



Trends in private land conservation: Increasing complexity, shifting conservation purposes and allowable private land uses



Jessica Owley^{a,*}, Adena R. Rissman^b

^a SUNY Buffalo Law School, 722 O'Brian Hall, Buffalo, NY 14260, United States

^b University of Wisconsin, 1630 Linden Drive, Room 111, Madison, WI 53706, United States

ARTICLE INFO

Article history:

Received 6 July 2015

Received in revised form 14 October 2015

Accepted 27 October 2015

Keywords:

Conservation easement

Land trust

Nonprofit organization

Private-land conservation

Property rights

ABSTRACT

The terrain of private-land conservation dealmaking is shifting. As the area of private land protected for conservation increases, it is time to understand trends in private-land conservation agreements. We examined 269 conservation easements and conducted 73 interviews with land conservation organizations to investigate changes in private-land conservation in the United States. We hypothesized that since 2000, conservation easements have become more complex but less restrictive. Our analysis reveals shifts in what it means for private land to be “conserved.” We found that conservation easements have indeed become more complex, with more purposes and terms after 2000 compared to conservation easements recorded before 2000. However, changes in restrictiveness of conservation easements varied by land use. Mining and waste dumping were less likely to be allowed after 2000, but new residences and structures were twice as likely to be allowed. We found a shift toward allowing some bounded timber harvest and grazing and a decline in terms that entirely allow or prohibit these working land uses. Interviews revealed staff perceptions of reasons for these changes. Our analysis suggests that “used” landscapes are increasingly important for conservation but that conserving these properties stretches the limits of simple, perpetual policy tools and requires increasingly complex and contingent agreements.

© 2015 Elsevier Ltd. All rights reserved.

1. Introduction

Land conservation can prevent development and enhance environmental management and recreation. Conservation easements (CEs) are part of the global trend toward decentralized environmental governance in which nonprofit and government entities negotiate standards and enforce rules (Owley, 2013). Internationally, public agencies and nonprofit organizations have sought ways to augment land protection and are increasingly relying on CEs. As CEs become more important for land conservation, it is helpful to understand how the tool is evolving (Merenlender et al., 2004). Because they are perpetual restrictions on land based on today's understanding and preferences, CEs tend to remain fixed once established with subsequent transactions reflecting organizational learning and changing conservation contexts (Rissman, 2011). Organizations and landowners are learning from experience and responding to changing institutional contexts for conservation,

so CEs established in the 1980s and 1990s may be substantially different from those of more recent decades.

We examined 269 conservation easements from six U.S. states to investigate differences between older and more recent CEs and conducted 73 interviews with staff of organizations holding these CEs. The CE and interview data present a compelling story of change within private-land conservation. Scholars and practitioners have noted increasing sophistication of CEs (Boyd et al., 1999). Yet, the trends and contours of these changes have not been examined systematically. Understanding how CEs are changing provides important information to land conservation stakeholders considering how to conserve land.

1.1. Conservation easements

CEs are nonpossessory rights in land with a conservation purpose. The holder of a CE is a government agency, nonprofit land trust, or Native American tribe with a nonpossessory right in another person or entity's real property. Such rights are generally negative, prohibiting the landowner from doing something she would have otherwise been able to do. CEs can also contain

* Corresponding author. Fax: +1 7166452064.

E-mail addresses: jol@buffalo.edu (J. Owley), arissman@wisc.edu (A.R. Rissman).

affirmative rights, giving the CE holder the right to do something the landowner could have otherwise prohibited. Whether negative or affirmative, the goal of the restriction is to yield a conservation benefit (NCCUSL, 2007). CEs vary widely in purposes, restrictions, and the size and landscape context of conserved properties. Common examples of CE terms include prohibitions on development, limitations on activities in wetlands, and rules regarding forestry and agricultural practices.

The CE tool has evolved significantly. Historically, courts did not approve of CEs, disfavoring long-term restrictions on land that made transfers and negotiations regarding land uses more cumbersome. Conservationists grew dissatisfied with the limitations of public land conservation and land-use regulation and began to look for additional mechanisms to protect environmental amenities (King and Fairfax, 2006; Owley, 2006). CEs appeared a logical outgrowth of traditional property agreements like easements and real covenants that restrict a landowner's behavior on her own land or permit a right holder to do something on the land (like trespassing) that the landowner would otherwise have been able to prohibit. CEs needed new legal foundations due to inherent legal conflicts with traditional real estate mechanisms (that limited permissible holders and purposes of servitudes) and the desires of conservationists (Cheever, 1996). Therefore, beginning in earnest in the 1970s and increasing after a 1981 Uniform Act (the UCEA), U.S. states enacted CE statutes validating the use of such agreements and creating foundations for their enforcement. The CE deduction was added to the U.S. federal tax code in 1980, enabling a charitable tax deduction for donated CEs and estate tax benefits. All fifty states, Washington D.C., Puerto Rico, and the Virgin Islands now have CE statutes. Other nations have been following this model, and we now see CE-like structures in the Scotland, Australia, Canada, Kenya, Costa Rica, and Mexico (Di Leva, 2002; Jacobs, 2014; Korngold, 2010; Rissman et al., 2014). There are also proposals for development elsewhere, including England, Wales, Papua New Guinea, and Chile (Root-Bernstein et al., 2013; Stolton et al., 2014; Telesetsky, 2001).

The growth in CEs in the U.S. has been driven by the growth of the land trust movement and the infusion of public funding from ballot initiatives and the U.S. Farm Bill. The number of land trusts has grown at an incredible rate. In 1950, there were only 53 land trusts, and in 2011 there were over 1700 (McLaughlin, 2004; Chang, 2011). The 2010 Land Trust Alliance's Census tallied the total hectares of CEs held by land trusts at over 19 million (Chang, 2011). In 2000, there were only 9.3 million hectares held by state, local, and national land trusts. This number does not include the millions of additional hectares held by government agencies.

The land trust movement and the use of CEs matured between the 1980s and 2010s. The Land Trust Alliance first published *The Conservation Easement Handbook* in 1988 and the *Standards and Practices Guidebook* in 1993. Farm Bill funding became available for land-trust-held CEs in 2002 (Alliance, 2013). By the early 2000s, CEs were subject to heightened academic, media, and governmental scrutiny. Senate Finance Committee and IRS investigations began in 2003, resulting in hundreds of CE audits. The Land Trust Accreditation Commission was created in 2006 to set national organizational standards.

