How the Endangered State Acts: Reverse regulatory threat and market-based conservation policy

Daniel Large, Cornell University
Steven Wolf, Cornell University

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Abstract
Environmental non-governmental organizations (NGOs), private interests, and state actors continue investing in habitat offsetting—that is, compensatory mitigation to conserve at-risk species—despite uncertain payoffs and continued environmental losses. In the U.S. and Europe, habitat offsetting is a key focus of research and policy development. Proponents argue that offsetting will produce conservation benefits at least aggregate cost and garner more political support than an appeal for regulation because it is a market-based approach. In this view, market mechanisms outperform traditional state-centered regulation. While we observe sustained enthusiasm for these conservation strategies, promises outweigh results. In trying to understand this record of institutional failure, we argue that the distinction between state- and market-based forms of environmental governance is fuzzier than is popularly understood. In the absence of regulatory mandates or credible threat of regulation, market-based approaches to conservation premised on voluntarism are incapable of producing conservation at scale. We investigate this thesis through analysis of ongoing efforts to develop habitat exchanges—platforms for production and trading of habitat offsets. Through analyzing exchanges for greater sage-grouse in Colorado in a case study based on 58 interviews conducted in the summer of 2018 (also including a Nevada program), we explore how *reverse regulatory threat* structured the emergence, development, and crisis of exchanges. Reverse regulatory threat emphasizes a perversion of traditional models of governance. Traditionally, credible public regulatory threats are seen as mediating private actors' investment, management decisions, and strategies. In the case of the sage grouse, we observe a situation in which state regulatory capacity has become the endangered resource within environmental governance. Reverse regulatory threat refers to a governance context in which regulators—both government and NGOs—are unable or unwilling to constrain commercial activity. In analyzing the construction and administration of exchanges, we identify processes that serve to maintain legitimacy of exchanges and their sponsors as a coherent and attractive conservation strategy, despite a lackluster record of achievement. Based on our findings, we argue for assessing market-based policy strategies such as exchanges as environmental management platforms that require a muscular public regulatory mechanism. Without political will and capacity to regulate private economic actors, market-based schemes are likely hollow.

Introduction

Market-based environmental strategies are central to contemporary environmental governance. As a complement and an alternative to exercise of administrative authority by the state, the last 40 years have been a period of great experimentation with application of economic logic to secure and to exploit natural resources. There exists a marked diversity of market forms (e.g., conservation banking, Bonnie, 1999; payment for ecosystem services, Farley & Costanza, 2010; tradeable permits systems, Schmalensee & Stavins, 2017). As represented in economic theory (Coase, 1937) and in popular ideology of neoliberalism, market-based approaches are seen as effective and efficient information processing and transmission mechanisms. Beyond questions of effectiveness and efficiency, market-based approaches enjoy legitimacy because they allow policy actors to conform to prevailing norms, policy styles, and discourses. As expressed by a leading environmental economist, market-based environmental strategies are "politically correct" for environmental regulation in the United States (Stavins, 2007, p. 19). Critical scholars of policy recognize that market-based strategies are premised on state involvement (e.g., rollout neoliberalism; McCarthy, 2005). We agree. Yet this does not mean that market-based environmental organizing has necessarily been accompanied by state involvement. On the contrary, we contend that in many instances, the converse applies: market-based policy initiatives have not been adequately supported by state regulation, resulting in weak and ineffective interventions. To investigate this thesis, we analyze the emergence, development, and crisis of efforts to create market exchange in service of conservation of sage grouse, an at-risk species of bird in the American West. In this paper, we focus on a specific case: the design and implementation of habitat offsetting for an endangered species in two American states connected by a similar set of policy actors. We argue that this case demonstrates the failure to institutionalize a driver for industrial demand, highlighting what we understand to be a source of widespread institutional failure attached to the market-based environmental policy field.

For two decades, environmental economists have recognized that state controls on private economic actors is key to ensuring industrial responsibilities are met in environmental protection (Alberini & Segerson, 2002; Daley, 2007; Ervin, Wu, Khanna, Jones, & Wirkkala, 2013; Khanna, Deltas, & Harrington, 2009; Segerson, 2013). To operate effectively, environmental protection relies on functions that the state is best positioned to fulfill. Self-regulation (i.e., through collective action), private standards, and ethical and informed consumption/investment cannot match the state in delivering these functions. These include sufficient drivers for participation, clear and enforced standards, adequate monitoring, and controls on free riding (Segerson, 2013). A particular capacity of the state in this regard is regulation or regulatory threat (i.e., the projection of a credible risk of more costly alternatives if firms do not meet environmental objectives voluntarily). Without the capabilities and competencies the state can bring to bear, industry is unlikely to change goals, strategies, and practices at the scale and at the pace necessary for

responding to contemporary ecological risks. Accordingly, market-based environmental programs lacking state controls of private economic activity will be weak and ineffective. In this article, we explore the fate of market-based governance strategies that are not tightly linked to regulation or threat of regulation. This is a phenomenon that, as stated previously, we identify as common in the market-based environmental policy field.

To address this question, we focus on an initiative in Colorado to develop a habitat exchange (exchange; Toombs, Sokulsky, & Wolfe, 2018) for the greater sage-grouse (sage-grouse; *Centrocercus urophasianus*). Exchanges were introduced as vehicles for offsetting, a management practice intended to mitigate impact of development to species habitat by directing benefit to species habitat elsewhere. The exchange concept is premised on demand for credits from industrial actors who produce habitat disturbances (e.g., oil and gas firms whose exploration and extraction activities disturb habitats essential to sage-grouse populations). Supply of sage-grouse habitat offsets is derived from farmers and ranchers willing to forgo development options or alter their land use in ways that expand habitat values. Our analysis focuses on how policy entrepreneurs, state and federal regulators, and other actors dealt—or rather, did not deal—with the critical question of producing demand for offsets by industry in the design and implementation of exchanges.

