

An Annotated Bibliography of the Literature on Family Forest Owners



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Introduction

Ten million families own 253 million acres of forest in the United States. This number is on the increase, as each year more and more forestland is divided into smaller parcels. Though family forest owners collectively represent a significant player in the forestry sector, a relatively small proportion of them engage in systematic management practices designed to ensure sustainability.

The Sustaining Family Forests Initiative is a collaboration of government, industry, NGOs, certification systems, landowners, and academics organized to gain comprehensive knowledge about family forest owners in the United States—credible, useful information for those who wish to create a climate in which forest owners can easily find the information and services they desire to help them conserve and manage their land.

The following review was prepared with the aim of presenting salient works from both the published and gray literature on family forests. Most of the early research did not deal explicitly with family forests; rather, such ownerships were addressed under the broader heading of nonindustrial private forests (NIPFs). Increasingly, the literature has adopted the term family forests to replace NIPFs.

The literature on family forest owners is structured around four broad themes: (1) Who are family forest owners? (2) What are their motivations for owning forest and how are they currently managing their land? (3) What kind of extension work is being done to help them? and (4) What needs to be done to improve extension and management practices? This review focuses on all four, presenting an array of the literature on the demographics, attitudes, and motivations of family forest owners in the U.S. as well as an overview of their response to policies and incentive programs for improved forest management.

A few general points can be made from this review:

- Many of the studies of forest owners are done at the scale of a state or smaller. It is not clear if the results of these regional-scale studies can be used to make inferences about the national population of family forest owners.
- The number of family forest owners is increasing annually, with greater parcelization of forestlands throughout the US (though there is variance with regard to growth of different parcel sizes regionally)
- The average age of family forest owners is increasing, indicating significant transfer of forestland in the near future
- The values, motivations and objectives for owning forest vary widely, reflecting the huge diversity of family forest owners
- Generally, however, it appears that family forest owners in much of the country share a greater affinity with the general public than they do with professional foresters in terms of their views on environmental issues and their knowledge of forests and forestry
- Most family forest owners rank things like aesthetics, recreation, wildlife viewing, and part of residence as the most important reasons for owning forestland; timber production

is usually a low priority, although many owners surveyed in the various studies reviewed have harvested timber

- Most family forest owners do not have written management plans
- Most have not sought professional advice from a forester or utilized public assistance programs for forest management—owners of larger tracts of land are more likely to seek assistance
- The importance of commercial timber production is positively correlated with acreage of holding, as it is with the likelihood that the owner has used professional forestry advice and/or public assistance programs
- There is a need to mix qualitative and quantitative methods in carrying out research on family forests, especially for those undertakings that aim to analyze the values and motivations such owners
- Many of the papers reviewed make statements about demographic or motivations of forest owners that are not backed up by data
- State and regional studies are not comparable due to differing questions and methods

The following review is annotated selectively, for two reasons. First, while all the papers listed below deal in some way with family forest owner demographics and motivations, some are more focused on these issues than others – some only provide such information for contextual purposes, focusing on other findings on related topics about family forests. Second, many works present broadly similar findings; thus, a single review is presented for the most useful articles.

Finally, an appendix of Forest Service technical documents is provided at the end of this review. These reports were not reviewed in full – many being rather dated and site specific – but they are listed here for further reference.

The Literature

National Findings and General Overview of Family Forest Owners

Bengston, D.N., S.T. Asah, and B.J. Butler. 2011. The diverse values and motivations of family forest owners in the United States: An analysis of an open-ended question in the National Woodland Owner Survey. *Small-scale Forestry*. DOI: 10.1007/s11842-010-9152-9.

This paper describes the system of values and motivations that emerged from analysis of responses to the open-ended question, and compares these findings to a closed-ended, fixed-response question also included in the NWOS. Diverse and multidimensional motives were expressed by respondents. Eight broad categories and 37 sub-categories of motives and values emerged from analysis of the open-ended question.

Best, C. and L.A. Wayburn. 2001. *America's Private Forests: Status and Stewardship*. Island Press: Washington, D.C.

An introductory chapter entitled “Who owns the forest and why?” reports demographic data drawn from Birch (1996). The chapter also reviews much of the literature and provides a good overview of NIPF attitudes and management objectives.

Birch, T.W. 1996. *Private Forest-land Owners of the United States, 1994*. USDA Forest Service Northeast Experiment Station Resource Bulletin NE-134. USDA Forest Service: Radnor, PA.

The Birch report is perhaps still the authoritative study on “who they are.” His numbers are reproduced throughout most of the studies reviewed here. Before presenting syntheses of regional numbers in tables (forming the bulk of the document), Birch draws some broad conclusions in the introduction of the report. The diversity of forestland owners is emphasized – their values and motivations for owning forest vary widely. However, generally, Birch states that most own forest because it is “part of the residence” or for “recreation and aesthetics.” Conversely, relatively few (in number) cite timber production as a main aim, though those that do account for a disproportionate percentage of NIPF lands. Birch also states that most smallholders do not have management plans.

Bliss, J.C. and A.J. Martin. 2003. Nonindustrial Private Forests. In: *Introduction to Forest Ecosystem Science and Management* (3rd ed.). R. Young and R. Giese (eds.). Hoboken, NJ: John Wiley & Sons, Inc. p. 221-240.

Bliss, J.C. and E.C. Kelly. 2008. Comparative Advantages of Small-Scale Forestry Among Emerging Forest Tenures. *Small-scale Forestry* 7:95–104.

Forestland tenure institutions and patterns are in a period of rapid change in the USA. Increasing numbers of private individuals and families are purchasing small rural tracts and some communities are developing innovative means to gain control over nearby forestlands in order to protect these lands from commercial real estate development. Within this context of rapid ownership change, small-scale forest owners including families and communities find themselves at a competitive disadvantage, relative to large corporate owners, in wood commodity markets. This paper considers how small-scale forest tenures, relative to large corporate tenures, may be advantageous to society with regard to selected ecological, social, and economic factors.

Bliss, J.C., E.C. Kelly, J. Abrams, C. Bailey, and J. Dyer. 2010. Disintegration of the U. S. Industrial Forest Estate: Dynamics, Trajectories, and Questions. *Small-scale Forestry* 9: 53-66.

While much former industrial timberland remains in industrial-style timber management, some has been subdivided for 'highest and best use,' and conservation buyers have assumed control of a few large blocks. This paper outlines the dynamics of forest ownership restructuring, posits alternative future scenarios for small-scale forestry, and points to potentially useful future research.

Brunson, M.W., D.T. Yarrow, S.D. Roberts, D.C. Guynn, Jr. and M.R. Kuhns. 1996. Nonindustrial Private Forest Owners and Ecosystem Management: Can they Work Together? *Journal of Forestry* 94(6): 14-21.

The authors surveyed NIPF owners in 11 states, assessing their views on ecosystem management. They note at the outset that ownership size and owner objectives vary widely across the US. In Indiana and the Southeast, for example, most owners held smaller parcels of land in comparison to those in the West. More owners in the Midwest and Southeast were actively managing for timber, while more in the West raised livestock on wooded lands. Despite such diversity, the survey found surprising similarities in owner views on ecosystem management. Broadly, most reacted positively to the concept, suggesting that concerns about property rights, while significant, are secondary to the need for good forest stewardship and the protection of environmental integrity at a landscape level.

Butler, B.J. 2005. The timber harvesting behavior of family forest owners. PhD dissertation. Oregon State University, Oregon State University.

Butler, B.J., E.C. Leatherberry, C. Best, M.A. Kilgore, R.N. Sampson, and K. Larson. 2004. America's family forest owners. *Journal of Forestry* 102(7): 4-14.

The authors present the results of the 2002 and 2003 National Woodland Owner Survey (NWOS). The report summarizes the characteristics of 6,352 U.S. private forest landowners (a 46% response rate), their reasons for owning land, and future land-use decisions. There are an estimated 10.3 million family forest owners in the U.S. owning 262 million acres. The most common reasons for owning land were enjoyment of beauty

and scenery; privacy; protection of nature and biological diversity; or to pass it on to heirs. Only 9% of owners indicated that timber production was an important reason for owning land. Only 3% of the owners had a written management plan while only 16% have ever sought management advice. This report provides the most recent and comprehensive summary of regional demographic information for family forest owners in the United States and their motivations for owning land.

Butler, B.J., M. Tyrrell, G. Feinberg, S. VanManen, L. Wiseman, and S. Wallinger. 2007. Understanding and reaching family forest owners: lessons from social marketing research. *Journal of Forestry* 105(7): 348-357.

Social marketing—the use of commercial marketing techniques to effect positive social change—is a promising means by which to develop more effective and efficient outreach, policies, and services for family forest owners. A hierarchical, multivariate analysis based on landowners' attitudes reveals four groups of owners to whom programs can be tailored: woodland retreat, working the land, supplemental income, and ready to sell. A prime prospect analysis segmenting landowners according to their level of engagement and interest in land management can be used to improve the efficiency of program implementation. Landowners showing low levels of engagement but high levels of interest are of special interest because they are likely to be receptive to a social marketing message and therefore should be a priority target for any such efforts. Using the demographic profile of the average family forest owner, newspapers and television were identified as important means for mass communication.

Cleaves, D.A. and M. Bennett. 1994. Holding Size and Behavior of Nonindustrial Private Landowners: A Cautious Second Look. In: Newman, D.H. and M.E. Aronow (eds.). *Forest Economics on the Edge: Proceedings of the 24th Annual Southern Forest Economics Workshop*, Athens, GA: University of Georgia Daniel B. Warnell School of Forest Resources: 196-209.

Daniels, S.E., M.A. Kilgore, M.G. Jacobson, J.L. Greene, J.S. Thomas. 2010. Examining the compatibility between forestry incentive programs in the US and the practice of sustainable forest management. *Forests* 2010(1): 49-64.

This research explores the intersection between the various federal and state forestry incentive programs and the adoption of sustainable forestry practices on nonindustrial private forest (NIPF) lands in the US. The qualitative research reported here draws upon a series of eight focus groups of NIPF landowners (two each in Minnesota, Oregon, Pennsylvania, and South Carolina). Despite minor regional variations, the dominant theme that emerged is that these landowners' purchase and management decisions are motivated by the “trilogy” of forest continuity, benefit to the owner, and doing the “right thing.” This trilogy is quite consistent with notions of sustainable forestry, but somewhat more at odds with the objectives of many financial incentive programs, as well as specific tactics such as third-party certification. A series of policy recommendations that emerge from this research is presented.

Davis, M.L.E. and J.M. Fly. 2010. Do You Hear What I Hear: Better Understanding How Forest Management Is Conceptualized and Practiced by Private Forest Landowners. *Journal of Forestry* 108(7): 321-328(8).

The discrepancy between the amount of privately owned forestland and the amount of well-managed privately owned forestland has been attributed to a variety of factors including the time, money, and knowledge required to manage private forestland and the degree to which forest management services offered by natural resource professionals reflect private forest landowner (PFL) interests. These views assume the value of forest management is, or can be, mutually understood but may have ignored mutual understanding of the concept itself. This Tennessee survey compares how PFLs conceptualize forest management with traditional definitions and finds most landowners surveyed believe they manage their forestland. Relationships were identified between how forest management is conceptualized, whether PFLs believe they manage their forestland (or not), and forest management behavior. Results suggest incorporating landowner forest management conceptualizations and beliefs may more effectively engage PFLs in forest management than focusing on the value of forest management alone.

Demarsh, P., P. Sanders, and T. Beckley. 2004. Exploring the contribution of family forestry to the social health and sustainability of rural communities. Pages 21-26 *Proceedings of the Human Dimensions of Family, Farm, and Community Forestry International Symposium*. Washington State University.

Downing, A.K., and J.C. Finley. 2005. Private forest landowners: What they want in an educational program. *Journal of Extension* [On-line], 43(1) Article 1RIB4. Available at: <http://www.joe.org/joe/2005february/rb4.shtml>

Using a mail-in survey, the authors obtained basic socio-demographic data for 180 forest landowners from Central and Northeastern Pennsylvania and correlated these data with landowner's educational needs and preferences. The response rate was about 43% and the sample represents those most likely to be interested in natural resource issues, excluding "laggards," and emphasizes "early adopters." The demographic profile of survey respondents mirrored the typical forest landowner in Pennsylvania described by Birch and Dennis (1980) and the average NIPF owner in the United States described by Birch (1996)--87% male, average age of 57, moderate to high levels of education and income. Some interesting findings include forest landowner preference for winter and spring for receiving educational information, and that importance of seasonality was significantly related to occupation; laborers and technicians placed more importance on time of year than professionals and retirees. Over 86% of respondents believe learning natural resource specific information was important, which was correlated with educational level. Educational level and gender were important variables in determining interest in environmental issues. Forest landowners placed more importance on networking with natural resource professionals than networking with fellow landowners.

Egan, A. and S. Jones. 1993. Do Landowner Practices Reflect Beliefs? Implications of an Extension-Research Partnership. *Journal of Forestry* (October): 39-45.

Interviews and fieldwork were undertaken by the authors to explore the link between landowner management practices and stated views about forest stewardship. Egan and Jones show that information taken from surveys alone should not be seen as reliable indicators of how lands are managed. One notable finding was the fact that fewer than 50% of those who said they had harvested timber on their land “within the last 10 years” actually had.

-----, 1995. The Reliability of Landowner Survey Responses to Questions on Forest Ownership and Harvesting. *Northern Journal of Applied Forestry* 12(4): 184-186.

