

Subdivide or Silviculture: Choices Facing Family Forest Owners in the Redwood Region¹

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Abstract

Families or family businesses own nearly all of the private redwood forestland in California. Family forest owners have practiced both subdivision and silviculture for decades but the dominant theme for most family owners is environmental stewardship. Parcel size is more important than expressed values as a predictor of resource management activities. All landowners with more than 50 acres undertook high levels of resource stewardship regarding controlling invasive species, protecting water quality, improving fish and wildlife habitats, and removing individual trees to promote forest health. Timber harvesting was undertaken by 80 percent of the ownerships with 500 acres or more, but became progressively less common for smaller ownerships. Sustainable timber production is the most significant legal revenue-generating alternative to real estate for forest properties. Unlike most other resource management activities that are discretionary, timber harvesting in California can require permission from up to five state agencies and three federal agencies. High transaction costs limit involvement to forest owners with both large land holdings and strong skills in business management. It is not inconceivable that California's forest ownership pattern could become more like Washington State over time where small rather than large holdings represent the majority of family forestland.

Key words: family forests, land use change, sustainable forestry, timber harvesting

Introduction

Over the past 40 years, resource management of private lands in the redwood region has been a source of controversy as old growth redwood forests were logged and regenerated, wild and hatchery raised salmon populations fluctuated, and invasive species such as *Phytophthora ramorum* (cause of Sudden Oak Death) spread rapidly. A recurring theme in the public debate is whether timber harvesting is positively or negatively correlated with environmental stewardship activities. While the practices of the large industrial ownerships of forestland are well known due to their extensive permitting and planning documents, much less is known about resource management practiced by families with smaller ownerships. To increase understanding of the family owned forest and rangeland properties, a team of

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University of California Cooperative Extension and campus-based researchers surveyed California forest and rangeland owners in 2008. This paper uses a subsample of forest landowners (half from coastal forests and half from inland forests) to test hypotheses concerning resource management on family forests. We conclude with some hypotheses on the potential interaction of resource management and forest ownerships over the coming decades.

Methods

A mail questionnaire was sent to a sample of forest and rangeland owners on parcels greater than 3 acres in size from 10 representative counties in California. The counties included in the study were Humboldt, Sonoma, Mendocino, Shasta, Sierra, Plumas, El Dorado, Santa Barbara, San Diego, and Contra Costa.

Within each county, individual survey recipients were selected based on a stratified random sampling design. The sample was drawn from a statewide land parcel database created in 2003 by CalFire for the Forest and Range Assessment (CDF 2003). Parcel size was then sub-categorized into four groups: 3 to 9 acres, 10 to 49 acres, 50 to 499 acres, and greater than 500 acres. Equal samples were pulled from each size category. The resulting sample demographics have more small and medium size landowners compared to the proportion of total private forest and range land they own (Butler 2008). Due to the high standard errors on statewide estimates and the large variation in county-to-county forestland ownership patterns, definitive regional implications cannot be drawn from the statewide data analyses. The greater value comes from insights into factors such as ownership size, values, affluence, and local residency on resource management actions.

A statewide subsample of 200 forest owners was taken from the 670 forest and rangeland respondents for this analysis. Although only half of the forest owner respondents were from Sonoma, Mendocino and Humboldt counties, we used the total data set of statewide forest owners to provide greater statistical power. There was no statistically significant difference in the level of resource management activities between the coastal and inland forest areas.

Results and discussion

The survey results also included responses related to positions, values, actions, and additional information requests. We used the answers they provided on a 17-part question on their reasons for owning their land to create four unique groups based on environmental, family and community, and financial values (*table 1*). The results were analyzed using the K means cluster routine in the JMP software program (SAS Institute 2009). We gave the resulting four groups different names that match the results of Butler et al. (2007) in their analysis of a nationwide data set of family forest owners. It is important to note that our 'forest investor' group often own multiple parcels and had considerably larger ownerships than the other groups.

The names given to the different values-based clusters capture a dominant trait of each group. The percentages in the following tables refer to the number of answers that considered an attribute to be an important reason for forestland ownership.

