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## Land-conservation strategies: the dynamic relationship between acquisition and land-use planning

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**Abstract.** Nonprofit organizations often pursue land acquisition as a nonpolitical, private property rights approach to conservation of ecological and cultural resources. Yet acquisition and regulatory land-use planning are intertwined, both in terms of political strategies and conservation outcomes. Our objectives are (1) to understand the relationship between the acquisition strategies of land trusts and their involvement in land-use planning and zoning, and (2) to examine how the interactions between acquisition and land-use planning may shape conservation outcomes. We focus on the strategies of The Nature Conservancy, one of the largest conservation NGOs in the United States. Drawing from an institutional analysis framework, we compare case studies from Tehama and Monterey Counties, California. Through semistructured interviews, analysis of land-use plans and conservation-easement agreements, and GIS mapping we examine political strategies and conservation outcomes. Our analysis reveals that acquisition strategies and the regulatory context influence each other strongly, but that tensions between the politics of these strategies challenge conservation actors to deploy both effectively. Finally, we develop themes for future research, suggesting that the implementation and assessment of regional conservation efforts would benefit from an integrated strategy that recognizes the synergistic linkages between acquisition and regulatory land-use planning.

**Keywords:** land-use planning, zoning, land trusts, land acquisition, conservation easement, conservation strategy

### 1 Introduction

A sharp distinction is often drawn between acquisition-based and regulation-based approaches to land conservation (Nelson, 1977). These two types of instruments for private land conservation are grounded in differing philosophies on governance and private property rights, administered by separate agencies, and often promoted by different political organizations (Doremus, 2003; Reed, 2007; Stoms et al, 2009). Private nonprofit land trusts rely extensively on land acquisition to conserve private lands. They also face choices about whether to become involved in land-use planning, which may require different political strategies (Bengston et al, 2004). Despite their largely separate spheres, acquisition and land-use planning affect each other by shaping development options, land values, conservation planning priorities, and conservation outcomes. Therefore the interactions and feedbacks between acquisition and land-use planning are important for assessment of either tool on its own (Adams et al, 2001; Nie, 2008). To investigate these relationships, we rely on an institutional analysis framework and the policy-stages heuristic to chart land-trust potential acquisition and land-use planning strategies. We investigate two case studies based on this framework, and utilize these cases to develop themes for future research on land-trust conservation strategies. We suggest that a more nuanced understanding of the interactive

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effects of acquisition and regulation can help explain conservation organizations' behavior, and are necessary for a full examination of the effectiveness of conservation strategies in complex policy-making environments.

The heated debates arising from the gradual introduction of land-use planning in Western countries during the 20th century illustrate the difficulty of imposing public restrictions on private property, when control of such property by the landowner is often perceived as a natural right (Eagle, 2002). Most land-use planning continues to be controlled at local city, township, or county levels. Efforts to scale land-use planning to state or federal levels have been successful only in limited circumstances (Wildermuth, 2005).

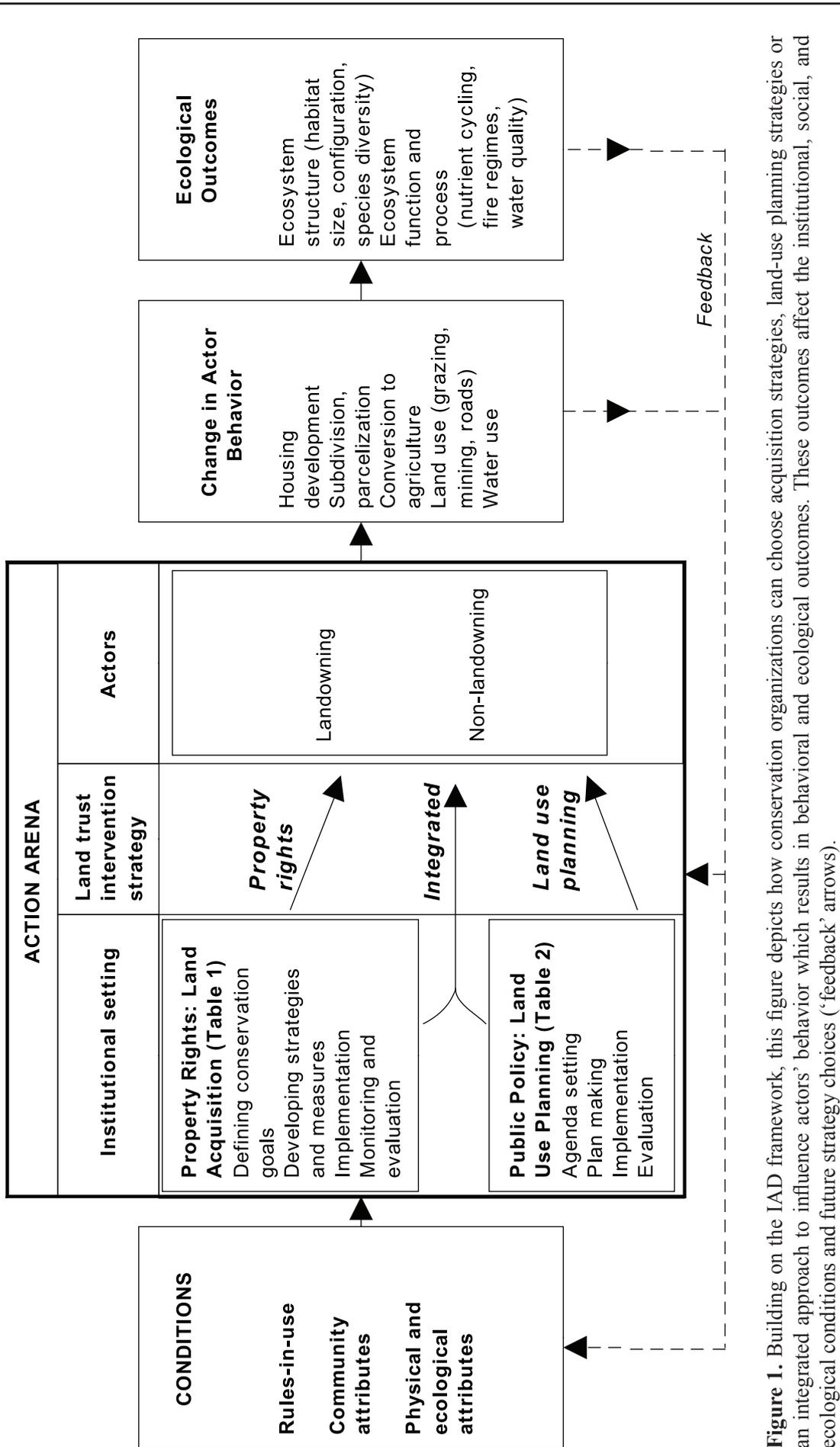
Meanwhile, land-acquisition policy has become increasingly fragmented, with a growing role for land trusts and conservation easements (Fairfax et al, 2005; Merenlender et al, 2004; Raymond and Fairfax, 2002). The trend toward an increasing importance of land trusts is most pronounced in the United States, although nonprofit land-conservation organizations acquiring land and conservation easements or covenants are increasingly common globally (Kabii and Horwitz, 2006; Saunders, 1996). Some countries have a long tradition of charitable organizations in land conservation (Fairfax et al, 2005). For instance, the National Trust in the United Kingdom was created in 1895 and continues to protect land and historic resources (Dwyer and Hodge, 1996). Land-trust activity has increased particularly in Australia, Latin America, and Asia through local land trusts and increased activity from international organizations.

