CHAPTER 6
SUSTAINABILITY AND MANAGEMENT OF AGROSILVOPASTORAL SYSTEMS

Oak Woodland Ranchers in California and Spain: Conservation and Diversification

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Abstract

Data from surveys made it possible to compare properties in Cáceres Province dehesa and Californian oak savanna to gain insights into how landowner and manager characteristics fit into emergent conservation initiatives. The prevalent institutions and ecological dynamics influence the kinds of conservation initiatives in the two sites under investigation. Spanish management and land use is more diverse, reflecting the vast difference in social and economic history between Spain and California. In California today, landowner interest in diversification is limited, but where there is a large amount of land in restricted title landowners seem to be more interested in diversified and specialized production. In California, oak woodlands are ecologically comparatively inert, but the human population dynamics are quite volatile. In Spain, the woodlands change rapidly without regular human intervention, but the distribution of the human population is comparatively stable. Emerging incentive-based conservation strategies reflect these differences: California programs focus on restricting development, while Spanish programs target agricultural practices and afforestation. Cáceres and California owners and managers do share many similar attitudes toward the government and conservation programs. It appears that negotiations with woodland landowners and managers over conservation programs are about control over the operations, and about appropriate incentives. Ranchers and dehesa managers are willing to manage for different goals, employ new practices, and even surrender some components of title if the correct balance of control and incentives is offered.

Keywords: Oak savanna, afforestation, landowners, regulations, development, land use, dehesa

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Introduction

The conservation of grazed oak woodlands, known as *dehesa* in Spain, and open oak woodland or *oak savanna* in California, is an oft-mentioned goal for local environmental groups and government agencies. However, direct public investment in encouraging environmentally-beneficial agricultural uses and practices that protect these systems remains low. Their persistence as extensive habitats in large measure depends on the participation and motivation of those who own and manage the land. Despite the similarities of the woodlands (Campos-Palacín et al., 2001), the conservation incentive programs that have been adapted or developed in each place are different. We make use of available data to compare dehesa and oak savanna management, gaining insights into how the characteristics and practices of owners and managers fit into emergent conservation initiatives.

California (Fig. 1) and west-central Spain have more than 2 million ha each of oak woodlands with a well-developed understory of grasses and herbs and a history of livestock grazing. Valued for agricultural production, and enjoyed for their beauty, the woodlands are crucial reservoirs of biodiversity (Campos-Palacín et al., 2001; Díaz et al., 1997). Their extensive character, mild climate, and structurally and nutritionally rich mix of acorn-producing trees, grasslands, and shrubs make them prime wildlife habitat (Díaz and Pulido, 1995). In both countries they are more than 80% privately owned, primarily used for livestock production, and have been sharply reduced in extent by changes in land use and management (Campos-Palacín et al., 2001).

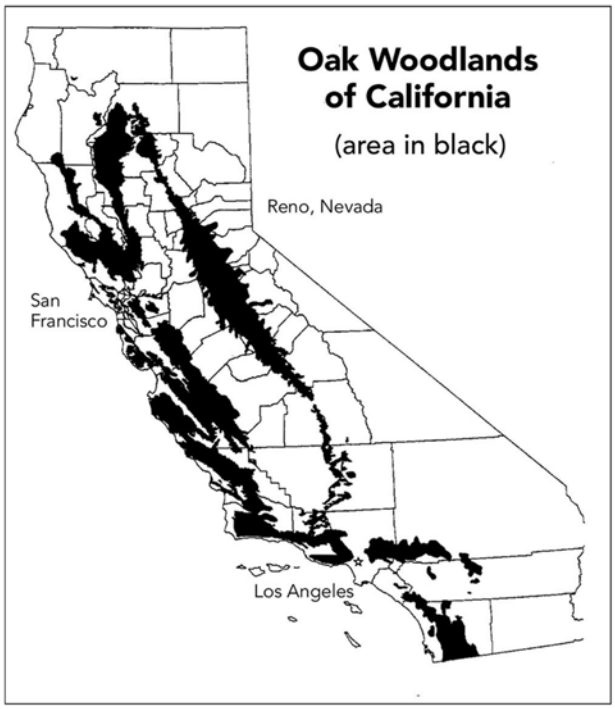

Fig. 1: California oak woodlands

We begin by looking at the conservation strategies that are currently capturing attention in California and Spain. Using surveys conducted in California and in Cáceres Province, Spain, we then compare some of the characteristics and practices of landowners and managers. To conclude, we assess the attitudes and practices we find within the context of prevalent institutions and ecological dynamics, analyzing the explanatory value of each.