We expected to see two trends in CE terms: increasing complexity and declining restrictiveness of private land use. Our research group has experience working with CEs as attorneys, academic researchers, and board members of land trusts. This experience suggests that CEs are getting longer and more complicated. At the same time, however, CEs appear to be allowing more development and landowner uses of the conserved property. We conducted a survey of CE documents and interviews with CE holders to test our hypotheses and quantify these trends, comparing CEs created before and after 2000.

Hypothesis 1. Conservation easements have increased in complexity

We expected to find that CEs increased in complexity, with newer CEs including more purposes and terms. Contract theory, diffusion of innovation, and organizational learning suggest an increase in complexity over time (Argyres et al., 2007; Gray, 1973; Vanneste and Puranam, 2008). CEs evolved in conjunction with changes in state and federal law, funder requirements, and increased public scrutiny. As land trusts and government agencies mature and CE use increases, holders are more likely to be repeat participants. With this experience and the growth in the number of attorneys working with CEs, we expect organizations to anticipate more potentialities and negotiate for more terms, seeking to maximize the likelihood of achieving their conservation goals. We also expect that donated CEs might be less complex than purchased or partially-purchased CEs (Rissman, 2010). CEs are also more likely to be part of mitigation for development or habitat destruction in which the expectation for defined rules and duties is higher (Owley, 2011). Larger properties may also require greater complexity in CE terms.

An increase in complexity of conservation easements would be consistent with trends seen in other types of contractual documents. Attorneys often seek to improve contract completeness by adding contingency planning or by increasing contract details (Argyres et al., 2007; Crocker and Reynolds, 1993). As parties to contracts learn about potential outcomes through personal experience, court cases, and news reports, they add contract language regarding such events. Though characterized as deed restrictions, CEs are similar to contracts, are often referred to as contracts (Tegene et al., 1999), and courts use contract rules when interpreting them (Haines, 2012).

Innovative terms may also have diffused through conservation organizations. Diffusion of innovation occurs where there is "communication of a new idea in a social system over time" (Gray, 1973). Increased levels of interaction through social media likely magnify this effect. For example, increased use of model CEs, publications like the *Conservation Easement Handbook* or the Land Trust Alliance's *Standards and Practices*, or discussions on the Land Trust Alliance listservs enable drafters to easily adopt terms and techniques used by others. It is also possible that there is a bandwagon effect (Asch, 1955) for CE terms. That is, the probability of any holder adopting a particular term increases with the proportion of holders who has already done so (Colman, 2012).

Organizational learning theory supports the hypothesis of increasing complexity. Organizational learning is a change in an organization's practices based on experience (Argote, 2013). As land trusts enter into more CEs, staff members change and improve their CEs based on their earlier transactions and in reaction to conflicts that have arisen with landowners. Repeated interactions enable drafters to capture more contingencies. Changes are more frequently driven by actual experiences rather than increased ability to predict potential future occurrences (Mayer and Argyres, 2004). It is impossible to foresee all contingencies, and staff identify important terms that were left out of prior CEs. For example, if land trusts have problems with landowners dumping trash, they are likely to add provisions on waste dumping to future CEs. Incorporating new CE terms guards against organizational forgetting and may leave terms in subsequent CEs long after individual staff members have forgotten why the terms first appeared (Argote, 1999).

Hypothesis 2. Conservation easements have decreased in restrictiveness

While CE documents may become increasingly complex, the restrictions on landowners may be lessening.¹ We hypothesized that recent CEs would allow landowners to exercise more land-use rights for a few reasons. The earliest CEs preserved key landmarks or were viewed as “forever wild” CEs that did not allow substantial use or development of those properties (Jacobs, 2014). CEs are now used in more contexts and on larger properties. They may be more likely to be part of a large-scale suburban development, in urban areas, or on a golf course. To attract new landowners and enable a growing conservation land base, CEs may also increasingly encumber residential properties or large working lands with active farming, grazing, and timber harvesting. In these cases, landowners typically retain rights to conduct activities on the lands. Changes in funding and conservation organization priorities could also contribute to decreased restrictions on land use. One trend that may run counter to this hypothesis is that donated CEs may contain fewer restrictions than purchased or other CEs because landowners typically receive less financial incentive for a donated CE. Purchased CEs have increased with funding from the Farm Bill and voter-approved bond initiatives.

2. Methods

We examined 269 CEs from six states in the U.S. (California, Colorado, Indiana, New York, South Carolina, and Wisconsin). We collected the CEs through a distributed graduate seminar conducted among six universities in Spring 2011 (Owley and Rissman, 2011). States were selected with the goal of including a variety of “conservation contexts” including diverse legal, ecological, and social characteristics and conservation easement activity (Kiesecker et al., 2007) while also drawing upon the backgrounds of the involved researchers who have experience working in several of the states. California and New York are the states with the oldest CE enabling acts. They both have a long history of CE use by both young and old land trusts and by government entities. Colorado has a pre-UCEA enabling act and has been ground zero for many debates about valuation and validity of CEs. A portion of Colorado lottery proceeds goes to private land conservation including purchases of CEs, which has led to a high level of CE establishment in the state. Wisconsin is one of the first states to adopt the UCEA, shortly after it was published by the Uniform Law Commission in 1981. Indiana followed in 1984 with South Carolina in 1991, demonstrating a range of history and experience with CEs in each state. We sought states and regions within states that had different landscape types. Within each state in our study, we selected smaller study areas representing specific ecosystems or land forms; these encompassed working lands, coastal lands, scenic areas, wetlands and other features (Rissman et al., 2014).

Our sampling design faced the challenge of the lack of reliable accounting for the number and location of CEs. When we started the study, the National Conservation Easement Database (NCED) was not yet available (Morris and Rissman, 2009). The NCED remains incomplete. As of July 2015, the NCED contained information on 114,216 conservation easements in the United States encumbering more than 9,449,345 hectares of land. NCED estimates, however, that CEs encumber approximately 16,000,000 hectares of land in the United States (Cheever and Owley, 2016; NCED, 2015). We recently compared our sample to NCED and found that most of our states were sampled consistent with their proportions in the NCED database although Colorado may be over-represented and

¹ In fact, the most restrictive development term could be extremely short: “No Development Anywhere on the Property.” When the landowners have more rights, the provisions get longer, detailing where development may occur, what form it will take, and what approval process is required.

