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USDA Forest Service National Woodland Owner Survey

A Technical Document Supporting the Forest Service
Update of the 2010 RPA Assessment

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Abstract

This report summarizes the results from the 2011-2013 National Woodland Owner Survey (NWOS) conducted by the U.S. Forest Service, Forest Inventory and Analysis program. The focus of the results reported here is family forest and woodland ownerships with holdings of at least 10 acres. Summaries are based on responses from 8,576 family ownerships with at least 10 acres of forest or woodland across 47 U.S. states. Survey summary tables are available at dx.doi.org/10.2737/NRS-RB-99 and include the 36 states in which the minimum target effective sample size of 100 respondents was obtained plus tables for the nation and four regions (North, South, Rocky Mountain, and Pacific Coast). An additional 11 states (Arizona, Colorado, Hawaii, Idaho, Nebraska, New Mexico, North Dakota, Rhode Island, South Dakota, Utah, and Washington) have sample sizes between 10 and 99 and are included in national and regional summary tables, but state-level survey summary tables are not being published due to small sample sizes. Data for three states (Alaska, Nevada, and Wyoming) are excluded due to the low numbers of respondents ($n < 10$) in each of these states. The survey summary tables provide statistics on general forest ownership patterns, effective sample sizes, and responses to the questions asked on the survey. The 37 survey questions, many with multiple parts, focus on ownership characteristics, land characteristics, reasons for owning land, land ownership history, uses of the forest and woodland, sources of information, concerns, the future of their land, and demographics. For comparison purposes, summary tables from the 2002-2006 iteration of the NWOS are provided along with an additional set of 2011-2013 regional and national summary tables where only states in common with the 2002-2006 iteration are included. In addition, this report includes separate tables with estimated area and estimated number of private, nonindustrial private, and family forest and woodland ownerships by state.

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USDA Forest Service National Woodland Owner Survey: National, Regional, and State Statistics for Family Forest and Woodland Ownerships with 10+ acres, 2011-2013

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RPA Assessment**

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INTRODUCTION

A summary of the results from the 2011-2013 iteration of the U.S. Forest Service's National Woodland Owner Survey (NWOS) are presented here. The NWOS is coordinated by the U.S. Forest Service, Forest Inventory and Analysis (FIA) program and serves as a social complement to FIA's biophysical, plot-based inventory (Bechtold and Patterson 2005). The NWOS is aimed at understanding: who owns America's forests, why they own them, how they have used them in the past, and how they intend to use them in the future. The design, implementation, and analysis of the 2011-2013 NWOS were completed through the Family Forest Research Center, a joint venture between the U.S. Forest Service and the University of Massachusetts Amherst.

Information presented supports the U.S. Forest Service update of the 2010 Resources Planning Act (RPA) Assessment. The RPA Assessment consists of a series of reports that are produced on a periodic basis under the congressional direction of the Forest and Rangeland Renewable Resources Planning Act of 1974 (Public Law 93-378, 88 Stat. 476). Full assessments are completed every decade with updates done at intervening 5-year intervals. The main 2010 RPA Assessment report for forest resources is Smith et al. (2009) and the accompanying NWOS report is Butler (2008). The main forest resource report for the update to the 2010 RPA Assessment is Oswalt et al. (2014), and this report is the NWOS contribution to the update.

The primary intent of this report is to provide tabular summaries for the 2011-2013 iteration of the NWOS. Therefore, only an abbreviated description of the methods is included, and no analyses of the data are provided. Detailed documentation of the methods is available in Butler et al. (2016), and interpretation of the results and general findings will appear in forthcoming analytical publications, including Butler et al. (n.d.a.). Definitions of ownership categories used in this report, including family forest and woodland ownerships, are included in the glossary along with definitions of other key terms, such as forest land and woodland.

Although they use the same underlying FIA plot data, there are differences between the current RPA and FIA definitions of forest land (Oswalt et al. 2014). The update to the 2010 RPA Assessment forest resource uses the terms "forest" and "other wooded lands," which is often simplified to "forest and woodland" and follows the international definition used by the Food and Agriculture Organization. FIA currently combines these categories and labels them "forest land." The differences are largely manifest in the arid ecoregions of western Texas, western Oklahoma, and the Rocky Mountain and Pacific Coast regions. As this report is being published under the RPA banner, the term "forest and woodland" is used throughout and is synonymous with the FIA forest land definition.

The NWOS uses woodland in its title and the term "wooded land" throughout most of the questionnaire. The use of this term was based on extensive pretesting that showed it to be the most widely accepted phrase used by family ownerships when describing the part of their land that is dominated by trees. A lay definition of the Forest Service's technical definition was also included in the questionnaire.

Tables containing estimates of area and number of ownerships by state are provided at the end of this report and include estimates of area of forest and woodland by private and public ownership categories and estimates of area and number for private, nonindustrial private, and family forest and woodland ownerships (see Tables 4-10; [all tables begin on p. 14](#)). Separate tables for ownerships with 1+ acres (0.4+ hectares) of forest and woodland and ownerships with 10+ acres (4.0+ hectares) of forest and woodland are provided.

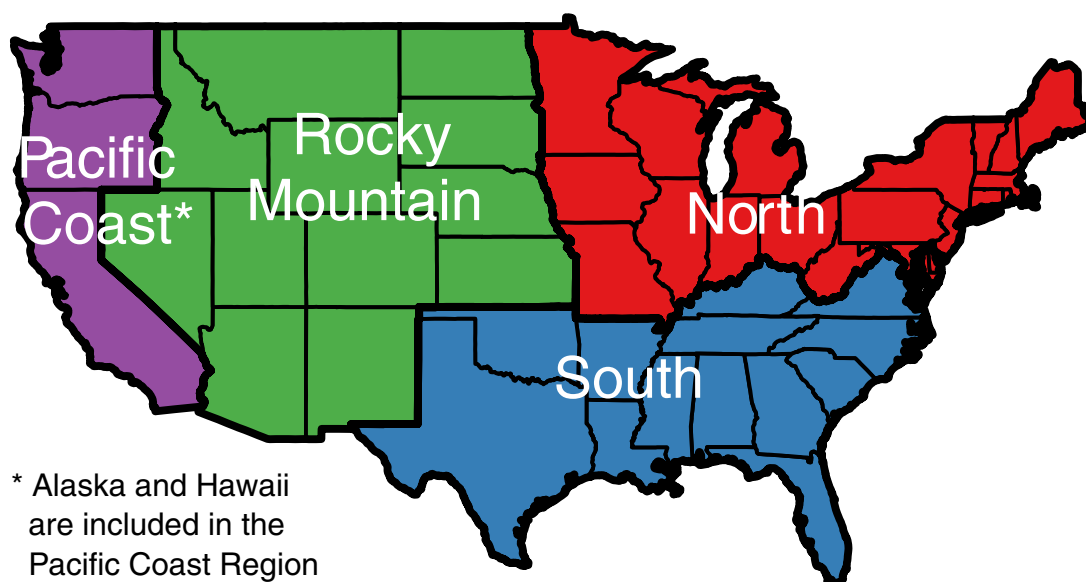


Figure 1.—Regions used by the U.S. Forest Service Resources Planning Act (RPA) Assessment and adopted by the National Woodland Owner Survey.

In the supplemental data accompanying this report (available at dx.doi.org/10.2737/NRS-RB-99), separate sets of survey summary tables are available for the nation, regions, and for individual states where the minimum sample size ($n \geq 100$) was obtained. The reporting regions are based on those used by the RPA Assessment (Fig. 1). The survey summary tables include the area of forest and woodland by ownership category along with information on sample sizes, cooperation rates, and summaries of the 37 questions asked as part of the NWOS.

Survey summary tables focus on family ownerships with 10 or more acres of forest and woodland holdings. Family and woodland ownerships with 1-9 acres were sampled as part of the 2011-2013 NWOS but are not included for a number of reasons: they are primarily large backyards associated with house lots; traditional forestry practices are not applicable at this scale; most forestry professionals do not consider these forests; many of these smaller holdings do not qualify for assistance programs; and the large sampling errors associated with estimates that include small ownerships make trend analysis more difficult. This is not to say that ownerships with less than 10 acres are unimportant, rather they are different from ownerships with larger holdings and will be the focus of separate data reporting and analysis efforts. Likewise, data on corporate and other private ownerships, such as nongovernmental conservation organizations, unincorporated partnerships, associations, clubs, and tribal ownerships, were collected as part of the 2011-2013 NWOS, but results for these important ownership groups will be reported in separate publications.

To aid in comparisons with the previous iteration of the NWOS, corresponding sets of survey summary tables for family ownerships with 10+ acres of forest and woodland are included for the 2002-2006 NWOS. See the Comparisons Between Survey Iterations section for information on how the 2002-2006 tables were generated and a brief discussion of similarities and differences between the iterations.

For those who do not find the summaries they are looking for in the tables included with this report, the NWOS Table Maker program (Butler et al., n.d.c.) is an online tool that allows users to create custom tables, including two-way, cross-tabulation tables.