Further argues the points raised in their 1993 article, calling for ground-truthing of survey data.

Jacobson, M.G., T.J. Straka, J.L. Greene, M.A. Kilgore, S.E. Daniels. 2009. Financial Incentive Programs' influence in promoting sustainable forestry in the northern region. *Northern Journal of Applied Forestry* 26(2): 61-67.

Selected forestry officials in each of the 20 northern states were surveyed concerning their opinions on the public and private financial incentive programs available to nonindustrial private forest owners in their state. The officials were asked to name and describe the programs and to assess forest owners' awareness of each one, its appeal among the owners aware of it, its effectiveness in encouraging sustainable forestry and enabling owners to meet their objectives, and the percentage of program practices that remain in place and enrolled acres that remain in forest over time. They also were asked to suggest ways to improve the programs. The Forest Stewardship, Forest Land Enhancement, and Forest Legacy Programs were among the top-rated federal programs, scoring well for all measures and attributes. Programs sponsored by states and private organizations tended to be more narrowly targeted than federal programs and scored well for specific attributes. The forestry officials' suggestions for program improvement centered largely on program visibility and availability, increasing and ensuring long-term consistency in program funding, and simplifying the application and approval processes.

Janota, J.J. and S. R. Broussard. 2008. Examining private forest policy preferences. *Forest Policy and Economics* 10(3): 89-97.

Policy tools are employed to effect changes in the behaviors of citizens. Policy tools, such as incentives and regulation, act as the medium through which the target population may comply with policy objectives; however, policymakers must choose carefully which policy tools to adopt. Given the predominance of privately-owned forestland in Indiana and the United States, this research explores forest policy tool preferences of family forest owners in southern Indiana. The research is based on data from 309 respondents to a mail survey of landowners in 32 southern Indiana counties. The research objectives were 1) to determine what factors influence policy preferences among family forest owners and 2) to

make recommendations to policymakers regarding what policy approaches are best suited to differing landowner types. Regression analyses identify landowner attitudes as significant predictors of policy preferences and also identified both absentee and riparian forest owners as more supportive of private forest policies. Based upon the results, recommendations to private forest policymakers are made.

Jones, S.B., A.E. Luloff and J.C. Finley. 1995. Another Look at NIPFs: Facing Our “Myths.” *Journal of Forestry* 93(9): 41-44.

The authors start with the premise that “most NIPFs are not well managed.” The paper looks at NIPF owners in Pennsylvania, where they say only 6% have a written management plan, and less than 20% consult a forester before harvesting, resulting in widespread highgrading. Citing forester myths that NIPF owners are “land-connected, anti-environmentalist, timber-oriented, and intensely in favor of private property rights,” the authors present data that suggest that landowners are in fact much more diverse. The paper is primarily geared towards foresters, and informing them of their “myths,” but presents some secondary research from Luloff et al. (1993) (see Appendix).

Kilgore, M.A., J.L. Greene, M.G. Jacobson, T.J. Straka, and S.E. Daniels. 2007. The Influence of Financial Incentive Programs in Promoting Sustainable Forestry on the Nation’s Family Forests. *Journal of Forestry* 105(4):184-191(8).

Financial incentive programs were evaluated to assess their contribution to promoting sustainable forestry practices on the nation’s family forests. The evaluation consisted of an extensive review of the literature on financial incentive programs, a mail survey of the lead administrator of financial incentive programs in each state forestry agency, and focus groups with family forest owners in four regions of the country. The study found that financial incentive programs have limited influence on forest owners’ decisions regarding the management and use of their land. Family forest owners viewed one-on-one access to a forester or other natural resource professional to “walk the land” with them and discuss their management alternatives as the most important type of assistance that can be provided. Recommendations for increasing the effectiveness of financial incentive programs in promoting sustainable forestry are discussed.

Kittredge, D.B. 2004. Extension/outreach implications for America’s Family Forest owners. *Journal of Forestry* 102(7): 15-18.

The increasing number of family forest owners presents a challenge to effect outreach. Family woodland in some parts of the country represents the dominant ownership type. Sustained provision of a host of greater social goods and services depends on functional forest landscapes, yet fragmentation and parcelization of family woodlands pose a threat. Segmentation of the family owner audience into different types, and targeting of outreach toward two specific decisionmaking junctures, may improve our ability to reach this important audience.

Kittredge, D.B. 2005. The cooperation of private forest owners on scales larger than one individual property: international examples and potential application in the United States. *Forest Policy and Economics* 7: 671-688.

A relatively small number of non-industrial private forest (NIPF) owners in the United States has recently expressed interest in cooperating with one another at scales broader than their individual properties. There are many good reasons to do so, which would enhance their individual ownership benefits, as well as the suite of greater public benefits that accrue from a privately owned forest landscape. An Internet and literature review of private forest owner cooperation in temperate nations with developed economies resulted in a broad array of evidence of longstanding and successful activities from 19 countries. Forms of cooperation and resulting activities vary, ranging from low levels of commitment for purposes of information/education, to more structured participation for financial and marketing purposes. Likewise, the origins of cooperation differ from country to country, though common elements emerge (e.g. the role of government, reaction to a stimulus or threat). This review and analysis of private forest owner cooperation provides examples of tactics and successful results that contribute towards the development of potential cooperation of private forest owners in places where such activity is contemplated.

Koontz, T.M. 2001. Money Talks—But to Whom? Financial Versus Nonmonetary Motivations in Land Use Decisions. *Society & Natural Resources* 14: 51-65.

The aim of this paper is show how different landowners make land use decisions. Using interview data, spatial analysis and public records, the author submits that there are substantive differences between the land use decisions of those motivated by financial concerns and those motivated by nonmonetary benefits. According to the paper, these differences are further influenced by such factors as age, education, wealth, and primacy of the land as a source of income.

Langer, J. 2008. Family Forest Owners: Insights into Land-Related Stewardship, Values, and Intentions: Report on focus group findings prepared for The Sustaining Family Forests Initiative. New York: GfK Roper Public Affairs and Media 69 p. available at www.sustainingfamilyforest.org

Little, J.B. 2000. Family Forests: Loving Care, Heavy Burdens. *American Forests*, Winter 2000.

This article, while providing little hard quantitative data, provides a broad overview of the pressures many family forests are currently facing. Little focuses on high taxes and public disapproval of logging as two major obstacles, which are shaping family forest owner actions. With anecdotes, the author shows that many are sticking with it through financial burdens out of a heart-felt belief that forests should be sustained and land kept “in the family,” but she also notes that many are selling off their land under pressure. With regard to public pressure to open their forests to

outside scrutiny, the author states that many feel over-regulated, asking why they are not simply trusted to manage their own land sustainably.

Majumdar, I., D. Laband, L. Teeter, and B.J. Butler. 2009. Motivations and Land-Use Intentions of Nonindustrial Private Forest Landowners: Comparing Inheritors to Noninheritors. *Forest Science* 55(5): 423-432.

The documented importance of intergenerational human capital transfers in agriculture generally gives us reason to suspect that such transfers may be important in a forestry context and that there may be important implied differences between first-generation woodland owners and multigenerational woodland owners with respect to their motivations and future intentions. In turn, knowledge of the motivations and intentions of nonindustrial private landowners may be extremely important because such knowledge may be vital in terms of our ability to predict future timber supply and the availability of nontimber amenities. Also, the effectiveness of public policies targeting nonindustrial private forest landowners may depend critically on their motivations and intentions. In this article, we analyzed 8,373 responses to the National Woodland Owner Survey to compare characteristics, motivations, and intentions of multigenerational forest landowners against those of single-generation forest landowners. In brief, we found there were significant differences in their motivations and management behavior; inheritors are more active forest managers and manage for both timber and nontimber forest products more aggressively than noninheritors who typically value esthetics, privacy, protection of biodiversity, and nonhunting recreation.

Melfi, F.M., T.J. Straka, J.L. Baumann and A.P. Marsinko. 1995. An Analysis of Nonindustrial Private Forest Land Owners' Attitudes Towards the Forest Stewardship Program. In: Caulfield, J.P. and S.H. Bullard, eds. *A World of Forestry: Proceedings of the 25th Annual Southern Forest Economics Workshop*. Mississippi State, MS: Mississippi State University, Department of Forestry: 90-105.

Munsell, J.F., R.H. Germain, I.A. Munn. 2008. A Tale of Two Forests: Case Study Comparisons of Sustained Yield Management on Mississippi and New York Nonindustrial Private Forestland. *Journal of Forestry* 106(8): 431-439.

Nonindustrial private forestland (NIPF) is increasingly important in the United States from a timber perspective. Harvested volumes have risen steadily since the 1970s and are not expected to decelerate. Sustaining the potential to meet future demand depends in large part on the management of stand density and changes in stand diameter when thinning, the quality of residual stocking, and regeneration practices after a final harvest. Previous research shows that these aspects vary on NIPF, but little is known about how they differ across forest management contexts and owner types. Field surveys on recently harvested loblolly plantations in Mississippi and northern hardwood stands in New York were performed and interviews with the owners of these forests were conducted. Data were used to assess whether density and diameter management, residual stocking quality, and regeneration practices more

strongly relate to the state where the harvesting occurred or the characteristics of the owner. Results suggest that outcomes differ more based on context than owner. The implications for sustaining high-quality timber yields from NIPF are also discussed.

Nadeau, E. G. July 2003. New Forest Landowner Profile Sparks Resurgence in Local Organizations. *National Woodlands Magazine*.

Reuben, A., M. Tyrrell. 2010. Tax policies and family forest owners: A summary of a forum exploring the impacts of national, state, and local tax policies on family forest owners and the opportunities for enhancing forest conservation through policy improvements. YFF Review Vol. 12, No. 2. New Haven, Connecticut: Yale School of Forestry & Environmental Studies.

A summary of a forum exploring the impacts of national, state, and local tax policies on family forest owners and the opportunities for enhancing forest conservation through policy improvements.

Richter, K. J. 2009. Reaching out to family forest owners: An examination of information behaviors by attitudinal type. Proceedings: International Conference on Transfer of Forest Science Knowledge and Technology.

Rickenbach, M.G. 2002. Forest Certification of Small Ownerships: Some Practical Challenges. *Journal of Forestry* 100(6): 43-46.

This paper considers challenges to certifying NIPFs. Rickenbach states that since most NIPF owners do not have management plans, and since many do not consult foresters, it will be hard to certify vast acreages of NIPF lands. Focusing on such bottlenecks, Rickenbach also states that landowners are rarely willing to make substantial investments in management systems without assistance.

Sample, V.A., C. Mater, and B. Butler. 2005. The New Generation of Private Forest Landowners: Brace for Change. *The Pinchot Letter* 10(2): 1-4.

The Pinchot Institute for Conservation and the USDA Forest Service conducted 300 telephone interviews with the children of current private forest owners in 25 states to determine if they were interested in future management of their family's land and what they saw as the benefits of land ownership. Most respondents wanted to inherit their family's forest but less than 50% want to be involved in the current management. The reasons for valuing the forest differed by gender, age, and geographic region. They saw taxes, maintenance costs and time as the major barriers to management. This report does not provide any information to construct a demographic profile of future NIPF owners. It also does not summarize results but only paints a broad portrayal of future implications of the intergenerational transfer of family forestland.

Sampson, R. Neil and L.A. DeCoster. 2001. *Sustaining Working Forests in the Peopled Woods – Improving Programs and Strategies for Communicating Sustainable Forestry Information to Non-Industrial Private Forest Landowners.*

Sampson, R.N. and L.A. DeCoster. 1997. *Public Programs for Private Forestry: A Reader on Programs and Options.* American Forests: Washington, D.C.

This reader presents a chapter on NIPFs, giving a broad overview of such ownerships drawing quantitative data from Birch (1996) – such ownerships are increasing over time, jumping by over 2.75 million owners between 1978 and 1994. NIPFs are increasingly small, with 59% of the NIPFs under 10 acres. Still, 96% of the total NIPF land is owned by only 40% of the owners. Sampson and DeCoster state that most NIPF owners' attitudes about environmental issues and forest management are more akin to the general public than professional foresters – that is, unlike forester concerns about timber supply, NIPF owners are more interested in forest products such as wildlife habitat, recreation and aesthetics. The authors assert that if sustainable forestry is to be extended to this vast ownership, NIPF owners will have to be shown that timber management can support these objectives.

Sustaining Family Forests Initiative (SFFI). 2010. TELE: tools for engaging landowners effectively.

Vermont Forest Resource Advisory Council. 1997. *Forest Landowner Survey.* Vermont Department of Forests Parks, and Recreation, Agency of Natural Resources.

Washburn, M.P., S.B. Jones and L.A. Nielsen. 1998. *Nonindustrial Private Forest Landowners: Building the Business Case for Sustainable Forestry.* A Case Study from The Business of Sustainable Forestry. Sustainable Forestry Working Group.

Much of the broad demographic data presented herein is cited from Birch (1996). Collectively NIPFs account for 58% of the US commercial forest estate and supply 49% of the timber. Generally, new owners of forestland are younger, better educated, and wealthier than past forest owners; at the same time, a greater number are now retired. There seems to be a growing number (40% is the number presented here) who cite recreation and/or hunting as the primary reason for holding land, not timber management.