We introduce *reverse regulatory threat* (RRT) as a concept to analyze this aspect of exchange development. RRT refers to the threat posed to regulators by powerful actors when they endeavor to protect public goods, and, by extension, strategic behavior exhibited by regulators maneuvering in response to politics. RRT is a process whereby regulators can come to behave in ways that approximate regulatory capture (capture). Capture refers to "the result or process by which regulation, in law or application, is consistently or repeatedly directed away from the public interest and toward the interests of the regulated industry, by the intent and action of the industry itself" (Carpenter & Moss, 2013, p. 13). RRT describes an analogous, but different process: *the process whereby the public intent of regulation is coopted by public interest organizations, towards the interest of the organization*. As we explain, exchanges emerged in a context where regulators made political calculations and regulated strategically in accordance with these calculations, at the expense of exchange functioning, and potentially more robust protection of public goods/trust responsibilities. RRT highlights how regulatory dynamics are shaped by tensions and maneuvering among state, industrial, and civil actors.

This research is structured as a case study (Yin, 2009). We analyze development of the Colorado exchange as a case based on field data collection in the state with relevant local and national policy actors. We focus on how exchange actors in Colorado negotiated the issue of industrial demand, and the outcomes for the exchange. In the following section, we present empirical background (§1). Next, we discuss RRT, how RRT connects to the cases, and the resulting research questions we pose (§2). In turn, we present study design and methods (§3). We discuss the results of our investigation in the

form of a detailed timeline of the exchange's emergence, development, and crisis (§4). In closing, we discuss the implications of our findings (§4).

Empirical background

In the U.S., a push for market-based regulation in biodiversity conservation is visible in federal programming and policy over the past decade (although market-based approaches for other environmental issues, notably pollution, date back to the 1970s (Driesen, 2010)). This includes the establishment of the U.S. Department of Agriculture Office of Environmental Markets (Ribaudo, Hansen, Hellerstein, & Greene, 2008), the U.S. Geological Survey Natural Resource Economics division (USGS, 2015), and U.S. Fish & Wildlife Service commitments to exploring markets for benefiting protected or at-risk species (USFWS, 2011). Non-governmental organizations, such as Defenders of Wildlife (Casey, Vickerman, Hummon, & Taylor, 2006) and Environmental Defense Fund (EDF), are also invested in research and development of biodiversity markets. Among technical experts and academics, interest in biodiversity markets reflected in projects like the International Panel on Biodiversity and Ecosystem Services and The Economics of Ecosystems and Biodiversity (Díaz et al., 2015; TEEB, 2010).

The promise of markets as an approach to conservation is appealing in light of the magnitude and tempo of biodiversity loss, and the seeming failure of traditional strategies of regulation to stem this crisis. Conservative analysis situates biodiversity loss as an accelerating extinction "unprecedented in human history and highly unusual in Earth's history" (Ceballos et al., 2015, p. 4). Notably, rate of loss is not slowing in spite of actions taken by governments and conservation groups (Butchart et al., 2010). In 2018 IUCN identified 1,042 animal species in the United States alone under threat of extinction from human activity (IUCN, 2018).

Meanwhile, USFWS—the agency charged with enforcing the Endangered Species Act (ESA)—has been underfunded for decades (BenDor, Vitro, & Riggsbee, 2017; Miller, Scott, Miller, & Waits, 2002). Amid failure of traditional tools of government, making the values of species and ecosystems visible and tractable through markets has emerged as a central conservation strategy of state and non-state actors. The ESA confers responsibility for biodiversity regulation (terrestrial and freshwater) to the USFWS. The ESA specifies a federal obligation to ensure protection and recovery of species that are listed (i.e., formally categorized) as "threatened" or "endangered." The ESA empowers the USFWS to enjoin other federal agencies from undertaking actions that would "jeopardize" the status of listed species. In addition, public and private entities are restricted from and can be sanctioned for harming ("taking") listed species. Through these commitments and authorities, the ESA provides for a system of direct regulation and the possibility for projecting regulatory threat.

Regulating sage-grouse conservation and habitat exchanges

In 2010, the USFWS issued a finding that listing the sage-grouse as endangered under the ESA was “warranted, but precluded by higher priority listing actions” (USFWS, 2010). Distribution of sage-grouse has shrunk to 56% of the historic range (Schroeder et al., 2004), including extirpation of the bird from five states where it was previously found. Following the threat of regulation posed by the USFWS finding, an array of federal, state, and local actors mobilized to develop conservation measures intended to preempt federal intervention. EDF’s efforts to develop exchanges as a form of market-based conservation strategy were a part of this mobilization.

Exchanges are identified as initiatives to “expand upon policy and practice” associated with existing forms of offsetting common in the U.S. (Toombs et al., 2018, p. 4). Conservation banking is closest to exchanges in form and function. Banks differ from exchanges in being designed as one-off, stand-alone, permanent conservation projects approved and overseen by the USFWS to provide mitigation credits to developers (Pindilli & Casey, 2015). Exchanges, by contrast, are intended to function dynamically, with a market of individual offset suppliers producing and selling offsets on an ongoing basis in response to industrial demand. Durability of exchange offsets is tied to the impact duration, rather than the permanent standard typically followed in conservation banking. Exchange promoters expected that regulators would recognize the exchange system, whereby the exchange administrator or a certified third party technician verifies offsets on a rolling basis, rather than requiring case-by-case USFWS approval of individual projects. In banking, supply of offsets largely derives from private investment firms. An ambition expressed by EDF policy entrepreneurs for introducing exchanges was to lower cost of entry for smaller landowners to supply offsets.

