Oak in the Valley: A case study of private forest conservation in the United States

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INTRODUCTION

Our research explores conservation policy for private lands in a case study about Oregon white oak on family forests in Oregon, USA. Our goal is to understand the social and policy context of oak conservation on family forests in Oregon's Willamette Valley and to apply this understanding to the analysis and design of policy. Using qualitative ethnographic methods and building upon social constructionism and interpretive policy analysis, this research investigates how family forest owners and other stakeholders frame the problem of oak's decline and opportunities and constraints for its conservation. The research also explores the utility of the behavioral motivations framework proposed by Schneider and Ingram (1990). By illuminating owners' motivations and constraints and identifying areas of common ground and conflict in stakeholders' interpretive frames, this research identifies ways to reach out to a target group with empathy, facilitate cooperation between stakeholders, and avert potential conflicts that arise from conservation strategies. In this paper, we focus on landowner perspectives.

BACKGROUND

In the United States, many of the thorniest natural resource conflicts occur on private lands. This is especially true in the Willamette Valley of Western Oregon, where 96% of the land area and four out of five threatened habitat types are privately owned (Oregon Biodiversity Project 1998). The valley's hallmark habitat type, Oregon white oak (*Quercus garryana*), is arguably the most vulnerable. Due to its location in prime areas for expansion of urban development, vineyards and tree plantations, and the elimination of the periodic fires to which it is adapted, the quantity and quality of oak is in decline. Oak's dependence on frequent disturbance makes conservation labor-intensive and costly. Stands must be regularly cleared of invasive vegetation, thinned to release oaks, and planted with native grasses and forbs (Vesely and Tucker 2004).

Regional and local planners, conservationists and natural resource agencies are developing conservation strategies for oak. However, little effort has been made to understand the social group in whose hands the fate of much of the resource rests: family forest owners. Traditional conservation approaches are incompatible with oak's ecology and demographics for several reasons; regulation is out of favor due to the resentment and disincentives it creates for landowners (Ellefson 2000), the working nature of oak lands makes reserves untenable (Lindenmayer and Franklin 2002) and oak's dynamic ecology makes preservation unrealistic.

Family forest owners are important partners in any oak conservation strategy. They typically are knowledgeable about ecological systems and hold ecological objectives among their multiple management goals (Brunson et al. 1996; Johnson 1999; Jones 1995). They are also skilled in active management practices necessary for conserving dynamic ecosystems such as oak. On the other hand, their ability to conserve oak may be limited by the generic nature of their ecological knowledge and market pressures to use their lands commercially (Fischer and Bliss 2006).

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The success of any policy effort depends on the extent to which it embodies the values and perspectives of its target group (Schneider and Ingram 1990, 1993). Schneider and Ingram (1990) argue that policy not only uses people's motivations as "handles" for influencing their behavior; it also determines people's willingness to act by shaping how they frame policy issues and their own responsibilities. They offer a framework for analyzing policy tools based on theories of individual behavior: authority tools assume people are motivated to obey laws and and act when they believe that current law directs or permits them; incentive tools assume individuals are "utility maximizers" and will make choices that will lead to tangible payoffs if they have adequate information, decision-making skill and opportunity; capacity tools assume people lack necessary information, skills or other resources to make decisions but would welcome assistance if available; symbolic and hortatory tools assume people are motivated by beliefs and values implicit in policy and that these beliefs and values can be manipulated; learning tools assume people are uncertain about the nature of a problem and its solution, but are able to select appropriate tools through learning and cooperative experiences.

Such an approach requires policymakers to go beyond the technocratic model of decision making (Holling 1995; Fischer 2000). More scientific information and more expert advice do not resolve complex problems, especially in contexts like family forestry where owners have diverse and emotional ties to their lands. Also, because ecosystems defy property boundaries, conservation cannot take place on a parcel by parcel basis (Landres 1998). What is needed is a cooperative model built on communication, mutual understanding and trust between stakeholders, and an atmosphere in which all members can contribute their expertise (Fischer 2000; Yaffee 2000).

This research contributes to such a model by providing information for policymakers to reach out to family forest owners with empathy and design tools that harness their motivations (Schneider and Ingram 1990). It also illuminates roles for social constructionism and interpretive analysis in policy design by comparing the extent to which stakeholders' with similar perspectives gravitate toward similar policy tools. While previous studies have taken constructionist and interpretivist approaches to understanding broad natural resource controversies and policy debates, they have not applied these theoretical frameworks to the analysis and design of specific policies.

