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Why there and then, not here and now? Ecological offsetting in California and England, and the sharpening contradictions of neoliberal natures

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Abstract

Failure has become an increasingly important theme of debate in the literature on neoliberal natures. In this article we take up this topic with respect to ecological offsetting, often regarded as an exemplar of market-orientated conservation. Comparing the case of species banking which emerged in California in the 1990s with frustrated efforts to implement a biodiversity offsetting programme in England beginning in 2010, we develop a novel analytical framework for explaining why this kind of environmental market-making may or may not be successful in different contexts. Drawing on work in geography on the neoliberalisation of nature and insights from economic sociology, we characterise ecological offsetting as 'command-and-commodify' regulation: a peculiar form of hybrid ecological regulation which depends on an institutional mix of 'authoritative' and 'economic' power to function. In California, these kinds of environmental markets initially emerged at a moment of compromise, contingent on an embrace of 'market' solutions to environmental problems on the one hand, and a somewhat paradoxical expansion of authoritative power to ecologically regulate land development, on the other. In England, by contrast, deep fiscal austerity and deregulatory zeal, combined with resistance from nearly every quarter, initially undermined the possibility of balancing economic and authoritative power, which we argue is necessary for the construction of viable ecological offsetting. Reflecting on themes in the wider literature, we conclude by questioning whether the English experience is indicative of sharpening tensions between economy and ecology in the late neoliberal era.

Keywords: neoliberal natures, ecological offsetting, environmental markets, command-and-commodify regulation, England, California

Introduction

Taking stock of the last decade's work on neoliberal natures in the inaugural issue of this journal, Bigger and Dempsey (2018) reflect on developments 'out there' in the neoliberal world since 2008, how nature-society relations have been reshaped in the process, and the evolution of the field during that period. While themes identified in early reviews by Castree (2008a, 2008b) and Bakker (2010) remain central to this sprawling literature, Bigger and Dempsey (2018) observe increasing attention given to shifts from government to governance, financialisation, new environmental markets, and links between generalised austerity and intensified extractivism. Yet as they note, efforts to 'financialise' nature and create new markets frequently run aground. In the realm of nature conservation, where this rhetoric is often at its strongest among proponents and critical scholars alike (e.g. Bayon and Jenkins, 2010; Büscher et al., 2012), the explosive wave of green capital and commodification has largely failed to materialise on any large scale (Dempsey and Suarez, 2016), and contemporary patterns of environmental destruction, injustice, and harm seem remarkably congruous with decades and centuries past (Lave 2018). Why has producing new forms of neoliberal nature proved so troublesome? What conditions are necessary for new markets in nature to emerge? In this article, we connect these questions to the politics of austerity and environmental protection in the neoliberal era, asking how and why environmental market-making has taken hold when and where it has, and what the future may hold for such efforts.

To address these questions, we examine two empirical cases of building markets in ecological offsets: the successful establishment of species banking in California in the 1990s; and the initially abandoned development of biodiversity offsetting in England in the early 2010s, followed by the more recent revival of these efforts under the guise of biodiversity 'net gain.' Offsetting is an ensemble of tradable permit mechanisms often held up as an archetypal example of market-based conservation (Bull et al., 2013; ten Kate et al., 2004). It allows land developers to meet regulatory obligations relating to ecological impact by compensating for harm they cause onsite through payment for ecologically equivalent improvements elsewhere. Our comparison of the successful development of a market in offsets in California with the (as yet) unsuccessful and still unfolding English example is especially relevant to ongoing debates within the literature. As both Asiyanbi (2018) and Lave (2018) note, failure is a big part of the neoliberal natures story. Yet despite Castree's (2008a) early appeal, comparative studies remain something of a rarity.

Our study helps fill this gap, asking why such similar forms of environmental market-making flourished in one time and place, but faltered in the other. What material conditions and contingent factors were present in California but absent in England in an era of supposed market supremacy in environmental policymaking? And what are the implications of these differences for our understanding of neoliberal natures? To answer, we develop an explanatory approach that categorises ecological offsetting as a form of 'command-and-commodify' regulation (see also Rea, 2017), emphasising how expansion of authoritative state power is vital to the forms of reregulation necessary to constitute environmental markets. Offsetting programmes are of course commonly understood as *regulatory* markets, and an extensive literature has revealed the contingent and inherently hybrid characteristics of 'actually existing' neoliberal natures, as geographically distinct articulations of market, state and local forces (e.g. Lockie and Higgins, 2007; Lockwood and Davidson, 2010; McAfee and Shapiro, 2010; McCarthy, 2005; McElwee, 2012). Our synthetic approach aims to situate these insights – and especially studies of regulatory markets, like ecological offsetting and cap-and-trade – by giving both a meso-level explanation of how offsetting functions institutionally, and a macro-level understanding of the fragile political economic conditions and relations of power which underpin it.