New York may be under-represented (online Supplementary Table A.1).

To include a wide range of land conservation organizations, we selected 63 land trusts and governmental holders from 28 regions across the six states. We sought a mixture of holders and selected three primary CE holders from each region, including at least one state or federal government agency and one nonprofit land trust. This means, at times, we had CE holders that operated in multiple states or regions. When this occurred, we interviewed those most knowledgeable about CEs for the study area. This yielded more interviews than organizations. We then acquired four CEs from each organization in each region: the oldest and newest CEs, a middle CE from the median year between the oldest and newest CE, and the largest CE (by area) held by the organization in the study region. If the largest CE was also the oldest, middle, or newest, the second largest CE was selected. We selected these CEs to maximize the variation in terms within each organization. In some cases organizations provided less than four CEs. When an organization was selected in more than one region in a state, they were asked to contribute four CEs from each region (Rissman et al., 2014).

We coded the CEs by categorizing their purposes, land-use terms, and procedural terms (as listed in the tables and figures below). To analyze how CEs have changed, we divided the CEs into two groups: those recorded before 2000 (“before 2000” $n = 76$) and those recorded from 2000 to 2011 (“after 2000” $n = 193$). We split the dataset at 2000 because the use of CEs increased dramatically by 2000. By that date, conservation organizations had access to a variety of CE drafting resources including books, conferences, and reports. Additionally, in the early 2000s funding for CEs grew with federal programs like the Farm Bill and local bond initiatives. By the early 2000s, CEs were subject to heightened academic, media, and governmental scrutiny. With some prior experience, drafters were incorporating lessons from earlier projects.

Our sample had similar dominant land covers, states, and types of holder (government or NGO), and types of landowner (private, NGO, or government) before and after 2000 (online Supplementary Table A.2). Our sample had fewer small properties and donated CEs after 2000. For this reason, we control for property size and whether the CE was donated in all multivariate analyses. Some organizations held no CEs before 2000; their CEs were included in the analysis because of the study’s purpose of comparing the change in overall CE terms over time, rather than tracking change within specific organizations. Organizations with all CEs after 2000 were well distributed by state and by type of holder (government and NGO).

To test our first hypothesis of an increase in complexity, we first examined whether the number of purposes was higher after 2000. We created a list of 16 purposes (plus an “other” category) based on our experience with CEs and adapting other categories of conservation purposes from the literature (Rissman, 2007; Gustanski and Squires, 2000) (online Supplementary Table A.1 and Fig. A.1). Thus, we assessed the number of goals the CEs professed rather than simply the number of purpose clauses. We conducted a multiple linear regression (all analyses in IBM SPSS v.22) of the number of purposes in each CE with independent variables year (before or after 2000), property size (larger or smaller than 500 acres), and whether the CE was donated (yes/no), and a size \times year interaction term. The size \times year interaction term was not significant, so it was removed from the final model. We conducted chi-squared analyses of whether specific purpose clauses and types of purposes were more or less common after 2000.

Second, we tracked the presence of 17 land-use and 5 procedural CE terms. We developed this list of provisions based on the Land Trust Alliance’s *Conservation Easement Handbook* and our previous experience with CEs. We created a land-use-complexity metric defined as the sum of the number of land uses that each CE

Table 1
Seventeen land-use terms included in the land-use complexity metric.

Land-use terms	Percentage of CEs Before 2000 (n = 76) containing the term	Percentage of CEs After 2000 (n = 193) containing the term	Increase in percentage
New structures, buildings, or roads mentioned	94.7%	99.0%	4.3%
Alteration of land mentioned	84.2%	84.5%	0.3%
Waste dumping mentioned	81.6%	94.3%	12.7%
Public access mentioned	81.6%	91.7%	10.1%
Timber harvest mentioned	76.3%	91.2%	14.9%
Alteration of water courses mentioned	72.4%	82.9%	10.5%
Commercial recreation mentioned	71.1%	82.8%	11.7%
Mining mentioned	69.0%	91.9%	22.9%
Subdivision of the property mentioned	64.5%	85.0%	20.5%
Farming mentioned	64.5%	83.4%	18.9%
Livestock grazing mentioned	56.6%	76.7%	20.1%
Invasive species mentioned	56.6%	68.4%	11.8%
Wildlife mentioned	39.2%	56.5%	17.3%
Water rights mentioned	36.6%	53.2%	16.6%
Management plan mentioned	31.0%	56.8%	25.8%
Prescribed fire mentioned	21.1%	34.2%	13.1%
Climate change mentioned	1.3%	3.6%	2.3%

mentioned (including provisions to restrict or permit the land use) out of 17 land-use categories. We hypothesized that CEs after 2000 would mention more land uses than CEs before 2000, which we tested with the nonparametric Mann–Whitney *U* test. We used the nonparametric test because it does not assume normal distributions. We tested change in presence of five procedural terms (termination, condemnation, Acts of God, amendment, dispute resolution) before and after 2000 with chi-squared analysis.

Our second hypothesis considered whether later CEs are less likely to restrict landowners' private land uses. When examining CE terms to test this hypothesis, we looked for both the presence of terms and their meaning. That is, we asked whether the land-use term actually restricted landowner behavior. For example, instead of just asking whether the CE had a term about mining, we asked whether the CE restricted mining on the parcel, investigating the level of control the CE purported to exert over landowner action. We compared the level of restrictiveness in all CEs before 2000 against those after 2000. We examined whether CEs became more restrictive through chi-squared analysis of land-use restrictions.

We compared development terms in CEs before and after 2000 with multinomial logistic regression (*n* = 269), controlling for property size, working land purpose (including forestry, grazing, or agriculture), and whether the CE was donated. Development restrictions were divided into three categories: no new development; one residence, agricultural building, cabins, or other structures; and two or more new residences allowed. The final model regressed development terms with year (before or after 2000), size of property (smaller or larger than 500 acres), and whether the CE included a working land purpose. We initially included a year × size interaction term and whether the CE was donated, but these variables were not significant and were removed from the final model with selection to minimize AIC (Akaike Information Criterion).