Washburn et al. present two cases in this document that are of relevance to family forests. They profile two ownerships (one 171 acres, the other 639) and discuss their motivations and their management. Both owners (a brother and sister, and a husband and wife) cite the desire to keep land in forest and to hand down the land to the next generation as the primary drivers for owning forest. Aesthetic beauty and “sanity” are also important motivating factors. Both actively manage for timber, making a fair profit presently. The brother and sister do not have a management plan, but they consult a professional forester for advice. The husband and wife (with a larger holding) have an estate plan and a management plan, and offer their forest as an

environmental education center for surrounding communities. As other studies make clear, the family forests owners profiled here, though having some similarities (such as the need to balance the tension between “money and meaning”), cannot be wrapped up and described neatly. They represent a huge diversity of interests, have owned their forest for varying lengths of time, and are motivated to use their lands in different ways with differing levels of outside input or support.

Zhang, Y., X. Liao, B.J. Butler. 2009. The increasing importance of small-scale forestry: evidence from family forest ownership patterns in the United States. *Small-scale Forestry* 8:1–14.

The state-level distribution of the size of family forest holdings in the contiguous United States was examined using data collected by the USDA Forest Service in 1993 and 2003. Regressions models were used to analyze the factors influencing the mean size and structural variation among states and between the two periods. Population density, percent of the population at least 65 years of age, percent of the population residing in urban areas, per capita income, income inequality, and per capita private forestland were found to be significantly correlated with the structure of landholding size. This paper suggests that the number and proportion of small-scale family forest owners in the United States are both increasing due to the increasing importance of non-timber amenities to forest landowners.

Regional Findings: South

American Forest Foundation. 2010. Southern woodland owners & conservation agreements: What they think and what to say. Washington, DC: American Forest Foundation 12 p.

Arano, K. G., I.A. Munn, J.E. Gunter, S.H. Bullard, and M.L. Doolittle. 2004. Comparison between regenerators and non-regenerators in Mississippi: A discriminant analysis. *Southern Journal of Applied Forestry* 28(4): 189-195.

Arano et al. examined landowner reforestation behavior relative to ownership size, socio-demographic characteristics, awareness of governmental financial incentive programs, and participation in educational programs. A telephone survey of 829 NIPF owners in Mississippi who recently harvested timber and owned greater than 20 acres of uncultivated land was conducted by the Social Science Research Center at Mississippi State University. Results reported provide demographic information according to regeneration behavior. Economic investment, desire to keep land in timber production, and fulfilling their role as environmental stewards were cited by respondents as important reasons why they participate in reforestation activities. Landowners who reforested tended to be younger, white, more likely to live in the city, and have higher levels of income and educational attainment. The belief that the land would naturally regenerate, the high cost of reforestation, and lack of information were the main reasons why non-regenerators behaved as they did.

While this study provides information for a specific subset of NIPF, it provides important demographic information related to reforestation behavior and insight into the reasons why these landowners avoid/participate in reforestation activities.

Arano, K.G., and I.A. Munn. 2004. Non-industrial private forest landowners' forest management activities and expenditures in Mississippi, 1998-2000 data. *Forest and Wildlife Research Center Research Bulletin FO 249*: 13 pp.

The Social Science Research Center at Mississippi State University conducted a three-year mail-in survey of NIPF owners' annual forest management activities and expenditures from 1998-2000. A 35% return rate resulted in 1605 usable surveys from those who owned more than 20 acres of uncultivated land. As the authors point out, the distribution of respondents differed significantly from the state population; the 20-49 acre size class was underrepresented and the 100-500-acre size class was overrepresented. According to the authors this did not bias survey results, because regression analysis shows that expenditures did not vary by ownership size. Pine plantations were the largest forest type owned by these landowners. Approximately 16% of respondents conducted some type of silvicultural activity on a total of about 9% of the land area. Mechanical and chemical site preparation and planting were the most common silvicultural treatments. A total of 637 acres was harvested annually. Un-even aged harvest constituted the smallest proportion (22%) compared to final, clear-cut, and intermediate. Silvicultural expenses and forestry consultant fees represented investment in forestland for timber production and constituted 43% of total average annual expenditures. While there is limited information on NIPF owner demographics, annual expenditures reflect landowner behavior, ranking of forestry activities, and level of investment.

Bliss, J.C., Sisock, M.L. and T.W. Birch. 1998. Ownership Matters: Forestland Concentration in Rural Alabama. *Society & Natural Resources* 11: 401-410.

This paper focuses on the link between secure tenure and “well-being.” Concentrating on Alabama, where NIPFs make up 62% of forestland owners, the authors assert that increased security of tenure makes for more “well-being.” Aside from the important observation that Alabama is bucking the broader trend of parcelization, and that there is greater consolidation of lands under larger and larger landholders in the state, the paper presents little on the demographics of family forests and/or their motivations.

Bliss, J.C., S.K. Nepal, R.T. Brooks, Jr. and M.D. Larsen. 1997. In the Mainstream: Environmental Attitudes of Mid-south NIPF Owners. *Southern Journal of Applied Forestry* 21(1): 37-42.

Using data from their 1994 research (below), the authors again present their findings that NIPF owner attitudes on a range of forest-related topics – from government regulations on timber harvests to private property rights and economic development – do not differ substantially from those of the general public. Significantly, most

NIPF owners feel that environmental protection measures are more important than private property rights, and that timber management should be heavily regulated.

-----, 1994. Forestry Community or Granfalloon? *Journal of Forestry* 92(9): 6-10.

The authors conducted a 50-question telephone survey of 987 households in the mid-South Tennessee Valley region, about 25% of which own forest (mostly <100 acres). The aim of the study was to gauge NIPF owners' view of forests and forestry versus the general public's view. The study concludes that NIPF owner opinions of forestry mirror that of the general public. In particular, many NIPF owners have a misperception of the environmental effects of timber harvesting, due in part to a lack of knowledge about forests and their management. Thus the idea of a "forestry community" with shared values and opinions on forests is a granfalloon, "a group of people erroneously believed to hold much in common."

Conway, M.C., G.S. Amacher, J. Sullivan, and D. Wear. 2003. Decisions nonindustrial forest landowners make: an empirical examination. *Journal of Forest Economics* 9(3): 181-203.

This study estimates a model to explain landowner behavior beyond the traditional activities of harvesting and reforestation to include bequest motives, debt and non-market activities. Conway et al. surveyed landowners of more than five acres of forested land within five counties of the northern piedmont region of central Virginia and had a 38% response rate resulting in 566 usable surveys. The study provides basic socio-demographic information on family forest owners in this region.

Gan, J., S.H. Kolison Jr., and N.O. Tackie. 2003. African-American forestland owners in Alabama's black belt. *Journal of Forestry* 101(3): 38-43.

Using a snowball survey approach, Gan et al. compiled information on a total of 171 African-American forest owners in the Black Belt region of Alabama via in-person interviews or mail-in surveys. The study provides demographic characteristics and forestland attributes for this specific subset of forest owners. These characteristics and attributes are compared to Alabama NIPF owners in general. African-American forestland owners had higher income and education level than others in the study area and paralleled other NIPF owners in Alabama. About 28% of respondents cited timber production as their primary management objective yet their land was less intensively managed compared to the broader group of NIPF owners in Alabama. Finally, demographics were correlated with forestland attributes and management behavior.

Gan, J. and S.H. Kollison, Jr. 1999. Minority Forestland Owners in Southeastern Alabama. *Southern Journal of Applied Forestry* 23(3): 175-178.

The authors look specifically at minority NIPF owners in two counties in Alabama. The mean size of forest was 113 acres. A higher percentage of such minority owners than the national average cited timber management and wildlife for hunting as the top management objectives. Over 65% were found to have thinned or harvested on their forestland. A majority of those interviewed stated that the forest did not

contribute significantly to their income, and the authors conclude that lack of capital and lack of knowledge about forest management and marketing characterize minority NIPF owners.

Hodge, S.S. 1996. Challenges for Ecosystem Management With Virginia NIPF Owners. In: Baughman, M.J., ed. *Proceedings: Symposium on Nonindustrial Private Forests: Learning from the Past, Prospects for the Future*. St. Paul, MN: University of Minnesota, Minnesota Extension Service, Extension Special Programs: 426–433.

The author analyzed 531 useable responses to a mail survey of Virginia NIPF owners. She found that 80% owned less than 250 acres and 50% owned less than 100 acres, with median parcel size being 90 acres. 50% of the respondents were aged 60 or older. As elsewhere, NIPF owners in the study ranked “preserving nature,” “maintaining scenic beauty” and “viewing wildlife” as the top reasons for owning forest. 46% of the respondents had not sought professional forestry advice, and among those who did, the author found them both to have larger parcels and to have a higher level knowledge about forests and forestry.

Jacobson, Michael G. 1998. Developing Extension Programs for Private Forest Land Owners in the Southeast: Are We Putting the Cart Before the Horse? Paper presented at the Third IUFRO Extension Working Party Symposium: “*Extension Forestry: Bridging the Gap Between Research and Application*,” July 19-24, 1998, Blacksburg, Virginia, USA.

Jacobson surveyed 3,125 NIPF owners in Florida. Of the 1,017 that responded, a majority (64%) do not live on the forest they own, meaning they do not manage on a day-to-day basis. Bucking the national trend, most of the respondents (70%) acquired their land through purchase, rather than inheritance. The average size of the landholdings was 235 acres, though the relatively short ownership tenure suggests a parcelization of forest in Florida. The author submits that such absentee owners of small acreage forests are more likely to hold land for aesthetic beauty, wildlife habitat and recreation rather than timber. Jacobson found that 43% used financial assistance in the form of cost-share programs, only 25% used reforestation tax credits, and 68% used technical assistance from county foresters.

Jacobson, M., E. Jones and F. Cabbage. 1996. Landowner Attitudes Toward Landscape-Level Management. In: Baughman, M.J., ed. *Proceedings: Symposium on Nonindustrial Private Forests: Learning from the Past, Prospects for the Future*. St. Paul, MN: University of Minnesota, Minnesota Extension Service, Extension Special Programs: 417–425.

This article highlights the need to collect information on NIPF owners before trying to initiate conservation efforts that require their support. Their survey of NIPFs in South Carolina found that protecting commodity values is very important, that compensation for conservation easements might be very high, and that of the landowners surveyed there is little eagerness to divest their land or to allow outside

intervention. The authors do not correlate these views outright with willingness to participate in landscape-level management however.

Jennings, B.M., and D.W. McGill. 2005. Evaluating the effectiveness of the forest stewardship program in West Virginia: Ten-year assessment. *Northern Journal of Applied Forestry* 22(4): 236-242.

A mail-back survey was conducted to assess the implementation rate of forest management practices in West Virginia recommended by forest stewardship plans. A total of 1672 surveys were returned (response rate of 63%) representing about 61% of the total acres enrolled in the West Virginia Forest Stewardship Program (WVFSP). Jennings and McGill focused on how factors related to private forest owner satisfaction with the WVFSP and motivation behind enrollment affect implementation of prescribed forest management practices. Demographic traits, number of acres and management objectives are also presented. For this group of more active landowners, timber production and wildlife habitat creation were the most important objectives. Stand improvement, wildlife habitat improvement, recreation and soil improvement were the most common types of forestry practices implemented. Implementation rates were higher for forest owners participating in other forest landowner assistance programs.

Joshi, S., K.G. Arano. 2009. Determinants of private forest management decisions: A study on West Virginia NIPF landowners. *Forest Policy and Economics* 11(2): 118-125.

A survey was carried out in 2005 to the nonindustrial private forest landowners of West Virginia to examine the factors affecting their forest management decisions. The study looked at four categories of decisions related to forest management: timber harvest, silvicultural activities (i.e., tree planting, herbicide application, fertilization, thinning, grapevine control, and timber stand improvement), property management activities (i.e., road construction, road maintenance, surveying/boundary maintenance, and access control), and wildlife habitat management and recreation improvement activities. The results showed that landowner, ownership, and management characteristics of NIPF landowners are associated with their forest management decisions. Specifically, age, education, profession, income, ownership size, period of forestland acquisition, distance of the forestland to the place of residence, whether the forestland was purchased or acquired through inheritance or as a gift, primary objective of forestland ownership, and presence of a written forest management plan were found to be significant determinants for at least one of the categories of forest management activities.

Kaetzel, B.R., D.G. Hodges, D. Houston, J.M. Fly. 2009. Predicting the Probability of Landowner Participation in Conservation Assistance Programs: A Case Study of the Northern Cumberland Plateau of Tennessee. *Southern Journal of Applied Forestry* 33(1): 5-8.

Financial incentive programs offer one means of encouraging landowners to manage forests in the face of increasing development pressures. Using data collected in a 2005 survey by the University of Tennessee's Human Dimensions Lab of 1,462 woodland landowners on the Tennessee Northern Cumberland Plateau (Cumberland, Fentress, Morgan, and Scott counties), models were developed to predict landowner enrollment in such programs. The probability of landowner enrollment was calculated using logistic regression. Results reveal that a significant positive relationship exists between amount of land owned and conservation aid program enrollment. Also, there is a positive relationship between receiving information from government agencies or foresters and conservation aid program enrollment. Increasing enrollment in conservation aid programs will depend on targeting landowners with information from government agencies and providing opportunities to talk to a forester.

Kendra, A., and R.B. Hull. 2005. Motivations and behaviors of new forest owners in Virginia. *Forest Science* 51(2): 142-154.

Kendra and Hull surveyed new landowners who purchased 0.8-20 acres of forestland between 1994 and 1998 in the top two counties with the highest population growth, housing starts and forestland loss within each of three physiographic regions of Virginia. The demographic attributes of these landowners were similar to previous studies of ex-urban forest owners. Ownership motivations and characteristics, management intentions, and obstacles to management were grouped according to six market segments. Only a small percentage (4%) within the absentee investors market segment resembled the "traditional" forest owner motivated by timber production. The majority of these new landowners were motivated by lifestyle, naturalism, and transcendental experiences. This study sample was stratified according to those owning 0.8 to 8 acres versus those owning 8-20 acres. The study does provide a comprehensive snapshot of ex-urban forest owner's characteristics and motivations for buying forestland.

