

# ASSESSING FOREST OWNERSHIP DYNAMICS IN THE UNITED STATES: METHODS AND CHALLENGES

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**Abstract.**—The National Woodland Owner Survey (NWOS) is conducted by the U.S. Forest Service, Forest Inventory & Analysis (FIA) Program as the social complement to its biophysical inventory. The NWOS is aimed at understanding who owns the forests of the United States, why they own it, what they have done with it in the past, and what they plan to do with it in the future. On a recurring basis, self-administered surveys are sent to randomly selected private forest owners from across the U.S. The sample points correspond with plot center of the FIA Phase 2 field plots. For the first time, in 2011, the NWOS began to resample points that were sampled between 2002 and 2006. If the same owner still owned the sample point, they were resurveyed and if there was a new ownership, they were surveyed for the first time. These results will provide the most comprehensive examination of forest ownership dynamics in the U.S. to date. Topics that will be explored include parcellation and changes in forest owners' attitudes, behaviors, and demographics. This information should prove useful to state forestry agencies, policy makers, nongovernmental organizations, forest industry, educators, researchers, forest landowner organizations, and anyone who is interested in understanding forest owners and/or interacting with them.

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## INTRODUCTION

There are 751 million acres of forest land in the United States and 56 percent of this land is owned by 11 million families, individuals, corporations, and other private groups (Butler 2008). The collective decisions of these owners will have profound effects on the future forest resources. If the forestry community is interested in understanding the factors affecting the sustainability of forests and designing effective policies, programs, and services that foster this sustainability, then it is imperative to understand forest ownerships and forest ownership dynamics.

The U.S. Forest Service, Forest Inventory and Analysis (FIA) Program conducts inventories of the biophysical forest resource in order to answer questions related to the composition, extent, health, and trends in this resource. As a complement to this biophysical inventory, FIA conducts the National Woodland Owner Survey to answer the following questions:

- Who owns the forests of the United States?
- Why do they own forests?
- How have they used their forests in the past?
- How do they plan to use their forests in the future?

This information is used by policy analysts, researchers, nongovernmental organizations, forest industry, and others in order to create policies, programs, and services that more effectively and more efficiently aid private forest owners.

The objectives of this paper are to provide some background on the National Woodland Owner Survey, present some of the current challenges, and discuss some things being done to overcome these challenges.

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## BACKGROUND

The National Woodland Owner Survey has been conducted on a periodic basis for many decades. The first national data on private forest ownerships comes from Josephson and McGuire (1958). This simply provided numbers of private forest ownerships and area of private forest ownership by size of forest holdings by region. The next iteration of a national survey was conducted by Birch, Lewis, and Kaiser (1982). Here more detailed information was collected including demographics and methods of land acquisition along with size of forest holdings. The finest resolution was again regions.

Birch (1996c) greatly expanded on the previous efforts by providing state-level summaries (Birch 1996a, 1996b, 1996d) and information on ownership objectives, management practices, size of forest holdings, and other topics. The National Woodland Owner Survey switched from a periodic to an annual basis in 2002 (Butler 2008). The most recently completed cycle, completed between 2002 and 2006, contained many of the same elements as Birch (1996c) and added some additional elements. Like Birch (1996a, 1996b, 1996d), Butler (2008) also provided state-level summaries.

The most current iteration of the National Woodland Owner Survey was initiated in 2011. One major advance is that for the first time, the same points on the ground are being included, i.e., point-to-point remeasurement will be feasible. If the same ownership still owns the ground on which the point is located, then that ownership is resurveyed, otherwise the new ownership is surveyed.

## METHODS

The National Woodland Owner Survey, beginning with Birch (1996c), is coupled with the national FIA sample design. The FIA sample design (Bechtold and Patterson 2005) consists of dividing the United States into hexagons (approximately 6,000 ac/hexagon) and randomly locating a sample point within each

hexagon. These sample points correspond to plot center of the FIA Phase 2 field plots. Twenty to fourteen percent of the sample points in the East and 10 percent of the sample points in the West are visited each year resulting in 5 to 7- and 10-year inventory cycles, respectively. For those sample points that are determined to be forested and privately owned, the landowner is invited to participate in the National Woodland Owner Survey. The ownerships of record are determined through county and municipal property tax records.

The National Woodland Owner Survey is a mail-based survey that follows the procedures outlined by Dillman (2009). Following an introductory postcard, each potential respondent receives a questionnaire, cover letter, and business reply envelope. The next mailing is a reminder/thank you postcard followed by, for those who have not responded, another questionnaire, cover letter, and business reply envelope. For those who still have not responded, a random subset is contacted via telephone in order to facilitate a nonresponse bias assessment. The cooperation rate to the National Woodland Owner Survey between 2002 and 2006 was 51 percent.

