

Oak trees have varied effect on land values

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On rangelands suitable for future rural subdivision, leaving some oaks may increase property values. The most favorable density in this study was 40 trees per acre.

During the last decade, subdivision of large parcels of hardwood rangeland into smaller "ranchettes" of 3 to 40 acres has become one of the primary pressures affecting the value of natural resources on these lands. Tree removal, ranging from complete to selective, is often carried out before property subdivision to generate additional revenues from the sale of wood products and increased grazing capacity.

Residual trees, however, can also provide aesthetic value and amenities for human and wildlife populations, and may influence the market value of subdivided property. The relationship between various tree densities and property market value, however, has not yet been established for unimproved hardwood rangeland subdivisions. Such information could help landowners assess the value of residual hardwood trees in areas where subdivisions will be occurring, and could assist them in making tree harvest decisions.

Estimates of market value

We conducted a study to establish the relationship between the density of blue oak (*Quercus douglasii* Hook and Arn.) and market value of unimproved rural property, based on interviews with realtors in Sonoma and Mendocino counties, north of San Francisco. We chose blue oak rangelands for this study, because they are the largest hardwood forest type in the state, with almost 3 million acres. Blue oaks are also of particular interest because of their apparent poor regeneration in some areas of the state.

Sonoma and Mendocino counties represent different levels of pressure for subdivision in the blue oak woodlands. The Sonoma County seat, Santa Rosa, is about 60 miles from San Francisco. The county's population of 340,000 on a land base of approximately a million acres is rapidly expanding, and urban pressures on the

hardwood rangelands are intense. Mendocino County, on the other hand, is more rural, with a population of only 75,000 people on 2.25 million acres. Ukiah, the county seat, is about 110 miles from San Francisco.

Photographs of several blue oak stands with different tree density were taken in July 1986 in Briones Regional Park (Contra Costa County). We took care to represent trees, grass and slope in a

similar manner in all photos and to avoid vistas, steep draws, streams, buildings and fences, and large-crowned "trophy trees." The five photos therefore varied only in tree density: 0, 40, 200, 300, and 460 trees per acre. Table 1 presents additional data on percent crown cover, volume per acre, and basal area per acre for each photographed stand. A sixth photograph representing a thinned stand (visible stumps) of approximately 100 trees per acre was added from the collection of Pamela Muick, Department of Forestry and Resource Management at UC Berkeley.

We also prepared a hypothetical property description for each county location to accompany the six photos. The description gave unifying assumptions on parcel size, distance from the property to the city limits of the county seat, the availability of water and utilities, soils, topography, zoning, access, and several other features (table 2).

TABLE 1. Data collected for five blue oak stands, Briones Regional Park, Contra Costa County

Trees per acre	Basal area per acre	Volume per acre	Crown cover
	sq ft	cu ft	%
0	0	0	0
40	52	2,258	20
200	206	5,590	50
300	123	1,324	40
460	223	3,872	70

TABLE 2. Composite property description for hypothetical blue oak rural subdivision parcel in Ukiah and Santa Rosa, California

CITY: Ukiah and Santa Rosa		COUNTY: Mendocino and Sonoma
LOT SIZE: Ukiah — 10-acre unimproved square lot Santa Rosa — 3-acre unimproved square lot		
ROADS: No on-site roads, faces county road		
SEWERS: None	WATER: City water unavailable, must dig 100' well	
ELEC. & GAS: Public utility	TELEPHONE: Service available, none now	
STRUCTURES: None		
NATURAL FEATURES: No streams present, landscape is blue oak woodland		
TOPSOIL: Stable for construction, rangeland suitability, no grapes		
SLOPE: Gentle, 5 - 10 %		
DRAINAGE: Good	EASEMENTS: None	DEED RESTRICTIONS: None
ZONING: Single-family residential, adjacent areas similarly zoned. Property and adjacent areas not in Timber Production Zone or under Williamson Act		
ACCESS & TRANSPORTATION: Good access to downtown, shopping, schools (5 miles), no public transportation		



0 trees



40 trees per acre



100 trees per acre



200 trees per acre



300 trees per acre



460 trees per acre

Oak trees add to the value of "ranchette" lands, up to a point. That point, according to real estate appraisers who saw large versions of the photos shown above, was about 40 trees per acre. Beyond that, and

especially at a density of 460 trees per acre, values decrease, possibly because it would cost more to clear the land than the harvested hardwood would be worth as firewood..

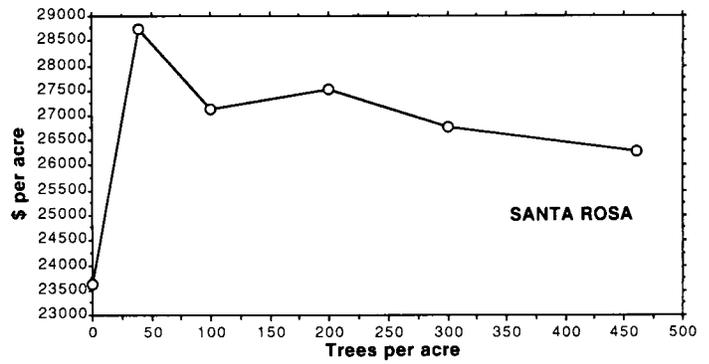
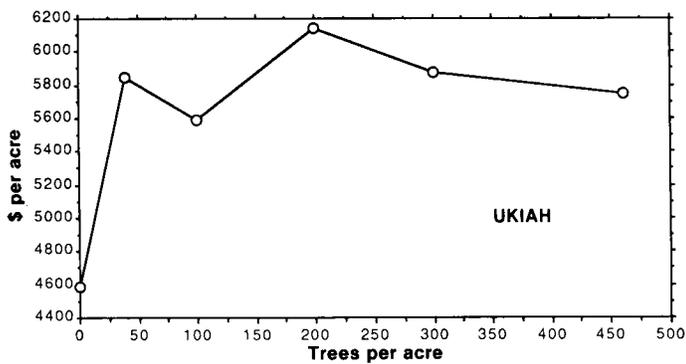