In the United States the number of national, state, and local land trusts increased dramatically from about 400 in 1980 to 1723 in 2010. These land trusts have diverse conservation goals, focusing on wildlife habitats, water resources, working farms, forests, recreation lands, historic resources, or urban parks and gardens (LTA, 2011). The significant gap between the average (\$460 832) and median (\$62 000) operating budgets for state and local land trusts suggests a high variability in organizational capacity [data for 2010 (LTA, 2011)]. Their strategies also differ. While land trusts' main focus is on acquisition, some are involved in land-use planning and policy development, including acting as technical advisors to jurisdictions during the development of municipal plans, regulations, and policies (Rudel et al, 2011).

Land trusts, by definition, favor a property rights acquisition strategy, but some have also chosen to engage in the land-use planning process. Land trusts are defined by the Land Trust Alliance as nonprofit organizations that "actively work to conserve land by undertaking or assisting in land or conservation easement acquisition, or by stewardship of such land or easements" (LTA, 2011). Acquisitions are typically framed by the land-trust movement as voluntary, private, and landowner-led agreements. Nonprofit land trusts have focused primarily on acquisition because they consider land-use planning and environmental laws to be inadequate, prefer voluntary compensation-driven action, or desire to avoid contentious political debates around land-use law and planning (Daniels and Lapping, 2005). In deciding whether to engage directly in influencing a regulatory land-use planning process, they face a political calculation about the benefits and costs of that strategy. Despite their private, property-rights gloss, acquisitions are imbedded in the political and regulatory land-use context. The linkages among land acquisition, regulation, development patterns, and conservation outcomes are complex and may complicate land trusts' choice of strategy (Endicott, 1993; Press, 2002; Wiebe and Meinzen-Dick, 1998).

### **1.1 Research objectives**

A simultaneous consideration of property rights and regulation may lead to an improved understanding of land-conservation strategies and conservation outcomes (Gerber et al, 2009, Stoms et al, 2009). Our first research objective is to understand the relationship between



**Figure 1.** Building on the IAD framework, this figure depicts how conservation organizations can choose acquisition strategies, land-use planning strategies or an integrated approach to influence actors' behavior which results in behavioral and ecological outcomes. These outcomes affect the institutional, social, and ecological conditions and future strategy choices ('feedback' arrows).

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land trusts' acquisition strategies and their involvement in land-use planning and zoning. We developed a conceptual framework of the interactions between land-use planning and acquisition based on the institutional analysis and development (IAD) framework (Ostrom, 1990) (figure 1). Within this framework we identify options for land-trust involvement in conservation strategies at each stage of the policy cycle (tables 1 and 2).

To study land-trust choices—between acquisitions and land-use planning strategies—and the resulting conservation outcomes, we applied this analytical framework to two regional cases of The Nature Conservancy (TNC)'s conservation strategies in contrasting socioeconomic contexts in California, USA. Founded in 1951, TNC is one of the largest land trusts in the United States and it relies on acquisition of lands and conservation easements as its primary conservation strategy. It has over one million members, and has protected more than 60 000 km<sup>2</sup> in the United States (TNC website: <http://www.nature.org>). The organization's assets total \$6.03 billion as of 2011 (TNC, 2011). TNC's worldwide office is located in Arlington, Virginia. Actions of state chapters located in each US state, along with regional or national offices, are coordinated through the central office. The chapters can develop their own strategies to implement conservation actions within the 'Conservation by Design' framework described below, occasionally experimenting with involvement in local land-use planning. All decisions concerning land acquisition have to be approved by the national board (small deals are approved retroactively).

We specifically compare inland Lassen County, where TNC has not engaged in land-use planning, with coastal Monterey County, where TNC engaged in land-use planning within the past decade. As described below (sections 3 and 4), both TNC field offices are working to succeed in different local conditions, with different political leanings, economic pressures, and expectations of how local government will decide on planning restrictions. On the basis of our analytical framework, we suggest that land trusts could engage in land acquisition only; engage in land-use planning separate from their acquisition strategy; or engage in an *integrated* strategy of influencing land-use planning by relying on their power as landowners or with the intent to enhance their acquisition strategy. To maximize their impact on development patterns and ecological outcomes, we might expect TNC to deploy all possible conservation approaches in an integrated strategy. However, we expect TNC to weigh the political and capacity costs of deploying multiple strategies against the potential for material gains in conservation outcomes. This leads to our second objective: to examine the potential for acquisition and land-use planning (either separately or in tandem) to shape conservation outcomes, focusing on development patterns and habitat fragmentation.

## 2 Theoretical approach and methods

### 2.1 Institutional analysis and development (IAD) framework and the policy cycle

Public policy analysis since the 1970s has focused on analysis of the policy cycle or stages (Jones, 1970). These stages (agenda setting, plan making, implementation, and evaluation) are reflected in nearly all policy processes (Knoepfel et al, 2007). In this paper we use the policy cycle as an interpretative framework to identify and describe stages within the policy process. As many scholars have pointed out, the policy-stages heuristic does not provide explanations about causal mechanisms and fails to consider physical, social, and institutional conditions and outcomes (Sabatier, 1991). In answer to these criticisms, scholars have posed a variety of alternative approaches including the IAD framework (Ostrom, 1990, Sabatier, 2007).

The IAD framework focuses the analyst's attention on individuals who make decisions over some course of action. The action arena is the unit of analysis and focus of investigation (Ostrom et al, 1994). An action situation is the "social space where individuals interact, exchange goods and services, engage in appropriation and provision activities, solve problems, or fight"

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(page 28). It includes “participants in positions who must decide among diverse actions in light of the information they possess about how actions are linked to the potential outcomes and the costs and benefits assigned to actions and outcomes” (page 29). Our approach modifies the IAD framework for our system, and then situates the strategies of land trusts at each stage of the policy cycle, insisting on their choice between two important institutions: property rights (acquisition strategies) or public policy (land-use planning strategies) (figure 1).