Broadly, EDF policy entrepreneurs envisioned exchangers as tools to balance conservation with economic development. Across the range of the sage-grouse, expansion of oil and gas operations could result in 7-19% reduction of the already diminished population (Copeland, Doherty, Naugle, Pocewicz, & Kiesecker, 2009). Oil and gas has been a major industry in Colorado, producing $5 billion USD there in 2017 (only including Bureau of Land Management lands; BLM, 2018). In Colorado, livestock contributed 59% of total agricultural sales in 2017 (National Agricultural Statistics Service, 2018). Producing sage-grouse offsets requires modifications to range management, but can be compatible with continued ranching. In this way, exchanges posed an opportunity to farmers and ranchers to diversify and potentially increase their revenue streams.

Offsetting for biodiversity conservation is controversial. On the one hand, proponents point to the pragmatism of offsetting where economic development objectives conflict with conservation goals (Toombs et al., 2018). On the other hand, critical assessments charge that the uncertain social, political, and ecological implications of offsetting (Redford & Adams, 2009; Vatn, 2018), and the scale of environmental losses demand at least circumspection (Apostolopoulou & Adams, 2017), if not reforming the system that necessitates offsetting in the first place (Dempsey & Collard, 2017).

These are important considerations. In addition to these arguments, we believe another proximate issue warrants attention: a seemingly ubiquitous implementation gap experienced in efforts to develop offsetting programs. In many instances, offsetting programs have simply failed to operate (e.g., Ferreira, 2017; Lockhart, 2015; Primmer et al., 2019). We identify exchanges as having similarly encountered this implementation gap. In the following, we discuss how failure of regulation contributes to this gap in implementation of offsetting.

Theory and research questions

Threat of ESA regulation is thought to have played a key role in the emergence of the habitat exchange project in Colorado. As actors in Colorado strove to realize offsetting through the design and implementation of the exchange, they attributed threat of regulation as a rationale for their work. To critically examine how regulatory threat in fact shaped these efforts, in this section we discuss the theory that structures our engagement with regulation and threat of regulation. We emphasize how regulatory threat, since as we will explain, threat played a major role in exchanges' emergence and development, whereas direct regulation was fleeting.

Listing sage-grouse as endangered and thereby imposing direct controls on private economic actors would have curtailed multi-billion dollar industries across the 11 states the bird inhabits. By itself, the proposal to list triggered a political firestorm. This context begs the question of how regulators navigated the pressures arising from such a contentious proposal. Besides state regulatory actors, we note environmental civil society actors encountered pressures against siding with a potential listing decision. Understanding regulatory strategy in this context entails taking account of how regulators, connected to civil society partners and others, contended with pressure from regulated industry, Congress, the White House, financial interests, and other groups implicated in potential regulatory actions.

Capture theory provides a starting point for this analysis. Capture identifies how agencies come to advocate for regulated parties' interests, rather than on behalf of public interests. Capture is defined as "the result or process by which regulation, in law or application, is consistently or repeatedly directed away from the public interest and toward the interests of the regulated industry, by the intent and action of the industry itself" (Carpenter & Moss, 2013, p. 13). While useful for conceptualizing the dulling and/or corruption of regulatory functions, capture has also fallen short. Specifically, capture has not generated nuanced accounts of how regulators interact with regulated industry, identified by what mechanisms capture occurs, with what differential effects for public interest (Carpenter & Moss, 2013).

We note that capture implies a simple dyadic, adversarial relationship between regulator and industry. In this way, capture has failed to identify how actors besides regulators and industry also play into to the state's capacity to protect public goods. Other

actors whose role in this process deserves consideration include the executive, legislative, and judicial branches, and civil society. Consider the “revolving door” concept, which is conventionally connected to capture. In the framing encouraged by capture, the revolving door refers to personnel interchange between government and industry; however, we believe it is equally important to note the revolving door frequently involves civil society and government.

By promoting a simplistic conception of pure public interest besieged by private interests, capture also tends to gloss over the reality that regulations can be ambiguous, allowing regulators to exercise discretion as and providing interpretive room for multiple plausible accounts of what regulation requires, what is constituted by public goods, and what necessary measures are justified in their defense. Kwak (2014) acknowledges this as an analytical issue for diagnosing capture. More generally, implementation theory has long recognized the role of discretion in influencing public policy, including policy failure (Lipsky, 1983; Pressman & Wildavsky, 1984). In summary, capture taken alone underspecifies the extent to which regulation is produced as an indeterminate, and pluralistic inter-organizational process, in which discretion abounds and multiple parties exercise agency and strategy.

To better address these dynamics in our case, we introduce the concept of reverse regulatory threat (RRT). RRT refers to the *threat that regulators face when seeking to impose controls on powerful actors*. RRT recognizes that regulators have a range of options available for interpreting their duties and for strategically implementing regulation. Before imposing controls on economic actors, regulators actively sense political winds, and the capacity of various actors to counter-punch. To the extent a regulatory action will expend capital, fracture advocacy coalitions, weaken the organization, and produce risk, the regulatory agency is expected to take measured action. Regulators will focus on their budgets, their mandate, their autonomy, and other strategic considerations, sometimes at the expense of public goods/trust responsibilities. These dynamics may not always be active; more often, we suspect RRT is manifested through systematic inaction and/or denial. In emphasizing regulators’ strategic calculus, we invert the standard model of regulation. Traditionally, private sector actors are understood as calibrating their investments and strategies in relation to the regulatory frontier. Here, we emphasize public sector regulators as reactive.

To provide a concrete example, in reaction to regulation, regulated industry can protest to the legislators, to elected officials, or to other supervisors, at (i) professional risk of regulatory personnel, (ii) at existential risk to regulatory programming, (iii) at risk of organizational survival of the agency, and finally, (iv) at risk to the institutional legacy of the agency and its mandate. These dynamics can operate at individual, departmental/divisional, and organizational levels. An example derives from Mashaw and Harfst’s analysis of the National Highway Traffic and Safety Administration (NHTSA; 1986; 2017). In the face of anti-rulemaking pressures, they found that NHTSA shifted from

a coercive stance to a cooperative posture over multiple decades. This occurred in part, they argued, because agencies "operate in a politico-legal environment characterized by multiple sources of constraint, limited sources of support, and the constant risk of being second-guessed by often-fickle overseers" (2017, p. 173). They characterized this process in terms of "resilience and adaptation, not failure," noting regulators were "better cast in the role of resourceful survivors than knaves or fools" (Mashaw & Harfst, 2017, p. 171). We agree with Mashaw and Harfst's conceptualization of institutional constraints ensconcing regulators. We suggest RRT provides conceptual grounding and an analytic lens for explaining the dynamics they identify at NHTSA and in other regulatory contexts.