METHODOLOGY AND APPROACH

The research discussed in this paper is part of a larger study, which follows a qualitative design, drawing from ethnography and policy studies, to achieve the following objectives:

1. Understand family forest owners' relationships with oak through their knowledge, beliefs and values and the socio-economic contexts of their management decisions.
2. Identify areas of conflict and common ground in the ways that family forest owners, natural resource agencies and conservation organizations frame oak conservation.
3. Draw implications for conservation policy design by understanding the extent to which stakeholder groups use different frames to view oak conservation and their frames reflect accurate assumptions about each other's behavioral motivations.

Thirty-five in depth individual interviews and six focus group interviews comprise the primary methods of data collection. In the tradition of case study research, we also use participant observation and secondary research to triangulate my objectives. To analyze the data we follow a qualitative protocol of coding, memo-writing and theory-building. Facilitating policy deliberations as part of the focus groups and seeking feedback from an advisory committee of stakeholders brings a participatory element into the research.

The study area is the Willamette Valley of Western Oregon where all but 1% of original oak habitat has disappeared (Oregon Biodiversity Project 1998; Willamette Restoration Initiative 2001). At the heart of this habitat loss is a growing pressure placed by humans on the valley's natural resources. The valley comprises one-eighth of Oregon's land area, yet is home to 70% of the population, 90% of the employment and 75% of

the economic activity, including agriculture, forestry and high-technology (Willamette Restoration Initiative 2001). At its current rate the valley's population is projected to grow from 2.3 to 4 million people by 2050 (Grossman 2002).

This paper presents findings from individual and group interviews with a purposive sample of owners of land where oak is present in the Willamette Valley. We identified the owner sample frame by collecting lists of owners of diverse oak resources – large and small, savanna and woodland – and diverse attitudes toward conservation – positive and negative – from Oregon State University Forestry Extension offices, Soil and Water Conservation Districts, state and federal natural resource agencies, land trusts and watershed councils. From a frame of 80 owners throughout the Willamette Valley, we individually interviewed 15 owners and invited 30 owners to group interviews, 18 of whom participated. We determined the final size of the sample through theoretical saturation, the technique of capping sample size when the collection of additional units of data yields proportionally smaller units of findings (Strauss 1987). We maintain the confidentiality of my informants through the use of pseudonyms.

RESULTS

Three themes in family forest owners' views on oak and conservation have particularly important implications for policy. First, owners' that manage oak perceive themselves to be stewards of an ecological and cultural legacy. This perception embodies several beliefs and values which provide fertile ground for symbolic tools. Second, owners seem to be driven by a sense of moral duty that they couch in the traditional utilitarian terminology of tangible rewards. This highlights roles for both symbolic and capacity tools. Third, owners value autonomy and self-determination. This limits the utility of the prescriptive policies that are typical of authority tools, yet creates opportunities for learning and capacity-building approaches.

Self-perception as stewards of ecological and cultural legacy

While it is well documented in the literature that family forest owners manage for multiple objectives, this research reveals how deeply intertwined the concept of cultural and ecological legacy is in their views on stewardship. When asked to describe how they value oak, the owners mentioned wildlife habitat, family history and historical legacy as often as aesthetics and more than any other value. When asked about his land management goals, Bill Waltmann, an owner of 650 acres of rocky, southwest facing oak woodland in the Cascade Mountain foothills, said he wants to rid his woodland of invasive pear and blackberry to achieve the open conditions that his ancestors encountered when they homesteaded the property;

> *I'd like to restore it to the 1850's type where there was a lot of oak savanna. I want to be a good steward of the land. I don't want to ruin anything. My poor great-great grandparents, they walked out here from Illinois herding some Durham cattle with a couple wagons. My grand father was 11 years old. I don't know why I like that period; I guess I should have been born 100 years ago.*

Similarly, Rosemary Dow, a widow in her early seventies, wants to maintain the open savanna conditions that her family experienced on the property to provide a historical connection and sense of place for future generations. To do so, she leases her 300 acres of land for cattle grazing to keep the brush down. She also works with neighbors to pick up branches and other debris to prevent invasive species from encroaching on the grassy understory. When asked why she wants her land to be maintained as an oak savanna in perpetuity, she said

> *It's been like this in the family for a long time, and all the relatives that grew up here before me come back and visit and talk about when we did this and that, and what I did then with my children and husband and what they're doing now. It's an ongoing family thing.*

Not only do the owners want to protect the legacy of the past, but they want to leave a legacy for the future. Bill and Bonnie Dowd say they are preserving conifer wolf trees and a few acres of oak within their 150 acres timber property because they decided "OK, we've got enough timber for us and the kids so let's dedicate some to nature. We want something for the grandkids so they can say 'these are our old growth.'"