Woodland conservation strategies

California and Spain have complex and overlapping jurisdictions, regulations, and institutions for rural lands, and we do not aspire to catalogue the myriad formal and informal rules that influence land use in either place. It is also beyond the scope of this paper to adequately address the differing political roots and theories of the two governments and societies. Here we focus on the ground, at the farm level, on several distinct forms of incentive-based, or voluntary, programs targeting landowners and managers that have captured attention in California and Spain. In California, the "California Land Conservation Act of 1965" and "conservation easements" are two major forms of incentive-based oak woodland conservation policy, along with a state-wide landowner education program. In Spain, on the other hand, the most visible incentive programs with a potential positive impact on dehesa are afforestation subsidies, labeling restrictions and certification, and subsidies for environmentally beneficial agriculture.

In exchange for agreeing to keep land in agriculture, rather than developing it, a California rancher pays lower annual property tax via the California Land Conservation Act. Enrollment is voluntary, and land is withdrawn by giving notice ten years in advance. The tax is only on the value of the land for agricultural production, rather than the value for development. The Act is funded by the State and is an incentive for ranchers to forgo development, but it has been shown to be least effective where land development pressures are greatest (McClaran, 1985). Where land values are extremely high, the tax benefit is simply outweighed by the extraordinary return from the sale of the property. While an agricultural property may bring $1,000 per ha, land subdivided for development may bring $10,000 to $25,000 per ha, or as much as $80,000 per ha if sold in small lots.

New incentive-based efforts to reduce development of working woodlands have largely been led by the private sector in California, through the efforts of non-governmental entities like *The Nature Conservancy* (http://nature.org) and *The California Rangeland Trust* (http://www.rangelandtrust.org) as they broker and hold "conservation easements" on private lands. Adapted from programs designed for protecting rights of way for public utilities, conservation easements are now the most widely used private sector land conservation method in the United States (Gustanski and Squires, 2000). The amount of California land under such easements increased by 225% between 1990 and 2000 (Land Trust Alliance, 2003). In exchange for tax benefits or outright payment, a landowner voluntarily agrees to a permanent deed restriction on the property title that prohibits development. This right is then held by a third party, sometimes a public agency, but often for ranch lands a non-governmental organization (NGO) land

trust. Though far from perfect as a conservation strategy (Merenlender et al., 2004), and not specifically oriented to oak wood-land conservation, easements help resolve an internal contradiction for ranchers in California, by allowing them to preserve a way of life they are overwhelmingly fond of, while extracting some of the capital value of the land by donating or selling the right to develop.

Although the transaction that creates a conservation easement is a private one, analogous to selling part of the property, and private donors often provide funding for the purchase of easements, the tax benefits are at public cost and government grants are often part of the funding used to pay for the easement. Property and inheritance taxes may be reduced and, if the landowner donates the easement, the value may be deducted from income taxes. The government generally has no role in influencing the management of the property or monitoring compliance with the terms of the easement, instead, this is left to the NGO.

Afforestation policy and subsidies are well-known incentive programs in Spain. As of 1998, 53,563 ha of holm oak, 21,353 ha of cork oak, 42,391 ha of mixed holm and cork oak, and 108,681 ha of oaks mixed with other tree species have been planted in Spain (Mariscal-Lorente, 2001). Dehesas are the highest priority for afforestation subsidies. European Union subsidies cover planting and maintenance costs through the first five years, and provide a premium to cover the loss of income resulting from afforestation – grazing is generally not allowed in plantations for twenty years after planting.

There are also government certified regional and local appellations to add value to culturally significant products such as acorn-fed ham, as well as other meats and cheeses. Origin and quality labels are important in Spain, with about 10% of farm products carrying such a label. Criteria may be a geographical origin, a special livestock breed, or the guarantee of a certain quality (Bartolomé-García, 1994). The premium prices that can be charged can help increase dehesa profits. For example, ham certified to be of the purebred Iberian breed, certified as raised in the proper manner, and certified again as finished on acorns in the dehesa in Extremadura, brings an extremely high price as *Jamón Ibérico Dehesa de Extremadura* (López-Bote, 1998). Ham from pigs produced similarly, but not of the pure Iberian breed, is referred to as *Jamón Serrano* and brings a lower price. Another successful label is *Corderex,* for lamb produced from sheep breeds with a defined quality and origin. In 2000, 443 Extremaduran sheep operations with a stock of 365,000 ewes were registered members (Junta de Extremadura, 2003).

Agro-environmental schemes were introduced at the European Union level in 1992 as an accompanying measure of the Common Agricultural Policy to promote environmentally compatible production processes (Oñate et al., 1998). Each region in Spain has designed agro-environmental schemes, some "horizontal," meaning applicable region-wide, and others "zonal," meaning that they pertain only to specific areas, usually around nature reserves. Horizontal schemes include extensification, organic farming, preservation of indigenous breeds, and agrienvironmental training. Zonal schemes may encourage livestock stocking rate reduction, reduction of fertilizer use, or the conversion of arable land into extensive grassland. These programs encourage traditional and low-intensity agricultural practices, but not dehesa management or oak recruitment in particular.