Fig. 1. Property values per acre for 10-acre lots of unimproved blue oak stands near the rural area of Ukiah were substantially lower than for 3-

acre lots in the more urbanized Santa Rosa area, but the effects of varying densities of oak trees were similar in both locations.

After consulting with the local Board of Realtors regarding the real estate agents and appraisers specializing in rural acreage sales, we selected a random sample of 15 to be interviewed in each county (30 interviews total). They were contacted in advance by telephone and letter, then interviewed in person at their offices.

Following a brief explanation of the study and its objectives, they were instructed to treat each of the six photographs as a separate piece of property, but to apply the same property description to each area. In other words, all site characteristics other than tree density were held constant. They could inspect the 8-by-10-inch color photos before estimating market value represented by each photo. "Market value" in this context was "the highest price in terms of money which a property will bring in a competitive and open market under all conditions requisite to a fair sale, the buyer and seller each acting prudently, knowledgeably, and assuming the price is not affected by undue stimulus" (from B. N. Boyce, 1975, *Real Estate Terminology*, Ballinger Publishing Co., Cambridge, Massachusetts, 137 pp.).

Results

The hypothetical unimproved lot on treeless rangeland would be worth \$4,587

TABLE 3. Average property value per acre for unimproved lots 5 miles from Ukiah and Santa Rosa, California

Trees per acre	Dollars per acre*	
	Ukiah	Santa Rosa
0	4,587 a	23,611 a
40	5,843 b	28,722 b
100	5,587 c	27,133 cd
200	6,140 bc	27,511 bc
300	5,873 b	26,756 d
460	5,743 bc	26,289 d

* Means followed by different letters are significantly different at the 0.05 level.

per acre near Ukiah and \$23,611 per acre near Santa Rosa (table 3 and fig. 1). The market value would increase by 27 percent near Ukiah (\$5,843) and 22 percent near Santa Rosa (\$28,722) for stands with as few as 40 trees per acre. In the rural Ukiah area, only slight statistical differences were detected in property value per acre with increasing tree density. A trend of decreasing property value could be seen in the Santa Rosa area as oak density increased from 40 to 460 trees per acre. It is possible that dense tree cover represents an increased cost for subdivision and home construction on the reduced parcel size (3 acres) used for the Santa Rosa interviews.

It appears that the market value for the amenities and aesthetic values associated with blue oak trees on hardwood rangelands will exceed the value that can be obtained for firewood stumpage at this time. Assuming that a cord of firewood has 85 cubic feet of solid wood, then 40 trees per acre would yield approximately 27 cords if clearcut (table 1). To equal the value that 40 trees per acre add to a property (\$1,300 per acre for Ukiah; \$5,000 per acre for Santa Rosa), the sale of firewood would have to generate a stumpage value (standing tree value net of harvesting, processing, and transportation costs) of \$48 per cord in Ukiah and \$185 per cord in Santa Rosa. The California State Board of Equalization Timber Tax Division, however, reported the average stumpage value for hardwood firewood in 1986 as only \$15 per cord.

Conclusions

This study is a preliminary attempt to establish the value of oaks on hardwood rangelands that are likely to be subject to future rural subdivision. In both the urbanized Santa Rosa setting and the more rural Ukiah setting, the results indicate that it may not be in the best economic interest of landowners to clear all oaks on

their property before subdivision. The aesthetic and amenity values associated with property having at least 40 trees per acre will yield a land value that is 22 to 27 percent higher than that of treeless property. The trends in property value as tree density increases from 40 to 460 trees per acre suggest that, for these two coastal counties, a landowner close to the city limits would not decrease, and could possibly increase, property value for subdivision with selective thinning.

This methodology and analysis can be applied to other areas of the state faced with subdivision pressures in hardwood rangelands, particularly those in which there are concerns about the loss of hardwood species. The relationship of tree cover and property value on parcels farther than the 5 miles from the county seat assumed in this study should also be investigated.

The initial results suggest that the quantification of amenity and aesthetic functions of hardwood trees may help landowners make decisions that provide adequate protection of hardwood cover in the event of subdivision. The maintenance of hardwood tree cover alone does not ensure that other concerns about subdivision, such as wildlife habitat, will be alleviated. Nonetheless, future concerns can be minimized if accurate information on the market-driven values for oak stands is made available and is coupled with county-level planning efforts that seek to maintain and enhance wildlife habitat in rural subdivisions through lot size standards and the spatial arrangement of subdivision lots.

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