Many owners have only recently become aware of oak. For example, it was by receiving a landowner guide from the Bureau of Land Management a month before our interview that Bill Waltmann learned that open grassland scattered with oaks had a name other than "wasteland." However, its rarity and endangerment seem to be justification enough for making conservation a priority. Bob Jones, an architect from California who built a home with his wife on 120 acres of oak savanna and mixed woodland, told this story:

> *I had a client in town here that just decimated a stand of oaks. I thought that was horrible. I'm not a tree hugger by any means, but I always like trees where they should be. And it was a beautiful grove of white oaks. In fact, the guy who cut them down found it really difficult because he really appreciated the white oaks. That's when I first became aware of white oaks, and that they were somewhat of an endangered tree. There's not a whole lot of them left. It's a native tree of Oregon and it's just a shame to cut them down.*

Douglas-fir management also has a place in owners' values for stewarding ecological and cultural legacies, sometimes to the detriment of oak. In addition to being the region's dominant tree species and the cornerstone of the timber industry, it symbolizes the importance of the forest sector and pioneer efforts to make land productive in Pacific Northwest history. Even on marginal land, owners often prioritize Douglas-fir production at the expense of oaks. For example, Bill Dowd used to value Douglas-fir so much that he never noticed oak on his property.

> *Quite honestly, I have to admit, I never knew the oak were there. Because when I walked in that area, the only thing I was looking at was Douglas-fir…And then after we logged, I was honestly amazed at how much oak we really had. I did not realize it was there, because I never saw it. It wasn't there. I filtered it out."*

Henry Sanders and Diane Dietrich, both of whom manage their thousand plus-acre forests for a living, believe that creating a market for oak will encourage owners to better care for their stands. They are critical of industrial forestry for influencing the mindset of small woodland owners in favor of conifer plantations over other species and management approaches. Sanders said he faces opposition from fellow small woodland owners to his oak management efforts.

> *We're working against the grain of the main community that we're a part of because industrial forestry has a big sway in Oregon, and it's in their interest to have the public believe that the only way to do things is the way that [industry] is doing it. To show that you can manage a forest in something other than a clear-cut regime, they don't want people to see that, because then it would be pressure on state forests or other people to do it.*

While many owners acknowledge that they have an affinity for Douglas-fir, they also say that the forestry profession hasn't offered alternatives for species or conditions. For example, Bill and Bonnie Dowd described how consulting foresters influenced their view of oak as an undesireable species when they first started managing their property.

> *We were told by one private consulting forester 'Get them out of here!'…As a matter a fact, he cut them down, some four-foot-diameter oak trees…[It used to be that] foresters could tell you how to girdle those oaks and spray them with chemicals and kill them and get rid of them so that they don't mess up this wonderful crop, which is Douglas-fir. That seemed to be the viewpoint then; the only thing you wanted to grow was Douglas-fir.*

The centrality of Douglas-fir in owners' notions about good management in some cases makes it

hard for them to manage for the oak. Fritz Quinn is a retired forester who owns 235 acres on 40 of which oak is interspersed with Douglas-fir. He describes how hard it has been to thin Douglas-fir to release oak.

> *On our 40 acres we [restored] five of the most obvious acres. We kept looking into the fir stand, and there were still a few oaks. I could have pushed it, but [my wife] said 'Enough! Enough is enough! We've done our duty.' Because to maintain that oak woodland, I have to go in there and pull fir seedlings. It will break my heart, but I'm going to have to do it."*

Understanding owners' values for oak reveals opportunities for policy design. Symbolic tools such as recognition, certification and branding can model oak conservation by linking it to owners' values for stewardship of ecological and cultural legacies. At the same time, policy makers must realize that oak competes with Douglas-fir in owners' ideals for stewardship. In the past, land grant university extension foresters, agency service foresters and family forest interest groups have promoted Douglas-fir plantation management through their programs (Sampson and DeCoster 1997; Best and Wayburn 2001), sometimes at the expense of native biodiversity (Fischer and Bliss 2006). Capacity tools such as technical and financial assistance and incentives can enable and encourage owners to manage for oak in stands once valued for Douglas-fir.

Tension between utilitarian and intrinsic environmental values

Environmental values among the general public are evolving away from a utilitarian focus toward a more biocentric or intrinsic focus (Manfredo, Teel et al. 2003). The value systems of family forest owners are likely following this same trend (Jones, 1995). While it is well documented that owners manage for multiple amenity objectives, they still may use utilitarian language and rationales when explaining management decisions. This tension in value systems may impose an extra burden on owners' decision processes for oak. At the same time that landowners want to conserve oak for altruistic reasons, they also want clear rationales for doing the work. One of the most common needs that landowners identify is more research. Landowners say they need reliable and specific information about why it is important to conserve oak, what treatments they should conduct in their oak stands, and how the treatments will achieve conservation results. Sandy Carpenter, who owns 90 acres of land, 15 of which is oak, as a residence and for recreation, finds it difficult to make conservation decisions such as thinning Douglas-fir from oak when she cannot justify them in terms of utility.