It is important to note that in both countries, existing programs are widely considered flawed and inadequate for oak woodland conservation. In Spain, subsidies for afforestation and agro-environmental practices, as well as labeling of special products, provide income to maintain the agricultural operation. However, these programs were not designed to solve particular problems in the dehesa: afforestation schemes, for example, originated to tackle the problem of agricultural overproduction in the EU. Agro-environmental programs are intended to solve general farming environmental problems. Product labels often refer more to quality criteria and a geographic origin than to specific environmental standards. All these measures have had a beneficial impact on the maintenance of the dehesa but appear too general and too vague to solve, for example, the problem of maintaining livestock grazing in the dehesa while still encouraging oak recruitment. The programs are not specifically aimed at dehesa conservation, and most are derived from a larger body of production-oriented piecemeal policies that most oak woodland conservationists would argue have done more harm than good.

California has approached encouragement of oak recruitment through education for landowners and managers about the values of oaks, from property value maintenance to wildlife habitat. While this has reduced the cutting and clearing of oaks, and increased awareness of the vulnerabilities of oaks, it has not led to significant increases in oak planting or protection of regeneration by landowners (Huntsinger et al., 1997). Conservation programs that prevent land conversion to urban or residential uses generally do only that: they do little to address the ecological problems of oak regeneration, or the long term economic viability of the agricultural operations of woodland owners. Furthermore, they do not necessarily target oak woodlands or even lands of greatest habitat or agricultural value for conservation. The California Land Conservation Act, though it enrolls the majority of ranch lands of California oak woodland ranches, has been shown to be least effective where it is needed most (McClaran et al., 1985). Land under conservation easements, though permanently conserved, is still small (less than 6% of ranch lands in 2004) and scattered (Huntsinger et al., unpublished).

Given these considerations, however, in California the most visible and growing incentive programs emphasize control of land conversion. In Spain, incentive programs gaining visibility as having the potential to improving the dehesa emphasize afforestation, and encouraging environmentally-beneficial agriculture and labeling and certification programs that support dehesa-based production.

Methods: Surveys of oak woodland landowners and managers

We examined recent available oak woodland surveys that posed the following questions:

- Are the attitudes and practices of woodland managers in California and Spain similar?
- Can these attitudes and practices explain why emergent incentive-based private land conservation strategies in each place take such different forms?

A questionnaire survey of dehesa managers and owners, conducted in 2001 by Plieninger et al. (2004) in Cáceres Province of the Extremadura Autonomous Region, provides most of our quantitative data from Spain. Though this is the heart of the Spanish dehesa country, it is only about one-fifth of the total dehesa area. We supplemented this with a survey of the literature available to us, personal observations during visits to Spain, and discussions with Spanish researchers. For California, a number of surveys conducted since 1985 provide the quantitative information used here (Huntsinger et al., 1997; Liffmann et al., 2000; Sulak and Huntsinger, 2002). Populations surveyed are similar to the California surveys but are not exactly comparable (Table 1). Some surveys focused on ranchers, while others on landowners and managers in general. Some samples are relatively large, but others are very small. Some draw on interviews, some on mailed questionnaires. Nonetheless, the consistency of the responses is striking.

Table 1: Sources of survey data.

Source	**Year**	**Population & Response Rate**	**n**	**Geographic Area**	**Code**
T. Plieninger, J. Modolell y Mainou, W. Konold. 2004.	2001	Estates > 10 ha; response rate of 37% to mail survey	59	Holm oak dehesas throughout Cáceres Province, Extremadura Region, Spain	SP1
L. Huntsinger, L. Buttolph, P. Hopkinson. 1997.	1985 & 1992	Properties > 8 ha; response rate of 76% in 1985; 80% in 1992, mail survey. Results used here are for properties grazed by livestock.	1985: 94; 1992: 79	Oak woodlands throughout state of California	CA1
R.H. Liffmann, L. Huntsinger, L.C. Forero. 2000.	1994 to 1995	Livestock producers using rangeland; 66% response to mail survey	245	Three California oak woodland counties, 1 rural and 2 urban.	CA2
A. Sulak and L. Huntsinger. 2002.	2000 to 2001	Oral interviews of ranchers in Central Sierra Nevada foothills	38	Selected ranchers in the west Central Sierra region of California	CA3

All the surveys used here, in California and Cáceres, focus on site managers of the property, whether landowners or hired managers. The publications cited in Table 1 for the surveys provide detailed information about sample selection and survey methodology. Because of our very opportunistic use of studies of limited comparability and representativeness, comparisons are only preliminary. A striking complication is that in California, most landowners are the on-site

managers, while in the dehesa, most are not. While it is the landowner that sets the overall goals for a property, and ultimately makes the management decisions, it is the manager living on the property who often is most familiar with management practices and the ecological dynamics of the property. This situation will challenge future comparative work.