METHODS

Brief summaries of the sample design, implementation procedures, and estimation methods for the 2011–2013 NWOS are provided here and are explained in greater detail in Butler et al. (2016). Additional details and justification for the methods are provided in Dickinson and Butler (2013).

Sample Design

The NWOS sample design is based on the quasi-systematic FIA sample design (Bechtold and Patterson 2005). Although an area-based sampling frame was used to select the FIA sample, ownerships were the primary sampling units for the NWOS. Therefore, the sample selection probabilities were proportional to size—the larger the size of the forest and woodland holdings, the higher the probability of an ownership being included in the sample.

To spatially distribute the sample, each state was divided into hexagons. Each hexagon was approximately 6,000 acres (2,400 hectares) in size, a size selected by the FIA program to provide reliable statistics on basic forest attributes. Within each hexagon, a sample point was randomly selected.

Using a combination of remote sensing and field observations, each sample point was classified as either being forest and woodland or nonforest/nonwoodland. For the forest and woodland points, publicly available property tax data were used to determine the ownership of record. If the ownership of the forest and woodland point was determined to be private, it was included in the NWOS sample.

As stated in the questionnaires, the unit of analysis was an ownership and all of the forest and woodland owned in a given state. If more than one sample point fell on the land of an ownership in a state, only one survey was sent.

Survey Implementation

The methods recommended by Dillman et al. (2014) were used to solicit responses from the private ownerships identified as part of the NWOS sample. First, a prenotice postcard was sent to all potential respondents identifying the purpose of the survey and alerting them to the fact they would soon be receiving a questionnaire. Next, ownerships were mailed a copy of the questionnaire, a business reply return envelope, and a cover letter reiterating the purpose of the survey and stating how the data would be used. The third contact was a reminder/thank you postcard. Those who had not returned a questionnaire within 25 days of the first mailing were mailed a second copy of the questionnaire, a business reply envelope, and a modified cover letter. Telephone follow-up interviews, using a subset of the mail questionnaire questions, were attempted with a subset of those who had yet to respond in order to increase response rates and to measure potential nonresponse bias. The subset of nonrespondents contacted for the telephone follow-up interviews were randomly selected from the nonrespondents for whom telephone numbers were available. Financial constraints limited the total number of contacts.

A copy of the questionnaire is available in Butler et al. (2016), and state-specific questionnaires are available on the NWOS Web site. In general, the only difference among state questionnaires was the insertion of the state name, for example “How many acres of wooded land do you own in Alabama?”

Population-level Estimates

For the NWOS, the populations of interest are: family, corporate, and other private. The geographic area of interest is the United States, with sampling occurring at the state level (i.e., the strata are states). The focus of this report is on a subset of these populations: family ownerships with 10+ acres of forest and woodland. Population estimates were generated using estimators appropriate to the probability proportional to size sampling design. These estimates were calculated in terms of numbers of ownerships and area of forest and woodland, which can show different patterns. The equations used to calculate ownership-based and area-based estimates and their accompanying variances are provided in Butler et al. (2016). All estimates were calculated at the state level and then aggregated to generate estimates for larger geographic areas.

To ensure a reasonable level of certainty, full sets of survey summary tables are only being published for states where a minimum sample size of 100 was obtained. States with sample sizes between 10-99 are included in the national and regional tables, but summary tables are not being published for these states. Tables can be requested from the authors, but results from these unpublished tables should be interpreted cautiously. States with sample sizes of less than 10 are excluded from the national and regional tables, and survey summary tables are not available for these states.

RESULTS

Number of Respondents and Cooperation Rates

Across the United States, a total of 10,092 family forest or woodland ownerships responded to the NWOS between 2011 and 2013. This number includes all family forest and woodland ownerships with 1 or more acres of forest and woodland and is the basis for calculating cooperation rates since the size of holdings is unknown for nonrespondents and cooperation rates just for the subset of ownerships with 10+ acres of forest and woodland cannot be calculated. The overall cooperation rate $\left(\frac{\text{Responses}}{\text{Sent} - \text{Undeliverables}} \times 100 \right)$ is 52 percent for the United States and ranges from 37 percent in Hawaii to 64 percent in Michigan (Table 1). As shown in Figure 2, some regional cooperation rate patterns exist with relatively higher rates in the Northeast, Midwest, and Pacific Northwest, and lower rates in the Southeast, South Central, and Intermountain West.

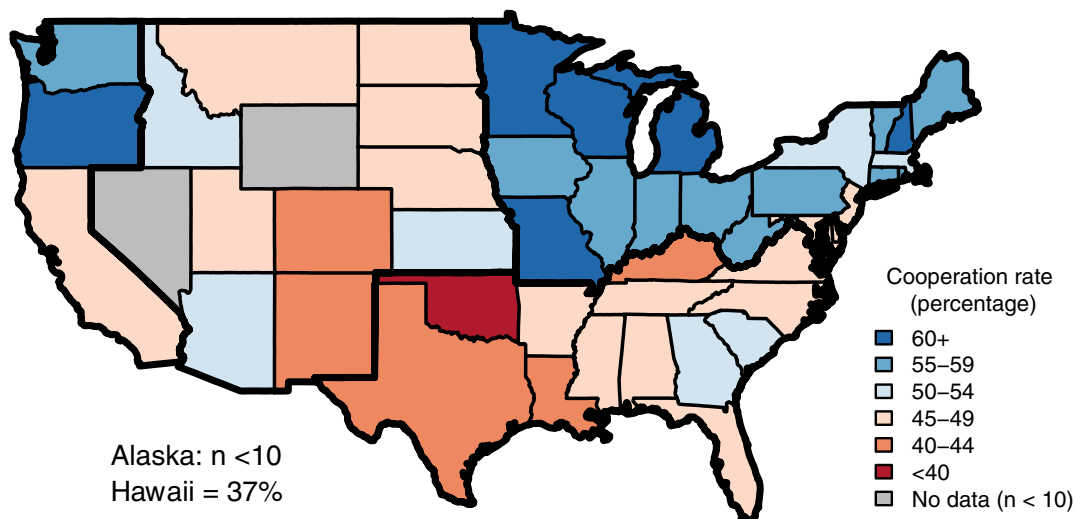


Figure 2.—Cooperation rates for the 2011-2013 National Woodland Owner Survey for family forest and woodland ownerships, by state.

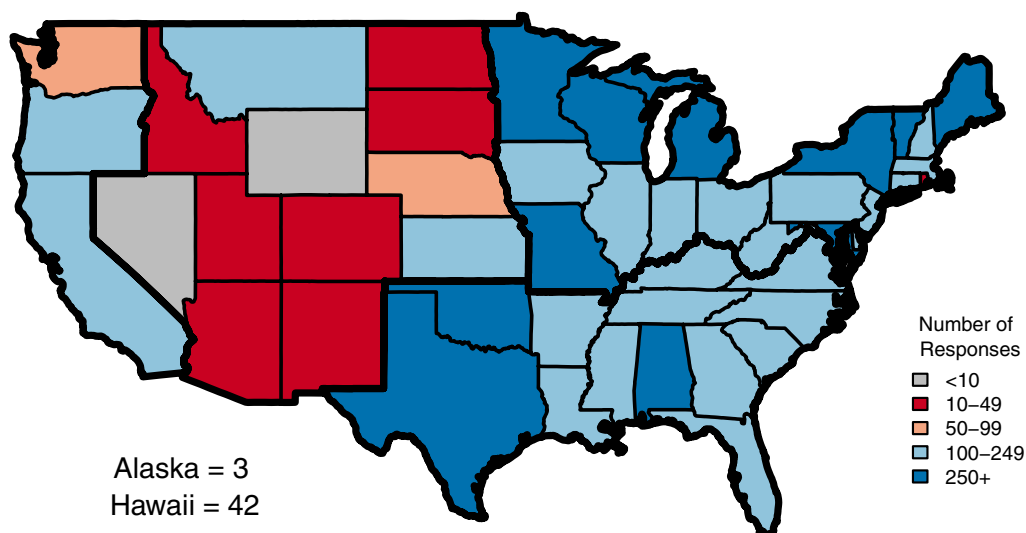


Figure 3.—Number of family forest and woodland ownerships with 10 or more acres of forest/woodland who responded to the 2011-2013 National Woodland Owner Survey, by state.

A total of 8,567 family forest and woodland ownerships with at least 10 acres of forest and woodland responded to the 2011-2013 NWOS, and these responses formed the basis for the statistics reported in the survey summary tables. The effective sample size varies across tables because the NWOS uses different survey instruments (mail-back questionnaire, online questionnaire, and telephone interviews), and not all questions were asked on all survey instruments. Thirty-six states had at least 100 respondents allowing for full sets of survey summary tables to be published (Fig. 3; Table 2). Six states had between 10 and 99 respondents, so even though individual state results are not being published, these states are included in national and regional summaries. For the three states that had fewer than 10 respondents, no state summary tables are being published and data are not included in regional or national summaries.