Turning towards the case of USFWS regulation, it is instructive to highlight a 2011 court settlement involving USFWS. This case revealed a backlog within the agency of status reviews for over 851 species of conservation concern (BenDor et al., 2017). This backlog is conventionally interpreted as evidence of underfunding (indeed, the USFWS is widely understood to be underfunded; Miller et al., 2002; Schwartz, 2008).

However, funding does not necessarily tell the whole story. Analysis by the light of RRT suggests there may be another element at play. Namely, in the face of the threat the USFWS would confront were it to press its mandate, over the years, the agency has systematically suppressed species status reviews in a measured way, directed towards upholding its statutory commitments to the extent possible without triggering political disruption. We note that such suppression need not be an active, or even necessarily conscious or explicit process; more likely, it could occur through inaction and/or denial.

We do not aim to argue this provocative thesis here. We include this as an anecdote merely to illustrate the spotlight RRT brings to regulatory behavior. This example demonstrates how we can use RRT analysis to generate questions about the ESA as a regulatory framework and about regulatory capacity for species conservation more generally.

Reverse regulatory threat and a sage-grouse listing

Given the calculus USFWS faced with listing the sage-grouse, under RRT, one would expect USFWS to gravitate towards cooperative conservation, rather than coercion, out of pressure to minimize political conflict arising from a more aggressive approach. In conjunction or alternatively (or in some instances/contexts), one might also expect the USFWS to assume inactive or denialist postures in its regulatory strategy. Under such circumstances, regulatory behavior may resemble coordination with regulated industry at the cost of ecological security (i.e., conventional capture). RRT highlights that although what is happening may look like capture, it can instead be a function of regulatory restraint and strategy—a shadow boxing match between the regulator, and opponents perceived as powerful.

We identify lack of regulation as a limiting factor for offsetting to produce conservation at scale. Without state controls mandating private industry to buy offsets, to

there will not be sufficient demand driver to define and sustain a market. Without demand drivers, exchanges and other market-based environmental strategies that depend on regulation will fail. An early analysis has identified this as one factor among many affecting lack of exchange performance (Galik, BenDor, DeMeester, & Wolfe, 2017). Analysis of environmental market construction reveals they are fundamentally shaped by state involvement (cf. Knoll, 2015). Multiple analyses have found institutional relations necessary for offsetting to function are not-yet-realized (Ferreira, 2017; Lockhart, 2015; Primmer et al., 2019). We contend that the coercive capacity of the state is pre-eminent among these not-yet-realized institutional relations. This disconnect between regulation to drive demand and launching offsetting programs reliant on said demand is remarkable in light of consensus among environmental economists about the importance of regulation or threat for environmental markets to function effectively (e.g. Segerson, 2013). How to account for this paradox, and what is the fate of market-based governance strategies that are not tightly linked to regulation or threat of regulation?

We explore these research questions by examining how regulatory threat shaped interactions between policy entrepreneurs, state and federal officials, extractive industry, and landowners, in the efforts to launch an exchange in Colorado. Given the link with the state, we focus on the matter of establishing industrial demand drivers via state-centered regulation.

Study design and methods

Design

This investigation is based on a case study design (Yin, 2009). The case is the development of the expanded exchange model, as realized in the Colorado Habitat Exchange (CHE). The period covered by our analysis runs from 2010-2019, starting from the USFWS issuing its 2010 listing-warranted-but-precluded finding to the time of this writing. This period encompasses the emergence, construction, and certain crises of the CHE (2012) and NCCS (ca. 2013-2014). This timespan provides opportunity for us to comment on prospects for exchanges following the 2018 gubernatorial election in Colorado. Bearing witness to a decade of exchange experience (i.e. 2010-2019) also positions this study to comment on the policy development cycle, a process that is considered to require years or decades to analyze meaningfully (Howlett & Cashore, 2009; Sabatier, 1993).

Methods

Data collection began spring 2018. Fieldwork consisting of interviews, observation, and document acquisition took place summer 2018. We focus on interview data in this analysis. Data collection began with key informant interviews with EDF and EI partners, conducted by phone. These aimed to develop a picture of how the CHE emerged, its status, and potential development paths.

A second set of interviews open to the full spectrum of individuals (i.e., not only key informants) connected to the CHE took place in late spring. These interviews had two aims. The first was sensitizing the investigators to circumstances relevant to the exchanges, as speaking with a wider array of interviewees would reveal. The second aim, deriving from the first, was refining the semi-structured interview guide.

The first version of the interview guide provided for free-ranging conversation. Over the course of early interviews and in subsequent conversations with collaborators and other colleagues, we revised the guide. The final version consisted of 16 prompts, covering (i) design and implementation of exchanges, (ii) lessons learned resulting from exchange experiences, and (ii) reflection on the implications of exchanges and their broader regulatory and ecological context.

During the field season (June-August 2018) 46 interviews were completed. In-person interviews were carried out wherever interviewees were located. Emphasis was placed on interviewing in-person to stimulate rapport and to enrich the observational dimension of the data. Interviews focused on new contacts; a few individuals already interviewed by phone earlier in the year participated in second interviews. To better understand the exchanges from the perspective of individuals occupying different roles in relation to them, participant solicitation spiraled out to using a snowball referral process, whereby interviewees were asked to identify persons they judged to have relevant experience. Interviews averaged one-hour in duration. We recorded interviews using a digital audio recorder. Recordings were later transcribed.