While not providing an opportunity to make definitive cross-cultural conclusions, these surveys do offer insights into the shifting landscape of manager expectations and values. Furthermore, we believe that the contrasts presented are strikingly robust and likely to hold up in future research.

Results and discussion: oak woodland management

Surveys of oak woodland managers reveal similarities in management practices, goals, attitudes, and demographics, as well as some interesting points of divergence. The average dehesa property in the Cáceres study was 507 hectares (Table 2). In California, the average oak savanna ranch size was larger, from 800 to 960 hectares. Managers in Cáceres, most of them hired workers, are younger, though of similar education level. In both areas, the land has been, on average, in its current ownership for a relatively long time. California ranches tend to be family homes led by a middle-aged patriarch. The land may have been passed down through several generations, although private ownership of land in the modern sense in California did not begin until 1850. Spanish dehesa owners tend to live off-site, using the ranch for leisure activities.

Table 2: Survey responses about landowners, managers, and land, Spain and California.

	Cáceres (SP1)	**California**
Owner is resident manager	< 25%	80% (CA1) 92% (CA2)
Mean age of manager	45	59 (CA1) 50 (CA2) 57 (CA3)
Manager attended college	58%	55% (CA2) 63% (CA3)
Mean years of ownership	73	53 (CA1) 51 (CA2) 63% more than 100 years (CA3)
Mean property size	507 ha	927 ha (CA3)

In 1962, James J. Parsons wrote of the Spanish dehesa owner: "Large landholdings and absentee ownership have had a conservative influence on land use in southern Spain. The great hacienda houses [*cortijos*], nestled in the oak-covered sierras, serve as retreats from the turmoil of the city and symbolize a set of values in which the prestige of landownership looms large. The additional addiction to the hunt, whether of doves, partridges, deer, or wild boars, often gives these wildlands a value above and beyond the traditional norm" (Parsons, 1962). Numerous studies, including all those used here, have identified

California and U.S. ranchers as strongly motivated by lifestyle benefits (Torell et al., 2001). This behavior has often led to "non-rational" decision-making on the part of the rancher. However, when the environmental, lifestyle, and other non-monetary benefits to the landowner, also termed "autoconsumption values," are taken into account, the decisions made are often quite rational (Campos-Palacín and Mariscal-Lorente, 2003; Campos-Palacín, 1997).

Agricultural practices

Most dehesa operations produce more than one species of livestock, raising cattle, sheep, and goats for market (Table 3). Though a majority of respondents had pigs, in the Cáceres study area most were raised as a sideline for subsistence, not for commercial sale, and only a few operations fattened pigs on acorns specifically for Iberian ham. Goats, chickens, and horses were also common in the area, though also not sold commercially. There were many *Corderex* lamb producers and cereal crop growers. It was common to lease out firewood cutting, often in exchange for pruning. About 19% of California ranchers reported using the property themselves for recreation or a second home (CA2), but very few dehesas or ranches were used for fee-based tourism or recreation. Commercial hunting was far more common in Cáceres (Table 3). Overall, California production is notably lacking in diversity – almost all produce only cattle and herds are usually derived from the same two English breeds, Here-ford and Angus.

Table 3: Percent of surveyed dehesas or ranches producing the following products, Spain and California

	Cáceres (SP1)	**California**
Produce cattle	62%	92% (CA1) 91% (CA2)
Produce more than one kind of livestock	79%	3% (CA1) 7% (CA2-sheep) 2% (CA3)
Mean number of cattle	102	336 (CA3)
Other products for market	Small game (70%) Large game (23%) Fishing (9%) Firewood (54%) Dry farming (47%) Irrigated crops (72%) Tourism (4%)	Fee hunting/fishing (13%-CA1) (7%-CA2) Firewood (12%-CA1) (11%-CA2) Crops (11%-CA1) (20%-CA2) Recreation (3%-CA1) (2%-CA2)

Diversity in production may have historical roots. Readily available labor and a higher proportion of the population living in rural areas were long characteristic of the dehesa. Availability of workers translated to more intensive practices, with specialized rural labor for pig production, goat herding, beekeeping, charcoal production, and silviculture. On the other hand, post Gold Rush (1849)

California's rural population and labor pool were sparse. Early settlers produced cattle, the least labor-intensive form of agricultural land exploitation for arid lands, and used guns and flawed land allocation institutions to prevent sheep owners and small farmers from gaining much of a foothold. Through ups and downs in the market for beef, frequent yet unpredictable droughts, and even occasional floods, the cattle business persisted because of low costs. The Progressive Era in the United States, reaching a zenith about 1950, and the Fordism of the post-Depression period generated and solidified an agricultural mindset that emphasized homogeneity, industrial-scale efficiency, and standards for a consistent product. California livestock producers standardized breeds, weaning weights, carcass qualities, and marketing, and now, at the beginning of the 21st century, are standardizing genetic architecture. The countervailing drift toward "boutique" products like organic beef, goat, sheep cheeses, and local olive oil is recent, and comparatively tiny, though energetic.