Table 1—*Summary of characteristics of California family forest owners clusters based on environmental, family and community, and financial values.*

	Forest investor	Business family	Gardener family	In-heritor
Percent of total sample	16%	49%	22%	13%
Butler et al. (2007) typology	Supplemental income	Working the land	Woodland retreat	Ready to sell
Sample Size	30	91	41	25
> 50 acres	25	43	18	10
< 50 acres	5	42	23	14
No size reported	0	6	0	1
Median size in acres	1260	50	40	35
Reasons to own forestland				
Environmental values (n=5)	51%	71%	79%	20%
Family and community values (n=6)	16%	58%	56%	26%
Financial values (n=11)	50%	45%	23%	27%

The forest investor type captured all of the very large land holdings in the sample and was the only group where less than half the group did not live on the land or within 50 miles. Notwithstanding their moniker and large land holdings, their median annual income was considerably lower annual incomes than either of the two family groups. Annual income did not have a significant positive or negative influence of resource management actions across the whole sample. While the two family types have very similar values on most topics, the business family group had a stronger focus on the positive financial values related to owning forestland. The gardener family appears to most closely represent the archetypal city dweller that chose to move to a rural area. The inheritor group (the ‘ready to sell’ group in the Butler (2007) typology) generally had lower incomes, less interest in a children-friendly environment, and a greater interest in selling rather than managing the forestland. *Table 2* provides demographic information on the specific responses used to create the groups in the preceding table.

Table 2—Positive responses to “reasons for owning land” questions from family forest owners in the University of California Landowner survey.

UC Landowner Survey Family Forest Typology	Forest investor	Business family	Gardener family	In- heritor
Sample Size	30	91	41	25
DEMOGRAPHICS				
live on land or nearby	37%	59%	78%	72%
income > \$100,000/year	37%	45%	51%	20%
retired	20%	36%	37%	28%
timber/range job	20%	19%	15%	8%
ENVIRONMENTAL				
protect environment	80%	68%	83%	4%
grow own food	0%	44%	59%	4%
preserve open space	67%	67%	85%	8%
live near natural beauty	50%	95%	98%	52%
recreational opportunities	57%	81%	68%	32%
simpler life	13%	84%	80%	44%
FAMILY AND COMMUNITY				
small community	20%	82%	76%	28%
good to raise children	13%	54%	61%	20%
escape city crime pollution	20%	87%	68%	36%
ex-city dweller	37%	32%	49%	36%
close to friends and family	0%	36%	15%	16%
connect to higher power	10%	31%	46%	0%
FINANCIAL				
add land	73%	46%	2%	20%
source of income	53%	40%	15%	16%
support local economy	43%	27%	17%	4%
family tradition/business	47%	52%	34%	16%
good financial investment	80%	82%	15%	36%
land appreciation	80%	84%	32%	52%
harvest timber	67%	38%	27%	32%
approached to sell	53%	36%	39%	36%
will sell	3%	12%	7%	32%
will give to children	47%	73%	68%	52%
will donate	0%	0%	0%	0%

How long have families owned their land?

The large number of willing buyers and willing sellers of family forestland in California as well as succession within families has led to a significant turnover in family forest ownership. *Figure 1* compares the length of time the forest property has been in the family for the different clusters. Both the business family and the gardener family had very high percentages of relatively recent land purchases. Across all groups, nearly 80 percent of the current owners became owners of their property after 1970.