To finalize collection, additional informants belonging to underrepresented groups were sought to address gaps or otherwise round-out the dataset. The final data set of included transcripts of interviews with 58 individuals connected to the CHE (and a related Nevada program) initiative, including environmental NGO, state and federal personnel, environmental consulting firms, extractive industry, ranchers, trade associations, and academics.

Analysis

Analysis began with manual review of transcripts of interviews with key informants (n = 4) and interviews with state and federal agency personnel (n = 16 and 8, respectively). This manual review was geared: (i) to generate a timeline of exchange development; and (ii) to identify emergent themes relevant to RRT and exchange development. Information from key informants provided the foundation of the timeline we present in “Results.” We also targeted key informants to derive information concerning how launching the CHE was motivated by regulatory threat. State and federal agency personnel’s perspectives complemented this latter piece, by illuminating the regulatory work underlying the 2010 listing preclusion and USFWS’ succeeding activities.

The system of coding employed during manual review was informed by theory to code for a set of pre-determined themes. At the same time, manual review was open to

identifying emergent themes arising from the data set. Once coded, these two sets of themes (one theory-based, the other emergent) served as the foundation for our analysis. As a final step, the entire corpus of transcripts was searched using both sets of themes. The perspective obtained from this final integrated analysis was used to challenge and to enrich our preliminary assessment focused on key informants and agency personnel.

Results

Regulatory context

Petitioners began calling on the USFWS to list the entire sage-grouse population as endangered since 1999. In 2005, the USFWS responded to these petitions by issuing a finding that listing the sage-grouse was not warranted. This finding was met with charges of subterfuge. In an ensuing court case, a political appointee within USFWS was found to have interfered with the species status review process, intimidating field staff and altering the scientific basis for the decision. After an environmental NGO sued in federal court, the not-warranted finding was remanded to the USFWS for reconsideration.

In 2010, USFWS concluded its reconsideration of sage-grouse status. In its decision agency identified sage-grouse as endangered, but designated that listing was "precluded by higher priority listing actions" (USFWS, 2010). This preclusion postponed regulatory protections. In 2011, a settlement set September 30, 2015 as the deadline for USFWS to issue a final rule on sage-grouse. This action was interpreted by policy actors and state and federal personnel as projecting the threat of regulation.

Following this, the sense emerged that conservation plans would need to be developed in order to provide sufficient basis for the USFWS to determine a listing is no longer warranted by its September 30th deadline. In December 2011, the Secretary of the Department of the Interior formed the State-Federal Sage-grouse Task Force (SGTF) along with western state governors. The SGTF was charged with informing the revision of federal plans to preempt the need for listing the sage-grouse. The SGTF was to be a vehicle for coordination between state governors and federal agencies, particularly BLM and the U.S. Forest Service (USFS). The BLM and the USFS comprise 58% of the remaining range of the sage-grouse (Knick, 2011), making these plans the single largest component in conservation and management of sage-grouse.

In parallel to government-led programming to develop conservation plans for the species, national conservation organizations such as The Nature Conservancy (TNC) and EDF also joined the fray and began mobilizing on behalf of sage-grouse conservation. It was in this context that EDF's effort to launch an exchange for sage-grouse in Colorado materialized.

Emergence of exchanges

Exchanges emerged in a policy field distributed across the 11 states where contemporary sage-grouse populations range. As one federal official observed, different

forms of habitat offsetting emerged in multiple states. Federal regulators within USFWS observed this as a groundswell in habitat offsetting as a major component of sage-grouse conservation plans across the states. Asked whether the federal government promoted offsetting (i.e., "compensatory mitigation") from the outset, or the states, a USFWS informant responded:

> "Yes to all of those things. So because we have 11 states, and in reality there have been seven of those 11 that have been really interested, or engaged on the mitigation front. Seven states is still a lot of states. We had seven different ways, and sometimes more than that, of how this was approached. We had states that weren't as interested in our direct input. We had states asking for our direct input, and opinions, and help. We also had the BLM. The BLM as a whole has not been an agency that has…developed a lot of compensatory mitigation programs. They've definitely done mitigation project by project, but they've come a long way. They didn't really have much of a mitigation policy until this process…"

On the one hand, exchanges emerged among a policy field where habitat offsetting writ large was the order of the day. On the other, the impetus for constructing exchanges in particular—a specific and emergent model of habitat offsetting in the U.S. species conservation context—arose from a trajectory of conservation mechanism development by EDF policy entrepreneurs involving species of conservation concern in the U.S. Since the early 2000s, EDF staff had been seeking opportunities to connect federal programs with conservation incentives for private landowners (a common "formula"). It is instructive to briefly recount EDF's programmatic precursors to the sage-grouse exchanges.

In 2008-2009, EDF played an instrumental role in establishing a program for the endangered Utah prairie dog to channel permanent habitat credits to offset impacts to prairie dog habitat. This program, called the Utah Prairie Dog Habitat Credit Program, was inspired by a previous EDF initiative, the Fort Hood Recovery Credit System, organized in 2005 in central Texas. The Fort Hood program involved endangered songbird species, the golden-cheeked warbler and the black-capped vireo, and 10- and 25-year habitat credits to offset impacts (Wolfe, Hays, Farrell, & Baggett, 2012). The "habitat exchange" moniker and the principles embodied in various design elements in these early habitat offsetting initiatives came to serve as the foundation for the expanded model habitat exchange subsequently developed for sage-grouse.

From 2008-2010 EDF worked at the local level in Colorado to promote the concept of an exchange to offset impacts to sage-grouse habitat by oil and gas industry. The concept was embraced by the Colorado Cattleman's Association (CCA), a statewide ranching and landowner trade group. An early field trip involving key founders was led to Texas to meet with landowners and military officers connected with the Fort Hood Recovery Credit System and discuss their experiences. CCA became a staunch

supporter of the exchange project. In 2009-2010 EDF made a strategic decision to invest its resources in its Ecosystems Program on developing expanded-model habitat exchanges sage-grouse as its major contribution in this arena (and another high profile listing case at the time, the lesser prairie chicken (*Tympanuchus pallidicinctus*)). As an EDF staff person remarked:

> "We chose those birds because they were headed for listing, or assessment of listing, and they were widespread across the entire, basically, western United States, and they were really coming into conflict with oil and gas and other kinds of development."