## **2.2 Property rights and public policy**

Property titles are designed to protect the interests of individuals or other entities against the action of other entities, including the state itself. This strong Lockean concept of property is questioned by those who point out that title holders also have a social responsibility and that the institution of private property should meet societal goals (Jacobs, 1998; Sax, 1992). In practice, property rights are tempered by public policies which follow from a different logic than property titles. Policies are crafted by democratically elected legislative bodies to solve a politically defined public problem, and hence are designed to defend the public interest. Policies with a spatial impact sometimes conflict with landowners’ freedom. Land-use planning is an obvious example of this, because its *raison d’être* is precisely to control how landowners use their land (Nelson, 1977). Land-use planning is the “process by which public agencies, mostly local governments, determine the intensity and geographical arrangements of various land uses in a community” (Fulton, 1999, page 7). Limits on the regulatory authority of the state are imposed by the ‘takings’ provision of the US Constitution (5th Amendment, last clause).

Property titles and policies such as land-use planning can be conceptualized as two ‘layers’ covering the national territory. The first layer is the cadastral plan, which records the extent, value, and ownership of land. It provides a precise description and identification of particular plots of land. The second layer corresponds to the territory affected by a particular regulation. Unlike property rights, this second layer is not necessarily gapless; concrete public action results from the combined effect of multiple policies, and the intensity of this action depends on factors such as the gravity of the public problem or the capacity of citizens to influence political outcomes.

In practice, the boundaries between property rights, designed to protect individuals, and public policies, intended to defend the general interest, are ambiguous. State and federal actors frequently rely on property rights, rather than regulatory authority, to accomplish their public tasks. Moreover, many lands are acquired with public funding from legislatures, voter-approved bond measures, or tax incentives, or are exacted through regulation. This entanglement in resource conservation has implications for efficiency, effectiveness, accountability, and principal-agent issues—eg, see King and Fairfax, 2006; Lane and Morrison, 2006; Morris, 2008).

## **2.3 Property titles and conservation acquisitions**

Property titles can be full or partial—for example, the rights to access, use, exploit, sell, bequeath, mortgage. In the United States and globally, the sale or acquisition of conservation easements (or conservation covenants) is a common form of partial title transfer. A conservation easement is a legal agreement between a landowner and a nonprofit land trust or government agency that restricts future activities on the land to protect its conservation values in perpetuity (Byers and Ponte, 2005, page 7).

The burgeoning field of conservation planning is focused on making efficient acquisition choices to conserve species, habitats, and ecosystem processes effectively (Margules and Pressey, 2000). One of the main objectives of conservation planning is to help organizations prioritize new acquisitions (table 1). Within TNC, ‘planning’ refers to the prioritization of its conservation efforts within ecoregions—defined by biophysical criteria rather than political

**Table 1.** Land acquisition cycle. Steps leading to acquisition following The Nature Conservancy's (TNC's) conservation action planning approach (TNC, 2007, page 2). TNC's conservation approach does not exclude measures other than acquisition (eg, participation in the local political process), but in practice TNC focuses much more on acquisition than involvement in land-use planning.

Stages in acquisition process	Strategic connection with land-use planning	Practicability for TNC	Lassen, Tehama County	Monterey County	Strategy type
Goal and agenda setting	(1A) Adopt biodiversity targets based on county land-use planning goals	No. To guarantee scientific objectivity, TNC defines conservation goals according to ecological criteria only (conservation planning, not land-use planning)	N	N	integrated
Strategies and measures	(1B) Consider local land-use plans in the 'situation analysis' and develop strategy around them	Yes. So-perceived bad planning is a major threat to ecosystems	N	N	integrated
Implementation	(1C) Utilize acquisition to constrain development independently of land-use plans	Yes. Property rights prevent development perceived as inconsistent with conservation	Y	Y	property rights
	(1D) Utilize acquisition to influence local land-use plans	Yes. Existing property rights constrain the work of planners	N	N	integrated
	(1E) Influence building permits through participation in public hearings before permit approval	Yes. Landowners are consulted about surrounding development	Y	Y	integrated
Monitoring and evaluation	(1F) Provide information to influence land-use planning process	(see table 2, strategies 2F, 2H, 2K)	N	N	—

boundaries (TNC, 2006, page 8). Efficient targeting of new acquisitions to achieve the greatest return on investment in comparison with a do-nothing strategy requires an understanding of land cost, probability of loss (threat), and conservation benefits (Newburn et al, 2005). By restricting development rights, the regulatory land-use planning context has the potential to influence both cost and threat—hence altering efficient acquisition strategies.

#### 2.4 Land-use planning

Plan making is the process of devising plans for communities. It is a political process in which interest groups jockey for influence. The local plan-making process takes place within the broader framework provided by federal and, mostly, state laws (including environmental regulations). By contrast, plan implementation is the process of carrying out the plans on a project-by-project basis, through zoning decisions and permit approvals (Fulton, 1999, page 11). While plan implementation is reactive, as regulators await private development proposals and respond to them, plan making is proactive, providing a vision of local

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development for the next decades. Land trusts can attempt to influence land-use planning at all stages of the planning cycle, including agenda setting, plan making, implementation, and evaluation (table 2).

In California, zoning must be consistent with county land-use plans. Restrictive land-use plans have repeatedly been undermined by California county boards because county governments have economic incentives to encourage development, infrastructure, and an increasing tax base (Pincetl, 1999). For this reason, conservation land trusts often suggest that land-use planning is unreliable for preventing development in rural landscapes. Several recent articles illustrate the limits of a planning strategy based on ‘citizen enforcement’ and the resulting lack of coordinated regional development strategies: for example, the failure of the Nevada County Natural Heritage 2020 Program (Hurley and Walker, 2004; Walker and Fortmann, 2003). Simultaneously, the potential of planning situations involving higher level authorities is highlighted: for example, species habitat conservation plans (HCPs) under the federal Endangered Species Act (Pincetl et al, 2011), or the efforts of the Coastal Commission, which has permit authority along the Californian coastline (Ellison, 2010). Multiple overlapping local, statewide, and federal planning and regulatory efforts complicate the conservation landscape.

### **2.5 Selection of case studies and methods**

We selected TNC’s strategies for our analyses due to the large size of the organization, its well-formulated acquisition strategies, and the quality of its acquisitions database. The organization focuses on property acquisition, infrequently engages in local land-use planning, and sometimes advocates for national policies (Weeks, 1997). Because of its large size, strong funding base, and geographical diversity, the California chapter is confronted with a broad array of conservation issues. By focusing on an extreme case, where TNC is particularly powerful and active, we chose to study a situation which can potentially reveal more information because more basic mechanisms are activated and more actors come into play (Gerring, 2007), providing a comprehensive array of issues that confront land trusts.

The two cases were selected to vary the involvement of the land trust in the land-use planning process. We deliberately excluded situations where external actors are involved in the planning process—such as the federal government in the context of the federal Endangered Species Act, or the California Coastal Commission along the Pacific coast—in order to focus on typical situations where land-use planning is carried out by local planning agencies. Preliminary interviews with TNC’s California program office in San Francisco helped us select two cases that contrast TNC’s involvement in land-use planning. In the case of the Lassen Foothills, in rural Tehama County, TNC focuses on rangeland conservation easements and is not involved in county land-use planning. In the Monterey County case, TNC conducts acquisition and also became involved in the county general plan revision process.