We also developed multinomial logistic regressions to examine whether timber harvest or grazing terms were more or less restrictive after 2000. We classified the dominant land cover of each CE based on GIS maps, Google Earth, and document descriptions. We examined harvest terms on forested CEs (126) and grazing terms on grass/shrub CEs (108). Properties with a dominant land cover of wetland (31) or other (4) were excluded. For forest properties, we examined whether CE terms allowed any timber harvest, some timber harvest (with restrictions in the CE or an associated management plan), or no timber harvest were more or less common after 2000, controlling for property size, working land purpose, and whether the CE was donated (*n* = 126). Property size, a size × year interaction term, and donated status were not significant and were

removed from the final model due to selection to minimize AIC. For grass/shrub properties, we examined whether CE terms that allowed any grazing, some grazing (with restrictions in the CE or an associated management plan), or no grazing were more or less common after 2000, controlling for property size, working land purpose, and whether the CE was donated (*n* = 108). A size × year interaction term and donated status were included in the preliminary grazing terms model but were removed because they were not significant and removing them minimized AIC.

We conducted 73 structured interviews with staff from each land trust and government agency holding CEs in our sample. We sought the staff person most familiar with the CE holdings in each organization (or in the state chapter of a national organization). We asked to speak with the person most familiar with CE drafting, and if CE drafters were not on staff, we then spoke with CE stewardship staff (those responsible for monitoring and enforcement). For 10 of the 63 organizations, we conducted two interviews with staff responsible for different regions within a state, leading to a total of 73 interviews. These structured interviews based on a uniform questionnaire were conducted by phone (*n* = 49), in person (*n* = 22) or through written email correspondence when this was preferred by organizational staff (*n* = 2). We asked staff involved with CEs to describe the organization's approach to drafting CE language and how that approach has changed over time. We induc-

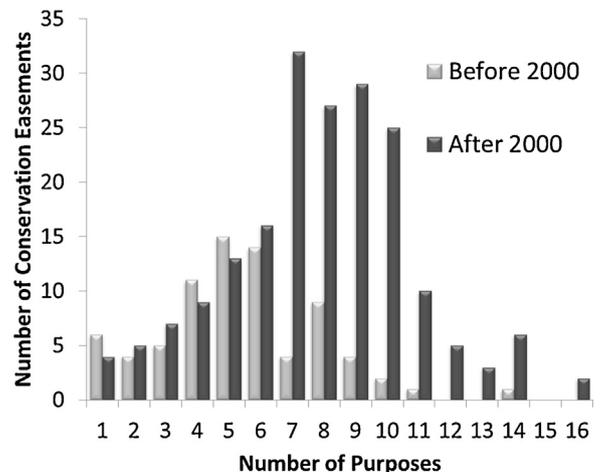


Fig. 1. Conservation easements created after 2000 have more purposes than those created before 2000.

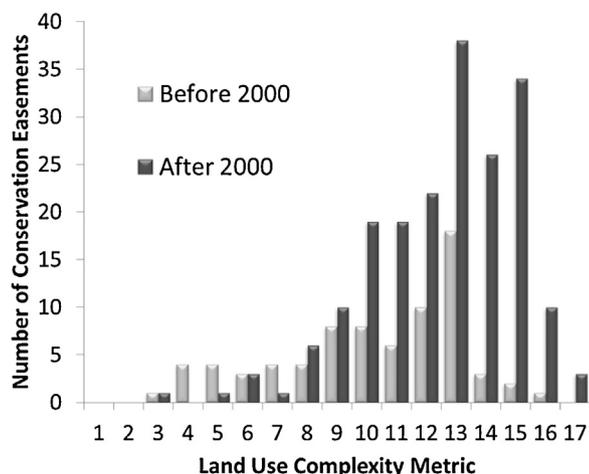


Fig. 2. The complexity of land-use terms in conservation easements is higher after 2000.

tively coded open-ended questions (Boyatzis, 1998) and identified sixteen recurring themes.

3. Results

3.1. Complexity

Multiple analyses support the hypothesis of an increase in CE complexity. First, we found an increase in the number of CE purposes (Fig. 1). CEs recorded since 2000 had an average of 7.8 purposes, compared to 5.4 purposes before 2000. A multiple linear regression found that CEs after 2000 had more purposes (standardized $\beta=0.392$, $t=6.247$, $p<0.001$) and larger CEs over 500 acres had more purposes (standardized $\beta=0.195$, $t=3.482$, $p=0.001$), while donated CEs (standardized $\beta=-0.195$, $t=-3.345$, $p=0.001$) had fewer purposes (full model adjusted $r^2=0.184$, $F=21.184$, $p<0.001$). CEs created after 2000 were more likely to have specific purposes with lists of specific conservation values, species and natural communities, and goals to protect working land uses like forestry, grazing, or farming (online Supplementary Table A.4).

The complexity of land-use provisions increased (Fig. 2). CEs after 2000 had more terms regarding land-use restrictions, with a mean of 12.5 land-use terms after 2000, compared with 10.2 terms before 2000 (Mann–Whitney U test, $n=269$, $z=-5.49$, $p<0.001$, two-sided). The land-use complexity metric summed the land uses in Table 1.

Procedural clauses like Acts of God, amendment, and dispute resolution increased over time (Table 2). Termination and condemnation provisions, which are generally common, did not change in frequency.

3.2. Restrictiveness

Trends in land-use restrictions differed by land-use type. Waste dumping and mining were more likely to be prohibited after 2000 while other land-use terms showed no significant change (Table 3).

Table 2
Percent of CEs with each procedural clause before and after 2000.