It is notable that the sage-grouse and the prairie chicken were not listed at the time of these efforts. Because regulations were not in effect, the incentives for engaging landowners and industry in schemes involving these species was different from EDF's previous experiences with listed species. Nevertheless, the potential for listing opened a space in which EDF perceived opportunity to create conservation benefit and to build on its legacy in market-based environmental strategies.

In 2012, EDF and CCA convened stakeholders in Colorado to launch an exchange to offset impacts to sage-grouse habitat by oil and gas industry. The original stakeholders convened included EDF, CCA, the state natural resources agency, and representatives from the oil and gas industry, including firms and trade associations. In 2013-2014, the Colorado exchange model was adapted for implementation in Nevada. There, emphasis was focused on offsetting impacts of mining, rather than impacts of oil and gas. In Colorado, the program was named the Colorado Habitat Exchange (CHE); in Nevada, the Nevada Conservation Credit System (NCCS).[1]

In the case of sage-grouse, EDF personnel on the front lines of the organizing process proceeded from the assumption that industry would appreciate the value of so-called pre-listing conservation (cf. Donlan, 2015). In this view, industry would participate in the exchange on a voluntary basis to pre-empt more costly of federal regulation by self-regulating and conserving sage-grouse. Sometimes this idea was expressed more forcefully, as a slide from a stock PowerPoint developed during this early period laying out the case for the exchange telegraphed: "A Market Emergence: Regulations Aren't Working – Incentives Are!!!" In this context, "incentives" referred to aligning private actors'

[1] Colorado and Nevada are the only states where exchanges for sage-grouse have obtained sustained dialog and activity. EDF attempted to launch an exchange initiative in Wyoming; however, that effort took a backseat to Wyoming's investment in a core area protection strategy and to shifting resources to development of an exchange in Colorado. Nevertheless, a state framework for offsetting to complement the core area strategy was recently issued. This may enable the Wyoming exchange to operate.

self-interests with protecting public goods, rather than through coercively government controls.

EDF acknowledged exchanges could function as mandatory schemes, in the event the sage-grouse became listed or some other regulatory requirement were imposed, but only in principle (cf. Pindilli & Casey, 2015). Behind the scenes, EDF executives engaged in policy advocacy to secure needed regulatory drivers. Overall, however, designing a coercive regulatory program was not the intention conveyed by exchange promoters, including EDF and CCA. Exchange administrators in Nevada operated under similar assumptions of voluntarism by mining industry.

EDF and CCA's ambiguous attitude towards regulation met with positive reception from the Colorado state government. Led by the Governor, the state had experience partnering with industry in goal-setting and rulemaking processes including voluntary ozone targets and regulatory methane emissions reductions programs. These initiatives were well accepted by industry and some civic leaders. This style of governance contributed to an expectation that a voluntary habitat exchange for sage-grouse could follow the same pattern. With the Governor's support, meetings for the EDF and CCA-backed exchange initiative were convened in offices of the state, rather than NGO offices.

Developing exchanges

Efforts to develop the Colorado Habitat Exchange were undertaken first as an informal Working Group, and subsequently as an Oversight Committee for an non-profit status-applicant organization (501(c)(3)), the Colorado Habitat Exchange, Inc. The Working Group met quarterly from late 2012 through early 2015. After nearly three years without reaching agreement with industry on design and administration of the exchange, the Working Group was disbanded and reconstituted as the Oversight Committee in late 2015. The Oversight Committee has met roughly quarterly from late 2015 to the present. The Oversight Committee is the Board of Directors of CHE, Inc. The Committee is charged with operating according to bylaws and under the legal and operational framework designated for a non-profit. Organizers hoped formalizing would provide additional clarity and legitimacy to help overcome distrust and confusion on the part of industry. Formalization also conferred legal status to the organization, enabling the State of Colorado to recognize and partner with the organization as a mitigation supplier.

Membership of the Working Group consisted of CCA, EDF, Colorado Governor's Office, Colorado Department of Natural Resources, Colorado Parks & Wildlife Department, Colorado State Land Board, and a shifting roster of small and large oil and gas firms and trade associations, including staff and attorneys. The Oversight Committee featured a similar composition, with the exception that the State Land Board would not hold a seat, and industry would be represented by trade associations, rather than including firms. The Oversight Committee included optional advisory seats for BLM and USFWS. Work Group meetings were facilitated by Environmental Incentives, LLC (EI) a

consulting firm involved in designing markets for ecosystem services, under supervision from EDF. Oversight Committee meetings were organized jointly with support from CCA. Over the course of development, both groups endeavored to make a large number of complex decisions about exchange design and administration. This included consulting with federal agencies, such as BLM and USFWS, whose recognition would be instrumental to exchange operation.

Exchange representatives consulted USFWS and BLM to ensure the exchange would align with federal policies and procedures, and that the exchange could be recognized as a legitimate source of compensatory mitigation. These agencies were not members of the Working Group; they were engaged by correspondence and some attendance by invitation. The distance between the exchange and the federal agencies was described as a strategy to provide space for innovation. At the same time, this strategy was critiqued as impractical, leading to lack of federal buy-in. From these efforts, the Working Group obtained written comments from USFWS on proposed exchange operations. The group also signed a memorandum of understanding with BLM that expressed BLM's recognition of the exchange concept as a potentially useful tool for sage-grouse habitat offsetting. These outcomes fell short of the objective to federally certify the exchange.