Kluender, R.A. and T.L. Walkingstick. 2000. Rethinking How Nonindustrial Landowners View their Lands. *Southern Journal of Applied Forestry* 24(3): 150-158.

The authors looked at NIPF owners in the south, where they account for 70% of commercial timberlands. Respondents to a mail questionnaire were separated into four categories: timber managers, resident conservationists, affluent weekenders and poor rural residents. Timber managers were more affluent and better-educated than representatives from the other groups; resident conservationists tended to live on their land and opposed any harvesting; affluent weekenders did not live on the property, but also disapproved of timber harvesting; poor rural residents were raised on the land and were not averse to timber harvesting to make money, but generally

lacked the capital to do so. An interesting observation that here that bucks a trend is that those who were actively engaged in timber harvesting were generally wealthier than those interested in conservation.

Lorenzo, A.B. and P. Beard. 1996. Factors Affecting the Decisions of NIPF Owners to Use Assistance Programs. In: Baughman, M.J., ed. *Proceedings: Symposium on Nonindustrial Private Forests: Learning from the Past, Prospects for the Future*. St. Paul, MN: University of Minnesota, Minnesota Extension Service, Extension Special Programs: 264–275.

The authors examined NIPFs in Louisiana and their use of public assistance programs. NIPFs make up about 8 million acres of a total 13 million acres of timberland in the state. Data from Birch (1996) is presented on the demographics of private forestland owners. A survey was conducted to rank the motivations and objectives of NIPF owners. The research found that 51% of those surveyed owned less than 100 acres; 31% less than 50 acres; most owners were between 40 and 59 years old; 49% had completed college, and the better educated, the more likely they were to have used assistance. 37% of those surveyed had used such assistance, and there was a statistically significant positive correlation between acreage of ownership and use of the assistance.

Loyd, H. July 2003. A Roadside View of Kentucky Forest Practices. *National Woodlands Magazine*.

Majumdar, I., L. Teeter, and B.J. Butler. 2008. Characterizing Family Forest Owners: A Cluster Analysis Approach. *Forest Science* 54(2): 176-184.

For policy implementation to promote better stewardship on family forestlands, it is necessary to understand what motivates landowners. This study characterizes family forest owners in Alabama, Georgia, and South Carolina, based on their feelings about forest stewardship and their stated reasons for owning forestland. Multivariate cluster analysis suggests that family forest owners are, in fact, a diverse set of owners who can be grouped into three attitudinal types, namely, multiple-objective, nontimber, and timber. The multiple-objective ownership type was found to be the largest group (49.1% of respondents) with almost half the family forest owners in the sample population belonging to this category. Owners belonging to the timber cluster (29.4%) indicated only timber management and land investment as strong motivating factors behind their forestland ownership, whereas owners belonging to the nontimber cluster (21.5%) value the nonconsumptive uses of their forestland such as aesthetic values, biodiversity, recreation, and privacy.

Majumdar, I., L.D. Teeter, B.J. Butler. 2009. Using extant data to determine management direction in family forest. *Society & Natural Resources* 22(10): 867-883.

This study investigated the differences between multiple-objective-, timber-, and non-timber-motivated family forest landowner groups in the southeastern states of Alabama,

Georgia, and South Carolina. The focus was primarily to develop a classification scheme using easily available location-specific secondary data associated with family forest owners such that we may be able to identify the likely management direction for particular parcels of forestland in the future. Using nonparametric discriminatory analysis procedures the authors found that the biophysical, socioeconomic, and demographic factors best differentiated the landowner groups. With all the variables used to develop the classification scheme in this study known, a priori—that is, before the landowner on a Forest Inventory and Analysis (FIA) plot location is contacted for the National Woodland Owner Survey (NWOS)—it may be possible to predict the motivational membership type of a future landowner with known woodlot (FIA) and demographic (Census) attributes.

Measells, M.K., S.C. Grado, H.G. Hughes, M.A. Dunn, J. Idassi, and B. Zielinske. 2005. Nonindustrial private forest landowner characteristics and use of forestry services in four southern states: Results from a 2002-2003 mail survey. *Southern Journal of Applied Forestry* 29(4): 194-199.

NIPF owner demographics, use of forestry services, and educational needs for better forest management in the south-central U.S. were assessed using a mail-in survey. Surveys were sent to landowners in Arkansas, Louisiana, Mississippi, and Tennessee who owned 10 or more acres. About 30.7% were returned, which represents 1,689 respondents owning a total of 739,663 acres, 58% of which were forested. The top reasons for owning forestland included forest legacy (even though 34% did not have a written will), residence/farm, and a place to relax/privacy. Eleven percent of landowners reported having a written management plan. The majority of respondents had not received any forestry information, attended any educational programs, or become familiar with any government cost-share or tax incentive programs. Wildlife management, insects/disease, marketing, harvesting, and best management practices were the most popular educational topics of interest. Newsletters, pamphlets/brochures and letters were the most frequently cited methods for informing landowners.

Newman, D.H., M.E. Aronow, T.G. Harris, Jr. and G. Macheski. 1996. Changes in Forest Land Ownership Characteristics in Georgia. In: Baughman, M.J., ed. *Proceedings: Symposium on Nonindustrial Private Forests: Learning from the Past, Prospects for the Future*. St. Paul, MN: University of Minnesota, Minnesota Extension Service, Extension Special Programs: 214–221.

The authors documented the motivations, attitudes and plans of NIPFs who have recently sold or purchased land in Georgia with the aim of determining if new landowners are different from longer-term owners. A mail survey among those who had purchased land of more than 75 acres in the year 1993 was conducted – specifically seeking those who would be using the land for forestry. A total of 475 surveys were returned. New timberland owners were found to be older, better educated and wealthier – 50% had an income of over \$100,000/yr – than the general population. Absentee ownership (here classified as those who live more than 50 miles away from the property) was found to be on the increase; it was also found that there is an increasing interest in recreation and hunting. A majority anticipate timber

harvesting in future, and many reported that they actively sought information to help them in making management decisions.

Pan, Y., Y. Zhang, B. J. Butler. 2007. Trends Among Family Forest Owners in Alabama, 1994-2004. *Southern Journal of Applied Forestry* 31(3): 117-123.

There are an estimated 432,000 family forest owners in Alabama and they control 67% of the State's forestland. About two-thirds owned less than 10 ac. and about 88% of the family forest owners have holdings of less than 50 ac; collectively, this group of owners with 1-49 ac of forestland own 15% of Alabama's family forestland. The corollary to this finding is that a majority (85%) of the state's family forestland is owned by the minority (12%) of owners who own 50 ac or more. Between 1994 and 2004, the amount of forestland owned by family forest owners with small (less than 10 ac) and large (more than 500 ac) forest holdings increased, while the total area of forestland owned by people with intermediate-size holdings, in general, decreased. Compared with 10 years ago, the number of family forest owners 45-54 years old is higher but they tend to own smaller parcels of forestland. During the same period, the number of owners 65 years or older decreased, but, on average, the size of their holdings increased. Recreation and investments have become more important objectives of ownership, whereas timber production as a primary ownership objective decreases. The probability of an owner having harvested trees, having a management plan, or having sought forest management advice increased as the size of the forest holding increased.

Polyakov, M., D. Zhang. 2008. Property tax policy and land-use change. *Land Economics* 84(3): 396-408.

In this study, the authors analyze the effect of property taxes on changes between agricultural, forestry, Conservation Reserve Program, and developed land uses in Louisiana. They estimate a random parameters logit model of land-use conversion from the National Resources Inventory plot data. The results indicate that land-use changes are inelastic with respect to property taxes. Simulation shows that current use valuation policy, while slowing down development of rural lands, also affects changes between rural land uses.

Rasamoelina, M. S., J. E. Johnson, and R. B. Hull. 2010. Adoption of Woodland Management Practices by Private Forest Owners in Virginia. *Forest Science* 56(5): 444-452(9).

Sustainable management of private forests is a key issue to ensure sound rural economics and a flow of ecosystem benefits. Logistic regression models for the adoption of woodland management practices by Virginia private forest owners were developed, and they correctly classified between 66 and 89% of the cases. Separate models were developed for specific practices that improve forest health and productivity or protection and general practices associated with any type of rural landownership, such as surveying property boundary lines. For specific practices, adoption was most influenced by the use of technical assistance, followed by use of a written management plan, economic motivations, and attendance at educational

programs. Probabilities of adoption ranged from 3% for forest owners who did not have any technical assistance nor used a management plan and had low economic motivations to 70% for owners who had technical assistance, used a management plan, and had high economic motivation. The general management practices were adopted at a higher rate (from 51 to 99%) and were predicted by landowners' use of financial assistance, recreational motivations, and economic motivations.

Rossi, F.J., D.R. Carter, J.R.R. Alavalapati, J.T. Nowak. 2010. Forest Landowner Participation in State-Administered Southern Pine Beetle Prevention Cost-Share Programs. *Southern Journal of Applied Forestry* 34(3): 110-117.

Healthy pine trees in low-density stands offer the best defense against the southern pine beetle (SPB), helping to ensure that timber resources and other benefits of forests are protected against infestations. Through the SPB prevention cost-share program, landowners of nonindustrial private forestland are able to receive a financial incentive for improving forest health by proactively undertaking forest management practices. In this study, two surveys were used to analyze this program: (1) a survey of enrollees in the SPB prevention cost-share program, and (2) a survey of forest landowners who have *not* participated in a cost-share program. Data are used to examine similarities and differences in the two samples (e.g., background awareness of the SPB, sources of their information about the SPB). Information obtained from cost-share program enrollees is also presented to characterize their participation and to provide an overall evaluation of the program. Data indicate that the SPB prevention cost-share program is very successful in terms of the satisfaction of its customers (i.e., the actual program participants).

Schelhas, J., and R. Zabawa. 2005. Model forest landowners in Alabama: are they different from typical landowners? In: *Proceedings of the 11th International Symposium on Society and Resource Management*, Ostersund, Sweden. 48 p.

Shivan, G. C., S.R. Mehmood. 2010. Factors influencing nonindustrial private forest landowners' policy preference for promoting bioenergy. *Forest Policy and Economics* 12(8): 581-588.

Nonindustrial private forests (NIPFs) of the southern United States, representing a large percentage of timberlands in the nation, are often viewed as potential sources of woody biomass for future bioenergy production. It is therefore critical to understand landowners' policy preferences for promoting wood-based bioenergy. This study examines policy alternatives preferred by landowners for promoting wood-based bioenergy and utilizes binary logit models to identify the factors influencing these policy preferences. The results indicate that landowners in general prefer tax based policies over direct subsidy support. A significant relationship was observed between landowners' decision to support or not to support different policy instruments and their income, age, distance of residence from the forest, size of the forest owned, size of trees in the forests, forest management objectives, and previous experience of using government cost-share programs.

Sun, X., I.A. Munn, C. Sun, A. Hussain. 2008. How promptly nonindustrial private forest landowners regenerate their lands after harvest: a duration analysis. *Canadian Journal of Forest Research* 38(8): 2109-2117.

Understanding factors that influence how promptly landowners regenerate their timberlands after harvest, if at all, is critical to developing policies to improve forest productivity. Mississippi forest landowners with over 100 acres (1 acre = 0.404 ha) of forestland were surveyed in 2006 to collect harvest and regeneration data from 1996 to 2006. This study investigated the length of the time interval between harvest and reforestation. Nonparametric duration analysis was used to examine how long nonindustrial private forest landowners waited to reforest after harvesting. Parametric duration analysis was used to examine factors that influenced the length of this period. The mean time elapsed from harvest to regeneration was 11 months for landowners that regenerated their lands. The instantaneous probability of regeneration reached its highest value in the 16th month after harvest and, thereafter, decreased steadily until the 28th month, after which the probability of regeneration was essentially nil. Interest in timber production, employing a consultant, and ownerships that were predominantly pine forest types were factors associated with substantially shorter reforestation times. Lower stumpage prices and higher reforestation costs were associated with substantially longer reforestation times.

Vlosky, R.P. and J.E. Granskog. 2003. Certification: a Comparison of Perceptions of Corporate and Non-industrial Private Forestland Owners in Louisiana. In: *Forest Policy for Private Forestry: Global and Regional Challenges*. L. Teeter, B. Cashore and D. Zhang (eds.). CABI Publishing: New York.

While this report provides little in the way of information on demographics, it is an interesting case for rethinking accepted 'truths' about the insular nature of private forest owners. Through a rigorous scientific method, the paper shows that there is in fact little difference between NIPFs and big timber interests in terms of their willingness to allow certification assessments on their property, and their willingness to pay for such assessments. Given that this is Louisiana, the paper raises an interesting point that family forest owners may not be as xenophobic as many may assume.

Vokoun, M., G.S. Amacher, and D.N. Wear. 2006. Scale of harvesting by non-industrial private forest landowners. *Journal of Forest Economics* 11(4): 223-244.

The goal of this study was to estimate what factors affected the NIPF owner decision regarding the intensity of harvest at the lowest acceptable price. A mail-in survey was administered to 1718 Virginia landowners in the hardwood region. There were 609 usable surveys resulting in an average response rate of 35%. While the empirical modeling is not relevant to this literature review, the authors do summarize demographic information and ownership characteristics and motivations for this group of NIPF owners. Environmental reasons (habitat, water quality and soil protection) were cited as the most important benefits to forest ownership.