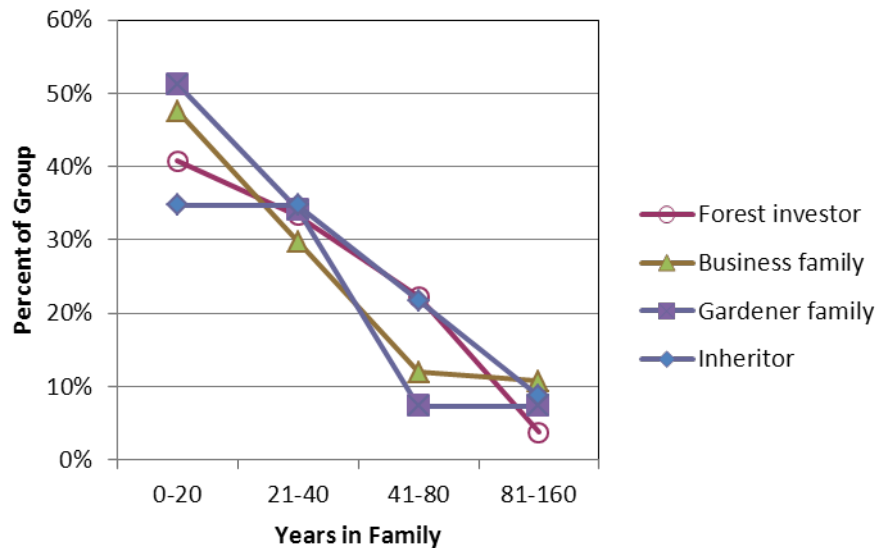
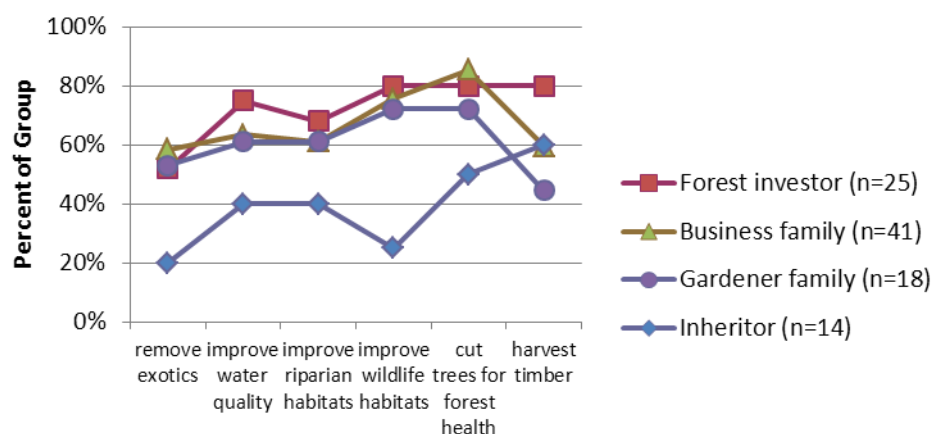


Figure 1—Length of time of family forest ownership.

Is ownership size or values the more important driver of resource management actions?

In addition to responses on positions (e.g., “I would like access to more land for hunting and fishing in my area”), and values (e.g., “I own land to help protect the environment”), we also collected responses on resource management activities undertaken by landowners. We used a small subset of those action responses that range from simple (remove exotics by pulling up weeds) to complicated (file a timber harvest plan) to compare the actions undertaken by different sub-samples of owners.

Figure 2 illustrates the resource management activities undertaken by the four value-based clusters for the medium and large ownerships (greater than 50 acres).



Resource Management Activities (from simple to complicated)

Figure 2—Resource management activities for ownerships larger than 50 acres by value group.

Among these ownerships, all the owners with strong environmental, family and community values also reported high levels of environmental stewardship activities. There was less consistency with regard to timber harvesting across the value-based clusters.

As shown in *fig. 3*, ownership size had more explanatory power across the range of resource management activities. The first five actions in both figures require expenditures of time and money by the landowner and can be considered as environmental ‘gifts’ since the benefits spill over across the landscape. It is noteworthy that few of the forest landowners reported being recipients of cost share awards or grants for these activities. They also did not have positive opinions regarding the quality of management advice they received from state and federal agencies associated with water quality and habitat issues. (Ferranto et al.⁵). Overall, it is apparent that forest owners with parcels larger than 50 acres are willing to invest considerable amounts of their own resources in environmental stewardship. Timber harvesting was practiced by 80 percent of owners with 500 acres or more, but dropped by half for each successively smaller ownership size class in our study.