Four states (Connecticut, Oklahoma, Texas, and Vermont) have a total number of respondents that far exceeds the target sample size. The number of respondents in Connecticut and Vermont are high relative to other states due to additional funding being provided to intensify the samples in those states. For Oklahoma and Texas, the FIA forest inventory on which the NWOS is based treats the eastern and western portions of these states as separate strata, and target sample sizes are calculated separately and sampling is done differently in each substate area. The NWOS has inherited these differences in sampling intensities and uses the same approach with target sample sizes calculated separately for the eastern and western portions of these two states.

As reported in Butler et al. (2016), the potential for nonresponse bias was tested by comparing results for mail respondents to telephone respondents for key variables such as area of forest and woodland owned, land tenure, and having harvested trees. No systematic biases were detected, and therefore no adjustments were made.

Item nonresponse occurs when a respondent is asked a question but chooses not to respond to that specific question. As reported in Butler et al. (2016), the median item nonresponse rate was 5 percent. The tables in this publication list the number of respondents used to calculate the statistics in each row of each table. A separate row labeled “no answer” is included in the tables for those who were asked to respond to a specific question but opted not to (i.e., item nonresponse). To make interpretation of the results easier, item nonresponse was excluded from the percentage calculations.

Comparisons Between Survey Iterations

To make accurate comparisons across surveys, it is important to ensure the populations of interest are the same and the questions asked are the same, or at least compatible. To aid in comparisons between the 2002-2006 and 2011-2013 iterations of the NWOS, the 2002-2006 data were reprocessed to include only family ownerships with 10 or more acres of forest or woodland. The previously published data (Butler 2008) included family ownerships with 1 or more acres of forest or woodland. To further improve comparisons, the 2002-2006 data were reprocessed with the same estimation methods used for the 2011-2013 data. The estimation methods were similar between iterations, but the estimation units changed from multi-county survey units of typically four or more per state (Butler et al. 2005) to the state as a whole.

Due to sampling issues, different states were included in the summaries of the 2002-2006 and 2011-2013 iterations of the NWOS. To aid in the comparison of national and regional results, a second set of 2011-2013 national and regional tables is included that contains only those states that are also summarized in 2002-2006 national and regional tables. The states included in the national and regional tables are indicated in Table 2.

The questions in common between the 2002-2006 and 2011-2013 iterations are listed in Table 3. While many of the questions were identical in wording, some had slight changes that are noted in Table 3. These notes should be considered when making comparisons. For the specific wording of the questions, refer to Butler (2008) and Butler et al. (2016). To assess if differences are statistically significant, z-tests or similar statistical tests that incorporate variances and covariances should be considered (Dorofeev and Grant 2006). The covariance is important because the two samples are not completely independence since many of the sample points and respondents are the same between surveys. The sampling errors reported provide an estimate of the variances, but covariances are not provided and differences must therefore be interpreted cautiously.

Survey Summary Table Descriptions

The main results in this report consist of sets of 44 survey summary tables that are produced separately for the nation (all states combined where the minimum state sample sizes of $n \geq 10$ were obtained), the four RPA regions (North, South, Rocky Mountain, Pacific Coast), and each state where the number of survey responses met or exceeded the minimum sample size of 100 (Table 2).

To aid in comparisons, the table numbering and naming convention used for survey summary tables are consistent across sets. Tables are designated as Table XX-# (YYYY) where XX indicates the state, region, or nation abbreviation, # indicates the table number, and YYYY indicates the year for the iteration of the data used to generate the results. Parallel tables were produced for the 2011-2013 and 2002-2006 data, but tables were left blank for the latter if the requisite data were not available (Table 3).

- Table XX-# (2013) designates tables with results from the 2011-2013 data.
- Table XX-# (2006) designates tables with results from the 2002-2006 data.
- Table XX-# (2013 Compare) designates 2011-2013 regional and national tables generated for comparisons with the 2002-2006 data. The 2011-2013 values were recalculated only using those states in common with the 2002-2006 data.

The first table in each summary set shows area of forest and woodland by broad ownership categories. These area numbers are derived from the U.S. Forest Service, Forest Inventory and Analysis plot data. The specific inventory years used for each state are indicated in the table caption. The second table shows the sample size and cooperation rate. Subsequent tables summarize specific survey questions or subquestions as listed in Table 3. These tables include separate columns for area and ownerships in terms of totals and percentages along with the associated standard errors (SE) and effective sample sizes (n). Sampling errors help interpret the uncertainty associated with the estimates. Footnotes in tables provide key definitions, define abbreviations, and list any data that are excluded. A list of titles for the survey summary tables is provided below, and tables are available at dx.doi.org/10.2737/NRS-RB-99. Titles for the 2006 summary tables may be slightly different due to variations in the wording and formatting of survey questions.

Table XX-1 (YYYY)—Estimated area of forest and woodland by ownership category

Table XX-2 (YYYY)—Sample size and cooperation rate for family forest and woodland ownerships for the U.S. Forest Service, National Woodland Owner Survey

Table XX-3 (YYYY)—Estimated area and estimated number of family forest and woodland ownerships (10+ acres) by ownership subcategory

Table XX-4 (YYYY)—Estimated area and estimated number of family forest and woodland ownerships (10+ acres) by number of owners

Table XX-5 (YYYY)—Estimated area and estimated number of family forest and woodland ownerships (10+ acres) by percent of ownership's land that is forested/wooded

Table XX-6 (YYYY)—Estimated area and estimated number of family forest and woodland ownerships (10+ acres) by size of forest/woodland holdings

Table XX-7 (YYYY)—Estimated area and estimated number of family forest and woodland ownerships (10+ acres) by number of parcels owned

Table XX-8 (YYYY)—Estimated area and estimated number of family forest and woodland ownerships (10+ acres) that are within 1 mile of ownerships' primary residences

Table XX-9 (YYYY)—Estimated area and estimated number of family forest and woodland ownerships (10+ acres) that are within 1 mile of ownerships' vacation homes

Table XX-10 (YYYY)—Estimated area and estimated number of family forest and woodland ownerships (10+ acres) that are within 1 mile of ownerships' farms

Table XX-11 (YYYY)—Estimated area and estimated number of family forest and woodland ownerships (10+ acres) by reason for owning forest and woodland. Numbers include ownerships that rated an objective as very important or important on a five-point Likert scale.

Table XX-12 (YYYY)—Estimated area and estimated number of family forest and woodland ownerships (10+ acres) by type and source of forest and woodland acquisition

Table XX-13 (YYYY)—Estimated area and estimated number of family forest and woodland ownerships (10+ acres) by land tenure

Table XX-14 (YYYY)—Estimated area and estimated number of family forest and woodland ownerships (10+ acres) by frequency of selling or giving away forest and woodland and recipients of this land

Table XX-15 (YYYY)—Estimated area and estimated number of family forest and woodland ownerships (10+ acres) by decisionmaker

Table XX-16 (YYYY)—Estimated area and estimated number of family forest and woodland ownerships (10+ acres) by written management plan status

Table XX-17 (YYYY)—Estimated area and estimated number of family forest and woodland ownerships (10+ acres) by activities that cut or removed trees

Table XX-18 (YYYY)—Estimated area and estimated number of family forest and woodland ownerships (10+ acres) by types of timber products and trees cut or removed

Table XX-19 (YYYY)—Estimated area and estimated number of family forest and woodland ownerships (10+ acres) by use of professional foresters for timber harvesting

Table XX-20 (YYYY)—Estimated area and estimated number of family forest and woodland ownerships (10+ acres) by activities related to nontimber forest products (NTFPs)

Table XX-21 (YYYY)—Estimated area and estimated number of family forest and woodland ownerships (10+ acres) by activities related to nontimber forest products (NTFPs)

Table XX-22 (YYYY)—Estimated area and estimated number of family forest and woodland ownerships (10+ acres) by past 5 years' forestry activity

Table XX-23 (YYYY)—Estimated area and estimated number of family forest and woodland ownerships (10+ acres) by next 5 years' forestry activity. Numbers include ownerships that rated an activity as extremely likely or likely on a five-point Likert scale.

Table XX-24 (YYYY)—Estimated area and estimated number of family forest and woodland ownerships (10+ acres) by lease status

Table XX-25 (YYYY)—Estimated area and estimated number of family forest and woodland ownerships (10+ acres) by familiarity with and participation in cost-share programs

Table XX-26 (YYYY)—Estimated area and estimated number of family forest and woodland ownerships (10+ acres) by familiarity with and participation in green certification programs

Table XX-27 (YYYY)—Estimated area and estimated number of family forest and woodland ownerships (10+ acres) by familiarity with and participation in forestry related property tax programs

Table XX-28 (YYYY)—Estimated area and estimated number of family forest and woodland ownerships (10+ acres) by familiarity with and status of easements that restrict land use conversions

Table XX-29 (YYYY)—Estimated area and estimated number of family forest and woodland ownerships (10+ acres) by who recreated on the forest and woodland and type of recreation

Table XX-30 (YYYY)—Estimated area and estimated number of family forest and woodland ownerships (10+ acres) by whether the ownership has its forest/woodland posted to restrict public access and type of restriction

Table XX-31 (YYYY)—Estimated area and estimated number of family forest and woodland ownerships (10+ acres) by advice received in the preceding 5 years and advice source

Table XX-32 (YYYY)—Estimated area and estimated number of family forest and woodland ownerships (10+ acres) by type of assistance desired by ownership. Numbers include ownerships that rated a topic as very helpful or helpful on a five-point Likert scale.