We employed multiple methods to investigate the interactions between acquisition and regulation. Relying on TNC’s exhaustive internal database, we examined TNC acquisition orientation narratives along with conservation-easement documents and easement documentation reports. Analysis of legal documents enabled us to determine the particular land uses that TNC aimed to prevent or encourage. Where orientation narratives were unavailable we relied on interviews with TNC staff to determine their goals and strategies for land acquisitions. We also examined land-use planning documents in each county. Interviews were conducted with TNC staff, county planners, and other nonprofit organizations with special attention paid to internal decision-making procedures concerning the relationship between land acquisition and land-use planning and TNC’s involvement in land-use planning.

**Table 2.** Land-use planning cycle: the planning process breaks down in four steps (column 1) (Knoepfel et al, 2007). Each step offers different input opportunities to conservation NGOs (column 2). Only some of these options are available to land trusts, bearing in mind that 501c3 nonprofit organizations have some limits on their ability to lobby.

Possible involvement and intervention	Strategic use by a conservation-oriented actor	Practicability for a land trust	Lassen, Tehama County	Monterey County	Strategy type
<i>1 Agenda setting</i> initiation of the revision process within a given area					
Game on the agenda	(2A) Call for the initiation of a revision and/or subsequent steps according to favorable political majorities	Yes. Diffusion of scientific information calling for a revision is part of land trusts' mission	N	N	land-use planning
Game on the boundaries	(2B) Exclude/include ecologically sensitive areas from the local planning process (e.g. by the involvement of a higher level of government)	Yes. Higher levels of government are less sensitive to local (pro-development) political pressures	N	N	land-use planning
<i>2 Plan making</i> process of devising plans designed to guide the future development of a community					
(a) Writing of the General Plan draft (implies: the creation of an advisory task force such as the General Plan Advisory Committee, and the selection of an outside General Plan consultant)					
Participation in the General Plan Advisory Committee	(2C) Promote a new more environment-friendly territorial 'vision'	Yes. Education of the public is one of the missions of land trusts	Y (indirectly through other NGOs)	Y	–
	(2D) Defend strong zoning around own land properties and other sensitive areas	Yes. Zoning is a way to protect one's investment	N	N	integrated
	(2E) Defend strong zoning to lower land prices and facilitate acquisition	Yes. Even if 'downzoning' may be politically risky and thus counterproductive, such a strategy can be an option.	N	N	integrated
Act as an external expert	(2F) Highlight sensitive areas, possible corridors and buffer zones; initiate a debate about potential measures	Yes. Diffusion of scientific information is part of land trusts' mission	N (indirectly)	Y	land-use planning

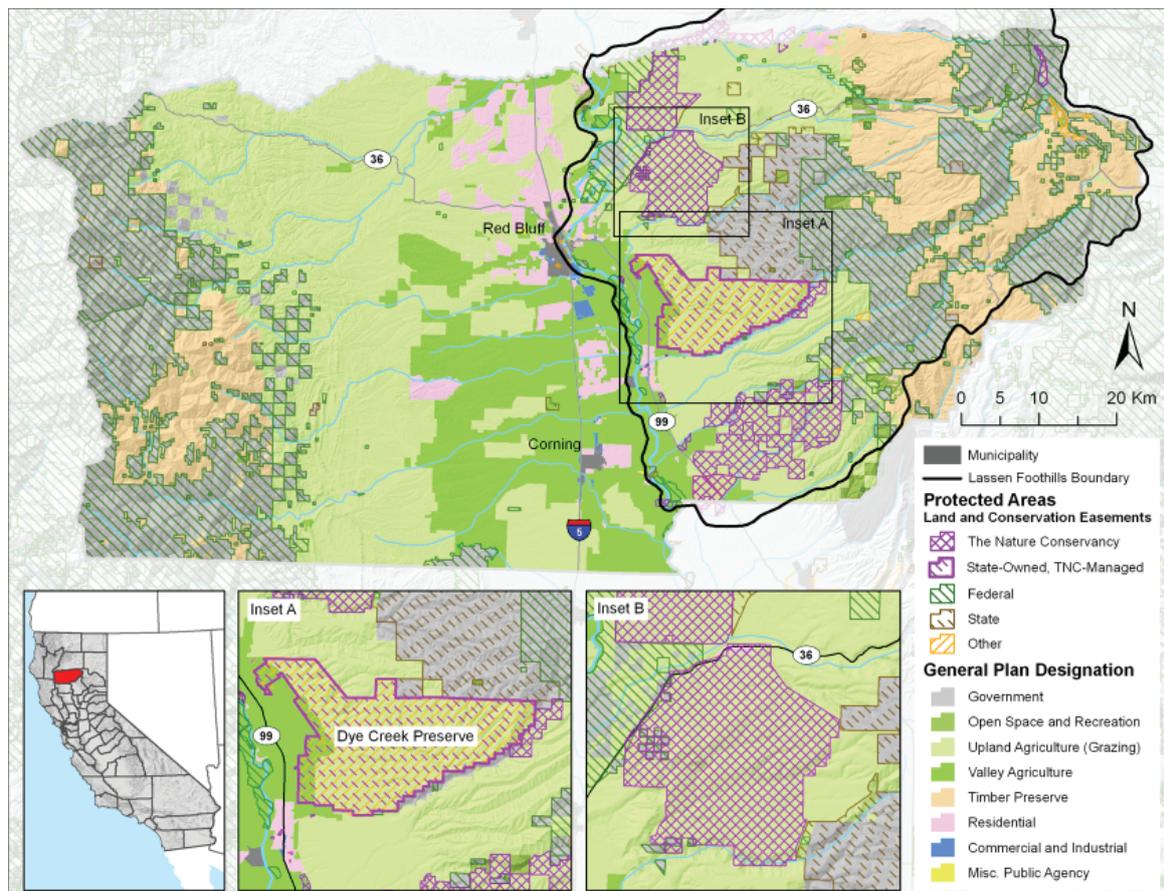
**Table 2** (continued).

(b) Writing of the revised version of the General Plan (implies: involvement of the planning commission and involvement of the city council):						
Lobbying of elected officials, political campaign	(2G)	Support favorable candidates, pressurize elected officials	No. No involvement in partisan politics	N	N	–
Participation in the public hearings (before the planning commission and/or city council)	(2H)	As for 2F	Yes. Public hearings are a platform to expose one's view about environmentally responsible development	N	Y	land-use planning
Initiative and referendum	(2I)	Place general plan amendments or rezoning on the ballot by the voters through initiatives or referenda	Yes. Initiating a vote is a powerful tool for land trusts to prompt a public debate about environmentally responsible development	N	N	land-use planning
<i>3 Implementation</i> process of carrying out the plans on a project-by-project basis (implies: zoning decisions and permit approvals)						
Litigation	(2J)	Contest administrative decision in court	Yes. California has a longstanding tradition of 'citizen enforcement' of laws in the planning field	N	N	land-use planning
<i>4 Evaluation</i>						
Expertise	(2K)	Call for a General Plan revision through new scientific evidence	Yes. Diffusion of scientific information could be part of land trusts' mission	N	Y	land-use planning

We used a geographic information system (ArcGIS™) to overlay regulations and acquisitions over time. Protected area boundaries, general plan designations, and zoning restrictions were compared, based on TNC's GIS acquisition database, the Monterey County 1982 General Plan, Monterey County 2006/2010 draft general plan update, Tehama County 1983 General Plan, and Tehama County 2009–2029 General Plan (Tehama County, 2009). The maps allow us to describe the zoning in which TNC's holdings are located and to determine whether new acquisitions influenced future land-use plan updates.