Wicker, G. 2002. Motivation for Private Forest Landowners. In: *Southern Forest Resource Assessment*. D. Wear and J. Greis (eds.). USDA Forest Service Southern Research Station and Southern Region.

Privately owned timberlands in the south are held in more than 4.9 million tracts. The number of private owners is increasing, while the size of their holdings is decreasing. Though private forest owners have widely divergent objectives and values, they hold forest primarily because it is “residence” and for recreation. Wicker states that though many southerners feel that property rights are important, they believe them to be secondary to environmental protection needs. Emphasizing the diversity of owners, Wicker says that “available research information is insufficient to define an average private southern forest landowner.”

Williams, R.A., D.E. Voth and C. Hitt. 1996. Arkansas’ NIPF Landowners’ Opinions and Attitudes Regarding Management and Use of Forested Property. In: Baughman, M.J., ed. *Proceedings: Symposium on Nonindustrial Private Forests: Learning from the Past, Prospects for the Future*. St. Paul, MN: University of Minnesota, Minnesota Extension Service, Extension Special Programs: 230–237.

The authors examined NIPF owners in Arkansas. Focus groups were held and a mail survey was sent out 2400 NIPF owners. The authors found substantial regional differences in terms of land use and participation in incentive programs. Delta and Southwest NIPFs were more interested in growing and selling trees, and used incentive programs to do so. Ouachita and Ozark region NIPFs preferred recreational use and grazing on their lands. Broadly, Arkansas NIPFs were found to be opposed to land use regulations, which restrict their activities on their land; all surveyed felt they were good land stewards and manage for environmental sustainability.

Regional Findings: Northeast

Barten, P.K., D. Damery, P. Catanzaro, J. Fish, S. Campbell, A. Fabos, and L. Fish. 2001. Massachusetts family forests: birth of a landowner cooperative. *Journal of Forestry* 99(3): 23-30.

The story is as old as the profession: private lands, low-value species, a stagnant rural economy, development pressure, and loss of forests. A group of foresters and landowners is trying to reverse this cycle by forming a cooperative enterprise. This article summarizes their approach and experiences during the start-up phase. The overarching objective of Massachusetts Family Forests is to sustain or enhance the forest resources, rural character, and economy of the region.

Belin, D.L., D.B. Kittredge, T.H. Stevens, D.C. Dennis, C.M. Schweik, and B.J. Morzuch. 2005. Assessing private forest owner attitudes toward ecosystem-based management. *Journal of Forestry* 103(1):28-35.

Belin et al. conducted a study of landowners in Massachusetts, New Hampshire and Vermont to ascertain any relationships between landowner characteristics and attitudes toward ecosystem-based forest management. Attitudes toward ecosystem-based management were measured using three indices: “within property sensitivity,” “landscape-scale perspective,” and “temporal vision.” Basic demographic information for 1,331 respondents was obtained (49.5% response rate). Consistent with other studies, privacy, part of residence, and conservation against development were cited as the top reasons for owning forestland. The majority of landowners surveyed favored an ecosystem-based approach at all three scales. There were no significant differences in attitudes toward this approach between states, yet attitudes differed according to population density, education-level and enrollment in current-use property tax programs. This analysis builds on an earlier study performed in western Massachusetts and indicates that, in general, landowners in this region are sympathetic to incorporating ecological values in forest management.

Bourke, L. and A.E. Luloff. 1994. Attitudes Toward the Management of Nonindustrial Private Forest Land. *Society & Natural Resources* 7: 445-457.

Management of the nation's forests has been widely criticized. Such criticisms stem, in part, from the widely held belief that owners and managers of nonindustrial private forests (NIPFs) have a vested economic interest in the resource not shared by the general public. As a result, previous studies of NIPF management have assumed that landowners differ from the general public and hold utilitarian-oriented values toward the natural environment. Data collected in Pennsylvania, a state with one of the largest acreages of NIPFs, challenge this commonly held belief. This article presents evidence of common concerns held by NIPF landowners and the general public with respect to their attitudes toward forests and forest management policies. Moreover, these findings reveal that sociodemographic characteristics, use of the forest, and ownership status have little influence on attitudes toward management.

Broderick, S.H., K.P. Hadden and B. Heninger. 1994. The Next Generation's Forest: Woodland Owners' Attitudes Toward Estate Planning and Land Preservation in Connecticut. *Northern Journal of Applied Forestry* 11(2): 47-52.

In Connecticut, NIPFs account for 88% of all woodland acreage, 42% of which is in parcels smaller than 50 acres; and 21% of which is smaller than 20 acres. As elsewhere in the north, the number of NIPF owners in Connecticut is increasing, while the size of holdings is decreasing. The authors took a random sample of 500 landowners from a roster of 8,606 people who own at least 25 acres of woodland. A mail survey was conducted, with 286 responding. The authors found NIPF owners in CT to be well-educated and older (average and median age was 61), as well as wealthier than the state average. The authors found that though income from wood

products was the lowest priority, a full 89% had engaged some timber management. A majority cited the desire to maintain their forest “as is for future generations” as their most important reason for owning forest.

Connelly, N. A., T.L. Brown, P.J. Smallidge. 2007. An Assessment of Family Forest Owners in New York State, 2007. HDRU Series No. 07-6. Ithaca, NY: Cornell, Department of Natural Resources, University Human Dimensions Research Unit.

Finley, A.O., D.B. Kittredge, T.H. Stevens, C.M. Schweik, and D. Dennis. 2006. Interest in cross-boundary cooperation: Identification of distinct types of forest owners. *Forest Science* 52(1): 10-22.

Private forest owner interest in cooperative activities was evaluated through the use of a mail-in survey in Franklin County, MA. The authors profiled four subgroups of private forest owners according to their interest in cross-boundary collaboration and correlated these segments with their interest in different cooperative activities, socioeconomic variables, and demographic data from 783 surveys (68.4% usable response rate.) Approximately half of respondents were open to cooperation. While data are summarized based on cooperation, the study provides a good overview of private forest owners in rural MA and provides a different perspective by which we can better understand NIPF owners, with particular implications for ecosystem-based forest management.

Finley, A.O., and D.B. Kittredge Jr. 2006. Thoreau, Muir, and Jane Doe: Different types of private forest owners need different kinds of forest management. *Northern Journal of Applied Forestry* 23(1): 27-34.

Finley and Kittredge use a three-phase analytical strategy to identify and describe private forest owner segments from a 2001 survey of 579 landowners in 20 towns in Massachusetts. Characteristics were then compared to participation in a state forest property tax program. Using this segmentation approach, the authors identified three segments of landowners who differ in their attitudes toward environmental protection, privacy, and appreciative values of forests. The “Henry David Thoreau” group (67% respondents) placed high value on privacy, contemplative benefits like scenery, recreation, etc. yet, they did not necessarily reject consumptive use of the forest for wood products. The John Muir group represented 23% of respondents who were best described as having a more hands-off approach to forest management and placed high value on environmental quality and protection. The final “Jane Doe” group represented 10% of respondents who differed greatly from the previous two segments because they placed little value on environmental protection, privacy or contemplative benefits. The authors caution against using these results to characterize a larger population of private landowners. This study provides a useful approach to understanding family forest owners that more accurately addresses the disconnect between “professed attitudes and observed behaviors.”

Irland, L.C. 1999. Nonindustrial Private Owners. In: *The Northeast's Changing Forest*. Harvard University Press: Petersham, MA.

Kittredge, D.B., A. D'Amato, P. Catanzaro, J. Fish, B.J., Butler. 2008. Estimating ownerships and parcels of non-industrial private forest in Massachusetts. *Northern Journal of Applied Forestry* 25(2): 93-98.

Woodland ownership for three regions of Massachusetts is estimated using property tax assessor data. These data are nonspatially explicit and are based on commercial, industrial, residential, or other activity rather than actual land cover. A heuristic was used to aggregate similar parcels to provide an estimate of actual landownership. The estimated average statewide ownership is 17.9 ac, and when properties less than 10 ac are excluded, the average rises to 42.5 ac. The median ownership varies from east to west in the state across the spectrum of suburban development radiating from the metropolitan Boston area, with the median being 4.8, 7.8, and 8.6 ac in the eastern, central, and western part of the state, respectively. These results are compared with ownership estimates generated by the US Forest Service Forest Inventory and Analysis.

Munsell, J.F., R.H. Germain, V.A. Luzadis, E. Bevilacqua. 2009. Owner Intentions, Previous Harvests, and Future Timber Yield on Fifty Working Nonindustrial Private Forestlands in New York State. *Northern Journal of Applied Forestry* 26(2): 45-51.

The authors present a case study that used a theory of planned behavior to explain sustained-yield management intentions and to describe potential yield on 50 recently harvested NIPFs in New York. Predictors of an owner's intention were modeled, and intentions and silviculture classifications were cross-tabulated. Nearly all owners plan to manage for a sustained yield of sawtimber, but previous cutting will force most to regenerate or convert to uneven-age management to achieve this goal.

Rickenbach, M. and D.B. Kittredge. 2009. Time and distance: comparing motivations among forest landowners in New England. *Small-Scale Forestry* 8(1): 95–108.

Parcelization and shifting landownership are critical forces reshaping forested ecosystems in the USA and elsewhere. These forces create a mosaic of new and long-time landowners as well as differences in residency. Using survey data (n = 879) of landowners in Massachusetts and Vermont, USA, we begin the process of sorting out time (i.e., length of landownership) and distance (i.e., distance of primary residence from forest holding), and their relationships to motivations for continued landownership and management. Both time and distance, and their interaction were significant in explaining three motivations for landownership: enjoyment, production, and protection as well as the number of neighbors with which respondents were acquainted. Distance is the statistically more important factor—negatively related to all dependent variables, but time and its interaction with distance offer the more useful insights for intervention.

Regional Findings: Midwest

Baughman, M.J., J.C. Cervantes and D.M. Rathke. 1998. Reaching Minnesota's Nonindustrial Private Forest Owners. Paper presented at the conference *Improving Forest Productivity for Timber: A Key to Sustainability*. 1-3 December 1998, Duluth, MN.

This paper presents the findings of a survey of 1000 NIPFs (average holding 106 acres) in Minnesota. The authors state the top reasons such owners cited for owning forest were wildlife habitat, recreation, hunting, and because the forest is "part of the farm." Timber management for sale was the lowest priority reason cited, even though 38% had harvested timber for sale. The authors state that of those surveyed, 35% had consulted a professional forester at one time or another, but only 16% had a management plan. Incentives preferred by those surveyed were tax reductions, cost-sharing, and extension by resource professionals.

Becker, D.R., G.L. Wilson, and S.A. Snyder. 2010. Private Forest Landowner Attitudes toward Off-Highway Vehicle Access: A Minnesota Case Study. *Northern Journal of Applied Forestry* 27(2): 62-67.

This research examines the attitudes and willingness of private forest and seasonal recreation landowners to provide OHV access. A series of focus groups was conducted to inform a survey questionnaire mailed to a random sample of landowners in north central Minnesota. Results indicate low willingness among landowners to provide public OHV riding opportunities. Approximately 3% of respondents currently allow public access, but that increases significantly if OHV riding behaviors are to reflect lowered noise levels, increased age of riders, low speeds, and small group sizes. Results also indicate that landowner attitudes regarding OHV effects and rider behaviors differ when riders are family and friends versus the public.

Bliss, J.C. and A.J. Martin. 1989. Identifying NIPF Management Motivations with Qualitative Methods. *Forest Science* 35(2): 601-622.

Bliss and Martin present 16 case studies from Wisconsin profiling NIPF managers. Using unstructured interviewing, field observation, and management record review, the authors found that forest ownership affects identity, and that management practices are related to ethnic, familial and personal characteristics. A key point in the paper is that while survey methods can contribute to our broad quantitative knowledge of NIPF owners, qualitative research is better suited to exploring issues surrounding beliefs and behavior.

Bliss, J.C. and A.J. Martin. 1988. Identity and Private Forest Management. *Society & Natural Resources* 1: 365-376.

The authors state that NIPF owner motivations are poorly understood. Qualitative methods were used to study NIPF owners in Wisconsin who engage active forest

management “in accordance with mainstream professional forestry standards.” The authors conclude that there is a link between forest ownership and management and individual identity. As a relatively early scholarly study of its sort, the paper is useful as a thick description of a select set of NIPF owners, but it does not attempt to address such owners as a whole.

Bovee, J.K., and A.G. Holley. 2003. Planners vs. non-planners: Characteristics and differences between nonindustrial private forest landowners in southeastern Oklahoma who engage in planned and non-planned forest management. In G. S. Amacher and J. Sullivan, (eds). *Proceedings of the 2002 Southern Forest Economics Workshop*: 254-267.

Erickson, D.L., R.L. Ryan, and R.d. Young. 2002. Woodlots in the rural landscape: landowner motivations and management attitudes in a Michigan (USA) case study. *Landscape and Urban Planning* 58(2/4): 101-112.

The findings of Erickson et al. are consistent with the literature on NIPF owner motivations and management approaches. The authors conducted a mail-in survey of NIPF owners in two townships in Michigan in which previous land use change studies had been performed. There were 112 survey respondents (35% response rate) who identified non-economic benefits like aesthetic appreciation and environmental protection as motivation for retaining their woodlots. This group of NIPF owners have taken a “hands-off” approach to forest management, which the authors liken to more conservation-based behavior compared to tree planting, selective logging and cooperative management practices.