> *On the one hand, those Douglas-fir aren't worth enough to be able to pay for the removal of them; on the other hand, I have a really hard time cutting down a big fir because I like trees in general and I know it has some value, and so I need to know that it really has to be done, that it's really the right thing to do.*

The high cost of oak restoration makes the utilitarian rationale all the more remote. Thinning and removing invasive brush and trees from oak stands can cost up to $2000 and take up to 29 hours per acre (Yamhill County Soil and Water Conservation District 2006). In addition, the opportunity costs of conserving oak instead of growing timber or agricultural crops can be overwhelming. Finally, the habitat created through conservation may attract endangered species, inviting further restrictions and opportunity costs on land uses. Many owners poke fun at themselves as being "crazy to do oak conservation." Four of the most conservation-minded and non-land-based owners interviewed recognize inherent risks and losses in oak conservation. Two of these landowners are so frustrated at not being able to reconcile their love for oak with their need for security that they have abandoned their conservation efforts.

Nancy Young purchased her 500 acres of land, 300 of which supports oak woodland and savanna, with the intent of developing residential home sites. She hopes it will one day be annexed into the urban growth boundary, improving the value. After living on the property for several years she became aware of oak and its ecological importance.

> *I really respect [other landowners] for having no economic reason at all...but that isn't me. We own the land for economic reasons, but in my heart of hearts, I would rather see it not developed and valued for what it is: oak savanna. I'm sure that ultimately society is going to say this stuff is worth more to us all as oak savanna and habitat than as subdivisions. I'm really torn about this whole thing because I'm very politically liberal, and I've just kind of fallen into this situation where my economic interests are directly opposed to what I really believe.*

Like Nancy Young, other owners view conservation in utilitarian terms. They refer to habitat as a social good worthy of compensation just like timber. For example Lance Norton justified restoring a dozen acres of oak in his 800 timber property as producing a public benefits for which he is compensated, albeit poorly.

> *When I received the money from Fish and Wildlife Service, I looked at it in that regard, as compensation. I didn't get anywhere close to the maximum amount, but it was a pretty substantial amount of money they were prepared to pay people for set-asides and restoration work.*

While numerous owners see opportunity in markets for environmental services, they also realize that being compensated for these services may bring along more accountability requirements and public scrutiny. Mary Harten manages her 160 acres for timber production as well as habitat and recreation. While she thinks compensation would be an incentive for owners to conserve oak for the public good, she also acknowledges that the public may be skeptical about paying for conservation's private benefits, such as aesthetics and recreation enjoyed by the landowner.

> *I think that's an issue that needs to be grappled with, how to value it in a way that clearly provides something for the public good. It's one of those philosophical things that I grapple with now and then. There isn't any clear line that can really separate public good from private good. But there needs to be some way of helping the public understand and feel comfortable with the use of their money on someone else's land. There has to be some accountability, and there has to be a clear understanding of what the public good is.*

Some owners feel that commodification of environmental services may make conservation more fair. These owners are concerned that regulation has eroded private property rights and inflated society's expectations of working lands. The public is expecting an increasing array of services from private lands for free, for example, water quality, habitat, farm and forest products, and scenic beauty. Lacey Bidwell, whose family owns more than 3000 acres of timberland, thinks that conservation expectations need to be harmonized across ownership types before more owners will be willing to protect oak or other habitats. She feels that it is unfair to impose the burden of conservation on any one group because conservation is not an exact science and management prescriptions are constantly evolving.

> *If society thinks it's important, then everybody else has to pony up, not just the landowner. To me it's a lot less draconian if everybody is contributing because I'm not smart enough to know, you know, how many owls we need or how many oaks we need or how many squirrels we need, I'm not smart enough. But I am going to be a lot more agreeable if everybody else is pitching in. It's not happening now…And I'm not willing to go any further unless that happens.*

Many of the landowners perceive that environmentalists hold a value system that separates humans from nature, and view that system at the core of conservation conflicts. As the people that are the most familiar and practiced with management of their land, and the ones that are present and willing to do the work, owners see themselves as assets in conservation. Many see a fundamental compatibility between oak conservation and human uses. Nancy Young proposes planned unit development as conservation strategy for oak on the urban fringe.