### 3 Lassen Foothills, Tehama County case

The Lassen Foothills project area is in eastern Tehama County, a primarily rural agricultural county in the upper Sacramento Valley (figure 2). In the Lassen Foothills, TNC focuses on private rangeland conservation easements, management of a large state preserve, small fee simple acquisitions, and education and outreach opportunities. TNC's goal in the Lassen Foothills is to work with private landowners, local organizations, and the community to ensure the sustainability and economic viability of private land uses and the ongoing health of the area's plants and animals. Tehama County's 7600 km<sup>2</sup> features fertile valleys along the Sacramento River, bounded to the east and west by rolling foothill rangelands, forests, and



**Figure 2.** [In color online.] Tehama County and The Nature Conservancy's (TNC's) Lassen Foothills project area. TNC's conservation easements protect the foothills located between the privately owned valley floor and the mainly public forests at higher elevation. The vast majority of TNC's acquisition acres are zoned as upland agriculture with large lot sizes (65 ha minimum).

buttes (Tehama County, 2009). Much of the Lassen Foothills has remained unfragmented because the large private cattle ranches have not been sold and subdivided, as has happened in much of the Sierra foothills (TNC, <http://www.nature.org>).

### 3.1 Acquisition

TNC acquisitions in the Lassen Foothills show evidence both of opportunism and planning, conceptualized and conducted separately from the land-use planning process (strategy 1C in table 1). The biological value of the region was recognized in early acquisition of small vernal pool sites in the 1980s. In 1987 the 15 192 ha Dye Creek Preserve was selected through a 'debt for nature' swap, and is managed by TNC through a lease with the State of California. In 1994 TNC completed its Central Valley Ecoregional Plan, which defined the organization's priorities for conservation. The Lassen Foothills were identified as an area with high potential for a landscape-scale project of high conservation value. "The major threats to conservation targets in the Lassen Foothills are destruction of habitat through conversion to rural residential housing and intensive agriculture (eg, orchards and vineyards), inadequate streamflow resulting from diversions, stream channel alterations, and inappropriate grazing and fire management practices that facilitate invasion and establishment of exotic plant species" (TNC, 2001). To mitigate these threats, TNC acquired twenty-five conservation easements covering 33 100 ha between 1988 and 2010. TNC also owns several small properties.

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TNC's strategy in the Lassen Foothills does not rely on planning and zoning to guide its acquisitions (strategy 1A) because of the perception that land-use planning regulations cannot resist incremental changes to zoning and the general plan through variances or other exceptions. This is particularly important in the context of a project that is meant to secure land ahead of imminent threats. Their acquisition strategies do not treat lands differently depending on their minimum lot sizes according to the zoning (strategy 1B). The 65 ha minimum lot sizes are considered large lots in the land-use plans, but these are not considered large in comparison with existing ranches by TNC. GIS analysis (figure 2) revealed that the vast majority (96%) of TNC's acquisition acres in Tehama County were zoned as upland agriculture, with 65 ha (160 acre) minimum lot sizes, while 2% were zoned as 16 ha (40 acre) minimum lot sizes in agriculture or upland agriculture, 1% as timber preserve, and less than 1% for agriculture with 0.8–8 ha (2–20 acre) minimum lot sizes.

In addition to differences in how acquisition and planning address the scale of parcelization, there are also differences in terms of land management. Conservation-easement goals of maintaining undeveloped grazing lands are consistent with general plan upland agriculture designations, but go much further in tailoring land-use restrictions to conservation of target species and habitats. Our survey of these twenty-four easement agreements shows that the content of conservation-easement terms has evolved over time, but that all have a strong impact on land use—restricting extensive subdivisions of the parcel (100% of easements) and development rights (96%). The partial property rights obtained by TNC also restrict conversion of grazing lands to orchards or feed lots (96%), development or sale of water rights (96%), nonagricultural commercial uses (91%), and construction of new roads or trails (64%).

To choose whether to acquire a parcel or easement from a willing seller, TNC first looks at the biological value of the parcel and second at its potential beneficial effect regarding the reduction of development threats. Its acquisition strategy does not involve direct coordination with county planners (strategy 1D). In its 2001 internal plan TNC plans to “engage key public and private stakeholders, including US Fish and Wildlife Service, CALFED Bay-Delta Program, California Department of Fish and Game, California Department of Forestry and Fire Protection, US Forest Service, Bureau of Land Management, Natural Resources Conservation Service, private timber companies, universities, local schools, and local watershed conservancies, to implement restoration and conservation land management strategies,” but county planning authorities are not referenced (TNC, 2001).

The advantage for a land trust engaging in action ahead of imminent threats is that land prices are lower than those in high-threat areas, and larger properties can be conserved. Consequently, there is no need for TNC to reduce land-acquisition prices through land-use planning designations (strategy 2E). Since anticipated population growth rates are low and resulting threat minimal, one model questioned whether the conservation easements provide a benefit over the do-nothing strategy for the next several decades (Byrd et al, 2009). On the basis of prior experience with development in the county, TNC staff perceived that zoning variances would be granted to permit development in excess of the land-use plan, and therefore did not coordinate their acquisition strategy with the plan.

### **3.2 Land-use planning**

In the Lassen Foothills case, staff suggested three primary reasons for not engaging the county's land-use planning process: a victory for conservation can be overturned in a subsequent revision of the land-use plan ; entering the political arena implies choosing a side, which contradicts TNC's nonconfrontational philosophy (strategies 2G, 2I) ; and partisan debates may result in the loss of trust by some landowners. This strategy has allowed TNC to

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develop personal relationships with landowners and to work with the politically conservative ranching community to protect working ranches.

The Tehama County General Plan revision process started in 2003 and was finalized in 2009. This 2009–2029 General Plan calls for agriculture to remain one of the primary land uses in the county. Urban development is also encouraged and permitted densities are increased within the Special Planning, Suburban, and Urban land-use designations (Tehama County, 2009).