Table 4: What ranchers say they would do if they lost some or all of their customary leased pasture in California's Central Sierra Nevadan National Forests (Sulak and Huntsinger, 2002 -CA3).

Leased Pasture Reduction	*My response would be to…..(% ranchers responding, may select all that apply)*							
	Continue as usual	Sell the ranch	Stop grazing	Reduce livestock number	Find other pasture	**Diversify my operation**	Find more work outside	Other
25%	35%	12%	6%	35%	41%	**6%**	18%	6%
50%	18%	18%	6%	35%	59%	**6%**	12%	12%
100%	18%	35%	6%	41%	53%	**18%**	18%	12%

A little over a third of California ranchers in one survey responded that diversification was an important goal for their ranch, but more than 90% responded that increasing livestock and forage were important goals, and around 75% wanted to reduce pesticide use, protect scenic values, and enhance wildlife habitat (Liffmann et al., 2000). Ranchers interviewed in the Sierra Nevada foothills were asked if they would consider diversifying their operations if they lost some of the pasture they customarily leased from the United States Forest Service (Table 4). While most of them expressed some interest in diversifying production, not one saw it as a major solution to a potential loss in resources for cattle production (Table 4). Instead, strategies that have long proven themselves were preferred: finding more land to lease, working an off-ranch job, and reducing livestock numbers. Finding more land to lease is getting difficult, however, and a third stated they would have to seriously consider selling the ranch if they lost their forest grazing resources — not only because of the loss of income, but also be-cause of the significant change in the traditional patterns of the ranch operation. In California, this would generally result in a shift in land use to housing or "ranchettes."

In fact, there are many contemporary reasons why diversification may not be

a source of great income augmentation for most U.S. ranchers. In terms of recreation and hunting, half of California and the majority of the western United States are in public ownership. Hunters use much of this land without paying an access fee. On private land, game animals belong to the state and hunting permits are state-allocated. Landowners may only charge an access fee and they may not augment or manipulate the game population directly. The large area of public land also offers substantial competition for wildlife watching and recreation. Pigs are considered damaging to oak woodland ecosystems in California, as there is no native wild boar, and goats and sheep are devoured by predators, particularly coyotes. Predator control is increasingly unpopular with the public. Lamb is high priced, and is not a common choice for the American table anymore. The growing demand for goat meat remains small and restricted to Hispanic, Islamic, and other ethnic markets.

Attitudes about government and conservation

The majority of respondents believed the government had a responsibility or duty to protect natural resources (Table 5), and threats to oaks were perceived by around half of respondents in California and Cáceres. Ranchers are more optimistic than the general scientific opinion that oak replacement is often inadequate on grazed woodlands. In Cáceres, a majority believed oak regeneration was adequate. Though not asked exactly the same question, a strong majority of California ranchers stated that they saw some or many small oaks on their property (Table 5).

Cáceres dehesa managers seem more open than California ranchers to government restriction of oak cutting (Table 5). However, when a specific case was raised, for example the restrictive and non-voluntary "*Ley de Dehesas de Extremadura*" of 1986, their response was quite negative, with less than 20% of respondents favoring it as a conservation method. Based on a compilation of previously existing laws, this law restricts land use and other activities as well as oak cutting. In fact, today it is largely ignored and little known. On the other hand, dehesa owners in a Monfragüe Shire case study were willing to follow environmentally-friendly agricultural practices if the right level of government incentives was offered (Campos-Palacín and Mariscal-Lorente, 2003). The incentives necessarily were moderated by the high value of dehesa ownership as a lifestyle benefit for landowners (autoconsumption). At present in California, little regulation applies directly to silvicultural and livestock management practices characteristic of oak woodland ranches, and no widespread incentive program for specific ranching-related agricultural practices exists.

Counties and municipalities in California are charged with land use planning responsibilities. Zoning, the establishment of controls on housing densities or land use types over particular areas, is part of this process. Such involuntary restrictions are developed under the authority of locally elected officials. The vast majority of California ranchers perceive such planning and land use designations as threats to the sustainability of ranching (Table 5). This is exacerbated when ranchers perceive that their values are held by a smaller and smaller proportion of the local population (Liffmann et al., 2000).