> *We agree that oaks require perpetual maintenance. Somebody is going to have to pour money into these things. I'm trying to*

find a way with my farming operation to at least break even with the maintenance, but I don't think I'll ever make a cent…It's a great marriage to have people living on the property that care deeply about it, connected to it and putting money into it…You know, people buy a lifestyle. I think there's a market for that. People are yearning to be part of nature…Ten families sharing 250 acres, it's a big habitat chunk; if you collected $500, $1000 a year from people to maintain the property, it's going to be enough.

Several of the landowners propose modifying Oregon's land use system to allow more residential and business uses of exclusive agriculture and forestry-zoned lands where oak is present. For example, Sandy Carpenter thinks that developing spiritual or educational retreat centers would generate enough income for landowners to justify not working their oak lands. At the same time, it would give the public an opportunity to appreciate oak.

To me there's an opportunity to relax [restrictions on uses of oak land] a bit for landowners that are using it in another way that has public benefits and can be an economic factor as well and just you know, private benefits too.

While landowners' appreciation for oak as an ecological and cultural legacy reflects values that are at once biocentric and anthropocentric, they frame oak conservation in utilitarian terms. They justify oak conservation in terms of production, see a role for compensation in conservation strategies, and believe that oak conservation can be consistent with human uses. Policy efforts should recognize the intrinsic value that owners place on oak at the same time that they serve owners' need for practical management rationales, compensation and human compatibility. Capacity-building programs can provide landowners with the scientific information and technical training they need to justify their conservation efforts as productive and worthwhile. Incentives can provide landowners with the income they need to justify foregoing other uses. Reforming land and resource use rules can allow owners more opportunity and flexibility in conserving and garnering value for oak through small scale industries and alternative land use scenarios.

Autonomy and self-determination

At the same time that many of the owners see themselves as stewards of the oak resource and want public support for their efforts, their values for autonomy and self-determination in land use decisions are paramount. Even the most conservation-minded landowners enter into programs and policy relationships with trepidation. Henry Sanders, an owner of more than one thousand acres of timberland who is also an active environmentalist, has developed his own program for monitoring the effects of his land use activities on the environment. He recognizes inherent risks in conservation, especially in cooperating with public biologists.

If you grow a more complex forest, species are attracted to those forests. If you're doing that in a context where your neighboring lands are headed the opposite direction and becoming less complex, there's an excellent chance you're going to be put out of business. So build it and they will come; don't build it and they won't come…By providing habitat you're putting yourself at risk for being punished, even looking for what you've got, you're putting yourself at risk. If you find a spotted owl you have to report it, and then your only option is going out of business. So why would you grow a complex forest? Why would you monitor?

A minority of landowners interviewed had experienced negative repercussions from seeking assistance from public agencies with their voluntary conservation efforts. Will O'Brian invited fish and wildlife agency personnel onto his 400-acre property to explore options for restoration of his 200-acre oak woodland and savanna. During their visit he noted their special interest assisting him with restoring the native prairie around his oak stands. Months later he realized he had inadvertently opened the door to species regulation; the federal critical habitat listing for the endangered Fender's blue butterfly included the prairie portions of his property.

> *Having been on our property and feeling they were invited, they had noted that in the report that they had seen the butterfly…I initially thought from a conversation with one of them that it was only a few, but then the biologist that I talked to the other day tried to tell me there were hundreds…*

Most landowners frame fear about species regulation in terms of autonomy and self-determination. Helen Rollins works closely with public agencies on wetland and oak restoration on her 300-acre property, which she manages as a residence and for habitat.

> *I think one of landowners' greatest fears is to have a police mentality with the people with whom they're partnering. We have had a great relationship with all these different agencies. However, there have been situations where we have seen this policy mentality come in and we've had to say. 'Wait! We want to stop and step back here, because we are partners with you.'*

Owners' conservation efforts collide with other kinds of regulations in addition to species protections. Oregon's Forest Practices Rules require minimum regeneration timeframes and stocking levels after harvests. Oregon's land use rules require that owners meet similar species and stocking level requirements in order to maintain special forest land tax assessments. Owners that clear or thin stands to release oak risk violating these regeneration requirements. Norman Peters owns several parcels of land as long term real estate investments. He encountered problems with regeneration requirements when he thinned and removed invasive species from the understory of some of his oak stands.

> *I saw that reforestation requirement and I inquired about that, and they said, "Oh, yeah. You need to apply for an alternate forest practice." So I did. I spent a long time preparing it. It was denied. I heard later indirectly through the top guy --they thought I was trying to pull a fast one, you know, because they have a job to do to save the forestland from abusive practices. And so I -- you know, so I reapplied -- it was a total of like six months to a year or something, and I finally won.*

Mallorie Calloway attributes fear of species regulation to the core human value of autonomy; "It's an autonomy issue. You ask any three-year old about autonomy and they'll say the same thing. You want to work with them, not for them." Mallorie owns one hundred acres of pasture, vineyards and oak woodlands that she and her husband Chris inherited from his family. She is not concerned that her land has been listed as critical habitat for the Fender's blue butterfly.