Table XX-33 (YYYY)—Estimated area and estimated number of family forest and woodland ownerships (10+ acres) by preferred methods to receive forest/woodland management information. Numbers include ownerships that rated a method as very useful or useful on a five-point Likert scale.

Table XX-34 (YYYY)—Estimated area and estimated number of family forest and woodland ownerships (10+ acres) by ownerships' concerns. Numbers include ownerships that rated an issue a great concern or concern on a five-point Likert scale.

Table XX-35 (YYYY)—Estimated area and estimated number of family forest and woodland ownerships (10+ acres) by ownerships' likelihood of selling or giving away land in the next 5 years and who is likely to receive it

Table XX-36 (YYYY)—Estimated area and estimated number of family forest and woodland ownerships (10+ acres) by ownerships' agreement/disagreement about statements related to keeping land forested/wooded and selling forest/woodland

Table XX-37 (YYYY)—Estimated area and estimated number of family forest and woodland ownerships (10+ acres) by primary and secondary owners' retirement statuses

Table XX-38 (YYYY)—Estimated area and estimated number of family forest and woodland ownerships (10+ acres) by primary and secondary owners' occupations

Table XX-39 (YYYY)—Estimated area and estimated number of family forest and woodland ownerships (10+ acres) by primary and secondary owners' ages

Table XX-40 (YYYY)—Estimated area and estimated number of family forest and woodland ownerships (10+ acres) by primary and secondary owners' genders

Table XX-41 (YYYY)—Estimated area and estimated number of family forest and woodland ownerships (10+ acres) by primary and secondary owners' highest levels of formal education attained

Table XX-42 (YYYY)—Estimated area and estimated number of family forest and woodland ownerships (10+ acres) by primary and secondary owners' ethnicities and races

Table XX-43 (YYYY)—Estimated area and estimated number of family forest and woodland ownerships (10+ acres) by ownerships' annual household income

Table XX-44 (YYYY)—Estimated area and estimated number of family forest and woodland ownerships (10+ acres) by ownerships' percent of household annual income derived from forest and woodland owned

OTHER NWOS RESOURCES

Additional information about the 2011-2013 NWOS methods, results, and general program attributes is available through a series of publications, tools, and Web sites. Details of the design, implementation, and analysis methods can be found in Butler et al. (2016) and Dickinson and Butler (2013). Butler et al. (2016) also contains a copy of the questionnaire and documentation for the NWOS database.

Butler et al. (n.d.a.) presents an analysis of the general findings of the 2011-2013 NWOS concentrating on family forest and woodland ownerships with 10 or more acres of forest or woodland and examines trends between the 2002-2006 and 2011-2013 iterations of the NWOS. Summaries highlighting ownership patterns and general results from the 2011-2013 NWOS are published in U.S. Forest Service (2015) and will be available in a series of two-page graphical summaries, one for each state where the minimum sample size ($n \geq 100$) was obtained, each region, and the nation (Butler et al., n.d.b.). The U.S. Forest Service (2015) brochure is intended primarily for those people who responded to the NWOS questionnaire and other private landowners. The Butler et al. (n.d.b.) summaries are intended primarily for a more technical audience including people who work for state forestry agencies, research institutions, and nonprofit organizations that are familiar with the NWOS program.

Additional program information, including links to some of the items listed above and copies of the state-specific questionnaires, is available at the following Web sites:

- National Woodland Owner Survey: www.fia.fs.fed.us/nwos
- Forest Inventory and Analysis program: www.fia.fs.fed.us
- Family Forest Research Center, a joint venture between the U.S. Forest Service and the University of Massachusetts Amherst: www.familyforestresearchcenter.org
- Resources Planning Act (RPA) Assessment: www.fs.fed.us/research/rpa

GLOSSARY

Corporate forest and woodland ownerships—ownerships that are incorporated, including timber investment management organizations (TIMOs), real estate investment trusts (REITs), native corporations in Alaska, and private universities, that own forest or woodland. Where identifiable, family ownerships that have been incorporated primarily for tax, estate, or other purposes (e.g., family limited liability corporations) are included with the family forest and woodland ownerships category.

Family forest and woodland ownerships—families, individuals, trusts, estates, and family partnerships that own forest or woodland.

Federal forest and woodland ownerships—National Forest, National Park Service, Bureau of Land Management, U.S. Fish and Wildlife Service, Department of Defense, and other federal ownerships that own forest or woodland.

Forest land—land at least 120 feet (37 meters) wide and at least 1 acre (0.4 hectare) in size with at least 10 percent cover (or equivalent stocking) by live trees including land that formerly had such tree cover and that will be naturally or artificially regenerated. Trees are woody plants having a more or less erect perennial stem(s) capable of achieving at least 3 inches (7.6 cm) in diameter at breast height, or 5 inches (12.7 cm) diameter at root collar, and a height of 16.4 feet (5 meters) at maturity in situ. The definition here includes all areas recently having such conditions and currently regenerating or capable of attaining such condition in the near future. Forest land also includes transition zones, such as areas between forest and nonforest lands, that have at least 10 percent cover (or equivalent stocking) with live trees and forest areas adjacent to urban and built-up lands. Unimproved roads and trails, streams, and clearings in forest areas are classified as forest if they are less than 120 feet (37 meters) wide or an acre (0.4 hectare) in size. Forest land does not include land that is predominantly under agricultural or urban land use (Oswalt et al. 2014 p. 31).

Local forest and woodland ownerships—county, municipal, and other nonfederal public ownerships that own forest or woodland.

Nonindustrial private forest and woodland ownerships—private forest and woodland ownerships that do not own and operate a primary wood processing plant. A primary wood processing plant is any commercial operation that originates the primary processing of wood on a regular and continuing basis. Examples include: pulp or paper mill, sawmill, panel board mill, post or pole mill (Woudenberg et al. 2010 p. 49).

Other private forest and woodland ownerships—nongovernmental conservation and natural resources organizations (e.g., the Nature Conservancy, Trust for Public Lands, Pacific Forest Trust, Boy Scouts of America) and unincorporated partnerships, associations, and clubs (e.g., hunting clubs that own, not lease property; recreation associations; 4H clubs; churches) that own forest or woodland.

Ownerships—a legal entity that has proscribed legal rights over a specific resource. In the case of family ownerships, it is composed of one or more owners (i.e., individuals).

Private forest and woodland ownerships—corporate, family, other private, and tribal ownerships that own forest or woodland.

Public forest and woodland ownerships—federal, state, and local ownerships that own forest or woodland.

State forest and woodland ownerships—state owned parks, forests, wildlife, and other lands that own forest or woodland.

Tribal forest and woodland ownerships—Native American (Indian) ownerships that are within reservation boundaries that own forest or woodland. Due to data confidentiality rules and small numbers of these ownerships in many states, these ownerships are often included in the other private forest ownership category.

Woodland—land at least 120 feet (37 meters) wide and at least 1 acre (0.4 hectares) in size with sparse trees capable of achieving 16.4 feet (5 meters) in height with a tree canopy cover of 5 to 10 percent combined with shrubs at least 6 feet (2 meters) in height to achieve an overall cover of greater than 10 percent of woody vegetation. Trees are woody plants having a more or less erect perennial stem(s) capable of achieving at least 3 inches (7.6 cm) in diameter at breast height, or 5 inches (12.7 cm) diameter at root collar, and a height of 16.4 feet (5 meters) at maturity in situ. The definition here includes all areas recently having such conditions and currently regenerating or capable of attaining such condition in the near future. It does not include land that is predominantly under agricultural or urban land use (Oswalt et al. 2014 p. 35).