One striking contrast is in opinions of "protected land" designations (Table 5). In Cáceres, most landowners had a positive response to the establishment of governmentally controlled protected areas. Spanish "protected lands" are commonly privately owned, often under designations such as a "Natural Park". This sometimes creates opportunities for landowners to obtain compensation for management changes, but certainly allows landowners to continue to take advantage of governmental incentive programs and subsidies for agriculture. Although Natural Park and other designations still are controversial and some restrictions on land use or practices result in conflicts with farmers, establishment of protected areas, in contrast to the U.S., rarely includes land expropriation by the government. While land may be acquired by the Spanish government and converted to government or "public" land, as in the Spanish "National Park", it is seldom done. Less than 2% of Spain is public.

In California, a "protected lands" designation raises the spectre of government land acquisition. The land is purchased, retained, or otherwise acquired by the government and becomes public land managed by government-employed land managers, or the land is subject to involuntary highly restrictive zoning designations such as "designated open space", which preclude development with no compensation or benefits to the landowner aside from some limited tax relief. In addition, agriculture is often viewed by the public as a "problem" on open space lands, as the designation is associated with traditional park-like (simulated wilderness) land set-asides. California landowner reaction to both options is highly negative (Table 5) and we suspect landowners would react likewise in the dehesa.

More than three-fourths of owners and managers in Cáceres and California believe private lands are better managed than public lands (Table 5). Livestock producers gave the government low marks for collaboration or consultation with private citizens. It seems probable that differences in acceptability of land designation as a conservation tool hinge most on the issue of landowner management and control, and the balance between government as a usurper of lands and government as a potential source of subsidy or compensation. California ranchers have had a very negative experience with "protected areas," because the history is of public acquisition and consequent agricultural exclusion. In Spain, the dominant form of protected area is land in private landownership, and there is a history of direct government support for agriculture.

Almost half of Cáceres managers stated that the government had a right to "control agriculture." In Europe, such control comes with substantial financial investment on the part of the government in agricultural operations, including direct subsidies for agricultural producers. In California, a similar proportion of managers stated it would be acceptable for government to regulate private land if it "provided compensation."

In each country, there is participation in voluntary programs that allow land to remain private with owner management (Table 5). Among Cáceres respondents, about 43% of landowners are involved in some sort of afforestation or agro-environmental scheme, though these are not necessarily related to protection of the dehesa. In California, about three-fourths of ranchers are enrolled in the California Land Conservation Act (CACL). Conservation easements, while

increasing rapidly, still were reported by only 4% of oak woodland managers statewide in 1992 (Table 5). A recent survey in Marin County, where perhaps the first ranch-oriented conservation easement program was implemented 20 years ago, showed that 27% of ranches had conservation easements, and another 19% were considering them (Gale, 2003).

Table 5: Percent of surveyed managers with the following attitudes about the government and conservation strategies, Spain and California

	Cáceres (SP1)	**California**
Government responsibility	Government has a duty to protect nature (90%)	State has a responsibility to protect natural resources (65%-CA1)
Condition of oaks	Oaks are endangered (44%) Oaks are regenerating fine on my land (62%)	Oaks are being lost (54%-CA1) I see small oaks frequently (23%-CA1); I see some small oaks (69%-CA1)
Conservation options	Ban on oak cutting (49%) Implement dehesa law (19%)	Regulate oak use: (21%-CA1) Land use planning a threat: (81%-CA2)
	Establishment of protected areas (71%)	Want ranch to become public land when ranch is sold (3%-CA2) Want ranch to become "designated open space" when ranch is sold (19%-CA2)
	Gov't has right to control agriculture (40%)	State can regulate private land with compensation (44%-CA1)
	Private lands are better managed (78%)	Private lands are better managed (76%-CA2)
Government consultation	Regional government & agric. sector collaborate satisfactorily (6%)	State consults adequately with citizens about regulating resources (16%-CA1)
Participation in voluntary programs	Afforestation scheme: 32% Agro-environmental scheme: 28%	Tax relief 10 year contract under CLCA: (65%-CA1) (69%-CA2) (70%-CA3) Conservation Easement 4%+? (CA1, CA2)

Explaining conservation strategies

Survey results show that oak woodland and dehesa managers have many shared views. They recognize a government responsibility in conservation of natural resources, but do not want this duty to impinge on them — most of them tell us that they believe they are doing a good job taking care of their property. California ranchers typically say that they are good stewards of their land, that they understand how the land works better than others, and that an increasingly urban national population does not understand agriculture. Though they recognize a "problem" with oaks, they do not necessarily see the problem on their own property. In California and in Cáceres, ranchers report that government agencies and their personnel do a poor job of understanding or working with them. In both woodlands, we hear complaints about how government managers do not understand rural culture, and sometimes have unrealistic expectations of recreating "wilderness" conditions. It is probable that questions could be asked

that would bring out greater points of divergence in the attitudes of managers and landowners in each place, and that more precise comparative studies could reveal considerable gradations even in responses that seem superficially alike. However, clearly oak woodland and dehesa managers share optimism but also a concern about oaks, want land to be private, and believe owners should be compensated for land use or management restrictions. Obviously, they prefer incentive-based approaches over regulations.