## CURRENT CHALLENGES

A primary objective of the National Woodland Owner Survey is to monitor trends in forest ownership over time. Therefore, consistency over time is paramount. Changes are periodically made to the survey and estimation procedures, but only when deemed necessary and when the benefits sufficiently outweigh the costs.

Recent work has shown that there was an error in the underlying estimation algorithm for calculating numbers of owners (Metcalf 2010). While the impact of this error on estimates is minimal, the estimation algorithms are being reworked. Once this is completed, data from the 2002-2006 and the newer, 2011 and future, surveys will be (re)calculated using the adjusted procedures.

A challenge with presenting results from the National Woodland Owner Survey is how to clearly and precisely report different units, i.e., ownerships versus acres. The units can have profound impacts on the interpretation of the results (e.g., Fig. 1). In addition to reporting statistics in terms of ownerships and acres, the latest iteration will, for the first time, allow for estimates of the number of owners—an ownership is a legal entity and can, and often does, consist of more than one owner.

The ability to analyze remeasured data is a large opportunity and a great challenge. How does one know when an ownership has changed? A seemingly simple question that quickly becomes complicated. When a sample point is remeasured, the new and old owners are recorded in the database. If the names and mailing

addresses are the same, it is the same owner. If the names and mailing addresses are completely different, they are different owners. But often, the differences are more subtle (e.g., Bob Smith to Bob and Sue Smith). Therefore, it will be necessary to quantify change on a sliding scale from definitely the same owner to definitely different owners, and thus be able to quantify and analyze the subtle differences.

## NEXT STEPS

Next steps will include continued honing of the National Woodland Owner Survey estimation procedures with special emphasis on quantifying change over time. This will allow unprecedented examination of forest ownership dynamics.

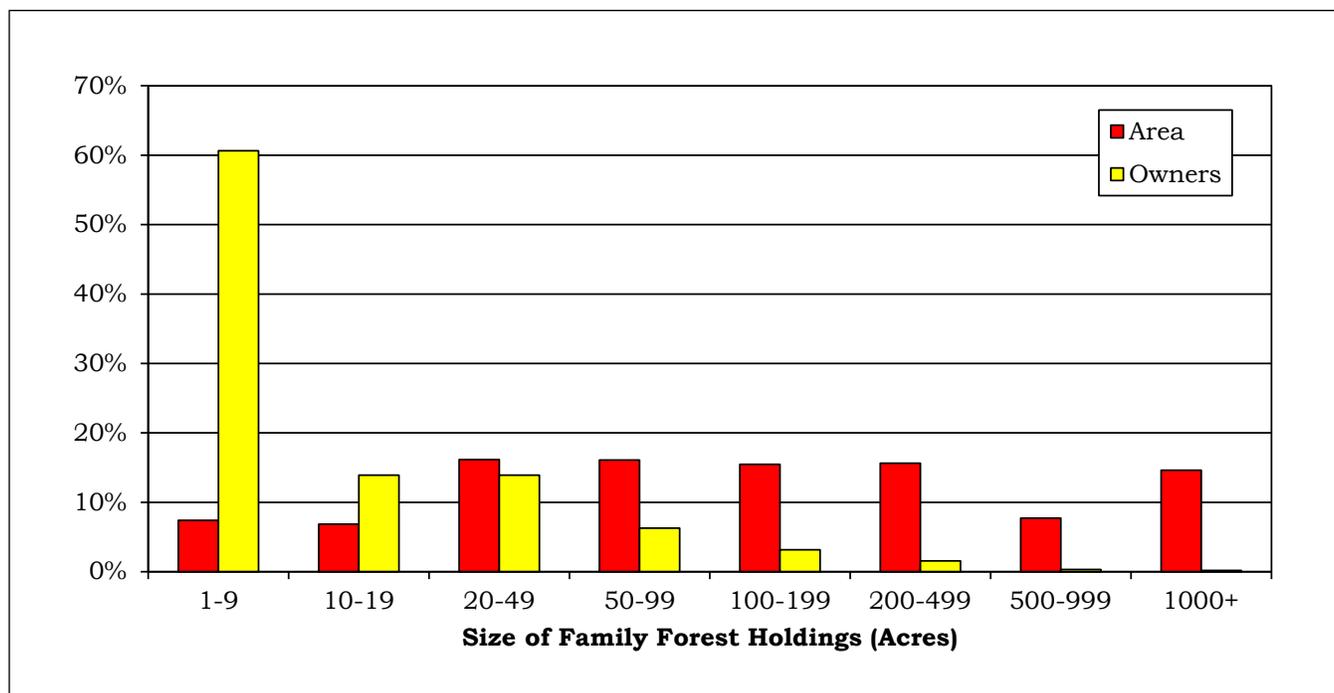


Figure 1.—Percentage of family forest acres and family forest owners by size of forest holdings (Butler 2008).

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