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NATIONAL FOREST AND WOODLAND OWNERSHIP TABLES

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Table 1.—Sample sizes and cooperation rates for family forest and woodland ownerships (1+ acres) for the U.S. Forest Service, National Woodland Owner Survey by state/region/nation, 2011-2013

Region/state	Sent	Undeliverable	Responses	Cooperation Rate ^a
	----- number -----			percent
North				
Connecticut	615	6	347	57.0
Delaware	545	18	255	48.4
Illinois	373	23	201	57.4
Indiana	516	35	269	55.9
Iowa	289	16	152	55.7
Maine	551	52	286	57.3
Maryland	883	37	401	47.4
Massachusetts	489	30	237	51.6
Michigan	506	37	301	64.2
Minnesota	691	68	392	62.9
Missouri	689	63	378	60.4
New Hampshire	295	22	168	61.5
New Jersey	457	29	205	47.9
New York	632	54	313	54.2
Ohio	466	20	248	55.6
Pennsylvania	492	36	259	56.8
Rhode Island	33	2	18	58.1
Vermont	953	51	501	55.5
West Virginia	563	70	277	56.2
Wisconsin	656	28	393	62.6
North total	10,694	697	5,601	56.0
South				
Alabama	721	89	297	47.0
Arkansas	595	97	239	48.0
Florida	396	24	175	47.0
Georgia	556	57	256	51.3
Kentucky	605	66	242	44.9
Louisiana	411	36	164	43.7
Mississippi	553	55	236	47.4
North Carolina	518	35	228	47.2
Oklahoma ^b				
East	549	52	179	36.0
West	252	13	108	45.2
South Carolina	500	58	236	53.4
Tennessee	621	41	280	48.3
Texas ^b				
East	580	35	204	37.4
West	697	73	284	45.5
Virginia	625	60	280	49.6
South total	8,179	791	3,408	46.1

Table 1.-(continued)

Region/state	Sent	Undeliverable	Responses	Cooperation Rate
	----- number -----			percent
Rocky Mountain				
Arizona	60	11	26	53.1
Colorado	45	9	15	41.7
Idaho	89	7	42	51.2
Kansas	284	19	145	54.7
Montana	421	21	193	48.2
Nebraska	148	13	66	48.9
Nevada	7	0	2	28.6
New Mexico	121	12	46	42.2
North Dakota	54	5	23	46.9
South Dakota	61	7	25	46.3
Utah	104	16	40	45.5
Wyoming	11	0	2	18.2
Rocky Mountain total	1,405	120	625	48.6
Pacific Coast				
Alaska ^b				
Coastal	15	1	5	35.7
Interior	0	0	0	—
California	329	49	135	48.2
Hawaii	224	12	78	36.8
Oregon	231	24	132	63.8
Washington	206	24	108	59.3
Pacific Coast total	1,005	110	458	51.2
United States				
U.S. total	21,283	1,718	10,092	51.6

Note: These numbers are for all family forest and woodland ownerships. The size of holdings is unknown for nonrespondents and therefore these statistics cannot be subset just to ownerships with 10+ acres of forest or woodland.

$$^a \text{ Cooperation rate} = \left(\frac{\text{Responses}}{\text{Sent} - \text{Undeliverables}} \times 100 \right)$$

^b Estimates are made at the substate level

Table 2.—States included in regional and national summary tables and states for which full sets of state-level summary tables are being published in this report for the 2013 and 2006 iterations of the U.S. Forest Service, National Woodland Owner Survey

Region/state	2013		2006	
	Included in regional and national summary tables	State-level summary tables published	Included in regional and national summary tables	State-level summary tables published
North				
Connecticut	X	X	X	
Delaware	X	X	X	
Illinois	X	X	X	X
Indiana	X	X	X	X
Iowa	X	X	X	X
Maine	X	X	X	X
Maryland	X	X	X	
Massachusetts	X	X	X	
Michigan	X	X	X	X
Minnesota	X	X	X	X
Missouri	X	X	X	X
New Hampshire	X	X	X	X
New Jersey	X	X	X	
New York	X	X	X	X
Ohio	X	X	X	X
Pennsylvania	X	X	X	X
Rhode Island	X		X	
Vermont	X	X	X	X
West Virginia	X	X	X	X
Wisconsin	X	X	X	X
South				
Alabama	X	X	X	X
Arkansas	X	X	X	X
Florida	X	X	X	
Georgia	X	X	X	X
Kentucky	X	X	X	X
Louisiana	X	X	X	X
Mississippi	X	X	X	X
North Carolina	X	X	X	X
Oklahoma ^a				
East	X	X	X	
West	X			
South Carolina	X	X	X	X
Tennessee	X	X	X	X
Texas ^a				
East	X	X	X	X
West	X	X		
Virginia	X	X	X	X

Table 2.-(continued)

Region/state	2013		2006	
	Included in regional and national summary tables	State-level summary tables published	Included in regional and national summary tables	State-level summary tables published
Rocky Mountain				
Arizona	X		X	
Colorado	X		X	
Idaho	X		X	
Kansas	X	X	X	X
Montana	X	X	X	
Nebraska	X		X	
Nevada				
New Mexico	X		X	
North Dakota	X		X	
South Dakota	X		X	
Utah	X		X	
Wyoming				
Pacific Coast				
Alaska ^a				
Coastal				
Interior				
California	X	X	X	X
Hawaii	X			
Oregon	X	X	X	X
Washington	X		X	X

^a Estimates are made at the substate level

Table 3.—Descriptions of survey summary tables for the U.S. Forest Service National Woodland Owner Survey and crosswalk between survey questions by questionnaire version

Table number	Brief description	Question number		Notes on differences between questionnaire versions
		Version 5.1 (2011-2013)	Version 4.5 (2002-2006)	
1	Acres by ownership category for all ownerships	—	—	
2	Sample size and cooperation rate	—	—	
3	Acres by ownership category	1	5	Categories were simplified, especially for corporations. Switched from “check all that apply” to “check only one”.
4	Number of owners	2	—	
5	Percent of land that is forested/wooded	3	1	
6	Size of forest/wooded land holdings	3	1	Subquestion of wooded land outside of State of interest was dropped.
7	Number of parcels owned	3	1	The number of parcels subquestion was separated into two subquestions.
8	Primary residence	4	7	
9	Vacation home	5	7	
10	Farm	6	6	Added “not applicable” option. Dropped subquestion on farm acreage.
11	Reasons for owning	7	9	Converted from a 7-point to a 5-point Likert scale and all options were labeled with words. Added objectives related to water resources and raising a family. Split home and vacation home objectives.
12	Land acquisition	8	3	Added more detail on family relationships. Dropped the don’t know option for acquisition year.
13	Land tenure	8	3	
14	Past selling/giving away land	9	4	Added more detail on family relationships.
15	Decision maker	10	14	Added more detail on family relationships and dropped logging contractor.
16	Management plans	11	17	Added subquestions on whether plan was implemented, who prepared the plan, and reasons for no plan. Don’t know option was dropped.

Table 3.-(continued)

Table number	Brief description	Question number		Notes on differences between questionnaire versions
		Version 5.1 (2011-2013)	Version 4.5 (2002-2006)	
17	Timber harvesting	12	15	Converted to a matrix format. Added options for wood chips and unwanted trees. Dropped veneer logs and pulpwood. Added subquestion on certified logger. Dropped reason for cutting.
18	Timber harvesting (simplified)	12	15	
19	Use of foresters	12	15	
20	Nontimber forest products	13	16	Converted to matrix format.
21	Nontimber forest products (simplified)	13	16	
22	Recent forestry activities	14	18	Added controlled burn, invasive species, and livestock grazing. Dropped planted trees and chemical use. Separated road and trails. Recreation and posting converted to separate questions.
23	Future forestry activities	15	23	Switched to a likelihood rating. Dropped convert land, buy more land, leave as is, minimum activities, no plans, and don't know. Sell and give away converted to separate question.
24	Leases	16	10	Added land conservation, carbon sequestration, water supply, and wildlife. Dropped timber production and nontimber forest products.
25	Cost-share programs	17	13	Converted familiarity from yes/no to rating. Added subquestion on recency. Dropped specification of programs.
26	Green certification programs	18	12	Converted familiarity from yes/no to rating. Dropped subquestion on future intentions for certification.
27	Property tax programs	19	–	
28	Easements	20	11	Used phrase sell development rights instead of conservation easement. Converted familiarity from yes/no to rating. Dropped subquestion on what was eased.

Table 3.–(continued)

Table number	Brief description	Question number		Notes on differences between questionnaire versions
		Version 5.1 (2011-2013)	Version 4.5 (2002-2006)	
29	Recreation	21	18	Added information on who recreated and the types of recreation activities.
30	Posting	22	18	Added information on what activities are restricted.
31	Advice received	23	19	Added subquestion on advice topic and method of receiving advice.
32	Advice desired	24	–	
33	Preferred methods to receive information	25	20	Converted to a check all that apply.
34	Concerns	26	21 and 22	Converted from a 7-point to a 5-point Likert scale and all options were labeled with words. Added climate change. Separated air and water pollution. Dropped endangered species, lawsuits, regulations, and timber theft. Changed unwanted plants to invasive plant species.
35	Future selling/giving away land	27	23	Added subquestion on who will receive it and why they are planning to dispose it.
36	Conservation attitudes	28	–	
37	Demographics - retired	29 ^a	24	
38	Demographics - occupation	30 ^a	24	
39	Demographics - age	31 ^a	25	Converted to continuous variable.
40	Demographics - gender	32 ^a	28	
41	Demographics - education	33 ^a	26	Changed graduate degree to advanced degree.
42	Demographics - ethnicity and race	34 ^a and 35 ^a	29	
43	Demographics - income	36 ^a	27	
44	Income from forest/wooded land	37	–	

^a Asked for demographic information for up to two owners in version 5.1

Table 4.—Estimated area of forest and woodland ownerships (1+ acres) by category and state/region/nation, 2011-2013