The importance of autonomy and self-determination extends beyond landowners' views on working with the government to all private land management. All the owners emphasize a respect for the private interests of other landowners regardless of their practices. For example, despite Bob Jones' disgust with the clearing of oaks for houses and vineyards, he does not feel that society has a place in influencing individual land use practices. When asked about the role for policy in oak conservation, he replied:

> *I believe that an individual should have the right to do with his property what he wants to do with it, and if that means tear down his oaks, I think he has that right. Now, I think we all have to be stewards of our own properties, and you know, do what we want to do. But I really would feel that it's not the thing to say that I wish everybody would have kept all their oaks.*

The importance of autonomy and self-determination is also apparent in owners' preferences for organizational and learning styles. When asked what the best conservation strategy would be for oak, most landowners described education programs with the caveat that they are designed by and for landowners. Fritz Quinn explained the concept of grassroots landowner networks:

> *It's not going to get done unless we're involved, unless landowners want to do it. The awareness comes first, and then the knowledge of how to do it. If the government came in tomorrow and said you've got to conserve every oak woodland in this valley, we'd say "You can't make us go out there and pick those fir out." They can't do it with a big stick. But if we show [owners] that this is*

the right thing to do and it's going to make you feel good, then we do it. The ones that aren't going to feel good, they're not going to do it. But most of the small woodland owners, they want to. Time after time you hear the phrase "I want to leave it better than I got it," and what better way to leave it better than you got it than have something that is disappearing. The best way is to get people out, show them what's happening, tell them how good you feel, and how beautiful it looks.

Most of the landowners say that they trust and learn best from other landowners. Many suggest grassroots landowner-led efforts as the ideal model for private lands conservation. Helen Rollins described how landowner-to-landowner demonstrations proved to be a powerful tool in educating her own community about conservation.

We have a lot of nearby landowners who have oak and they seem either recalcitrant or they don't quite understand and are frightened. It seems like they don't want to hear anything, so you have to bring them in gently. When we first started our wetland project, we were new to the area from California of all places. These trucks would drive up into our driveway, and they'd watch this wetland start to be reconstructed. They'd all put their feet on their pickup trucks, looking out there, and they'd say "What are you doing, why are you doing it?" And pretty soon they liked it, and they realized it wasn't going to cause flooding over [the main] road, it was going to hold it back. They realized, you're not doing so bad after all, you're doing some good things. And they said, "Well, are you hunting?" "No, but we'll grow the ducks and you can hunt them." So we had a convergence, and then other people did similar projects. I think doing with a positive attitude helps others understand there are ways to do it that aren't so frightening after all.

Paul Knopf, an owner of 60 acres, a third of which is mixed oak-conifer forest, shared similar sentiments about the how demonstrating conservation work to one's community can change their views on conservation as well as their acceptance of people who think differently.

I think in some cases if you are in among a lot of landowners and you want to do a conservation easement and oak restoration, and all of the other landowners are opposite, you're sort of ostracized. So it's a matter of educating everybody that it's something good to do. Once it gets started it kind of snowballs. If you see good things are happening on it. So it's a community sort of thing that really is important in getting these things off the ground in many cases.

Landowners' strong sense of autonomy and self-determination manifest in their fear of losing decision-making ability due to species regulation, their distaste for prescriptive policies, their reluctance to enter into relationships with the government, and their preferences for grassroots landowner-driven conservation strategies. Policy can circumvent owners' fears of rule violations by permitting oak as a legitimate land use and removing disincentives imposed by species regulations. Rules and regulations can recognize oak as a valuable tree in land and resource use laws without penalizing owners that harbor listed species.

Policy can build on owners' need for autonomy and self-determination by supporting grassroots networks and participatory policy dialogues among landowners and with other stakeholder groups. Several owners referred to the Willamette Valley Ponderosa Pine Conservation Association as a model for private lands conservation. With the help of local Land Grant University Forestry Extension programs and timber companies, landowners initiated and carried out this effort to reestablish the historic range and genetic diversity of the native Willamette Valley variety of *Pinus ponderosa* for conservation and timber production purposes.