Yet there are some very basic differences in the types of incentives that are gaining prominence for oak woodland conservation in each country. In California, the emphasis is on prevention of land conversion, while little is done to encourage afforestation or regeneration beyond education programs. The survival of an agricultural enterprise with a conservation easement is not guaranteed, and the enterprise may even incur increased management costs in meeting easement terms. Grazing is seen as a problematic introduction to the woodlands, rather than responsible for its creation - though in fact ranchers have had 200 years of influence on woodland form Tax incentives, as an indirect way of using public funds to subsidize programs, are the norm. In Spain, on the other hand, financial incentives are direct and target the agricultural operation itself, either encouraging certain forms of production, or compensating for lost production when trees are grown. Explaining these differences requires examination of the role of local ecological and demographic dynamics.

Ecology and demographics

Emerging policy strategies may be more reflective of the ecological and demographic setting of each place than of landowner attitudes and goals. In California, urban out-migration has sporadically boomed since the 1970's. Recently money has flooded out of the stock market and into second homes and country estates (ranchettes). This dynamic population growth and movement has resulted in extremely high prices for oak woodland properties, putting pressure on California landowners to sell land. In one urbanizing county, it has been more than 10 years since a ranching property was actually sold for ranching — every sale has meant the conversion of ranchlands to housing and urban development (Liffmann et al., 2000). Land use planning is done at the local level and is subject to political change at a relatively small scale, making land use designations somewhat dynamic as well (Saving and Greenwood, 2002).

Yet the California woodland is a relatively stable landscape ecologically. In the majority of the savanna, woodlands will remain open and suitable for livestock production or wildlife habitat for decades with irregular, limited regeneration and little shrub invasion (Fig. 2). Eighty-five percent of woodland understory persists as grassland in the absence of management (Allen-Diaz et al., 1999). The instability of human population distribution and the stability of woodlands may explain why the most visible incentive-based conservation initiatives in California are restrictions on development (Table 6).

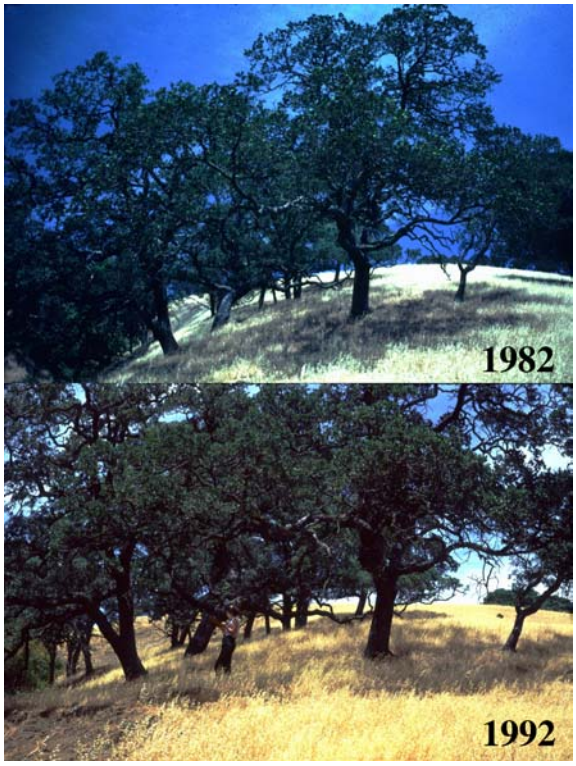

Fig. 2: Paired photo, Mt. Diablo State Park oak woodland, 1982 and 1992. Note that even in the absence of grazing and fire, there has been no apparent change in understory in 10 years

Table 6: The Policy Environment; Spain versus California

	Spain	**California**
Landowner preference for incentives or compensation	+	+
Markets for regional and diverse products	+	–
Stability of woodlands	–	+
Out-migration and land development pressure	–	+

In Spain, on the other hand, we find an unstable woodland and comparatively stable population distribution. Agricultural operations that consistently invest in woodland maintenance are required to maintain the dehesa (Joffre et al., 1999). In fact, the term dehesa is an economic as well as ecological term, representing the application of a complex of practices that maintain the woodlands while producing numerous crops in an agrosilvopastoral system. Without constant input, the volatile woodlands most often become brush within a decade and lose the characteristics valued for habitat, amenities, and livestock production. At the same time, even where understory vegetation is managed by agri-cultural use, there is considerable concern about how to accomplish replacement of oaks as even-aged dehesa stands get older. Woodland instability makes management of

competing vegetation and attention to reforestation more important. With regard to human population distribution, since the 1950's rural out-migration has been the norm in Spain, with young people moving to the cities to find job opportunities. Though there are indications that this may change, and Spain may find itself confronting some of the same issues of land subdivision and development that plague California, this has not been the history that has shaped conservation programs to date.