Region/state	All Ownerships						Private						Tribal ^a		Other Private	
	Total			Total			Family			Corporate						
	Acres	SE ^b	Acres	SE ^b	Acres	SE ^b	Acres	SE ^b	Acres	SE ^b	Acres	SE ^b	Acres	SE ^b	Acres	SE ^b
----- thousands -----																
North																
Connecticut	1,799	82	1,308	70	920	51	231	36	—	—	157	30				
Delaware	362	25	279	22	204	16	65	13	—	—	10	6				
Illinois	4,902	118	4,053	104	3,666	92	301	42	—	—	86	25				
Indiana	4,875	78	4,081	71	3,574	59	404	35	—	—	104	19				
Iowa	2,967	87	2,562	77	2,399	70	119	27	—	—	43	15				
Maine	17,636	210	16,355	202	5,575	130	10,173	142	—	—	608	59				
Maryland	2,462	99	1,812	86	1,296	66	408	49	—	—	108	25				
Massachusetts	3,036	106	1,954	84	1,380	62	335	43	—	—	239	37				
Michigan	20,357	221	12,602	196	9,114	151	2,797	106	—	—	691	67				
Minnesota	17,378	160	7,798	112	5,985	90	1,117	52	—	—	696	43				
Missouri	15,452	163	12,759	150	11,796	130	769	66	—	—	195	35				
New Hampshire	4,783	118	3,474	106	2,446	76	800	63	—	—	228	37				
New Jersey	2,002	90	971	65	584	47	274	37	—	—	113	26				
New York	18,950	220	14,088	202	10,669	151	2,738	118	—	—	680	64				
Ohio	8,162	141	7,012	129	5,797	101	932	70	—	—	284	41				
Pennsylvania	16,999	214	11,961	199	8,892	146	2,300	115	—	—	769	71				
Rhode Island	367	30	264	26	164	18	50	12	—	—	50	14				
Vermont	4,514	107	3,583	99	2,775	74	684	59	—	—	124	27				
West Virginia	12,186	195	10,596	189	6,459	132	3,989	130	—	—	148	32				
Wisconsin	17,101	146	11,947	125	9,775	99	1,490	63	—	—	682	44				
North total	176,293	640	129,458	574	93,469	434	29,975	331	1,339	68	4,676	165				

Table 4.--(continued)

Region/state	Total		Public			State		Local	
	Acres	SE ^b	Acres	SE ^b	Acres	Acres	SE ^b	Acres	SE ^b
----- thousands -----									
North									
Connecticut	492	44	14	9	304	29	174	31	
Delaware	83	12	9	5	67	9	7	5	
Illinois	849	55	382	25	220	31	247	37	
Indiana	794	33	380	20	366	23	49	11	
Iowa	405	42	118	23	188	27	98	21	
Maine	1,281	58	186	26	884	38	211	34	
Maryland	650	50	71	18	434	36	145	29	
Massachusetts	1,082	65	81	21	592	42	408	45	
Michigan	7,756	102	3,023	46	4,270	73	463	53	
Minnesota	9,581	114	2,878	38	4,077	79	2,625	73	
Missouri	2,693	66	1,871	45	737	42	86	22	
New Hampshire	1,309	52	856	27	209	26	244	36	
New Jersey	1,031	61	119	26	626	40	286	38	
New York	4,863	89	151	29	4,121	59	591	60	
Ohio	1,150	55	326	24	505	31	319	38	
Pennsylvania	5,038	80	623	29	3,879	46	536	58	
Rhode Island	104	15	<1	<1	61	11	43	10	
Vermont	931	40	491	23	368	26	73	20	
West Virginia	1,590	51	1,221	33	309	34	60	20	
Wisconsin	5,154	76	1,620	26	1,168	47	2,366	53	
North total	46,835	282	14,420	121	23,384	185	9,031	175	

Table 4.-(continued)

Region/state	All Ownerships						Private					
	Total			Total			Family			Corporate		
	Acres	SE ^b	Acres	SE ^b	Acres	SE ^b	Acres	SE ^b	Acres	SE ^b	Acres	SE ^b
----- thousands -----												
South												
Alabama	22,911	274	21,392	258	13,696	188	7,480	174	—	—	216	35
Arkansas	18,966	258	15,308	227	8,866	164	5,609	141	—	—	833	67
Florida	17,272	273	11,139	210	4,020	131	7,006	162	—	—	114	25
Georgia	24,745	293	22,158	272	13,354	197	8,466	182	—	—	338	43
Kentucky	12,510	189	11,070	168	9,148	138	1,844	93	—	—	79	22
Louisiana	14,965	236	13,017	213	5,563	143	7,283	155	—	—	172	32
Mississippi	19,468	263	17,151	239	11,803	178	4,657	146	—	—	692	62
North Carolina	18,611	250	15,449	220	10,641	166	4,430	137	—	—	378	46
Oklahoma	12,363	266	10,982	245	7,974	196	2,531	131	—	—	477	68
South Carolina	13,044	214	11,471	194	7,236	142	4,071	128	—	—	164	30
Tennessee	13,921	206	11,664	180	9,359	146	2,225	104	—	—	80	21
Texas	61,792	588	58,072	566	42,440	457	12,309	286	—	—	3,323	171
Virginia	15,883	227	13,017	198	9,625	154	3,156	119	—	—	236	36
South total	266,449	1,040	231,892	951	153,725	728	71,065	568	350	55	6,752	221

Table 4.-(continued)

Region/state	Total		Federal		Public		State		Local	
	Acres	SE ^b	Acres	SE ^b	Acres	SE ^b	Acres	SE ^b	Acres	SE ^b
----- thousands -----										
South										
Alabama	1,519	91	1,020	74	348	44	151	29		
Arkansas	3,658	124	3,118	111	459	51	80	20		
Florida	6,133	174	2,684	115	2,886	118	563	58		
Georgia	2,587	111	1,798	90	443	49	345	43		
Kentucky	1,440	87	1,191	78	179	32	70	19		
Louisiana	1,948	102	1,145	77	546	54	257	38		
Mississippi	2,317	110	1,832	97	239	37	246	37		
North Carolina	3,161	119	2,148	94	744	63	270	37		
Oklahoma	1,380	103	857	77	391	58	133	36		
South Carolina	1,573	91	1,029	73	381	45	163	29		
Tennessee	2,256	99	1,402	73	757	64	97	23		
Texas	3,719	160	1,588	95	1,505	108	627	70		
Virginia	2,867	111	2,270	96	349	44	247	36		
South total	34,558	421	22,083	323	9,226	230	3,249	141		

Table 4--(continued)

Region/state	All Ownerships						Private					
	Total			Total			Family			Corporate		
	Acres	SE ^b	Acres	SE ^b	Acres	SE ^b	Acres	SE ^b	Acres	Acres	SE ^b	Acres
----- thousands -----												
Rocky Mountain												
Arizona	18,587	264	7,220	172	1,172	83	372	47	—	—	5,677	143
Colorado	22,891	256	5,580	162	4,497	143	458	50	—	—	625	58
Idaho	21,481	237	3,043	129	1,518	91	1,375	87	—	—	150	29
Kansas	2,533	80	2,351	75	2,247	71	78	22	—	—	26	13
Montana	25,597	276	6,957	190	3,611	136	2,069	105	—	—	1,277	80
Nebraska	1,539	76	1,365	69	1,260	64	37	14	—	—	68	20
Nevada	10,577	152	395	46	252	36	93	22	—	—	50	17
New Mexico	24,839	310	10,799	234	6,626	192	601	66	—	—	3,572	116
North Dakota	764	54	532	42	419	36	—	—	—	—	113	23
South Dakota	1,929	67	807	60	540	48	36	12	—	—	232	35
Utah	18,299	244	2,817	123	1,747	95	458	52	—	—	612	59
Wyoming	10,401	351	1,549	199	1,214	173	56	41	—	—	278	89
Rocky Mountain total	159,439	768	43,415	486	25,103	379	5,633	183	11,745	229	934	77
Pacific Coast												
Alaska	127,575	1,150	36,083	639	4,030	210	31,939	566	—	—	114	210
California	32,254	287	12,541	236	6,948	174	4,751	141	—	—	842	75
Hawaii	1,748	196	1,155	173	723	118	124	44	—	—	309	118
Oregon	29,704	225	10,719	199	3,590	128	6,299	136	—	—	831	70
Washington	22,222	219	9,548	195	2,591	106	4,810	126	—	—	2,147	105
Pacific Coast total	213,504	1,242	70,045	756	17,881	341	47,922	613	2,730	212	1,513	186
U.S. total	815,685	1,903	474,810	1,429	290,178	989	154,595	918	16,163	324	13,874	342

Table 4--(continued)

Region/state	Total			Public			State			Local		
	Acres	SE ^b		Acres	SE ^b		Acres	SE ^b		Acres	SE ^b	
----- thousands -----												
Rocky Mountain												
Arizona	11,367	201		9,708	174		1,611	98		49	19	
Colorado	17,311	198		16,648	188		570	57		94	23	
Idaho	18,439	198		17,226	180		1,213	84		<1	<1	
Kansas	181	27		131	23		26	10		24	11	
Montana	18,640	201		17,661	187		962	74		18	9	
Nebraska	174	31		87	20		74	21		13	8	
Nevada	10,182	144		10,161	144		21	11		<1	<1	
New Mexico	14,041	204		11,726	166		2,273	117		42	19	
North Dakota	232	33		163	27		62	18		7	7	
South Dakota	1,122	29		1,044	23		68	17		10	7	
Utah	15,483	211		13,945	189		1,494	93		44	17	
Wyoming	8,852	289		8,509	271		343	100		<1	<1	
Rocky Mountain total	116,024	595		107,009	541		8,716	243		300	43	
Pacific Coast												
Alaska	91,493	955		63,752	795		27,475	528		266	47	
California	19,713	164		18,630	150		699	48		384	46	
Hawaii	593	93		12	14		573	91		8	11	
Oregon	18,985	105		17,874	93		924	37		187	33	
Washington	12,674	100		9,822	70		2,433	51		419	49	
Pacific Coast total	143,458	985		110,090	817		32,104	542		1,264	89	
U.S. total	340,875	1,257		253,601	1,039		73,430	664		13,844	245	