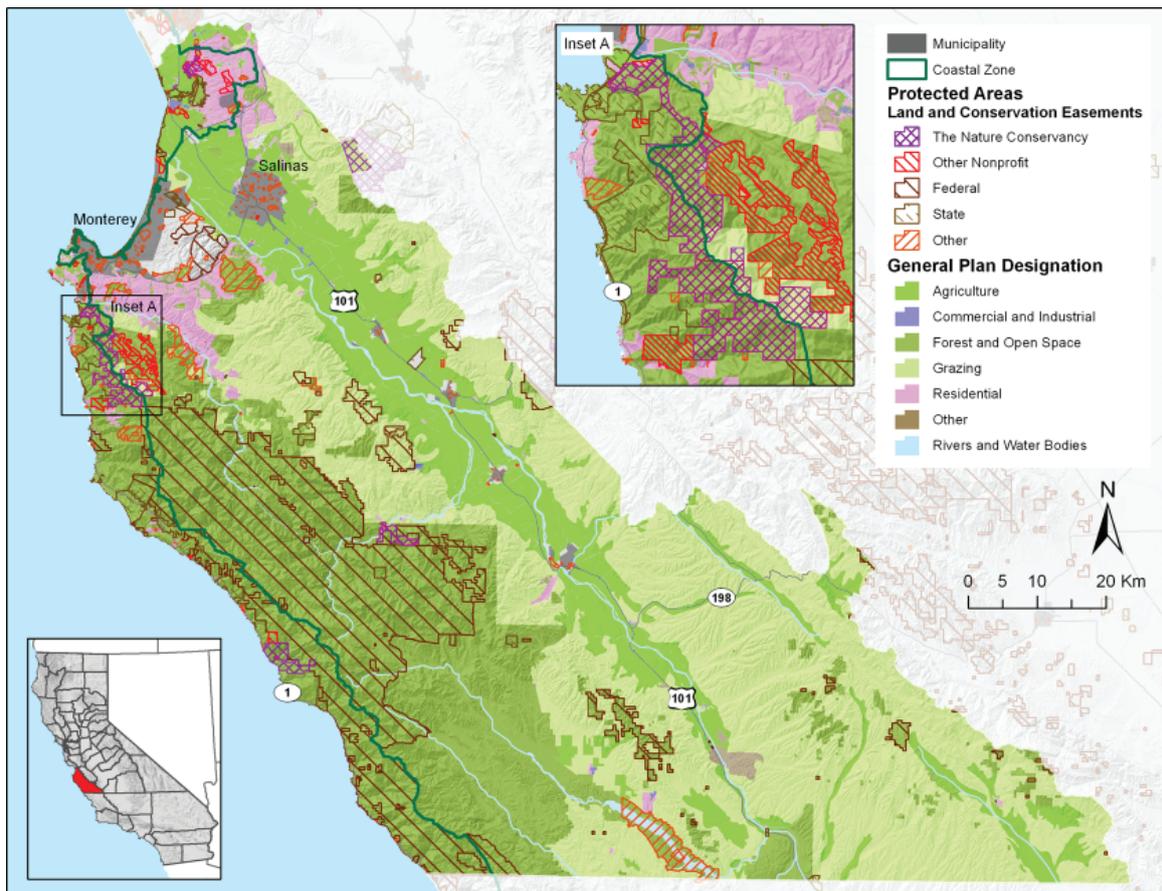
TNC was not involved in the land-use planning meetings that took place during the preparation of the 2009–2029 Tehama County General Plan (strategy 2H). It has not attempted to use its clout as a landowner to influence the county planning process. One TNC employee, active in another project, attended some of the meetings, but not as a representative of TNC. Staff did not provide ecological or biological information concerning the Lassen Foothills directly (strategies 1F, 2F), but would consider helping other NGOs or land trusts work with county planning. TNC's conservation-easement acquisitions were zoned with other private lands, without a conservation designation.

The Tehama County General Plan revision in the late 2000s hints at the influence of acquisitions on options open to county planners for directing anticipated growth. In the 1990s TNC chose to protect the Lassen Foothills east of the I-5 corridor, and the 2009–2029 General Plan has generated controversy by directing growth west of I-5. It would be an exaggeration to claim that TNC's action has displaced growth to the other side of the valley, but it might be true that securing a large area such as the Lassen Foothills can reassure planners about the existence of protected areas so that they might be more willing to tolerate additional development elsewhere. In 2009 the Sierra Club and local group Citizens Alliance for Rural Environmental Sustainability took legal action against the new general plan, arguing that the new plan permits large-scale development that would accommodate almost 1000% population growth, in particular along the Highway I-5 corridor. TNC was not involved in this legal challenge (strategy 2J).

The county planners' interest in documenting conservation acquisitions reveals their importance for land-use planning. Although TNC was not eager to share GIS boundaries of its easements with the county (strategy 2F), it would have allowed this in order to maintain positive relationships. The county obtained a GIS record of easement locations, and listed TNC's ownership within the plan. From the evidence of the Tehama case study, TNC does not frame or plan for acquisitions as part of the political land-use planning process. However, it is aware that acquisitions locally displace growth and result in a form of 'backdoor planning' (strategy 1C). Parcel-by-parcel conservation may have larger landscape effects on development and shape development options. Lassen Foothills staff did participate in an adjacent county's HCP under the Endangered Species Act.

#### **4 Monterey County case**

Monterey County, California features rugged coastal ranges, oceanside cities, and an interior agricultural valley (Figure 3). TNC focuses on conservation acquisitions and also became involved in the revision of the Monterey County General Plan as an experiment. Monterey County's natural environment is at risk from the rapid conversion of ranches, farms, and oak woodlands to vineyards and subdivisions. The county is part of California's 'Central Coast ecoregion' which was identified by the World Wildlife Fund in 1999 as one of the world's most threatened ecoregions, given its high rate of habitat loss and large numbers of endemic and range-restricted species (TNC, 2002). TNC observes that these threats are compounded by the "lack of a broadly accepted regional vision for protecting the county's natural resource areas and guiding future growth into less environmentally sensitive locations" (TNC, <http://www.nature.org>).



**Figure 3.** [In color online.] Monterey County. Land-use plan designations reflect public landownership, but many land-trust acquisitions were not redesignated in the plan. TNC's largest easements are mainly situated in the forest and open space zones near public lands in the northern half of the county. Many high conservation value habitats are in the lowlands (eg, riparian ecosystems), which are zoned either as agriculture or residential land.

#### 4.1 Acquisition

TNC's first involvements with conservation easements in Monterey County date back to 1982, well before the creation of the Monterey field office in the late 1990s. Its landholdings are relatively few in a county known for its biodiversity. TNC Monterey quickly realized that its usual tools were not calibrated to these extraordinary needs; it was facing a situation where it could not do all the conservation work alone and with acquisitions only (interview, TNC Monterey 20 February 2009). TNC Monterey staff saw easements as permanent and place-specific interventions (strategy 1C) whereas engagement in policy was a way to influence the use of the land connecting different islands of protected habitat. We found no evidence that acquisition was used to influence land-use planning (strategy 1D).