The group scored qualified regulatory advances, including a reference to exchanges in a document released by USFWS to guide development of sage-grouse mitigation (USFWS, 2014), perceived as a step towards recognition. A more direct accomplishment on the regulatory front was the 2015 establishment of a BLM requirement for compensatory mitigation in sage-grouse priority habitat management areas (PHMA). This provided a basis for industry demand that the exchange was poised to provide, at least in theory. In practice, we observed multiple instances in which federal mitigation requirements were met using other options besides exchanges and offsetting ratios determined by HQT. We also observed resistance from federal agencies for recognizing exchanges and the HQT, given the novelty and uncertainty associated with these instruments.

Throughout the exchange development process, industry expressed objections about the potential for the exchange to adversely impact their operations. These objections were in spite of the intended voluntary nature of the exchange programs. These objections were captured by an executive of Western Energy Alliance in a July 31, 2015 letter to Colorado Governor Hickenlooper:

> "At present, the Colorado Habitat Exchange (CHE) is being contemplated as a model for other states. However, based upon industry's extensive involvement, the CHE in its current form is not feasible, legally defensible nor economic, and will not incentivize broad-scale participation by industry or private land owners. It should not be used as a model in other states. Further, attempts to transform habitat

exchanges from their original intent as voluntary mitigation tools for private lands into mandatory regulatory mechanisms for state and federal permitting are inappropriate and legally not viable."

The letter went on to note industry's good faith, stating that they "have provided very detailed technical information and suggestions for improving the CHE…Yet while our practical input has been received, it has been substantially disregarded, and these significant critical issues remain open and unresolved in the working group." At the same time, informants from other interest blocs in Working Group meetings described industry as playing an obstructionist role. This included sending low-ranking representatives to the meeting table not qualified to make decisions, or who did not have adequate technical knowledge to speak to firm or industry interests. A moment of reckoning for the lack of progress came in September 2014, when it came to the Working Group's attention that:

> "…the Governor's Office reported that based on recent meetings with FWS and BLM and a recent letter from Dan Ashe at FWS, the Service believes state plans are inadequate for greater sage-grouse. The state requests that the Working Group provide drafts of all design documents by Dec 31 so that the state has evidence of the Exchange to provide to FWS in its conversations with them regarding the state plans. If the state does not have these draft products, they will need to move on and pursue another option."

The news that USFWS would not recognize the exchange was a blow to stakeholders' confidence. By this time the exchange had become the State of Colorado's primary investment in its sage-grouse conservation plan. The following year, USFWS rejected Colorado's plan. In its decision, the USFWS identified the fact that Colorado's existing program was voluntary, and premised on the development of an exchange that would also be voluntary in nature. Voluntarism, it said, was insufficient for providing necessary "certainty that the conservation efforts will be implemented" or demonstrating "the effectiveness of the conservation efforts to contribute to make listing a species unnecessary" (USFWS, 2015). USFWS highlighted other states' conservation plans with "regulatory mechanisms" that could be counted on to provide "legally binding and enforceable sage-grouse conservation measures."[2]

[2] This assessment was based on the USFWS' "Policy for Evaluation of Conservation Efforts When Making Listing Decisions" (PECE) guidelines, which state government representatives and others were aware of. PECE had previously come into play with the State's efforts to preempt listing the Gunnison sage-grouse. The State invested millions of dollars in protecting the Gunnison species, only to meet with an ESA listing, because most of the State's measures (predominantly establishment of conservation easements) were not recognized by the Service. It is unclear why, in this case of the greater sage-grouse, the state repeated the same (failed) strategy of pursuing voluntary measures in

In early 2015, the Colorado Governor issued an Executive Order directing relevant state agencies to provide for enhanced coordination and to prioritize completion of the exchange. At a time when the USFWS' listing decision was due in only a few months, anticipation was intense. This Executive Order continued to refer to the exchange as a voluntary tool for compensatory mitigation. Broadly speaking, Colorado state processes were carried out in what informants' referred to as "the Colorado Way." In this mode, government engages the private sector and seeks to obtain consensual agreements in support of public policy objectives. As one executive staff person within the Colorado state government explained,

> "…So our discussion with them [industry] has been, 'Okay, but will you defer to us? If we require it, will you then follow our lead like you have on methane?'…They're following our lead, because in this case, the State of Colorado has jurisdiction over the wildlife. Sage-grouse isn't listed, so it's our jurisdiction. So if we say this is what's necessary, the federal agencies should do it the way we want it done…[industry is] saying yes, but when the pressure really comes and the oil and gas companies go to the White House, will they stick to their agreement?"

Not long after the State of Colorado doubled down on its commitment to the exchange by Executive Order, a proposed mining project expansion in priority sage-grouse habitat was permitted to proceed without engaging with the exchange. In January 2016, a deal was struck whereby the company, Colowyo Coal Company L.P., conveyed ownership of 5 parcels of land totaling 4,543 acres under conservation easement with relinquished grazing preference and mineral rights, and a multi-bedroom house, to Colorado Parks and Wildlife Department. In addition to the land and the house for a research station, the company committed to donating $150,000 to the agency's ongoing monitoring efforts.

Notwithstanding the merits of this deal, the arrangement reveals unevenness in the State's commitment to the exchange as a primary vehicle for compensatory mitigation. Although the exchange focused on oil and gas rather than mining, exchange processes could have been transposed to the mining project (even if only partially, such as using the HQT to derive offsetting ratios). The deal contributed to Colorado's investments in research, which it considers to be a strategic component of its state plan for sage-grouse conservation. When reporting general conservation achievements, for example, Colorado makes a point of highlighting its investments in operations in support of sage-grouse, including research and monitoring, totaling $9.2 million from 2005-2014 (Western Governors' Association, 2014).

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the face of a potential listing, except perhaps adherence to the "Colorado Way" and the liberal governing philosophy of Governor Hickenlooper.