Procedural Terms	χ^2	P -value	Before 2000 ($n=76$)	After 2000 ($n=193$)
Termination provision	0.146	0.702	74.3%	76.6%
Condemnation provision	0.017	0.895	69.3%	70.2%
Acts of God provision	11.395	0.001	45.3%	67.7%
Amendment provision	30.514	<0.001	42.1%	77.2%
Dispute resolution provision	4.870	0.027	23.7%	37.8%

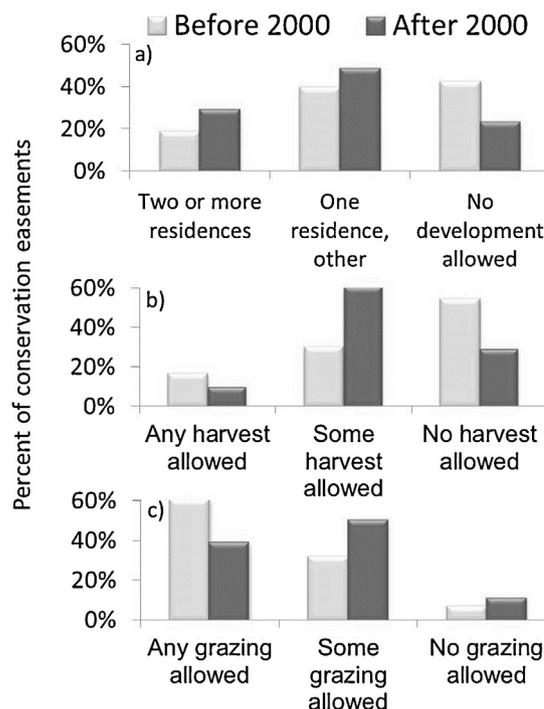


Fig. 3. Since 2000, conservation easements have shifted to allowing more development (2a, $n=269$), some timber harvesting (2b, forested properties $n=126$) and some grazing (2c, grass/shrub properties $n=108$).

CEs were more likely to allow development after 2000 (Fig. 3a). CEs have become twice as likely to allow one residence or other structures (including agricultural buildings, sheds or cabins) and 2.5 times more likely to allow two or more residences than no development after 2000 (odds ratios in Table 4).

Interestingly, half (52%) of South Carolina's CEs allowed for two or more residences, compared to only 9% to 27% of CEs in each of the other five states.

Timber harvest and grazing terms experienced a shift toward the middle. That is, timber harvests are less likely to be prohibited and more likely to be explicitly permitted with some restrictions in the CE or a management plan after 2000 (Fig. 3b). Before 2000, 54% of forested CEs did not allow harvest, compared to only 30% of forested CEs after 2000. CE terms that allowed harvest with some restrictions increased from 30% of forested CEs before 2000 to 61% after 2000, while terms that allowed any unrestricted harvest or were silent on harvest declined from 16% before 2000 to 10% after 2000. The shift from no harvest to some harvest with restrictions was significant in the multinomial logistic regression that controlled for working land purpose (online Supplementary Table A.5). The odds ratios indicated that CEs were 3 times more likely to allow some harvest with restrictions than no harvest (1/odds ratio of 0.33=3.03) or any unrestricted harvest (1/odds ratio of 0.31=3.23) after 2000.

Grazing terms also provided some evidence of a shift to the middle, meaning that fewer properties prohibited grazing outright and fewer properties allowed it without restriction after 2000 (Fig. 3c). Before 2000, only 32% of grass/shrub CEs include some restrictions

Table 3
Percent of CEs with each land-use restriction before and after 2000 (n = 269).

Land-Use Restrictions	χ^2	P-value	Before 2000 (n = 76)	After 2000 (n = 193)
Alteration of land restricted	0.186	0.666	77.6%	75.1%
Waste dumping restricted	9.301	0.002	81.6%	93.8%
Alteration of water courses restricted	3.167	0.075	63.2%	74.1%
Mining prohibited	4.613	0.032	49.3%	64.0%
Public access allowed	0.465	0.495	26.3%	22.4%
Commercial recreation prohibited	0.041	0.839	28.9%	30.2%
Landowner plantings restricted or landowner required to manage invasive species	3.292	0.070	22.4%	33.7%

on grazing in the CE or management plan, whereas 50% of those after 2000 included some restrictions. The percent of CEs with no grazing restrictions declined from 61% to 39%. No grazing is allowed in 7% of grass/shrub CEs before 2000 and 11% after 2000. Grazing terms had a marginally significant shift from any harvest allowed to some harvest allowed with restrictions, once property size and working land purpose were controlled for in the model (online Supplementary Table A.6).

3.3. Perceived changes in CE terms

Based on inductive coding, we identified recurring themes in response to questions asking whether an organization’s approach to drafting CEs had changed, and if so, how and why it changed (Table 5). The majority of interviewees (85%) stated that the organization had changed its approach to drafting. An additional two interviewees initially stated that the approach had not changed, but then described changes (increasing the percent of interviewees discussing changes to 88%). While most described a shift toward complexity, we also heard that some organizations are starting to reign in the complexity of CEs in favor of simple, clear terms. We heard conflicting views about whether recent CEs are more or less restrictive of private land uses.

4. Discussion

Hypothesis 1. Increasing complexity

Consistent with our expectations, CEs have become more complex and detailed. Our analysis of CE documents and interviews with conservation practitioners shows how CEs are increasing in complexity. This increase in complexity likely has many sources, including repeat players in negotiations, contingency planning, diffusion of innovation, organizational learning, and the increased prominence of purchased CEs on large properties with working

land uses. Our sample includes a wide variety of CEs held by diverse government and nongovernmental organizations. However, due to the lack of comprehensive data on CE locations, we cannot confirm how it may diverge from a representative sample of CEs.

4.1. Purposes

Within our sample, the number and specificity of purposes increased over time. These more diverse purposes may be an effort to ensure compliance with state and federal law as parties mirror the language that appears in statutes. CE purposes may also respond to judicial action. For example, conservationists worry about the implications of the doctrine of changed conditions, which suggests that when circumstances change the landscape such that purposes can no longer be fulfilled, CEs will terminate (Jay, 2012). Adding purposes to a CE could then serve as a backstop: if one purpose becomes impossible to fulfill, the CE need not face termination if another purpose can be met. Some holders may seek to expand the number of purposes because most CEs prohibit any actions inconsistent with the CE’s purposes. An expansion of purposes then can serve as a legal hook to later prevent unanticipated landowner action. Such language has been used to prevent erecting cellphone towers (T-Mobile Northeast LLC. v. Town of Islip, 2012c) and filling in sinkholes (The Nature Conservancy v. Sims, 2012a), and may serve as a way to prohibit hydrofracking (Stockport Mountain Corp. v. Norcross Wildlife Foundation, 2012b).