As of 2010 TNC had been involved in thirteen acquisitions covering 7800 ha, concentrating its efforts on the northern half of the county. TNC acquisitions include holding conservation easements (5 properties), assisting a third-party with an acquisition (3 properties), purchasing land or easements and then transferring these to another land trust or public agency (3 properties), and acquiring and retaining full title (2 properties). Our survey of the five conservation easement agreements shows that the two primary threats which TNC abates are development and subdivision. They also restrict mineral development (5 easements), alteration of natural water courses or development of water (5 easements), agricultural conversion (3 easements), nonagricultural commercial uses (3 easements), and construction of new roads (2 easements). The majority (72%) of TNC's acquisition acres in

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Monterey County are designated as forest or open space in the land-use plans, 25% were designated for grazing, 2% rural residential, and 1% agriculture (figure 3).

When it has a choice between two easements, TNC Monterey prefers the one which might reduce the process of settlement expansion (buffer), but it does not buy easements on properties which have no biological value only in order to stop development. TNC generally prefers to acquire land adjacent to existing protected areas (public land, other easements, etc) in order to provide connectivity. Aquatic ecosystems are an example of where TNC concentrates its efforts, as riparian areas are usually privately owned.

#### **4.2 Land-use planning**

Analysis of interviews with TNC Monterey staff revealed five main arguments for getting involved in the revision of the Monterey County General Plan that began in 1999: funding limits land acquisition in a county characterized by high biological value; strong zoning can offer efficient protection, especially in buffer zones or corridors; land-use planning coordinates development at the county level; political debates around land-use planning offer opportunities to communicate and raise the awareness among county authorities and the public; and participation in the land-use planning process is an opportunity for TNC to share its scientific expertise (strategy 2F). Interviews revealed that field office staff did not consider acquisitions and land-use planning as closely related instruments. TNC's participation in land-use planning was not conceived as a strategy to influence future acquisitions directly [eg, by influencing land price (strategy 2E)] (interview, TNC Monterey 20 February 2009).

The most recent general plan revision process began in 1999 and resulted in multiple drafts of an updated general plan for the unincorporated noncoastal part of the county. In 2010 the Monterey County Board of Supervisors adopted a final version of the general plan update. Before this, the 1982 General Plan was the first comprehensive update since 1968. The sharp debates in the plan-revision process were characterized by a strong and sometimes paralyzing polarization between conservation-oriented and agriculture-oriented actors. The original updates of the plan were seen by some as overly coercive. The different land-use designations defined various levels of habitat protection. For environmental interest groups in the county, the update was meant to enhance conservation (strategies 2C, 2H, 2K), but the powerful agribusinesses of the Salinas Valley were able to reduce the strength of the plan as a conservation tool in subsequent versions. The 2010 version appeared to provide a compromise.

TNC's original intent in participating in the land-use planning process was to make planners more knowledgeable about habitat-conservation issues (strategy 2F). Through its involvement in the county general plan revision, TNC saw an opportunity to bridge the gap between science and policy. Its goal was to "ensure that Monterey County's General Plan Update as well as their local policy planning aligns with portfolio conservation, by providing scientific and related resource information to Monterey County staff, officials and community groups" (TNC, 2002, page 5). Following the release of the 1999 World Wildlife Fund assessment, Monterey County planners and local conservation groups asked the newly established TNC Monterey field office to provide technical input on biologically significant sites in the county. This involvement in the county general plan revision was considered an experiment because of TNC's lack of experience in such processes. After the failure of the 2006 draft and the strong polarization that crystallized around the general plan update, TNC stepped out of its tight collaboration with planners and decided to provide information to both sides. TNC recognized that science and biodiversity information themselves became objects of political debate and that collaboration with only one partner (eg, county planners) generated distrust. TNC continued to help the environmentalist coalition, but stayed outside of the political debates.

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TNC has not done a final assessment of its participation in the planning effort, but has noted that land-use planning requires a significant involvement of time and money. In addition, the political costs of engaging the contentious local planning process are not insignificant. In Monterey County, TNC found itself portrayed as an ‘outsider’ with a global agenda attempting to interfere with local decisions. However, in terms of conservation outcomes, TNC and other conservation organizations were able to advance important amendments. A comparison of the 1982 and draft 2010 plans reveals that most land-use designations remained the same despite efforts to modify them. The main differences are in the specificity of the measures.

## 5 Discussion

The cases provide a comparison of a well-established land trust’s choices about whether to pursue acquisition, the political land-use planning process, or a combined strategy based on mutual reinforcement of acquisition and regulation. Following figure 1, we expected to find that TNC would promote conservation through a mutually reinforcing strategy in which TNC would (1) rely on its power as a landowner to influence the planning process, and (2) attempt to shape the planning process to enhance its ability to acquire new land and conservation easements (strategies 1B, 1D, 1E in table 1 and strategies 2D and 2E in table 2). From the evidence of our case studies, TNC does not frame or plan for acquisitions as part of the political land-use planning process. TNC relies strongly on acquisition to protect biologically important areas from development, in accordance with its mission and traditional approach. Its prioritization and evaluation processes do not incorporate general plan designations and there is no evidence that it conducts acquisitions to alter general plan designations or to disrupt planned development. Likewise, it does not engage in the land-use planning process to facilitate acquisitions.

The Lassen Foothills is a paradigmatic example of a case where TNC relied on property rights acquisition and not land-use planning involvement. The 65 ha minimum lot sizes are much below the size of existing ranches, so parcelization to the county-allowed minimums would mean significant habitat fragmentation. However, TNC does not expect even this level of low-density zoning to withstand development pressure. TNC argues that county planning and zoning do not necessarily influence grazing, timber management, riparian protection, and other land uses addressed in the conservation-easement terms. Consequently, regulation was viewed as unreliable and as an incomplete substitute for the environmental management possible through acquisition.

One might expect to find that TNC would be active in the Tehama County land-use planning process in order to promote conservation through regulation (strategies 2B, 2F, 2H, 2I, 2J, and 2K in table 2), since regulation is landscape-scale and potentially more cost-effective than acquisition. However, a land trust’s choice of instruments depends not only on the effectiveness of the instruments to conserve ecosystems, but also on the social impact of this choice on the community of resource users (eg, fear of antagonistic situations). This explains why even marginal involvement in land-use planning (mostly by information sharing) was controversial as a conservation strategy.

In Monterey County, TNC chose to engage in the plan-revision process and positioned itself as a biological expert (strategies 2F, 2H, 2K). TNC did not particularly try to exclude ecologically sensitive areas from the local planning process by getting higher levels of government involved (strategy 2B). Observing an increased polarization after the first version of the revised General Plan, TNC chose to step back from political battles (strategy 2I) and focus on sharing expertise. This is consistent with its strategy to avoid partisan politics. This attitude also explains TNC’s reluctance to pursue ‘citizen enforcement’ of laws in the planning field (strategy 2J), unlike other environmental advocacy groups. However, it

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suggests recognition within the organization that acquisition alone cannot suffice where high development pressure threatens important biological resources.