^a Due to data confidentiality, Tribal is included with Other Private at the state level^b SE = standard error

Table 5.—Estimated area and estimated number of private forest and woodland ownerships (1+ acres) by state/region/nation, 2011-2013

Region/state	Area		Ownerships	
	Acres	SE ^a	Number	SE ^a
- - - - - thousands - - - - -				
North				
Connecticut	1,308	70	166	16
Delaware	279	22	22	3
Illinois	4,053	104	149	24
Indiana	4,081	71	193	22
Iowa	2,562	77	80	12
Maine	16,355	202	170	24
Maryland	1,812	86	149	16
Massachusetts	1,954	84	236	32
Michigan	12,602	196	375	51
Minnesota	7,798	112	213	21
Missouri	12,759	150	440	58
New Hampshire	3,474	106	196	41
New Jersey	971	65	124	15
New York	14,088	202	782	131
Ohio	7,012	129	486	62
Pennsylvania	11,961	199	574	75
Rhode Island	264	26	46	15
Vermont	3,583	99	148	20
West Virginia	10,596	189	184	30
Wisconsin	11,947	125	414	48
North total	129,458	574	5,147	206
South				
Alabama	21,392	258	248	32
Arkansas	15,308	227	217	56
Florida	11,139	210	227	43
Georgia	22,158	272	462	106
Kentucky	11,070	168	422	81
Louisiana	13,017	213	135	25
Mississippi	17,151	239	284	68
North Carolina	15,449	220	566	101
Oklahoma	10,982	245	273	63
South Carolina	11,471	194	212	44
Tennessee	11,664	180	421	55
Texas	58,072	566	612	133
Virginia	13,017	198	534	94
South total	231,892	951	4,612	274

Table 5.-(continued)

Region/state	Area		Ownerships	
	Acres	SE ^a	Number	SE ^a
----- thousands -----				
Rocky Mountain				
Arizona	7,220	172	95	50
Colorado	5,580	162	34	13
Idaho	3,043	129	28	8
Kansas	2,351	75	95	13
Montana	6,957	190	72	16
Nebraska	1,365	69	41	14
Nevada	395	46	5	1
New Mexico	10,799	234	449	192
North Dakota	532	42	26	21
South Dakota	807	60	17	7
Utah	2,817	123	39	13
Wyoming	1,549	199	88	87
Rocky Mountain total	43,415	486	988	220
Pacific Coast				
Alaska	36,083	639	36	29
California	12,541	236	248	65
Hawaii	1,155	173	88	21
Oregon	10,719	199	172	47
Washington	9,548	195	172	40
Pacific Coast total	70,045	756	716	96
U.S. total	474,810	1,429	11,462	418

^a SE = standard error

Note: Data may not sum to totals due to rounding

Table 6.—Estimated area and estimated number of private forest and woodland ownerships (10+ acres) by state/region/nation, 2011-2013

Region/state	Area		Ownerships	
	Acres	SE ^a	Number	SE ^a
----- thousands -----				
North				
Connecticut	975	62	20	2
Delaware	239	20	4	<1
Illinois	3,794	120	83	7
Indiana	3,722	94	91	6
Iowa	2,430	86	51	5
Maine	16,070	211	89	7
Maryland	1,510	79	29	2
Massachusetts	1,514	83	30	3
Michigan	11,917	235	196	13
Minnesota	7,385	133	116	7
Missouri	11,979	210	214	15
New Hampshire	3,192	117	43	5
New Jersey	715	56	15	2
New York	12,504	305	203	14
Ohio	6,056	190	161	13
Pennsylvania	10,681	270	181	14
Rhode Island	192	29	7	2
Vermont	3,316	101	42	3
West Virginia	10,252	204	102	8
Wisconsin	11,083	187	193	11
North total	119,528	718	1,869	37
South				
Alabama	20,921	293	160	15
Arkansas	15,116	240	115	11
Florida	10,687	224	77	10
Georgia	21,260	344	121	12
Kentucky	10,489	217	173	14
Louisiana	12,807	226	83	10
Mississippi	16,779	272	135	14
North Carolina	14,245	313	167	15
Oklahoma	10,638	263	120	12
South Carolina	11,120	215	90	9
Tennessee	10,601	246	152	13
Texas	57,240	630	345	35
Virginia	12,161	251	161	13
South total	224,066	1,103	1,898	56

Table 6.-(continued)

Region/state	Area		Ownerships	
	Acres	SE ^a	Number	SE ^a
----- thousands -----				
Rocky Mountain				
Arizona	7,123	182	40	11
Colorado	5,580	162	34	13
Idaho	3,006	133	20	4
Kansas	2,219	84	60	6
Montana	6,808	193	31	4
Nebraska	1,298	76	20	3
Nevada	395	46	5	1
New Mexico	10,232	364	61	22
North Dakota	511	46	5	1
South Dakota	785	63	10	3
Utah	2,717	138	23	8
Wyoming	941	621	1	<1
Rocky Mountain total	41,615	820	310	30
Pacific Coast				
Alaska	34,870	629	2	2
California	11,958	282	89	14
Hawaii	993	157	6	2
Oregon	10,438	211	45	7
Washington	9,141	209	52	7
Pacific Coast total	67,400	767	194	17
U.S. total	452,610	1,730	4,271	76

^a SE = standard error

Note: Data may not sum to totals due to rounding

Table 7.—Estimated area and estimated number of non-industrial private forest and woodland ownerships (1+ acres) by state/region/nation, 2011-2013

Region/state	Area		Ownerships	
	Acres	SE ^a	Number	SE ^a
----- thousands -----				
North				
Connecticut	1,308	76	166	17
Delaware	269	24	22	3
Illinois	4,053	125	149	24
Indiana	4,058	81	192	22
Iowa	2,562	91	80	12
Maine	14,607	239	170	24
Maryland	1,797	95	149	16
Massachusetts	1,954	93	236	33
Michigan	12,066	223	374	51
Minnesota	7,263	120	213	21
Missouri	12,677	196	440	59
New Hampshire	3,442	120	196	41
New Jersey	971	68	124	16
New York	13,656	234	759	119
Ohio	6,978	155	484	62
Pennsylvania	11,606	225	572	75
Rhode Island	264	28	46	15
Vermont	3,566	117	147	20
West Virginia	10,065	216	183	31
Wisconsin	11,321	142	407	48
North total	124,482	666	5,112	198
South				
Alabama	19,652	249	248	32
Arkansas	12,512	211	215	56
Florida	10,366	207	225	43
Georgia	20,458	264	458	106
Kentucky	10,961	166	421	81
Louisiana	10,390	203	132	25
Mississippi	15,844	228	283	68
North Carolina	14,423	213	562	101
Oklahoma	10,464	260	272	63
South Carolina	11,327	193	211	44
Tennessee	11,520	179	419	55
Texas	57,777	572	611	133
Virginia	12,830	196	534	94
South total	218,523	943	4,591	273

Table 7.-(continued)

Region/state	Area		Ownerships	
	Acres	SE ^a	Number	SE ^a
----- thousands -----				
Rocky Mountain				
Arizona	5,443	164	88	49
Colorado	5,580	165	34	13
Idaho	1,787	100	26	8
Kansas	2,351	89	95	14
Montana	5,525	169	72	16
Nebraska	1,365	74	41	14
Nevada	395	46	5	1
New Mexico	10,343	232	425	180
North Dakota	532	45	26	21
South Dakota	807	63	17	8
Utah	5,681	175	75	25
Wyoming	1,515	196	88	87
Rocky Mountain total	41,325	487	992	211
Pacific Coast				
Alaska	36,043	640	36	29
California	9,180	219	242	63
Hawaii	1,155	173	88	21
Oregon	6,557	184	165	45
Washington	5,462	169	165	38
Pacific Coast total	58,396	741	695	94
U.S. total	442,726	1,456	11,390	409

^a SE = standard error

Note: Data may not sum to totals due to rounding

Table 8.—Estimated area and estimated number of non-industrial private forest and woodland ownerships (10+ acres) by state/region/nation, 2011-2013