DISCUSSION

Many of the owners interviewed see oak as an ecological and cultural legacy from a bygone era. In this way, oak conservation fits into their ideals for stewardship as a moral duty and land as a family asset. However, just as biocentric values

drive landowners in their conservation activities, utilitarian values constrain them. Despite the limited competitiveness of family forestry in the globalizing wood products sector, many owners still manage for commercial conifer production on at least some portion of their lands. These owners appear to be driven by utilitarian rationales.

Other owners acknowledge that they are not motivated by timber income at all, yet they still frame conservation decisions in a utilitarian manner. They talk about their management activities in terms of practical formulas to achieve predictable outcomes, such as ecological mandates or production of goods and services. These owners see themselves as producing goods and services for society that are worthy of compensation. As is, policy conflicts with their objectives and economics is entirely against them. They want financial and technical support for conservation, but are also concerned about associated risks and costs. They view partnering with public agencies and creating habitat as liabilities because they incur the risk of species regulation.

In some ways the owners' views on oak conservation embody numerous contradictions. At the same time that owners frame their conservation motivations in terms of moral duty, they also rely on justifications of tangible reward. At the same time that they recognize the intrinsic ecological and cultural value of oak, they rationalize management decisions in a utilitarian manner. At the same time that they want to be compensated by society with financial rewards and regulatory relief, they want autonomy and independence from government oversight.

Policymakers can harness owners' values and beliefs about oak conservation despite their contradictions by pairing policy tools with the motivations that are best suited to the logic of those tools. Schneider and Ingram offer a framework of theories about human behavior that should underlie choices of policies tools. Here we link these theories to our findings and suggest some policy options. Figure 1 depicts a conceptual framework of this analysis.

Policies that employ symbolic tools can link oak conservation with owners' stewardship ideals, justifying it as an alternative to Douglas-fir management. Symbolic tools assume people are motivated by beliefs and values implicit in policy and that these beliefs and values can be manipulated (Schneider and Ingram 1990). Educational campaigns can build on owners' values for land as a family asset and cultural symbol. Education can raise awareness about the importance of oak as a legacy from the time of Native American hunting and gathering and Western-European settlement. Branding products from operations that conserve oak can signal legitimacy to the public and other landowners. Programs that recognize exceptional oak stewards can publicize the value of oak and reward owners that appreciate public gratitude.

Capacity-building programs can give owners the skills and funds they need to be sure that their conservation efforts are productive and economical. Capacity-building tools assume that people lack necessary information, skills or other resources to make decisions but would welcome assistance if available (Schneider and Ingram 1990). Education and technical training can help owners incorporate scientific research into their management plans, providing legitimacy for their conservation efforts. Financial assistance can provide another level of legitimacy by helping owners feel compensated for their work. Cost-shares, conservation rents and conservation easements can make oak conservation possible for landowners that treat conservation like any other production activity and cannot justify providing conservation benefits below cost.

Incentive programs can provide the added financial benefit or profit that owners need to justify choosing conservation over other income generating activities on their lands. Incentive tools assume that individuals are "utility maximizers" and will make choices that will lead them to tangible payoffs if they have adequate information, decision-making skill and opportunity (Schneider and Ingram 1990). After capacity programs build knowledge and decision-making ability among owners, incentive programs can provide tax benefits, rebates and above-cost rents to owners that require tangible rewards. Agencies can establish regulatory infrastructure for environmental services markets, mitigation banks and conservation banks. Agencies can also play a