The case studies reveal some limits of a strategy reliant primarily on acquisition. Acquisition of protected areas generally shifts development elsewhere, assuming that developers will seek alternative locations for new growth. In some cases, acquisitions can even attract development due to higher amenity values (McDonald et al, 2007). Despite this, conservation organizations often prioritize acquisitions based on biological value alone, rather than considering the broader implications of where development will subsequently occur (Newburn et al, 2005).

Evidence from the case studies shows that one of the main factors explaining the land trust's choice of instruments is the social context among resource users. TNC tried to avoid confrontation in order to facilitate voluntary real estate transactions with landowners. An acquisition strategy may work well in regions with low development pressures such as the Lassen Foothills. However, whenever conservation action is needed in populated areas or on fertile agricultural land, land-use planning tools have become more important. TNC's role in land-use planning in Monterey can be characterized as the one of an expert sharing its deep knowledge of the ecological situation, not of a participant shifting pieces in the political game. As biological information became more politicized in the planning process, TNC was forced to reevaluate its close relationship with the county and provide information to advocates on all sides. This illustrates how scientific information is embedded in the political process. Nongovernmental organizations aiming to apply conservation science should not be surprised by the polarization of debate around science.

The scale of growth-management institutions is often ill matched to the scale of local development pressures. Financial pressures on growth-oriented local governments mean that local government plans have difficulty assuring long-term conservation. Some scholars and practitioners have argued for the merit of a supralocal body in charge of approving building permits. Higher levels of government are less sensitive to development pressures and may be better equipped to defend conservation interests. The framing of conservation expertise and funding as 'outside meddling' has been prominent in land-use debates, even though prodevelopment groups may also have national financial and political backing (Hurley and Walker, 2004; Walker and Fortmann, 2003). Where a federal law such as the Endangered Species Act forces local and regional actors to work together in order to reach an agreement about HPCs, national organizations may be better positioned to influence land-use planning.

Acquisition was not integrated with land-use planning. Likewise, the land-use planning process had an incomplete approach to property ownership that restricts development. In our cases, general plan maps typically did not reflect TNC's land and conservation-easement acquisitions. Similarly, previous research indicates that acquisitions by nongovernmental organizations appear to have less of an impact on county general plan designations than do long-standing public lands (Rissman and Merenlender, 2008). Because of the tight entanglement of private property rights and public legislation, county planners may benefit from broadening their 'government' or 'public-quasi-public' designations to include all conservation acquisitions. Publicly available datasets of nonprofit acquisitions would assist with this coordination.

Some scholars are concerned that a focus on payments for land, development rights, or ecosystem services weakens the public acceptance of uncompensated regulation (ie, Fairfax et al, 2005; Sax, 1992). Central to the integration of acquisition and land-use planning is an expanded public discourse around the question of when compensation is appropriate or required by the Constitution's takings provision. Integrated regulation-incentive programs

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would involve setting a regulatory floor for society's expectations and then providing incentives or compensation for conservation actions above that regulatory floor.

## **6 Conclusions**

The case studies show that an international land trust like TNC maintains an uneasy relationship with the tools of local land-use planning. The Monterey case shows an interest in experimentation—because TNC is aware that not all conservation can be done through acquisitions. In neither of the cases did TNC take the additional step of developing a strategy relying on the reinforcing effects of acquisition and land-use planning. This is rather remarkable considering their mutual effects on each other and on land-use change. Because the pressure on natural ecosystems is increasing and the funding for acquisition is limited, we expect that land trusts will recognize the limits of a strategy focusing only on acquisition, despite their preference for voluntary, nonconfrontational action. The Monterey case is a paradigmatic example of this attempt to harness the power of public policy. In this last section, we summarize the arguments in favor of better integration between acquisition and regulation and suggest themes for future research.

### **6.1 Moving toward strategic acquisition**

Through an integrated strategy associating acquisitions and land-use planning, land trusts could work with a diverse community of conservation groups to push development out of priority areas through acquisition and zoning restrictions, and pull development into dense and livable, transit-oriented urban spaces to achieve lasting landscape-scale conservation. Using regional growth models, land trusts may be able to prioritize conservation and understand the attraction and repulsion effects of protected areas.

Our case studies hint at the advantages of a move toward strategic acquisition, or acquisition that effectively achieves conservation outcomes across regions, not just specific properties. When acquisition is coordinated with land-use planning, it appears to be more likely to result in a spatial pattern of protected areas that is connected rather than fragmented. Acquisition can enable greater land-use regulation by providing a financial incentive that enables political compromise in favor of regulation. However, acquisition can create a societal expectation of compensation for lost development rights that could impede future regulations. Given the important connections between acquisition and the planning context, analysts should take land-use planning into account when examining acquisitions. Evaluations of the impact of acquisitions on conservation outcomes are more accurate when they account for the land-use planning context. For instance, when land-use planning effectively prevents development over the long term, acquisition to preserve open space may be unnecessary, but acquisition for ecosystem management and restoration may still be beneficial.

### **6.2 Playing the political game and enhancing the conservation outcomes of land-use planning**

Although property rights arise from a different logic than land-use planning, property is inherently embedded in the political process. Land trusts' role as property owners could give them important weight in the political process to influence regional development patterns. Our case studies present several arguments in favor of involvement in land-use planning, despite the political costs which may be associated with it.

Land trusts and other conservation organizations could enhance citizen and planner awareness of biodiversity and open space values, defend their investments, increase the political legitimacy of their acquisitions, and help to build more accountable institutions for planning conservation and development. Acquisition and land-use planning strategies are easier to integrate when land-use authorities have full information on acquisition, such as spatial protected area datasets. We deliberately excluded from our empirical analysis cases where supralocal bodies of government oversee land-use planning, but such institutional

arrangements may be more likely to ensure conservation outcomes, and allow for coordination with regional or national land trusts, because of greater independence from local development actors. Specialization among conservation organizations increases efficiency within NGOs, but also increases the price of coordination. The lack of coordination between acquisition and regulation hints at the limit of an approach to conservation in which private actors act independently.

Despite land trust efforts to frame acquisitions as voluntary, apolitical, nonconfrontation strategies, property rights and the market forces that drive development and conservation decisions are part of political processes. By engaging with community values and building political support for proenvironment land-use planning, nongovernmental organizations can extend their reach. Meanwhile, they can utilize acquisition to achieve temporally secure property rights that can buffer shifting political climates.

The historical development of zoning as nuisance abatement explains its function as a tool for planned development, rather than for conservation of natural resources. Just as land trusts may not conceive their acquisition strategy in light of land-use planning, local governments do not always examine existing acquisitions in shaping plans. Despite the orientation of land-use planning toward development planning and malleability in a short political timeframe, it is critical for landscape conservation. With increasing pressure for development, acquisition alone will remain an inefficient and piecemeal conservation approach.

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