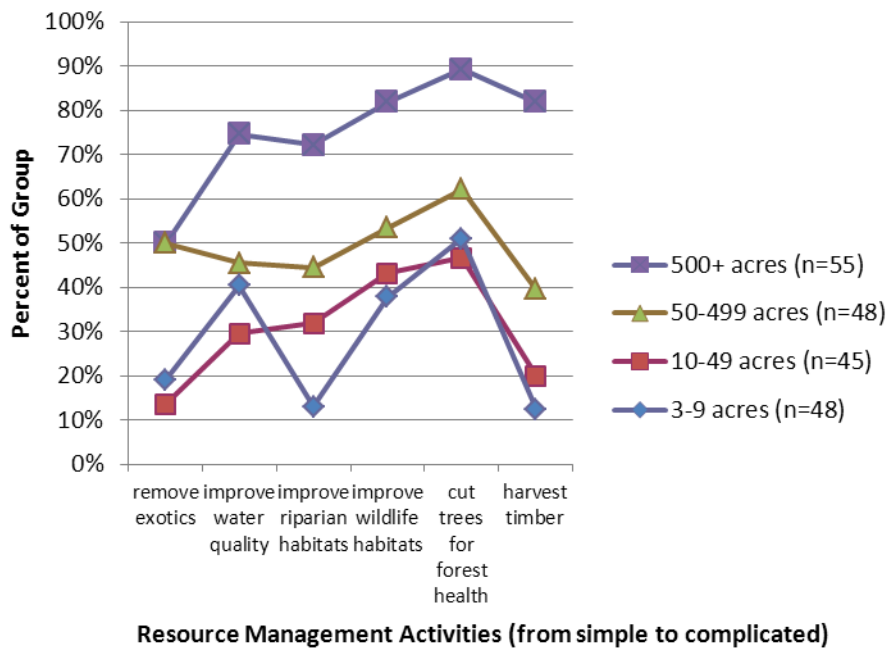


Figure 3—Resource management activities by ownership size.

For ownerships larger than 50 acres, there is a strong correlation between timber harvesting and four of the five other resource management activities. *Table 3* summarizes the probability of an owner with more than 50 acres undertaking an action as a function of whether they reported timber harvesting.

⁵ Ferranto, S.; Huntsinger, L.; Stewart, W.; Getz, C.; Nakamura, G.; Kelly, M. 2011. **Consider the source: the impact of media and authority in outreach to California's forest and rangeland owners.** Unpublished.

Table 3—Correlation between environmental stewardship activities and timber harvesting for forest ownerships larger than 50 acres (n=96).

Environmental stewardship activity	Harvest timber	Do not harvest timber	p value
Remove exotics	.525	.457	.5245
Improve water quality	.738	.389	.0007
Improve riparian habitat	.721	.389	.0012
Improve wildlife habitat	.836	.486	.0003
Cut trees for forest health	.921	.500	.0001

When the two analytical approaches are compared, ownership size has a much stronger explanatory effect than the expressed values, especially for ownerships larger than 50 acres. Timber harvesting was less common than the other activities for most forestland owners. Unlike most other resource management activities that are discretionary, timber harvesting in California can require permission from up to five state agencies and three federal agencies. Done successfully, it can provide enough revenue to justify the ownership of land that has a high market value for alternative uses. The relatively low percentage of timber harvesting among medium (40 percent) and small (20 percent) sized ownerships suggests that there are a significant disincentives involved to this activity.

Does ‘local’ matter?

Since many of the environmental stewardship outcomes can only be appreciated by the owners if they visit the land regularly, we tested whether having a primary residence on the forestland or living within 50 miles of the forest property had an impact of resource management activities (*table 4*). For ownerships larger than 50 acres, the ‘local’ bonus varied from 19 percent to 49 percent. The flip side is that non-local forest owners are considerably less active in both environmental stewardship and timber harvesting activities.

Table 4—Influence of local residency on resource management activities for ownerships larger than 50 acres.

	Remove exotics	Improve water quality	Improve riparian habitats	Improve wildlife habitats	Cut trees for forest health	Harvest timber
Not Local (n=42)	45%	51%	50%	56%	67%	48%
Local (n=56)	54%	68%	70%	81%	87%	71%
Local/Non	1.19	1.33	1.40	1.45	1.30	1.49
Local ratio						

How many forest ownerships are at risk of getting smaller in the redwood region?

The preceding analysis illustrates very strong resource management values and actions among family forest owners in California with more than 50 acres of forestland. They place considerable value on the self-provision of environmental outcomes such as improved water quality, fish and wildlife habitats, and forest health or resiliency. Although their goals seem to match those of the regulatory agencies,

there appears to be only limited cooperation. However, the general trend of increasing real estate prices compared to flat or declining commodity prices suggests that current land use and resource stewardship patterns could change. The following figures (*fig. 4, fig. 5*) show the distribution of forestland by parcel size (large ownerships are typically comprised of a number of medium sized parcels) for Sonoma, Mendocino and Humboldt counties. There are large acreages that potentially could be owned and managed as much smaller operational units without any need to request a parcel split.