However, an increasing number of purposes could cause trouble for both enforcement and management of protected lands. Most CEs did not identify dominant purposes. Enforcement concerns arise when holders and courts are faced with multiple conflicting mandates without an indication of which might take precedence. Generally, multiple purposes can create confusion for land managers (Fischman, 2002). Purposes may become incompatible, and individual land-use restrictions and permissions may conflict with one or more purposes.

Table 4
Results of a multinomial logistic regression indicating the effects of size, year, and working land purpose on the likelihood of allowing development (reference category is no development allowed).

	2+ Residences vs No development			1 Residence or other structures vs No development		
	B	p-value	Odds ratio	B	p-value	Odds ratio
Year (after 2000)	0.916	0.028	2.499	0.676	0.046	1.965
Working land purpose	1.759	<0.001	5.804	1.667	<0.001	5.294
Property size (>500 ac)	1.755	<0.001	5.786	0.87	0.016	2.388
Intercept	-2.127	<0.001		-0.847	0.006	
N	269					
χ^2	68.854					
Df	6					
p-Value	<0.001					
Goodness of fit, Pearson	$\chi^2 = 11.386, df = 8, p = 0.183$					
Pseudo R-squared, Cox and Snell	0.226					
% Predicted correctly	54%					

Table 5
Interview responses from organization staff describing types of change in conservation easement (CE) drafting ($n=73$).

Change to CE drafting approach	# of interviewees	Representative statements or examples from interviews
CEs are more specific, detailed	27	"Much longer and more detailed over time, with much more professional drafting"
Influence of a particular staff	15	"Documents changed based on the attorney involved"
Use of model CE	14	Organizations developed templates
Less restrictive	12	"Whenever possible we get away from micromanagement type issues on the property, for instance trying to not be involved in day-to-day management type issues. . ."
Shift in organization focus	8	The organization was more preservationist focused before, but now has more "working land easements"
Reaction to IRS or case law	8	"Due to IRS ranks becoming stricter, easements must become more sophisticated and detailed to meet the regulations"
Organization looked to LTA	7	"Basically we've followed the changes in the Land Trust Alliance's approach to easement drafting."
Easier to enforce or monitor	6	"[We] are using more terms that are monitorable and enforceable and trying to provide flexibility for adaptive management"
Less specific	5	"The language used to be too specific"
Simpler	4	Desire to make the language "clearer" and "more simple"
More prohibitions	4	". . . much easier to constrain an activity than it is to prescribe one." Constraints can be documented and tracked

4.2. Land-use terms

CEs since 2000 are likely to mention more land-use terms such as for dumping waste, mining, and subdivision of the property. Land-use terms are likely to increase for some of the same reasons as purposes. Increased litigation and scrutiny by the IRS as well as involvement by other government entities like state attorneys general may also lead drafters to add language clarifying rights and responsibilities. Additionally, as CEs cover larger and more varied properties in more circumstances (e.g., in development schemes or in working landscapes), there may be a greater need to explain permitted and prohibited land uses.

One of the biggest increases was in management plans, which is an intriguing phenomenon. On one hand it represents an acknowledgement of both the need to accommodate change and the potential need for active land management (Rissman et al., 2014). On the other hand, management plans can provide an avenue for delaying controversial decisions regarding CE terms as items eluding agreement can be pushed off for consideration another day and be hidden from public review (Rissman et al., 2013). Additionally, the presence of management plans likely indicates even greater complexity in CEs. The details that might have once appeared in CEs may now appear in management plans. Alternatively, they complicate analysis of restrictiveness because a CE could have few facial restrictions but contain more details in the management plan. Unlike CEs, management plans are not recorded on the deed and were not provided with the CEs we obtained from CE holders. The hidden nature of management plans indicates a need for further research into management plans used in conjunction with CEs to understand the role they play in both defining the rules of CEs and in masking information about CEs. This is an important area for future research.

4.3. Procedural clauses

Later CEs were more likely to contain procedural boilerplate clauses regarding Acts of God, dispute resolution, and amendment. Interviews indicated that sometimes these new clauses appeared when new staff members or outside attorneys began drafting the documents. This may have the impact of leaving terms in subsequent CEs with individual staff members no longer certain of their origin (Argote, 1999). The largest increase was in amendment clauses, which is particularly noteworthy as it accompanies a heated debate within the conservation community about the role of amendments. Some have argued that perpetual agreements

should not be amended and this generally appears to be the view of the IRS (Internal Revenue Service, 2012). However, most conservationists acknowledge that it is unrealistic and impractical to have long-term agreements without mechanisms for change. The Land Trust Alliance recommends including amendment clauses and having amendment policies (Alliance, 2004) and accreditation requires it (Commission, 2014b). This trend may help explain the increased presence of dispute resolution and Acts of God clauses. We may also be starting to see some backlash or course correction in response to the increasing complexity of CE terms in which organizations are focusing more on designing decision-making processes for settling CE disputes.

Hypothesis 2. Decreasing restrictiveness

We hypothesized that land-use terms have become less restrictive, but the trends we found are complicated. Restrictions on development have declined, and CEs created after 2000 are twice as likely to allow at least one or two residences than CEs before 2000. However, we found a shift toward compromise for timber harvest and grazing, with a decline in complete prohibitions on timber harvest and a decline in completely unrestricted grazing. Provisions regarding waste dumping and mining tended to be more restrictive. The presence of a mining term may be influenced by federal tax regulations requiring limitations on mining for donated CEs.

The patterns of CE evolution reflect broader trends in conservation policy and philosophy. Earlier CEs were viewed as a close alternative to fee simple ownership in which some landowners desired or were willing to accept limited land uses on their properties. We see evidence of the shift toward conserving used landscapes and the intent to promote compatibility between natural resource production and conservation (Brunson and Huntsinger, 2008; Sayre, 2005). However, at some level, increasing private land uses also suggests challenges for preventing undue private benefit and abuse of the CE tool. Meanwhile, increasing knowledge about conservation science indicates conservation benefits may be available in small slices. For example, practitioners may be more confident about allowing selective cutting of a forest parcel and still protecting some species habitat and water quality benefits. This has led to a shift toward the middle as the parties seek to compromise on the private land uses permitted on conserved properties.