We argue this framework not only explains the difficulties encountered by the UK government, but that our findings are suggestive of the challenges of environmental market-making more generally. We make the case that the policymaking process in England fell apart under the sharpening tensions of late neoliberalism – and that, to the extent English policymakers have recently tried to rescue offsetting, they have had to embrace more authoritative and less liberalising policy measures. In short, a politically blinkered faith in market efficiencies under an extreme programme of austerity and growth-orientated deregulation has had to give way to (proposed) expansions of authoritative state control over environmental protection—expansions that we argue are central to constituting command-and-commodify regulation. Instead of establishing a market-mediated compromise between competing economic and environmental demands (e.g. Carton, 2014; Felli, 2015), the initial attempted market-making exercise in England became irretrievably politicised and was undermined by the very politics of liberalisation that seemed to underpin the project in the first place. As new offsetting programmes continue to stutter in other contexts, we ask if the English experience may be more symptomatic of the challenges of striking the political compromises that undergird command-

and-commodify regulation. The English case, we argue, may highlight the limits of neoliberal natures in contexts of extreme austerity, deregulation, and liberalisation.

Our argument proceeds in five sections. We begin with an overview of the concepts and the historical development of ecological offsetting, understood as an example of nature's neoliberalisation. We then turn from a historical to theoretical discussion, where we give a more detailed account of command-and-commodify regulation, situated in debates about neoliberal natures. After laying out our analytical framework, we present the two empirical cases, first using our approach to show how and why species banking emerged and became institutionalised in California in the 1990s, and then to explain how and why biodiversity offsetting faltered in England in the early 2010s only to remerge in recalibrated form more recently. We conclude by discussing the implications of our findings for the future of ecological offsetting and environmental markets more generally, and how they might contribute to ongoing debates about the futures of neoliberal natures.

Ecological offsetting

Ecological offsetting[1] encompasses a variety of regulatory and voluntary programmes around the world, but a commonly accepted definition given by the Business and Biodiversity Offsets Programme describes them as "measurable conservation outcomes resulting from action designed to compensate for significant residual adverse biodiversity impacts arising from project development after appropriate prevention and mitigation measures have taken place" (BBOP, 2013: 4). A number of features are usually identified. First, offsets aim for 'no net loss' of ecological value, where loss and gain are measured quantitatively against a pre-development baseline using a consistent metric. Second, under the polluter pays principle, offsets require developers to finance compensation actions, which are preferably delivered by third party offset providers. Third, offsite compensation must be a last resort after onsite damage has been minimised in line with the 'mitigation hierarchy'. Fourth, compensation actions must be 'additional', meaning offset 'credits' purchased to neutralise environmental loss cannot be

[1] We use *ecological* offsetting rather than the more common term *biodiversity* offsetting to avoid confusion between this general formulation and biodiversity offsetting in England – the second of our empirical cases.

generated from conservation activities which would have happened without developer payment (BBOP, 2013; Bull et al., 2013).

Ecological offsetting is often held up as a paradigmatic case of the neoliberalisation of nature and market-orientated forms of environmental protection (e.g. Apostolopoulou and Adams, 2017; Büscher et al., 2012; Spash, 2015). Like many similar kinds of policymaking, ecological offsetting promises economic benefits to businesses by streamlining regulatory compliance, allowing development and growth to proceed with greater speed and certainty (Carroll et al., 2009; BBOP, 2013). Offsetting is also presented as a significant business opportunity in its own right, which should stimulate green enterprise and growth to meet market demand (Madsen et al., 2011). Standardisation and quantification are supposed to generate more transparent and accurate procedures for auditing regulatory compliance (Carroll et al., 2009; Gardner et al., 2013). Explicit pricing of environmental damage is said to both 'internalise' and make ecology's value economically visible to decision-makers, and to incentivise more rational land and resource use (eftec et al., 2010; OECD, 2013). By making developers pay, proponents argue offsetting directly levers much-needed private finance for conservation activity at a time when governments' willingness and capacity to do so is increasingly under strain (Jenkins et al., 2004; Kiesecker et al., 2009). Finally, underpinning these multiple benefits is a central role for market forces in resolving traditional conflicts between economic and environmental goals: market competition between specialist offset providers is expected to drive more efficient permitting processes, while simultaneously delivering high quality and cost-effective compensation and conservation outcomes (Bayon, 2004; ten Kate and Inbar, 2008). At the rhetorical level at least, this win-win narrative has come to dominate much of the policy discourse surrounding ecological offsetting. Nevertheless, a proliferating literature on its many challenges, limitations and injustices reveals a far more complex and variegated story of 'actually existing' offset policies and practices.