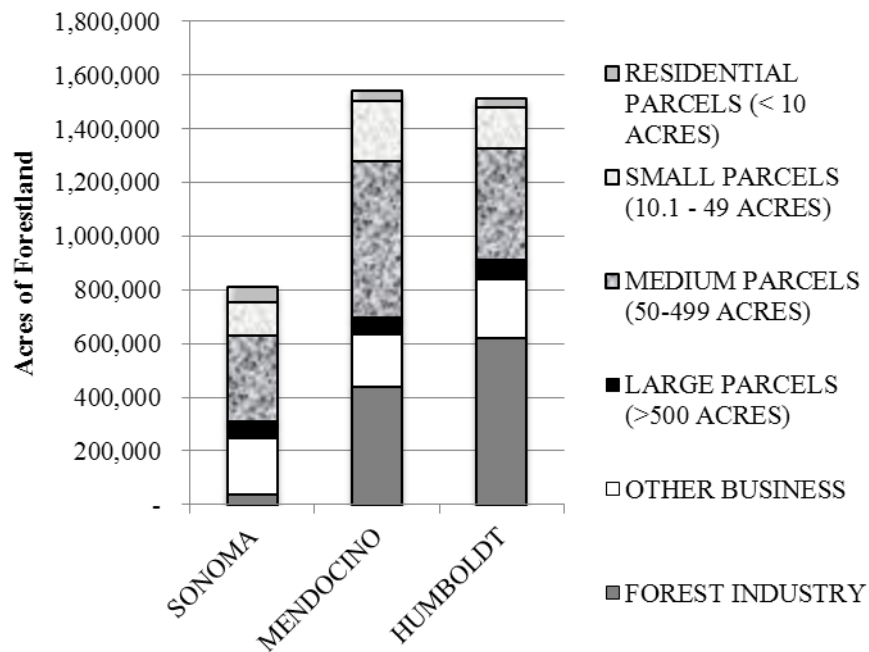


Figure 4—Area of forestland in family and business ownership in Sonoma, Mendocino, and Humboldt Counties.

While the rates of other environmental stewardship activities were positively correlated with timber harvesting, only timber harvesting generates revenue. For all forest landowners, there is a vibrant real estate market ready to purchase the ownerships 'as is' or to be further broken down into smaller units. California currently has a distribution of family forest ownerships very similar to Oregon where larger ownerships comprise most of the family forestland. However, the comparative economic advantages of non-timber valuation for small and medium sized ownerships could shift family forest ownership patterns towards those of Washington state.

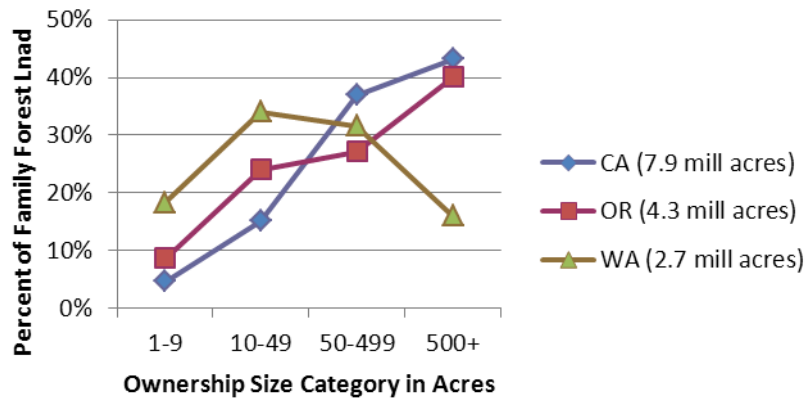


Figure 5—Distribution of family forestland in California, Oregon, and Washington (from Butler 2008).

Conclusion

Families own a substantial portion of the forests of the redwood region. Most of these parcels have changed ownership in the past forty years. Family forest owners have practiced both subdivision and silviculture for decades but the dominant theme for most family owners is environmental stewardship. The results of a 2008 survey of forest landowners documented very high levels of environmental stewardship activities that produce no revenue and provide benefits that extend beyond the property boundaries. Environmental stewardship actions were positively correlated with timber harvesting. All actions were more common for ownerships larger than 500 acres and declined as ownerships became smaller. It is smaller ownerships, however, that would be most affordable to the next wave of urban and suburban residents who would like to buy their own forest retreat. While the goals of stricter state environmental quality regulations seem to be closely aligned with the goals of most family forest owners in California, there does not appear to be much mutual recognition of common goals. The survey data also suggests that the high transaction costs limit involvement in timber harvesting to forest owners with large land holdings and strong skills in business management. Since sustainable timber production is the most significant legal alternative to real estate sales as a means for generating revenue from forest properties that are too large to be used as a single residential property, it is not inconceivable that California's forest ownership pattern would become more like Washington State over time where small rather than large holding represent the majority of family forest land.

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