programmes associés à cette dernière. Une bonne distribution de l'information – élément qui s'est amélioré – et la disponibilité de fonds sont encore les facteurs limitant en vue d'entreprendre une planification systématique et la mise en place de programmes de foresterie urbaine communautaires.

Zusammenfassung. 2004 bestimmten Forscher an der Mississippi State Universität den Status, die Ansprüche und den Wissensstand von kommunalen Führungskräften und Kommunen hinsichtlich der Vorteile urbaner und kommunaler Forstwirtschaft, Finanzierungsmöglichkeiten und Programmimplementierung. Als Ergebnis wurden die Ziele dieses Projektes auf voran gegangene Forschungsergebnisse gegründet und es wurden Entwicklungen in der vergangenen Entwicklung, gegenwärtigem Engagement und künftigen Interessenslagen an urbanen und kommunalen Forstprogrammen innerhalb kleinerer (bis 2000 Einwohner) bis hin zu größeren (> 10000 Einwohner) Kommunen von Mississippi identifiziert. Der gegenwärtige Einsatz überprüfte diese Kommunen erneut, die bereits 2004 befragt wurden und stellte die Unterschiede im Kenntnisstand und den verschiedenen bereits stattfindenden Aktivitäten und Programmen hervor. Es wurden Fragebögen an 293 Kommunen verschickt, wovon 163 antworteten, das entsprach einer Quote von 55,6%. Im allgemeinen verdeutlichten die befragten Kommunen, dass sich

bei einer stattlichen Anzahl von Verantwortlichen das Bewusstsein oder Interesse an urbaner und kommunaler Forstwirtschaft vergrößert hatte. Kommunen, die Programme etablieren wollten, gaben einen Mangel an Finanzhilfen als Grund für das Nichtzustandekommen neuer Projekte oder die Unterstützung bestehender Projekte an. Ein größerer Einsatz bei der Verbreitung von Informationen zur Mittelbeschaffung wurde als notwendig gesehen, gerade, weil die meisten Kommunen nur wenige nationale Programme kannten. Die Teilnahme an bundesweiten oder lokalen urbanen Forstprogrammen und Aktivitäten war gering. Die Autoren der vorangegangenen Studie fanden heraus, dass die Kommunen ohne die Qualität einer aktuellen Information über urbane und kommunale Forstwirtschaft und entsprechender Mittelbereitstellung bei der Durchführung einer systematischen Planung und assoziierten Programmen zur Erschließung arborealer Ressourcen eng begrenzt sind. Gute Informationspolitik, die sich mittlerweile verbessert hat und verlässliche Finanzierung begrenzen nach wie vor die Kommunen bei der systematischen Planung und assoziierten Programmen zur Erschließung arborealer Ressourcen.

Resumen. En 2004, los investigadores de la Universidad Estatal de Mississippi determinaron la situación, necesidades y niveles de conocimiento de los líderes de las comunidades de Mississippi en relación con los beneficios de los bosques urbanos, programas, oportunidades de financiamiento e implementación de los mismos. Como resultado de ello, el objetivo de este proyecto, con base en la investigación pasada, fue determinar las tendencias de la participación pasada y actual y los niveles de futuros intereses entre los pequeños pueblos de Mississippi (<2.000 personas) hasta las grandes comunidades (> 10.000 habitantes) para los programas forestales comunitarios y de asistencia urbana. Este esfuerzo actualizado con la revisión de estas comunidades, previamente encuestadas en 2004, puso de relieve los cambios en los niveles de conocimiento y de diversas actividades en los programas emprendidos. Se envió una encuesta por correo a 293 comunidades de Mississippi con 163 encuestas devueltas para una tasa de respuesta del 55,6%. En general, las comunidades que respondieron indicaron que un número considerable de funcionarios ha aumentado su conocimiento o interés en la silvicultura urbana y comunitaria. Las comunidades que querían establecer programas citaron de nuevo la falta de fondos como la razón para no iniciar proyectos o el mantenimiento de los programas existentes. Se consideró necesario un mayor esfuerzo en la difusión de información sobre las oportunidades de financiación, dado que la mayoría de las comunidades de Mississippi sólo eran conscientes de algunos programas nacionales. Fue mínima la participación en programas de silvicultura urbana a nivel estatal o local. Los estudios previos encontraron que sin información actualizada y de calidad sobre la silvicultura urbana y comunitaria y sin financiación fiable, las comunidades están limitadas en la realización de una planificación sistemática y programas asociados utilizando los recursos arbóreos. La distribución de buena información, la cual ha mejorado, y la financiación confiable todavía están limitando a las comunidades en la realización de una planificación sistemática y los programas forestales urbanos comunitarios asociados.