Kilgore, M.A., S.A. Snyder, J.M. Schertz, and S.J. Taff. 2008. The Cost of Acquiring Public Hunting Access on Family Forests Lands. *Human Dimensions of Wildlife* 13:175–186.

To address the issue of declining access to private forest land in the United States for hunting, over 1,000 Minnesota family forest owners were surveyed to estimate the cost of acquiring non-exclusive public hunting access rights. The results indicate landowner interest in selling access rights is extremely modest. Using binary logistic regression, the mean annual compensation required to purchase public access on these lands is estimated at \$50 per acre. Significant predictors of landowner willingness to sell unrestricted public hunting access rights are the compensation offered, owner’s use of the property for hunting, land’s hunting quality and market value, location of owner’s residence, current posting practices, future ownership intentions, and concern for property damage. The high payment required to purchase this right reflects the value owners attach to exclusive hunting rights, cost of enrolling in a government-sponsored program, and inability to control who and how many hunt on the property.

Kilgore, M.A., S.A. Snyder, J. Schertz, and S.J. Taff. 2008. What does it take to get family forest owners to enroll in a forest stewardship-type program? *Forest Policy and Economics* 10(7-8): 507-514.

The authors estimated the probability of enrollment and factors influencing participation in a forest stewardship-type program, Minnesota's Sustainable Forest Incentives Act, using data from a mail survey of over 1000 randomly-selected Minnesota family forest owners. Of the 15 variables tested, only five were significant predictors of a landowner's interest in enrolling in the program: compensation amount, intention to obtain a forest management plan, opposition to the program's land covenant, prior awareness of the program, and total acres of forest land owned. The estimated median minimum compensation required was approximately \$24 per acre per year. One-fourth of the survey respondents were undecided about whether they would participate in the stewardship program, suggesting there may be potential to capture additional interest and participation. Marketing efforts to raise program awareness, increasing annual stewardship payments, and eliminating the land covenant are likely to be effective strategies for increasing program participation.

Kilgore, M., J. Leahy, C. Hibbard, J. Donnay. 2007. Assessing family forest land certification opportunities: a Minnesota case study. *Journal of Forestry* 105(1): 27-33.

Minnesota family forest owners were surveyed to assess their perspectives on forest certification. The study found that in spite of the increased visibility of forest certification, its awareness among family forest owners continues to be low. Moreover, after developing an understanding of forest certification, only 4% of family forest owners were certain they wanted to certify their forests, and 19% were sure they would never want to do so. Landowners familiar with certification were no more likely to certify than those who had not heard of the concept. The design and outcomes of a certification program were found to have a substantial influence on landowner interest in forest certification. The lack of owner awareness and interest in forest certification, forest management plan requirement, and limited group certification opportunities suggest substantial expansion of certified family forestland is unlikely in the foreseeable future.

Kilgore, M.A., S. Snyder, S. Taff, J. Schertz. 2008. Family Forest Stewardship: Do Owners Need a Financial Incentive? *Journal of Forestry* 106(7): 357-362.

This study assessed family forest owner interest in formally committing to the types of land use and management practices that characterize good stewardship if compensated for doing so, using Minnesota's Sustainable Forest Incentives Act (SFIA) as a proxy measure of forest stewardship. The SFIA provides an annual payment in return for obtaining and using a forest management plan and adhering to Minnesota's timber harvesting and forest management guidelines, among other requirements. Results of a mail survey indicate the typical Minnesota family forest owner has relatively small acreage, owns the land for a long time, lives in a rural area, is an absentee owner, considers hunting the most important reason for forestland ownership, and is not an active forest manager but supplies timber to the marketplace. Analysis of the survey data using a logit model found landowner interest

in enrolling in the SFIA program was significantly influenced by the SFIA payment amount, acres of forestland owned, intention to obtain a forest management plan, opposition to the program's covenant requirement, and familiarity with the program. The model also estimated considerable compensation is needed to secure substantial participation of family forest owners in the SFIA program. Marketing efforts to increase the program visibility and extolling the virtues of a forest management plan should be part of a strategy to increase family forest owner participation in the SFIA program.

Leahy, J.E., M.A. Kilgore, C.M. Hibbard, J.S. Donnay. 2008. Family Forest Landowners' Interest in and Perceptions of Forest Certification: Focus Group Findings from Minnesota. *Northern Journal of Applied Forestry* 25(2): 73-81.

Focus groups were organized with individuals owning between 15 and 720 forested acres in northern Minnesota to better identify their understanding of, questions about, and interest in forest certification; factors that would encourage or discourage their participation in certification programs; and the types of certification program characteristics they preferred. Family forest landowner participants were generally unfamiliar with the concept of forest certification. They expressed concern about certification costs and benefits, its impact on land-use decisionmaking, eligibility requirements, and program administration. They also expressed clear preferences about how forest certification programs should be tailored to family forest landowners. The availability of financial assistance to help cover initial and ongoing certification costs, assurance that certification will not encumber property rights, and clear and tangible benefits were found to positively influence their interest in participation. Recommendations for foresters, forest policymakers, and forest certification program leaders are presented that would encourage more family forest landowner participation in certification.

Mills, W.L., Jr., W.L. Hoover, S. Vasan, K.T. McNamara and V. Nagubadi. 1996. Factors Influencing Participation in Public Management Assistance Programs. In: Baughman, M.J., ed. *Proceedings: Symposium on Nonindustrial Private Forests: Learning from the Past, Prospects for the Future*. St. Paul, MN: University of Minnesota, Minnesota Extension Service, Extension Special Programs: 204-213.

A very useful article, both in terms of methods and application. The authors examined the attitudes and characteristics of Indiana landowners who participate in forestry extension programs versus those who do not. The researchers used focus groups and a mail questionnaire. Among their sample, 68.3% owned less than 50 acres; 73.8% had owned their forestland for more than 10 years; more than 50% lived on their woodland; and a majority said they didn't work on their forest. Those who participated in government forestry programs were more likely to be engaging some sort of active management. Non-participants generally had a lower income, education level, and owned less land. The authors conclude with a probit statistical model predicting the correlation between participation and a variety of factors, of which income level was the most significant, as well as size of landholding, age and government sources of information.

Moser, W.D., E.C. Leatherberry, M.H. Hansen, B.J. Butler. 2005. Farmers and woods: a look at woodlands and woodland-owner intentions in the heartland. In: Brooks, K.N. and P.F. Folliott (eds) *Moving Agroforestry into the Mainstream*. Proc. 9th N. Am. Agroforest. Conf., Rochester, MN. 12-15 June 2005 [CD-ROM]. Dept. Forest Resources, Univ. Minnesota, St. Paul, MN, 14 p.

Moser et al. conducted a pilot study to examine the relationship between farm woodland owners' intentions and use of their land and the physical condition of their land measured as structure and composition. Using the USDA Forest Service Forest Inventory Analysis and the National Woodland Owner Survey databases and interviews with 152 farm woodland owners in Indiana, Illinois and Iowa, the authors were able to determine how the condition of a forest stand reflects the intentions and actions of the owner. Farm woodland owners in the Midwest who value their woodlands for timber production, aesthetics and enjoyment (hobby) tend to have well-stocked stands and trees of higher volume. Those motivated by privacy, firewood production and non-timber forest product production tend to have lower volumes/ha. The highest diversity of species corresponded with land managed for wildlife and timber.

Moser, W.K., E.C. Leatherberry, M.H. Hansen, B.J. Butler. 2009. Farmers' objectives toward their woodlands in the upper Midwest of the United States: implications for woodland. *Agroforestry Systems* 75(1): 49-60.

This paper reports the results of a study that explores the relationship between farm woodland owners' stated intentions for owning woodland, and the structure and composition of these woodlands in the states of Illinois, Indiana and Iowa in the upper Midwest of the United States. Woodland-focused ownership reasons were found to have larger volumes and individual tree sizes. The authors found that a passive woodland ownership reason—that woods were “part of the farm”—generally had lower volumes per hectare. Woodland owners who salvage-harvested their woodlands—a harvesting reason that is more reactive than proactive—exhibited lower volumes per hectare than those who harvested for more proactive, product-focused reasons. Biodiversity was also found to be related to the ownership focus and harvest intent. Generally, there was lower diversity in overstory species when the woodland was viewed merely as “part of the farm,” when the product harvested was fence posts and when timber was harvested for salvage or land clearing.

Potter-Witter, K. 2005. A cross-sectional analysis of Michigan nonindustrial private forest landowners. *Northern Journal of Applied Forestry* 22(2): 132-138.

To compare NIPF landowner characteristics, enrollment in different types of incentive or assistance programs, and management activities, a questionnaire was mailed to 2230 forestland owners enrolled in four different programs in Michigan. A 55% response rate resulted in 1234 usable responses. Demographic and parcel characteristics differed by enrollment in different types of programs. Of particular

interest is the finding that parcel size and not having a permanent residence on the forested parcel had a significant effect on whether or not the forestland was managed. Surprisingly, age, income and education level were not significant predictors of management activity. Timber harvesting was the most common type of management activity followed by timber stand improvement and tree planting. This study provides demographic and forest management information for the more “active” group of forestland owners in Michigan.

Raymond, L., A. Olive. 2008. Landowner Beliefs Regarding Biodiversity Protection on Private Property: An Indiana Case Study. *Society & Natural Resources* 21(6): 483 - 497.

This article argues that efforts to protect endangered species on private land could benefit substantially from a better understanding of landowners' beliefs and values about conservation and private property rights. Noting that surprisingly little research has been done in this area, the article presents data from a series of in-depth interviews with landowners in a conservation management area in central Indiana. The results illustrate the strength of a belief in ownership as an intrinsic right among landowners, as well as a high level of concern for protecting endangered species, often on moral grounds. The combination of views found in this case suggests a window of opportunity for greater collaboration with private owners to meet species conservation goals.

Rickenbach, M.G., R.P. Guries, and D.L. Schmolt. 2006. Membership matters: Comparing members and non-members of NIPF owner organizations in southwest Wisconsin, USA. *Forest Policy and Economics* 8(1): 93-103.

When does membership in forest woodland owner organizations matter? Rickenbach et al. answered this question by surveying members and non-members of NIPF owner organizations in three counties of southwestern Wisconsin. They obtained information from 503 usable surveys (usable response rate of 69.5%.) Their findings suggest that members in woodland owner organizations are more likely to engage in a variety of management activities and are more willing to consider cooperating with their neighbors on forest management activities. Results also indicated that members and non-members differed little in their motivations for owning forestland, perceived barriers to management, recent timber harvest activities, and confidence in their management skills. For our purposes, the study provides information on landowner motivations (ecological value and quality of life were ranked most important) and reported management activities.

Ross-Davis, A.L., S.R. Broussard, D.F. Jacobs, and A.S. Davis. 2005. Afforestation motivations of private landowners: An examination of hardwood tree plantings in Indiana. *Northern Journal of Applied Forestry* 22(3): 149-153.

This study focuses on the afforestation motivations and planting establishment success of a distinct subset of NIPF owners in Indiana. Surveys were mailed to landowners who were randomly selected from a group of 2000 nursery orders of greater than 300 seedlings of the three most popular tree species. Basic demographic

information and data on percent seedling survival were collected. There were no correlations between seedling survival and plantation size or seedling survival and use of cost-share programs, use of a management plan, subdivision of land, or previous experience planting hardwoods. The sites used in the study were distributed throughout Indiana but due to the small sample size (87 respondents), specific criteria for selecting participants, and assumption that those actively managing their land were those who plant trees, the results and demographic data should not be used to generalize about NIPF owners in Indiana.

Ross-Davis, A.L. and S. Broussard. 2007. A typology of family forest owners in north central Indiana. *Northern Journal of Applied Forestry* 24(4): 282-289(8).

The objectives of this study were to (i) identify distinct types of landowners with regard to ownership motivations and other ownership characteristics and (ii) compare these types of landowners in terms of (a) use of specific forest management practices, (b) information seeking, (c) familiarity with and participation in private forest conservation programs, and (d) ownership and sociodemographic characteristics. A two-step cluster analysis of responses to a mail questionnaire distributed to family forest owners in north central Indiana revealed three distinct types of landowners. *Forest managers* attributed importance to diverse values with regard to owning their forest. *New forest owners* owned their properties for the least amount of time and attributed importance to all ownership motivations with the exception of producing timber. *Passive forest owners* owned the smallest forested acreages and attributed importance to none of the ownership motivations operationalized in this research with the exception of enjoying scenery. Results are discussed in terms of typologies previously described in the literature and the implications of the relationships among landowner types with regard to management.

Schaaf, K.A., S.R. Broussard, and W.L. Hoover. 2004. Private lands in the Midwest: Exploring landowner views on collaboration, community, and social capital. In: Baumgartner, D.M. (ed.). *Proceedings of Human Dimensions of Family, Farm, and Community Forestry International Symposium*, March 29 – April 1, 2004, Washington State University, Pullman, Washington, USA.

Snyder, S.A., M.A. Kilgore, S.J. Taff, J.M. Schertz. 2008. Estimating a Family Forest Landowner's Likelihood of Posting against Trespass. *Northern Journal of Applied Forestry* 25(4): 180-185.