4.4. International implications

The development of CEs in the United States has been watched closely by other countries who have begun to adopt some of

these same land conservation strategies. This makes examination of the evolution of CEs in the United States particularly salient. For instance, the British Law Commission has been working with Parliament to determine the best type of conservation servitude structure for England and Wales (Commission, 2014a; deMauley, 2015). The Commission has recommended adoption of a conservation covenant, modeled closely off experience in the United States and in Scotland (which was earlier modeled off of the United States).

A key distinction for both the British experience as well as other countries currently considering CE structures is an explicit acknowledgement that the CEs will serve to promote biodiversity offsetting and payment for ecosystem service programs. Such a role for CEs was not anticipated in the United States at the time of their drafting or the passage of CE enabling acts. Other countries are also seeing the rise of these tools in a world where concerns of climate change are front and center (again, something not contemplated by earlier users of CES in the United States or drafters of CE enabling acts).

The lack of a tax incentive in Scotland and the 2014 England and Wales proposal suggests potentially different patterns of CE growth. There may be an impact on the complexity of terms, because some of the purposes and restrictions found in our study mirror requirements from the IRS. The lack of a tax incentive may be part of the reason why few CEs are found in Scotland despite an enabling act over fifteen years old (Reid, 2011).

Other countries using or contemplating CEs have different ideas of acceptable purposes (often with a wider variety of purposes being acceptable than in the United States) and are more amenable to allowing change within CEs. This final point may lead to starkly different CEs. While amendment terms would likely be more frequent, agreements may end up with fewer restrictions or less complexity because the parties will assume the ability to adjust the agreements over time. With only a few CEs yet available from other countries, it is too early to assess how CEs in other jurisdictions are developing differently but this study can illuminate patterns in the United States to inform decision-making elsewhere.

5. Conclusion

CEs initially held a promise of being a straight-forward low-cost alternative to fee-simple acquisition, but are becoming increasingly complex. Since 2000, CEs have become more restrictive for mining, waste dumping, and grazing, but less restrictive for development and timber harvesting. Recent CEs are more likely to detail what landowners can and cannot do and specify more issues than they had previously. They are being used more often and in more contexts. Where CEs cover larger land areas, they are more likely to spell out rights and obligations related to multiple land uses. We show that the question of what it means to conserve private land, and what balance of private and public rights and responsibilities are being codified in conservation restrictions, has changed over time. In an era of fragmented and devolved governance, nonprofit organizations and governments with considerable rulemaking autonomy are negotiating conservation terms. It is important to understand these choices and trends shaping the private-land conservation estate.

Acknowledgement

This project was funded in part by grants from the Resources Legacy Fund, University of Wisconsin-Madison, and the Baldy Center for Law and Social Policy. The funders played no role in study design; data collection, analysis and interpretation; choice of publication venue; or the writing of this Article. We would like to thank the faculty, postdoctoral researcher, and student teams who

helped conduct this research and improve this manuscript, including C. Carlarne, F. Cheever, J. Eagle, R. Fischman, B. Thompson, M. R. Shaw, V. Shewakramani, and W. W. Weeks, and two anonymous reviewers.

Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at <http://dx.doi.org/10.1016/j.landusepol.2015.10.026>.

References

- The Nature Conservancy v. Sims, Federal 3d. 2012. United States Court of Appeals, Sixth Circuit, p. 672.
- Stockport Mountain Corp. v. Norcross Wildlife Foundation, 2012. Not Reported. United States District Court, Middle District Pennsylvania, p. 719345.
- T-Mobile Northeast LLC v. Town of Islip, 2012. United States District Court, Eastern District of New York, p. 338.
- Alliance, L.T., 2004. Land Trust Standards and Practices. 24.
- Alliance, L.T., 2013. LTA Timeline.
- Argote, L., 1999. *Organizational Learning: Creating, Retaining, and Transferring Knowledge*. Kluwer Academic, Boston.
- Argote, L., 2013. *Organization Learning: A Theoretical Framework, Organizational Learning*. Springer, US, pp. 31–56.
- Argyres, N.S., Bercovitz, J., Mayer, K.J., 2007. Complementarity and evolution of contractual provisions: an Empirical Study of IT services contracts. *Organ. Sci.* 18, 3–19.
- Asch, S.E., 1955. Opinions and social pressure. In: Aronson, E. (Ed.), *Readings About the Social Animal*, 9th ed. Worth Publishers, New York, NY, pp. 17–26.
- Boyatzis, R.E., 1998. *Transforming Qualitative Information: Thematic Analysis and Code Development*. Sage, Thousand Oaks, CA.
- Boyd, J., Caballero, K., Simpson, R.D., 1999. *The Law and Economics of Habitat Conservation: Lessons from an Analysis of Easement Acquisitions*. Resources for the Future, Washington D.C., pp. 1–42.
- Brunson, M.W., Huntsinger, L., 2008. Ranching as a conservation strategy: can old ranchers save the new West? *Rangeland Ecol. Manage.* 61, 137–147.
- Chang, K., 2011. 2010 National Land Trust Census Report. In: Alliance, L.T. (Ed.), *Land Trust Alliance*, Washington D.C.
- Cheever, F., 1996. Public good and private magic in the law of land trusts and conservation easements: a happy present and a troubled future. *Denver Univ. Law Rev.*, 1077–1102.
- Cheever, F., Owley, J., 2016. Enhancing conservation options: an argument for statutory recognition of options to purchase conservation easements (OPCEs). *Harvard Environ. Law Rev.* 40 (1).
- Colman, A.M., 2012. *Oxford Dictionary of Psychology*, 3rd ed. Oxford University Press, Oxford.
- Commission, L., 2014a. *Conservation Covenants*. In: Commission, L. (Ed.), *British Parliament*, London, England, pp. 1–257.
- Commission, L.T.A., 2014. *Accreditation Requirements Manual*. 90.
- Crocker, K.J., Reynolds, K.J., 1993. The Efficiency of incomplete contracts: an empirical analysis of air force engine procurement. *RAND J. Econ.* 24, 126–146.
- deMauley L., 2015. Letter regarding Conservation Covenants, in: Affairs, D.o.E.F.a.R. (Ed.), London, England, p. 1.
- Di Leva, C.E., 2002. The conservation of nature and natural resources through legal and market-based instruments. *Rev. Eur. Community Int. Environ. Law* 11, 84–95.
- Fischman, R.L., 2002. The National Wildlife Refuge System and the hallmarks of modern organic legislation. *Ecol. Law Q.* 29, 457–622.
- Gray, V., 1973. Innovation in the states: a diffusion study. *Am. Political Sci. Rev.* 67, 1174–1185.
- Gustanski, J.A., Squires, R.H., 2000. *Protecting the Land: Conservation Easements Past, Present, and Future*. Island Press, Washington, D.C.
- Haines, J., Kayln, M. *Carpenter v. Commissioner of Internal Revenue US Tax Court*. Internal Revenue Service, Conservation Easement Audit Techniques Guide, 2012.
- Jacobs, H.M., 2014. *Conservation Easements in the U.S. and Abroad: Reflections and Views Toward the Future*, Lincoln Institute of Land Policy Working Paper. Lincoln Institute of Land Policy, Cambridge, MA, p. 18.
- Jay, J.E., 2012. When perpetual is not forever: the challenge of changing conditions, amendment, and termination of perpetual conservation easements. *Harvard Environ. Law Rev.* 36, 1–78.
- Kiesecker, J.M., Comendant, T., Grandmason, T., Gray, E., Hall, C., Hilsenbeck, R., Kareiva, P., Lozier, L., Naehu, P., Rissman, A., Shaw, M.R., Zankel, M., 2007. Conservation easements in context: a quantitative analysis of their use by The Nature Conservancy. *Front. Ecol. Environ.* 5, 125–130.
- King, M.A., Fairfax, S.K., 2006. Public accountability and conservation easements: learning from the uniform conservation easement act debates. *Nat. Resour. J.* 46, 65–129.
- Korngold, G., 2010. Globalizing conservation easements: private law approaches for international environmental protection. *Wis. Int. Law J.* 28, 585–638.