Over the course of seven years, the exchange development process in Colorado never resulted in a finalized exchange program, much less produced conservation through offsetting. Stakeholders met with resistance from industry, leading to stalemate over key issues that were necessary to resolve to consolidate exchange operation. At the same time, the exchange also failed to receive recognition from federal agencies, the most notable being USFWS' refusal to recognize it in its 2015 listing-not-warranted decision. In addition, the 2015 decision removed the USFWS basis for industry to participate in the exchange voluntarily.

At the end of this process, the exchange initiative was left with the as-yet unfulfilled expectation that a new BLM requirement for compensatory mitigation on public land would translate to an exchange market at scale:

> "…there was a process that started in 2013 I think with the BLM. There was a huge recognition the BLM was gonna be a major driver of compensatory mitigation, in some states more than others because of the federal land base. The states definitely wanted to balance that with their needs. The BLM really drove a coming together of the states through the Sage Grouse Task Force, which is where the states and the federal agencies get together every once in a while, and have discussions on topics such as mitigation, and how to coordinate across it. That task force has been going for years. So through that task force process, the BLM was getting state…[FWS]…and others input on developing a BLM mitigation overarching strategy. It was part of what they agreed to do in the resource management plans."

At the state level in Colorado, regulations conferred the state with the authority to require offsetting from oil and gas operators. In practice, this requirement was not enforced, although threatened enforcement of this would become a bargaining chip in negotiations between CHE stakeholders and oil and gas industry holdouts.

Crisis of exchanges

- Under the Trump administration, a key policy ordering development of mitigation policy across all executive agencies was rolled back. Within BLM, an internal memo was issued stating the agency would no longer require offsetting (although the agency would recognize states' efforts to develop such programming). In summary, the policy infrastructure undergirding the ascendancy of mitigation policy development at the federal level fell apart.

- The federal pullout from existing commitments to supporting offsetting emboldened oil and gas industry to walk away from the meeting table of the Colorado Habitat Exchange, essentially rupturing the tense but continuous engagement that exchange

organizers had sustained since 20212. This pullout occurred in June 2018. At the first meeting following oil and gas' stepping down, stakeholders were still regrouping.

- Not long afterward, EDF revisits its strategic plan and decides to resign from its seat on the board and continue supporting the CHE effort from a distance while investing resources in other programs.

Future trajectories for exchanges

- In November 2018 Colorado elected a new Governor, who is considered to be less conciliatory with oil and gas than his predecessor. We have not yet learned what the new Governor's strategy will be with respect to managing sage-grouse populations in the state.

- USFWS is committed to conducting a non-regulatory review in 2020 to examine the effectiveness of state and federal conservation plans in conserving the sage-grouse and avoiding the need for a potential listing.

- Among bureaucrats there seems to be continued recognition of offsetting as a legitimate approach to regulation, in spite of changes in official stance from the top. Previously, regulators accepted a regime predominantly comprised of habitat offsetting for the sage-grouse as inevitable and were at odds internally for how to regulate compensatory mitigation anyway, leaving them to conclude with caution that, while unproven, "exchanges could be a vehicle" for sage-grouse conservation.

- Despite rollbacks from the top, the social relations, infrastructure, and knowledge base for developing a habitat exchange (and other offsetting programs) may still be intact. The sage-grouse case features establishment of a number of new precedents that may be difficult to return to Pandora's Box: BLM began an agency-wide mitigation discussion, hired coordinators in multiple states, and similar conversations and activities emerged across a number of other organizations.

- Provided adequate regulatory controls, exchanges may provide a viable resources for habitat conservation for the sage-grouse when the political winds change.

Conclusion

In summary, over twenty years since the sage-grouse was first identified as USFWS has never imposed regulation for this species. When the courts forced the agency into action, the USFWS projected regulatory threat via a precluded listing proposal. This background demonstrates reluctance on the part of the USFWS to list the sage-grouse as endangered and to confer the full weight of federal regulatory protections.

In this context, regulatory actors behaved strategically with important consequences for market viability. EDF and CCA promoted a model that, in their view, could obtain voluntary industry participation, or serve as infrastructure for mandatory regulation, while they maintained strategic ambiguity as to their designs to advance either project. The Colorado Governor's Office used its influence to bring industry to the table, but avoided coercive regulatory action to force participation. In its regulatory 2015 assessment, the USFWS spotlighted adequate state regulatory strategies, but relegated Colorado's plan showcasing the exchange to the background of its finding as inadequate (USFWS, 2015). In so doing, USFWS assumed a strategic posture to encourage states to adopt coercive regulatory measures. Finally, the BLM instituted a requirement for compensatory mitigation, which was administrative rather than statutory and was rolled back under the subsequent presidential administration.

In spite of continued lack of regulatory driver, in 2019 an article was released that reported Colorado's "…mitigation policy is better than previous federal standard, which… [the Interior Department]…rolled back. They gave us the leeway to have a stronger standard" (Bowlin, High Country News, March 28, 2019). After seven years without ever producing conservation through offsetting results, this anecdote illustrates a remarkable capacity for sustained positive dialog surrounding the exchange as a collaborative, voluntary endeavor. In this way, the mere existence of the exchange as an ongoing effort, confers legitimacy to the state by promising conservation benefits, in spite of continued lack of mandate for industry to participate in the exchange.

The free market public face of the exchange and efforts behind the scenes to cultivate state-centered regulation present a paradox. We observe a tendency in market-based conservation to stress voluntary mechanisms, while the equally important role of state involvement (i.e. regulation), including processes for promulgating said regulation, are relegated to the background (e.g. Pindilli & Casey, 2015). Surveying the market-based policy field, one obtains the impression that regulation is a dirty word, or, at best, something repeatedly overlooked. We identify significant incoherence, an almost willful self-deception, on this point. The case of the Colorado Habitat Exchange represents an instance in which an ostensible effort to develop private governance rubs against the reality that state-centered regulation is necessary to ensure effectiveness. Within this context, policy actors take advantage of the free market ambiguity of the market-based environmental strategy.

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