Hunters and other recreators face challenges to gain access to private forestland in the United States because of an increasing number of landowners posting their land. A landowners' decision to post their land is influenced by a variety of factors, including landowner characteristics, hunter behavior, and parcel attributes. We used a logit model to help understand why family forest landowners in Minnesota post their land against public trespass. Factors that increased the likelihood of posting included younger owners, a perception that allowing access would interfere with one's own hunting, a perception that allowing access would result in damage to one's property, hunting as the primary reason

for forestland ownership, larger parcel size, having a management plan, higher property values, and a high percentage of surrounding area open to public hunting. Implications of increased posting by family forest owners on hunting access and wildlife management are discussed.

Regional Findings: West

Bliss, J.C. 2003. Sustaining Family Forests in Rural Landscapes: Rationale, Challenges, and an Illustration from Oregon, USA. *Small-scale Forest Economics, Management and Policy*, 2(1): 1-8.

Carroll, M.S., P.J. Cohn, and K.A. Blatner. 2004. Private and tribal forest landowners and fire risk: a two-county case study in Washington State. *Canadian Journal of Forest Research* 34(10): 2148-2158.

Using a theoretical versus a statistical sampling methodology, Carroll et al. differentiated NIPF owners in two counties in northeastern Washington State into four distinct segments relative to the size of their land holdings and intensity with which they managed their land. The four groups were- large active landowners owning greater than 400 acres, medium-active (20-400 acres), farmers/ranchers, and lifestyle landowners (5-200 acres). These segments were determined based on qualitative data from interviews with 105 NIPF owners. While this study does not provide specific demographic data, it does provide information on the management emphasis, perceived threats, and use of fire as a tool in the management of their forestlands.

Creighton, J.H., and D.M. Baumgartner. 2005. Washington State's forest regulations: Family forest owners' understanding and opinions. *Western Journal of Applied Forestry* 20(3): 192-198.

In 2002, the Washington State University (WSU) Department of Natural Resource Sciences and Washington Department of Natural Resources Small Forest Landowner Office conducted a survey of family forest owners in Washington State to determine how landowner characteristics related to familiarity with state and federal forest regulations. A 48% return rate resulted in a sample size of 923 respondents. The article contains useful demographic data and characteristics relating to the amount of land owned, employment status, absentee or resident status, income, etc. The findings regarding the level of agreement with statements related to the Endangered Species Act were interesting and can guide our understanding of respondent's views toward biodiversity conservation. But their responses might be regionally specific due to the close proximity if not direct connection of respondents to the spotted owl conflict.

Cubbage, .F.W., B.D. New and R.J. Moulton. 1996. Evaluations of Technical Assistance Programs for Nonindustrial Private Forest Landowners. In: Baughman, M.J., ed. *Proceedings: Symposium on Nonindustrial Private Forests: Learning from the Past, Prospects for the Future*. St. Paul, MN: University of Minnesota, Minnesota Extension Service, Extension Special Programs: 367-376.

Edwards, K.K. and J.C. Bliss. 2003. It's a Neighborhood Now: Practicing Forestry at the Urban Fringe. *Journal of Forestry* 101(3): 6-11.

The authors used quantitative and qualitative methods to gauge landowner views on forestry, focusing on the Soap Creek Watershed in western Oregon. While not offering much on the demographics of family forest owners, the article further confirms the finding that quality of life is consistently among the top motivating factors for people to own forest.

Elwood, N.E., E.N. Hansen, and P. Oester. 2003. Management plans and Oregon's NIPF owners: A survey of attitudes and practices. *Western Journal of Applied Forestry* 18(2): 127-132.

Elwood et al. present the results of a 1996 survey of NIPF owners in Oregon. They obtained characteristics of forest owners from 254 usable surveys (response rate of 34.3%.) The article focuses primarily on the relationships between landowner characteristics and objectives and management plan development and use but provides a good profile of Oregon NIPF owners. Consistent with previous studies, NIPF in Oregon are older; only 25% were less than 50 years old. The authors pointed out that management objectives differed according to parcel size, yet, overall, respondents cited good stewardship; a nice place to live; leaving a legacy; and timber production as the most important reasons for owning forestland. About 31% had management plans, which is higher than that found by other studies.

Fischer, P. and J.C. Bliss. 2008. Behavioral Assumptions of Conservation Policy: Conserving Oak Habitat on Family-Forest Land in the Willamette Valley, Oregon. *Conservation Biology* 22(2)275–283.

Designing policies that harness the motivations of landowners is essential for conserving threatened habitats on private lands. The authors' goal was to understand how to apply ethnographic information about family-forest owners to the design of conservation policy for Oregon white oak (*Quercus garryana*) in the Willamette Valley, Oregon. They examined owners' knowledge, beliefs, values, and socioeconomic contexts through in-depth individual and focus-group interviews to understand their motivations to conserve oak. Policies that use symbolism to inspire behavior and policies that build capacity can harness owners' stewardship ethics and moral obligations. Policies that offer tangible rewards can build on owners' utilitarian motives. Policies that permit and prohibit behavior can tap owners' concerns about rule violations. Policies that promote voluntary, collaborative efforts can accommodate owners' need for autonomy and flexibility.

Force, J.E. and H.W. Lee. 1991. Nonindustrial Private Forest Owners in Idaho. *Western Journal of Applied Forestry* 6(2): 32-36.

Idaho NIPF owners statewide were surveyed by mail to determine their sociodemographic characteristics and their reasons for owning forest. A majority were found to be older and better educated than the state average. Generally, those who own smaller parcels tended to be employed in a professional or service occupation, are younger, and have owned their land for fewer years. Larger landowners were, comparatively, more apt to be employing some type of timber management, whereas smallholders cited aesthetics as a more important ownership objective. 34% of all surveyed had sought advice from a professional forester.

Graesser, P.W. and J.E. Force. 1996. Early and Late Adopters of Stewardship Planning. In: Baughman, M.J., ed. *Proceedings: Symposium on Nonindustrial Private Forests: Learning from the Past, Prospects for the Future*. St. Paul, MN: University of Minnesota, Minnesota Extension Service, Extension Special Programs: 222-229.

The authors compared Idaho NIPFs participating in the Forest Stewardship Program (FSP) and those who are not. A mail questionnaire was sent out, and respondents were grouped as “early adopters” (those who participate in the FSP) and “later adopters” (those who do not). Early adopters were found to be younger, better educated and wealthier than later adopters. Later adopters were found to have owned their property longer than early adopters, but spend less time on their forestland. No statistically significant difference was found between the two groups in terms of size of landholding. Generally, later adopters do not think there is much economic advantage to the FSP, and think that it is not compatible with their values.

Hairston, A.B. and P.W. Adams. 1996. Landowner Opinions of Water Protection Rules in the Oregon Forest Practices Act. In: Baughman, M.J., ed. *Proceedings: Symposium on Nonindustrial Private Forests: Learning from the Past, Prospects for the Future*. St. Paul, MN: University of Minnesota, Minnesota Extension Service, Extension Special Programs: 110-117.

The authors looked at perceptions of water protection rules among NIPF landowners, logging operators, and industry foresters. Their analysis concerned only those NIPFs that reported harvesting, thus it was not a broad cross-section of all NIPFs. Results show a greater diversity of opinions on regulations (from “strongly oppose” to “strongly support”) among NIPFs as compared to loggers and industry foresters. The need for targeted extension and educational awareness for NIPFs is highlighted as a way to address their concerns with regulations.

Hanson, N. 1996. Family-Owned Forests in an Era of Regulatory Uncertainty. In: Baughman, M.J., ed. *Proceedings: Symposium on Nonindustrial Private Forests: Learning from the Past, Prospects for the Future*. St. Paul, MN: University of Minnesota, Minnesota Extension Service, Extension Special Programs: 95-100.

The author profiles the situation for family-owned forests in Washington State, where NIPFs make up about 3.5 million of the more than 20 million acres of forestland in the state. He contends that family forest owners manage their forests differently than others; most only harvest “when they need the money.” Hanson details the growing number regulations on forestry practice over recent years, and asserts that family forest owners are forced to cut more to make a return on their investment, or get out of forestland ownership altogether. The author suggests a “Conservation Contract” to keep land in forest and ensure a supply of forest products and forestry-related jobs.

Johnson, R.L., R.J. Alig, E. Moore and R.J. Moulton. 1997. NIPF Landowners’ View of Regulation. *Journal of Forestry* 95(1): 23-8.

This paper explores the link between public regulations and NIPF management decisions in western Washington and Oregon. The authors emphasize the diversity of owners, and urge caution in reaching simple and sweeping conclusions about owner motivations and harvesting practices vis-à-vis regulations. They found that most NIPF owners come from older age groups (41% >60 yrs. old), are wealthier than average (with a mean income of \$61,000/yr.), and most of their income comes from off-forest sources. Unlike the rest of the US, however, nearly 25% of those interviewed work in the forestry industry. Average acreage ownership was 83, and 73% cited the “enjoyment of green space” as the primary reason for owning forest. Only 9% cited timber production as the primary reason. Especially among those who derive substantial income from timber management, the study found evidence that the anticipation of new regulations (on riparian buffers or Endangered Species Act restrictions) would prompt some owners to harvest sooner.

The paper concludes that owner responses to public regulation of private lands are guided by owner objectives. Larger landholders (more likely to engage timber management) are likely to harvest sooner, ahead of public rules on forest management; smallholders are less apt to change management as timber is less important to them. The authors therefore contradict Jones et al. (below) and say that there are substantive differences between large landholders and smallholders – though this observation is restricted to the West.

Taxation

D'Amato, A.W., P.F. Catanzaro, D.T. Damery, D.B. Kittredge, and K.A. Ferrare. 2010. Are Family Forest Owners Facing a Future In Which Forest Management Is Not Enough? *Journal of Forestry* 108(1): 32-38.

Family forests represent the largest proportion of forestland within the United States; however, the processes of forest conversion, fragmentation, and parcelization are drastically impeding the ability to manage these lands and maintain the benefits they provide. One factor suggested as driving this trend is the inability of landowners to meet the property tax burden on their land. The authors evaluated the effectiveness of three tools commonly suggested for meeting the financial demands of property taxes: (1) use of economic returns from timber management, (2) enrollment in a current-use tax program, and (3) sale of a conservation easement, within a rural watershed in western Massachusetts. The results indicate that revenue from timber management is insufficient at covering property taxes and that application of measures such as the sale of conservation easements will be critical in maintaining the viability of forest ownership in areas of rising land values and property taxes.

Eckhoff, M., K. Mackes, T. Reader. 2007. Assessing State-Sponsored Tax Incentive Programs for Nonindustrial Private Forest Landowners in the Western United States. *Western Journal of Applied Forestry* 22(4): 253-260.

In 1982 Colorado approved a constitutional amendment that, in part, provided a lowered property tax rate for agricultural lands. Forested lands were not considered agricultural lands until 10 years later when a statute passed providing for such a consideration, under the Forest Ag program. This new program has created a number of unanticipated consequences, such as increasing stress on county government coffers. This stress may cause the program to be terminated and suggests a need for program reevaluation. As an initial step toward reevaluation, property tax programs affecting nonindustrial private forestland in the western United States were examined. Of the 11 contiguous states, 18 distinct programs were cataloged.

Finley, A.O., D.B. Kittredge. 2006. Thoreau, Muir, and Jane Doe: Different Types of Private Forest Owners Need Different Kinds of Forest Management. *Northern Journal of Applied Forestry* 23(1): 27-34(8).

The authors present a three-phase segmentation analysis designed to highlight the heterogeneity of forest ownership values and attitudes toward government control, privacy, and environmental protection held by a sample of Massachusetts private forest owners. This case study explores private forest owner characteristics that are associated with enrollment into Massachusetts' Chapter 61 current-use forest property tax program, which requires a professionally prepared 10-year forest management plan. The authors suggest the key to increasing landowner participation in forest management programs is to (1)

recognize this heterogeneity of the target population, and (2) tailor the program to meet segment specific needs and desires.

Fortney, J., K.G. Arano, M. Jacobson. 2011. An evaluation of West Virginia's managed timberland tax incentive program. *Forest Policy and Economics* 13(1): 69-78.

West Virginia's Managed Timberland (Managed Timberland) is designed to retain private forest land in forested use. In West Virginia, although private forest land owners hold 9.7 million acres of forest land (83% of forest land), Managed Timberland enrolled acres have remained at approximately 2 million acres since 1998. This lack of enrollment may be a cause for concern regarding the success and benefits of the program. This study evaluates West Virginia's Managed Timberland program, examines the factors that influence forest landowners' decision to participate in the program, and proposes strategies for increasing enrollment and improving the program. Most participants (51%) indicated that a longer contract time was a favorable change to the program. Many non-participants reported that they were not enrolled in Managed Timberland because they had never heard of the program.

Greene, J.L., T.J. Straka, and R.J. Dee. 2004. Nonindustrial private forest owner use of federal income tax provisions. *Forest Products Journal* 54(12): 59-66.

NIPF landowners in South Carolina were surveyed via a mail-in questionnaire to determine the relationship between certain demographic characteristics and knowledge and use of seven beneficial federal income tax provisions. A little more than 50% of landowners were aware of provisions specifically designed for forest landowners- the reforestation tax credit, amortization provisions, and the ability to exclude qualifying reforestation cost-share payments from gross income. The demographic characteristics associated with owner knowledge of all seven provisions included membership in a forest association, use of a written management plan, and high household income. Unfortunately, the authors did not collect and/or report information on the method by which landowners learned of these provisions, which would be helpful in revealing the best way to disseminate information for participation in programs. The NIPF demographic information collected differed from data obtained in South Carolina by Birch in 1996 using similar methods. Participants in this survey were older, less likely to be blue collar, owned more land, and were more likely to own forestland for timber production.