- Mayer, K.J., Argyres, N.S., 2004. Learning to contract: evidence from the personal computer industry. *Organ. Sci.* 15, 394–410.
- McLaughlin, N.A., 2004. Increasing the tax incentives for conservation easement donations—a responsible approach. *Ecol. Law Q.* 31, 1–115.
- Merenlender, A.M., Huntsinger, L., Guthy, G., Fairfax, S.K., 2004. Land trusts and conservation easements: who is conserving what for whom? *Patronatos Agrarios y Servicios de Conservación: ¿Quién Está Conservando Qué para Quién?* *Conserv. Biol.* 18, 65–76.
- Morris, A.W., Rissman, A.R., 2009. Public access to information on private land conservation: tracking conservation easements. *Wis. Law Rev.* 2009, 1237–1282.
- NCCUSL, N.Co.C.o.U.S.L., 2007. Uniform Conservation Easement Act. Uniform Law Commission.
- NCED, 2015. National Conservation Easement Database, p. Home page for NCED.
- Owley, J., 2006. The emergence of exacted conservation easements. *Nebr. Law Rev.* 84, 1043–1112.
- Owley, J., 2011. The enforceability of exacted conservation easements. *Vt. Law Rev.* 36, 261–302.
- Owley, J., 2013. From citizen suits to conservation easements: the increasing private role in public permit enforcement. *Environ. Law Rep. News Anal.* 43, 10486–10491.
- Owley, J., Rissman, A.R., 2011. Distributed graduate seminars: an interdisciplinary approach to studying land conservation. *Pace Environ. Law Rev. Online Companion* 2, 88–101.
- Reid, C.T., 2011. The privatisation of biodiversity? Possible new approaches to nature conservation law in the UK. *J. Environ. Law.*
- Rissman, Adena R., Tosha Comendant, Lynn Lozier, Peter Kareiva, Joseph M. Kiesecker, M. Rebecca Shaw, Adina M. Merenlender. Conservation easements: private use and biodiversity protection. *Conserv. Biol.* 21, 2007, 709–718.
- Rissman, A.R., 2010. Designing perpetual conservation agreements for land management. *Rangeland Ecol. Manage.* 63, 167–175.
- Rissman, A.R., 2011. Evaluating conservation effectiveness and adaptation in dynamic landscapes. *Law Contemp. Probl.* 74, 145.
- Rissman, A.R., Cheever, F., Owley, J., Shaw, R., Thompson, B.H., Weeks, W.W., 2013. Private land conservation and climate change: rethinking strategies and tools. A report to the land conservation community. Woods Institute for the Environment. Stanford University, Palo Alto, CA.
- Rissman, A.R., Owley, J., Shaw, M.R., Thompson, B., 2014. Adapting conservation easements to climate change. *Conserv. Lett.*
- Root-Bernstein, M., Montecinos Carvajal, Y., Ladle, R., Jepson, P., Jaksic, F., 2013. Conservation easements and mining: The case of Chile. *Earth's Future* 1, 33–38.
- Sayre, N.F., 2005. Working Wilderness: The Malpai Borderlands Group and the Future of the Western Range. Rio Nuevo Publishers, Tucson, AZ.
- Stolton, S., Redford, K.H., Dudley, N., 2014. The futures of privately protected areas: developing capacity for a protected planet. In: IUCN (Ed.), Protected Area Technical Report. IUCN, Switzerland.
- Tegene, A., Wiebe, K., Kuhn, B., 1999. Irreversible investment under uncertainty: conservation easements and the option to develop agricultural land. *J. Agric. Econ.* 50, 203–219.
- Telesetsky, A., 2001. Graun Bilong Mipela Na Mipela No Tromweim: the viability of international conservation easements to protect Papua New Guinea's declining biodiversity. *Georget. Int. Environ. Law Rev.* 13, 735–780.
- Vanneste, B.S., Puranam, P., 2008. Repeated interactions and contractual detail: identifying the learning effect. *Organ. Sci.* 21, 186–201.