For California ranchers, studies have shown that the financial appreciation of land provides more annual monetary return than livestock production (Hargreave, 1993). The value of the land for development is banked by the rancher as his or her major asset. Historically, the only way to realize this increase in value was to sell all or part of the property. Zoning designations remove this asset without compensation, encouraging ranchers to liquidate before such designations can happen. Conservation easements provide some realization of the land's asset value to the rancher and preclude development and subdivision. Traditionally, cash-short ranchers have sold small parcels of land to gain capital when needed. As much as 1% of ranch land is sold each year for this reason (CA1, CA2). Conservation easements substitute the sale of part of the title for the sale of part of the production base, the land, and provide a continued benefit in the form of tax relief. In Spain, dehesas are more often a luxury item for the landowner, perhaps making the need for cash less of an influence on landowner decisions to sell and convert property. It is possible that ranch ownership in California may evolve in a similar way over time.

Other factors also contribute to the differing policy forms. In Spain, the diversified and somewhat unique nature of dehesa production contributes to opportunities in product labeling, as opposed to California production which has been single-product and homogenous for some time. Many California ranchers believe they have little opportunity to significantly increase income with diversified production, especially where land use change is rapid.

In some areas where high value products are possible, land use is more stable, and there has been a trend to some limited diversification into artisanal cheeses and alternative forms of meat production like organic and grassfed production (Gale, 2003), indicating a possible interaction between land conservation and diversification. Marin County was one of the earliest areas in California to have a strong agricultural conservation easement effort. The Marin Agricultural Land Trust (http://www.malt.org) has made a significant contribution to preserving the rural character of much of the county by holding easements on ranch lands. In a recent survey of Marin farmers and ranchers, 27% of respondents had easements on their property. Almost half had diversified into organic production, and 24% produced "value-added" products such as dried herbs, natural wool, range-fed poultry, garlic braids, specialty cheeses, and so forth. Nearly one third of the ranchers had diversified their production in the last five years (Gale, 2003). However, this relationship is complex and must consider that Marin County, with its combination of high precipitation and moderate climate, is one of the best areas of California for dryland forage production. It is also an extremely wealthy county, with strong demand for niche and high quality agricultural products in the region.

Producing the intangible benefit

In both California and Spain negotiations with landowners and managers over conservation programs are about control over the operations and appropriate incentives. Landowners in both places are not solely or even predominantly motivated by cash income, but rather are willing to forgo considerable opportunity costs and even financial losses in some cases for lifestyle benefit. Development of incentive programs needs to consider the need to preserve that lifestyle benefit for the rancher as a component of motivation for conservation practices and decisions—and much of that benefit involves maintaining control over the day to day operation. Ranchers and dehesa managers are willing to manage for different goals, employ new practices, and even surrender some components of title if the right balance of control and incentives is offered.

Because the demographic and ecological setting for each type of policy has such an influence on the forms the policies take, transferability is limited in some ways. The California woodland is relatively inert ecologically, so it makes sense that prominent conservation programs emphasize the more dynamic land conversion issue. Spanish woodlands have a history of depopulation, and the woodlands require substantial management in the short term to continue to exist. Hence it also makes some sense that policies seen as having the potential to contribute to maintaining dehesas emphasize encouraging environmentally beneficial practices, supporting environmentally friendly agriculture, and afforestation. On the other hand, there is a crucial shared gap in conservation strategies in Spain and California sylvo-pastoral systems, because there is a need for programs that encourage assurance of oak recruitment *as part of* the agricultural operation.

What may make policies more likely to be transferable in the future is that Spain could very well see the development of substantial urban out-migration as the population becomes wealthier and rural services improve. As for California, the development of some regionalized high-value agriculture might provide support for the protection of agriculture and opportunities to use labeling and other industry supports to maintain the woodlands. The need for afforestation programs may become apparent as California oak woodlands age following the introduction of ranching, though it remains unclear how much of the woodland this might affect. However, if you suggest payment to a California rancher for the clean air, wildlife, and panorama his property provides, the response is most often that a rancher only feels good when *producing* things, and to the California rancher, that means producing livestock. On the other hand, it is apparent that many ranchers have found it possible to put the future development potential of their property on the market, and to share the title of their property with non-governmental conservation organizations, an idea that seemed outrageous just a decade ago.

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