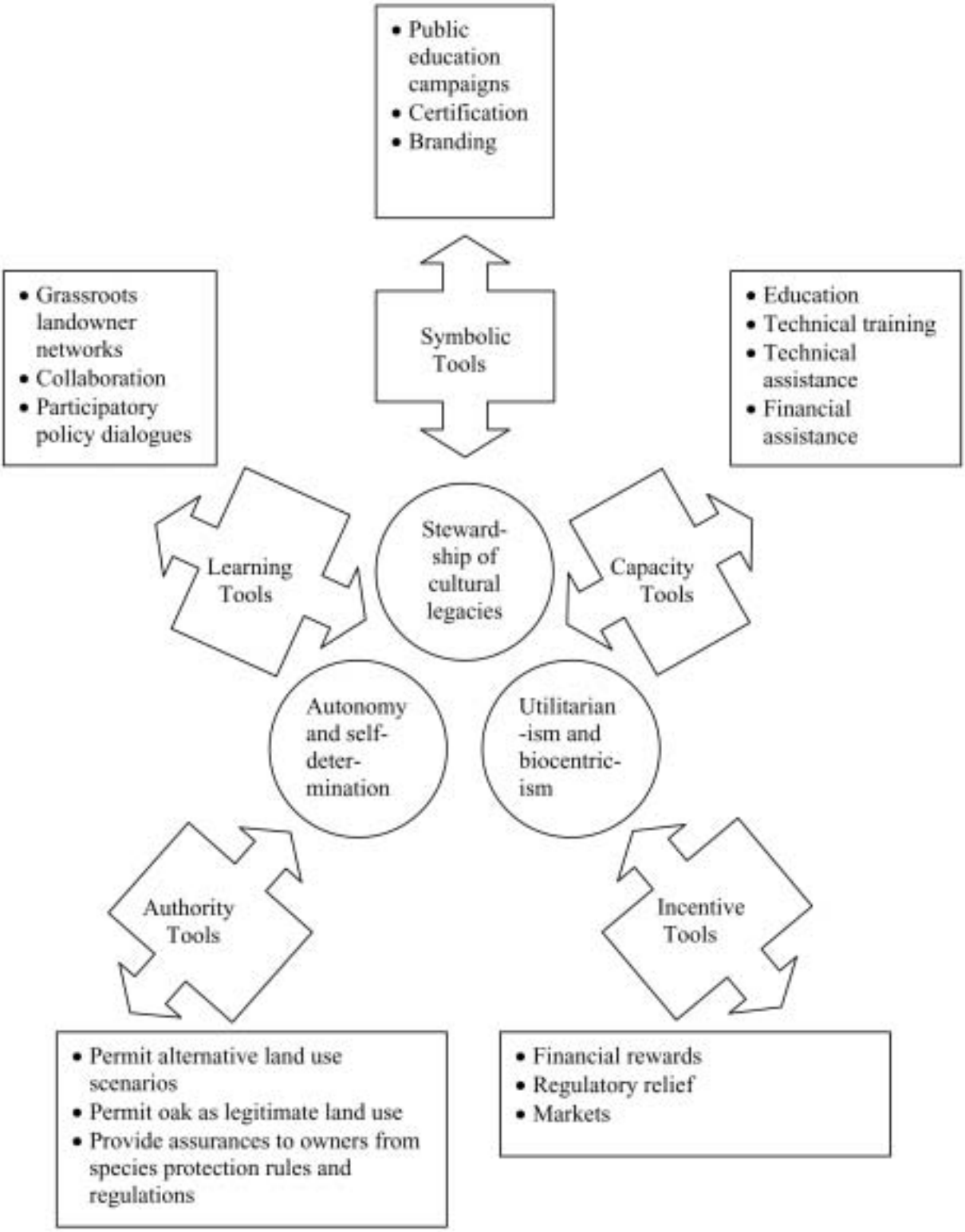

FIGURE 1: Conceptual policy model of prevailing motivations, corresponding policy tools and examples of policies and programs that employ tools.

role in the creation of oak wood markets by providing tax relief and other benefits to producers that manage oak on a sustained yield basis.

Authority tool-based policies can prohibit destruction of oak and permit oak management and conservation as legitimate land uses. Authority tools assume people are motivated to obey laws and regulations and act when they believe that current law directs or permits them (Schneider and Ingram 1990). Land use and forest practices laws can provide owners more opportunity and flexibility to manage oak by permitting additional uses on forest- and farm-zoned lands. For example, owners can be allowed to develop small-scale industries such wood and non-timber forest product production, planned unit development, tourism, fee recreation on lands where oak is explicitly being conserved.

Policies that employ learning tools can establish collaborative approaches to creating strategies and policies for oak conservation. Learning tools assume that people are uncertain about the nature of a problem and its solution, but are able to select appropriate tools through learning and cooperative experiences (Schneider and Ingram 1990). Policymakers and public agencies can include oak owners in planning and decision-making regarding oak conservation. Agencies can provide funding and administrative support to landowner-led oak conservation networks.

CONCLUSION

This research explores family forest owners' values, beliefs and management motivations regarding Oregon white oak and the ways in which they frame the issue of oak conservation. It highlights changes taking place among small scale forest owners in the growing wildland-urban interface in Oregon's Willamette Valley. In particular, it depicts the reorientation of family forest management from fully-stocked tree plantations to historic and cultural landscapes.

Information about owners' beliefs and values can inform policymakers' choice of symbolic and hortatory tools. Understanding owners' perceptions of conservation opportunities and barriers can help policymakers identify conditions for incentive, capacity-building and regulatory tools to address. Recognizing the differences in the meanings that stakeholders have for oak and their perceptions of policy opportunities and constraints may help policymakers identify roles for learning forums in oak conservation.

The present is an ideal time to conduct this study because few oak-associated species have been listed and oak conservation has not become divisive. By understanding areas of conflict and common ground in stakeholders' perspectives on oak conservation and initiating discussions about policy options, this research may resolve an environmental dispute before it occurs.

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