Region/state	Area		Ownerships	
	Acres	SE ^a	Number	SE ^a
----- thousands -----				
North				
Connecticut	975	65	20	2
Delaware	229	21	4	<1
Illinois	3,794	136	83	7
Indiana	3,699	100	91	6
Iowa	2,430	98	51	5
Maine	14,322	246	88	7
Maryland	1,496	86	29	2
Massachusetts	1,514	88	30	3
Michigan	11,381	254	196	14
Minnesota	6,850	138	115	7
Missouri	11,897	241	214	15
New Hampshire	3,161	128	43	5
New Jersey	715	58	15	2
New York	12,102	314	203	14
Ohio	6,025	203	161	13
Pennsylvania	10,325	284	180	14
Rhode Island	192	30	7	2
Vermont	3,299	116	42	3
West Virginia	9,721	228	102	8
Wisconsin	10,486	192	190	11
North total	114,614	777	1,862	37
South				
Alabama	19,182	285	160	15
Arkansas	12,321	225	114	11
Florida	9,914	221	76	10
Georgia	19,579	333	120	12
Kentucky	10,379	216	172	14
Louisiana	10,181	216	81	10
Mississippi	15,472	263	133	14
North Carolina	13,236	304	165	15
Oklahoma	10,120	275	119	12
South Carolina	10,976	215	90	9
Tennessee	10,460	244	151	13
Texas	56,945	636	344	35
Virginia	11,974	250	160	13
South total	210,739	1,093	1,885	56

Table 8.-(continued)

Region/state	Area		Ownerships	
	Acres	SE ^a	Number	SE ^a
----- thousands -----				
Rocky Mountain				
Arizona	5,345	174	34	8
Colorado	5,580	165	34	13
Idaho	1,750	104	19	4
Kansas	2,219	95	60	6
Montana	5,376	172	30	4
Nebraska	1,298	81	20	3
Nevada	395	46	5	1
New Mexico	9,799	357	60	22
North Dakota	511	48	5	1
South Dakota	785	65	10	3
Utah	5,488	216	45	15
Wyoming	908	620	1	<1
Rocky Mountain total	39,455	826	322	32
Pacific Coast				
Alaska	34,830	630	2	2
California	8,608	265	86	13
Hawaii	993	157	6	2
Oregon	6,287	195	43	6
Washington	5,068	183	48	7
Pacific Coast total	55,786	750	185	16
U.S. total	420,594	1,744	4,254	76

^a SE = standard error

Note: Data may not sum to totals due to rounding

Table 9.—Estimated area and estimated number of family forest and woodland ownerships (1+ acres) by state/region/nation, 2011-2013

Region/state	Area		Ownerships	
	Acres	SE ^a	Number	SE ^a
- - - - - thousands - - - - -				
North				
Connecticut	920	51	155	16
Delaware	204	16	21	3
Illinois	3,666	92	132	22
Indiana	3,574	59	187	22
Iowa	2,399	70	77	12
Maine	5,575	130	165	24
Maryland	1,296	66	140	15
Massachusetts	1,380	62	189	24
Michigan	9,114	151	371	51
Minnesota	5,985	90	212	20
Missouri	11,796	130	438	58
New Hampshire	2,446	76	192	41
New Jersey	584	47	107	14
New York	10,669	151	635	80
Ohio	5,797	101	430	55
Pennsylvania	8,892	146	559	75
Rhode Island	164	18	43	15
Vermont	2,775	74	139	18
West Virginia	6,459	132	183	30
Wisconsin	9,775	99	391	48
North total	93,469	434	4,767	173
South				
Alabama	13,696	188	247	32
Arkansas	8,866	164	214	56
Florida	4,020	131	215	43
Georgia	13,354	197	445	106
Kentucky	9,148	138	404	81
Louisiana	5,563	143	130	25
Mississippi	11,803	178	279	68
North Carolina	10,641	166	546	100
Oklahoma	7,974	196	264	63
South Carolina	7,236	142	207	44
Tennessee	9,359	146	413	54
Texas	42,440	457	595	133
Virginia	9,625	154	526	94
South total	153,725	728	4,487	272

Table 9.-(continued)

Region/state	Area		Ownerships	
	Acres	SE ^a	Number	SE ^a
- - - - - thousands - - - - -				
Rocky Mountain				
Arizona	1,172	83	74	48
Colorado	4,497	143	32	13
Idaho	1,518	91	26	8
Kansas	2,247	71	94	13
Montana	3,611	136	71	16
Nebraska	1,260	64	41	14
Nevada	252	36	4	1
New Mexico	6,626	192	227	125
North Dakota	419	36	26	21
South Dakota	540	48	17	7
Utah	1,747	95	37	13
Wyoming	1,214	173	87	87
Rocky Mountain total	25,103	379	735	164
Pacific Coast				
Alaska	4,030	210	36	29
California	6,948	174	246	65
Hawaii	723	118	83	21
Oregon	3,590	128	171	47
Washington	2,591	106	169	40
Pacific Coast total	17,881	341	704	96
U.S. total	290,178	989	10,693	375

^a SE = standard error

Note: Data may not sum to totals due to rounding

Table 10.—Estimated area and estimated number of family forest and woodland ownerships (10+ acres) by state/region/nation, 2011-2013

Region/state	Area		Ownerships	
	Acres	SE ^a	Number	SE ^a
- - - - - thousands - - - - -				
North				
Connecticut	609	42	18	2
Delaware	164	14	4	<1
Illinois	3,435	108	76	6
Indiana	3,215	85	85	6
Iowa	2,268	80	48	5
Maine	5,307	144	86	7
Maryland	1,009	58	25	2
Massachusetts	1,007	60	26	2
Michigan	8,430	198	192	13
Minnesota	5,573	114	114	7
Missouri	11,016	196	212	15
New Hampshire	2,164	91	39	4
New Jersey	348	35	11	1
New York	9,274	244	197	14
Ohio	4,951	158	145	11
Pennsylvania	7,612	234	166	13
Rhode Island	100	22	6	2
Vermont	2,521	77	40	3
West Virginia	6,115	154	101	8
Wisconsin	9,011	162	183	11
North total	84,129	592	1,776	36
South				
Alabama	13,225	233	159	15
Arkansas	8,674	181	112	11
Florida	3,568	152	65	9
Georgia	12,553	273	118	12
Kentucky	8,567	195	155	12
Louisiana	5,353	161	78	10
Mississippi	11,431	222	130	14
North Carolina	9,513	268	162	15
Oklahoma	7,630	218	112	12
South Carolina	6,885	170	86	9
Tennessee	8,296	222	145	12
Texas	41,607	535	329	35
Virginia	8,769	218	153	12
South total	146,072	910	1,802	55

Table 10.-(continued)

Region/state	Area		Ownerships	
	Acres	SE ^a	Number	SE ^a
- - - - - thousands - - - - -				
Rocky Mountain				
Arizona	1,074	101	19	4
Colorado	4,497	143	32	13
Idaho	1,481	96	18	4
Kansas	2,115	81	59	6
Montana	3,462	140	29	4
Nebraska	1,193	72	20	3
Nevada	252	36	4	1
New Mexico	6,267	309	48	19
North Dakota	398	40	5	1
South Dakota	518	51	10	3
Utah	1,647	113	22	8
Wyoming	607	613	<1	<1
Rocky Mountain total	23,512	749	265	26
Pacific Coast				
Alaska	2,418	166	2	2
California	6,365	232	87	14
Hawaii	566	96	6	1
Oregon	3,309	146	44	7
Washington	2,184	129	48	7
Pacific Coast total	14,842	359	187	17
U.S. total	268,555	1,367	4,030	72

^a SE = standard error

Note: Data may not sum to totals due to rounding

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This report summarizes the results from the 2011-2013 National Woodland Owner Survey (NWOS) conducted by the U.S. Forest Service, Forest Inventory and Analysis program. The focus of the results reported here is family forest and woodland ownerships with holdings of at least 10 acres. Summaries are based on responses from 8,576 family ownerships with at least 10 acres of forest or woodland across 47 U.S. states. Survey summary tables are available at dx.doi.org/10.2737/NRS-RB-99 and include the 36 states in which the minimum target effective sample size of 100 respondents was obtained plus tables for the nation and four regions (North, South, Rocky Mountain, and Pacific Coast). An additional 11 states (Arizona, Colorado, Hawaii, Idaho, Nebraska, New Mexico, North Dakota, Rhode Island, South Dakota, Utah, and Washington) have sample sizes between 10 and 99 and are included in national and regional summary tables, but state-level survey summary tables are not being published due to small sample sizes. Data for three states (Alaska, Nevada, and Wyoming) are excluded due to the low numbers of respondents ($n < 10$) in each of these states. The survey summary tables provide statistics on general forest ownership patterns, effective sample sizes, and responses to the questions asked on the survey. The 37 survey questions, many with multiple parts, focus on ownership characteristics, land characteristics, reasons for owning land, land ownership history, uses of the forest and woodland, sources of information, concerns, the future of their land, and demographics. For comparison purposes, summary tables from the 2002-2006 iteration of the NWOS are provided along with an additional set of 2011-2013 regional and national summary tables where only states in common with the 2002-2006 iteration are included. In addition, this report includes separate tables with estimated area and estimated number of private, nonindustrial private, and family forest and woodland ownerships by state.

KEY WORDS: landowner survey, private forest, family forest, nonindustrial private forest, United States.