Smith, N. R., P. Bailey, H.L. Haney, D. Salbador, J.L. Greene. 2008. The impact of federal and state income tax liabilities on timber investments in the West. *Western Journal of Applied Forestry* 23(2): 121-126.

Federal and state income taxes are calculated for hypothetical forest landowners in two income brackets across 13 states in the West to illustrate the effects of differential state tax treatment. The income tax liability is calculated in a year in which the timber owners harvest \$200,000 worth of timber. State income taxes range

from highs of \$19,693 for middle-income and \$34,993 for high-income landowners in Oregon to no income tax in Alaska, Nevada, Washington and Wyoming. After-tax land expectation values for a forest landowner in Oregon are also calculated to illustrate the importance of tax planning on returns to a timber investment. The need for adequate tax accounting is supported by the results.

Straka, T.J., J.L. Greene. 2007. Reforestation tax incentives under the American jobs creation act of 2004. *Southern Journal of Applied Forestry* 31(1): 23-27.

The American Jobs Creation Act of 2004 made significant changes in the reforestation tax incentives available to private forest owners. Owners can now deduct outright reforestation costs up to \$10,000 per year for each qualifying timber property and amortize any additional amount over 8 tax years. To assess the financial benefit the new incentives provide to forest owners, the authors developed spreadsheets that calculate after-tax Bare Land Value (BLV) for a representative southern pine management plan under three tax situations: no reforestation incentives, the incentives under previous law, and the incentives under the current law. They found that compared to no tax incentive, the current law chiefly benefits owners with high non-timber income, increasing BLV by an amount equivalent to a reforestation cost share of roughly 25 to 30% as opposed to 5 to 15% for owners with low or median income. Compared to previous law, the current law chiefly benefits owners of large forest holdings, increasing BLV by an amount equivalent to a reforestation cost share of roughly 10 to 20%. For owners of small forest holdings, however, BLV decreased by an amount equivalent to a 5 to 10% increase in reforestation costs. These findings are significant as Congress likely intended that the new incentives continue to benefit primarily “small woodland owners” with modest incomes and forest holdings.

Invasive Species Management

Howle, M.B., T. J. Straka, and M. C. Nespeca. 2010. Family Forest Owners' Perceptions on Chemical Methods for Invasive Species Control. *Invasive Plant Science and Management* 3(3):253-261.

Focus group methodology in a field demonstration setting was used to obtain qualitative data on the perceptions of family forest owners relating to treatment efficiency and feasibility of herbicide control methods. Interviews took place on sites where various strategic herbicide treatments were implemented for Chinese privet (*Ligustrum sinense*) control using the active ingredients glyphosate and metsulfuron. Forest owners expressed unease about the possibility for post-treatment privet reestablishment due to reseeding or other factors and opinions surfaced calling for selective chemicals or application methods that would spare non-target species. Furthermore, treatment cost effectiveness with regard to timber value, the possible need for expensive multiple treatments, cost-share incentives, and treatment guarantees from herbicide applicators were participant concerns. Environmental concerns surfaced about possible effects of both herbicide use and the

invasion of privet on natural systems and an unexpected result was a strong feeling among the forest owners that focus groups are a powerful demonstration tool.

Fire Management

Jarrett, A., J. Gan, C. Johnson, I.A. Munn. 2009. Landowner Awareness and Adoption of Wildfire Programs in the Southern United States. *Journal of Forestry* 107(3): 113-118.

The authors surveyed family forestland owners in five states in the southern United States to identify their perception, awareness, and adoption of wildfire prevention and mitigation programs. Wildfire was perceived as an imminent threat by the majority of the survey respondents, and over two-thirds of them have taken some preventive measure. Program awareness, wildfire experience and risk perception, information sources, wildfire preventive activities, and preferences for government interventions differ across racial groups; experience with wildfire, knowledge and activities of fire protection, information sources, and desire for government intervention and technical assistance are also significantly different between male and female landowners. Additionally, program awareness by landowners does not necessarily translate into action in preventing and mitigating wildfire, suggesting that additional assistance and stimuli would be needed to encourage private landowners to be more proactive against wildfire.

International Findings

Bieling, C. 2004. Non-industrial private-forest owners: possibilities for increasing adoption of close-to-nature forest management. *European Journal of Forest Research* 123:293–303.

Bieling analyzes how NIPF owners in the Black Forest region of Germany assess and implement “close to nature” forestry practices. Using the survey method, NIPF were segmented into three groups based on their interests in forests: economically interested, conceptually interested (more diverse interests likened to Boon’s (2005) hobby owner), and uninterested. Wood sale, personal wood supply, investment, and financial security through property were all significant factors differentiating the different ownership classes. Family tended to have a more powerful influence on forest management decisions than professional foresters, colleagues, friends or neighbors. The theoretical model used to group family forest owners by the degree that their forestry practices balance economics and conservation could easily be applied to the United States.

Boon, T.E., H. Meilby, and B.J. Thorsen. 2004. An empirically based typology of private forest owners in Denmark: Improving communication between authorities and owners. *Scandinavian Journal of Forest Research* 19(supplement 4): 45-55.

Much like the United States, Denmark has diverse segments of private forestland owners. Boon et al. surveyed a representative sample of private Danish family forest owners owning more than 7 acres to group them according to their ownership objectives. The segmentation analysis identified three main groups: classic owner, hobby owner and indifferent farmer. Each group valued their forest for different reasons, yet overall, aesthetic and recreational benefits were more important than economic and public recreational values. These findings parallel previous results of studies conducted in Finland, Sweden and Germany and can be used to understand how European family forest owners compare to their counterparts in the United States.

Hogl, K., M. Pregernig, and G. Weiss. 2005. Who are Austria's forest owners? Attitudes and behavior of traditional and new forest owners. Small-scale forestry in a changing environment. *Proceedings of the International Symposium IUFRO Research Group 3.08.00 Small-Scale Forestry*: 279-288.

Kvarda, M.E. 2004. 'Non-agricultural forest owners' in Austria - a new type of forest ownership. *Forest Policy and Economics* 6(5): 459-467.

Kvarda details a shift in small-scale forest ownership in Austria toward “non-agricultural forest owners” who live in more urban areas, have non-agricultural professions, and rely on other sources of income besides that derived from forest products on their land. This new class of landowner, like ex-urbanites in the United States, values their forestland for enjoyment (recreation and as a hobby), and non-commercial utilization of timber for their own needs and those of future generations. The study serves as a parallel to private land ownership change in the United States.

Novais, A. and M. Canadas. 2010. Understanding the management logic of private forest owners: A new approach. *Forest Policy and Economics* 12(3): 173-180.

Recently, several typologies of non-industrial private forest owners were established in order to assess their objectives and attitudes toward forests. However, current management practices and work organization have usually not been explicitly addressed in these empirically based typologies. In a context of increasing outsourcing and decreasing family work in forests, it is important to know the forest practices, who carries them out, and with whose labor and equipment. The interrelated knowledge of these variables sheds light on the constraints faced by different forest owners and about the agents caring for their forests. Such knowledge can also improve the understanding of forest owners' behavior and, therefore, be useful for the design and implementation of forest policies. The work models of Portuguese non-industrial private forest were identified with these goals in mind. A cluster analysis, using a representative nationwide sample and an empirically based

set of variables, was instrumental in identifying six work models. The interrelation amongst these models and other variables such as landholding attributes (e.g. forest size and dominant species), owners' social profile, and their economic goals was also assessed. Finally, the main dynamics of private owners' forest management are outlined.

Appendix – Forest Service Technical Reports (Regional)

The below reports, prepared by the US Forest Service, are provided for the reader's reference. These documents were not reviewed in detail for this paper (save Birch's 1994 general report). They are fairly detailed quantitative profiles of private forest owners in different regions of the US. As such, they would be particularly useful in detailed analyses of a site-specific nature, and may be of interest in tracking demographic changes over time and space.

- Amacher, G. S., M. C. Conway, and J. Sullivan. 2004. Nonindustrial forest landowner research: A synthesis and new directions. In: Gen. Tech. Rep. SRS-75 Chapter 22:241-252.
- Bengston, D.N., B.J. Butler, S.T. Asah. 2009. Values and motivations of private forest owners in the United States: a framework based on open-ended responses in the national woodland owner survey. Proceedings of the 2008 Northeastern Recreation Research Symposium; 2008 March 30 - April 1; Bolton Landing, NY. Gen. Tech. Rep. NRS-P-42. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station. p. 60-66.
- Birch, T.W., 1982. The forest-land owners of Ohio, 1979. U.S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station Resource Bulletin NE-74, 84 p.
- Birch, T.W., 1983. The forest-land owners of New York. U.S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station Resource Bulletin NE-78, 80 p.
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- Birch, T.W., 1989. Forest-land owners of New Hampshire, 1983. U.S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station Resource. Bull. NE-108, 96 p.
- Birch, T.W., 1996a. Private forest-land owners of the Northern United States, 1994. U.S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station Resource Bulletin NE-136, 293 p.
- Birch, T.W., 1996b. Private forest-land owners of the Southern United States, 1994. U.S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station Resource Bulletin NE-138, 195 p.
- Birch, T.W., 1996c. Private forest-land owners of the United States, 1994. U.S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station Resource Bulletin NE-134, 183 p.
- Birch, T.W., 1996d. Private forest-land owners of the Western United States, 1994. U.S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station Resource Bulletin NE-137, 249 p.
- Birch, T.W., Butler, B.J., 2001. Private Forest-Land Ownerships of New York: 1980 and 1994. U.S. Department of Agriculture, Forest Service, Northeastern Research Station Resource Bulletin NE-153, 75 p.

- Birch, T.W., Dennis, D.F., 1980. The forest-land owners of Pennsylvania. U.S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station Resource Bulletin NE-66, 90 p.
- Birch, T.W., Kingsley, N.P., 1978. The forest-land owners of West Virginia. U.S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station 76 p.
- Birch, T.W., Lewis, D.G., Kaiser, H.F., 1982. The private forest-land owners of the United States. U.S. Department of Agriculture, Forest Service Resource. Bull. WO-1, 64 p.
- Birch, T.W., Powell, D.S., 1978. The forest-land owners of Kentucky. U.S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station 101 p.
- Butler, B.J. 2008. Family Forest Owners of the United States, 2006. Gen. Tech. Rep. NRS-27. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station. 72 p.
- Butler, B.J., J.H. Hewes, P. Catanzaro, J.L. Greene, M.A. Kilgore, D.B. Kittredge, J. Langer, Z. Ma, A. Reuben, M. Tyrrell. 2010. Effects of federal, state, and local tax policies on family forest owners: Technical report. FFRC Research Paper No. 2010-01. Amherst, MA: USDA Forest Service/University of Massachusetts Amherst, Family Forest Research Center 199 p.
- Butler, B.J., E.C. Leatherberry, and M.S. Williams. 2005. Design, implementation, and analysis methods for the National Woodland Owner Survey. Gen. Tech. Rep. NE-336. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northeastern Research Station. 43 p.
- Carpenter, E.M., Hansen, M.H., 1985. The private forest landowners of Michigan. U.S. Department of Agriculture, Forest Service, North Central Forest Experiment Station Resource. Bull. NC-93, 55 p.
- Carpenter, E.M., Hansen, M.H., St. John, D.M., 1986. The private forest landowners of Minnesota--1982. U.S. Department of Agriculture, Forest Service, North Central Forest Experiment Station Resource. Bull. NC-95, 55 p.
- Ehlen, C. F. 2004. Private landowner perspective on landscape management. General Technical Reports of the US Department of Agriculture, Forest Service (596:75-77).
- Jakes, P. 2006. Forestry cooperatives: what today's resource professionals need to know. Proceedings of a satellite conference; 2003 November 18 St. Paul, MN. Gen. Tech. Rep. NC-266. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Research Station. 62 p.
- Kingsley, N.P., 1975. The forest-land owners of New Jersey. U.S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station RB-NE 39, 24 p.
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- Kingsley, N.P., Birch, T.W., 1980. The forest-land owners of Maryland. U.S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station Resource Bulletin NE-63, 78 p.
- Kingsley, N.P., Finley, J.C., 1975. The forest-land owners of Delaware. U.S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station Resource Bulletin NE-38, 19 p.
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- Leatherberry, E.C., Kingsley, N.P., Birch, T.W., 1998. Private timberland owners of Michigan, 1994. U.S. Department of Agriculture, Forest Service, North Central Forest Experiment Station Resource Bulletin NC-191, 84 p.
- Londo, A.J., and J.B. Auel. 2004. An Assessment of Mississippi's Nonindustrial Private Forest Landowners' Knowledge of Forest Best Management Practices Gen. Tech. Rep. SRS-71. Asheville, NC: U.S. Department of Agriculture, Forest Service, Southern Research Station. pp. 4 p.
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- Siegel, W. C., Haney, H. L., Greene, J. L. 2009. Estate planning for forest landowners: what will become of your timberland? Gen. Tech. Rep. SRS-112. Asheville, NC: U.S. Department of Agriculture Forest Service, Southern Research Station 180 p.
- Solari, K., Stein, S., Butler, B.J., 2004. Wildland waters: private forests on the frontline. U.S. Department of Agriculture, Forest Service FS-790, 24 p.
- U.S. Forest Service, 2006. Cooperating Across Boundaries: Partnerships to Conserve Open Space in Rural America. United States Department of Agriculture, Forest Service FS-861.
- U.S. Forest Service. 2008. Preserving the Family Woods: tools to help guide the transfer to the next generation of landowners. NA-IN-04-08 CD. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, State and Private Forestry, Northeastern Area.
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