U.S. origins

In the United States, offsetting's origins lie in efforts to 'mitigate' for losses of wetland systems caused by land development. The practice of mitigating ecological impacts *per se* stretches at least as far back as the Fish and Wildlife Coordination Act (FWCA) of 1934, which required government agencies involved with dam construction to consult with the Bureau of Fisheries in order to help mitigate harm to fish migration routes (National Research Council, 2001: 61). Later

amendments in 1958 expanded the environmental scope of the FWCA (Lave, 2014: 66), but it was not until the consolidation of environmental laws in the 1970s – passed on the back of growing social pressure to address the environmental impacts of post-war growth – that mitigation became a requirement rather than simply a request of regulatory agencies. The Federal Water Pollution Control Act (1972), retitled the Clean Water Act (CWA) in 1977, institutionalised a regulatory permitting system that undergirds contemporary, market-oriented wetland mitigation banking. Specifically, Section 404 of the law obliges all land developers to acquire a permit for any actions involving the "dredge and fill" of the "Waters of the United States". This provision enabled regulators in the US Army Corps of Engineers and newly founded Environmental Protection Agency (EPA) to refuse development permits on environmental grounds, or to allow development to proceed provided specific conditions for minimising ecological harm are met (Gardner, 2011). Government regulators initially proved reluctant to wield this newly granted authority (Pittman and Waite, 2009). By the time of a 1977 amendments to the CWA, however, a series of lawsuits had forced the Corps to expand its regulatory role (Rea, 2018; Mulligan, 2016). Moving into the 1980s, agreements to provide 'offsite' compensation began to be institutionalised. Such provisions allowed developers to create new or to restore degraded wetlands elsewhere, rather than 'mitigate' at the site of development itself (Environmental Law Institute, 1994; Hough and Robertson, 2009). This spatial and temporal separation of ecological impacts from ecological compensation paved the way for marketisation down the line, by enabling third parties to create ready-made wetland offsets that could be purchased by developers whenever needed (Robertson, 2004).

The evolution of Section 404 enforcement, however, unfolded in a context of considerable political turbulence. By the 1980s, a severe environmental backlash was underway, spearheaded by a well-organised conservative business movement (Bonneuil, 2015; Layzer, 2012a). The CWA was one of a number of laws considered an intolerable constraint on free enterprise and growth by these resurgent forces (Hrabanski, 2015). At the same time, many environmental groups were equally concerned with the law's effectiveness, and growing evidence of implementation failures (Robertson, 2004). Eventually, during the administration of George H. W. Bush, enforcement of Section 404 was consolidated around the newly coined notion of 'no net loss' of wetlands (Gardner, 2011). This approach offered a political (but not entirely ecological) compromise between environmental groups and the development lobby. It entailed extracting greater ecological concessions from developers in the form of offsite compensation, but also streamlined

the regulatory process, and involved environmental interests ceding ground – somewhat literally – to the ascendant pro-business agenda. Several phases of standardisation and regulatory refinement have since accompanied the consolidation of wetland banking as a large-scale commercial industry in the United States. Though ecological performance and compliance remains mixed, it is generally acknowledged wetland banking has significantly improved the quality and governance of compensatory mitigation as part of the CWA (Hough and Robertson, 2009; Gardner, 2011).

International context and practical problems

The political and regulatory popularity of wetland mitigation banking in the United States played a critical role in spreading offsetting approaches around the world. In the early 2000s, transnational mining companies, in collaboration with major conservation organisations, were at the forefront of creating standards for offsetting in other contexts, precipitating the establishment of the Business and Biodiversity Offsets Programme (BBOP) in 2004 (Benabou, 2014). Its appeal and legitimacy were heavily mediated by growing international emphasis on market-based instruments (MBIs) in environmental policymaking, and the shift towards an ecosystem services model in nature conservation (see MEA, 2005; TEEB, 2010). This put techniques of economic valuation and MBIs at the heart of efforts to meet global targets to curb biodiversity loss, and a putative reconciliation of economic and environmental goals (Gómez-Baggethun and Muradian, 2015).

Despite increasing prevalence around the world, however, ecological offsetting remains beset by an array of challenges both in theory and in practice, which are fiercely contested from different perspectives in an ever-expanding literature (see e.g. Apostolopoulou and Adams, 2017; Dempsey and Collard, 2017; Hase and ten Kate, 2017). First, long-running conceptual and technical controversies persist over the adequacy and precision of the underlying ecological science, appropriate forms of measurement and accounting, and biophysical limitations of ecological restoration itself (Bull et al., 2013; Calvet et al., 2015; Maron et al., 2016; Moreno-Mateos et al., 2015). Second, addressing persistent problems associated with regulatory compliance, monitoring and enforcement is a recurrent theme of debates (Clare and Krogman, 2013; Gordon et al., 2015; Walker et al., 2009). Third, critical scholars have drawn attention to the ways offsetting serves the needs of accumulation over nature conservation and social concerns. They point to a series of tensions and contradictions that undermine its ecological

efficacy in practice, contending that offsetting is a false solution to ecological crisis which also entrenches existing inequalities and injustices (Robertson, 2006; Seagle, 2012; Spash, 2015; Sullivan, 2013).

Command-and-commodify: conditions for environmental market-making

With these debates in mind, we turn to developing an analytical framework designed to understand and compare the emergence – or not – of ecological offsetting in different contexts. This framework, which defines offsetting programmes as 'command-and-commodify' regulatory markets, synthesises insights from literature on neoliberal natures and economic sociology. The former helps clarify the political economic conditions and drivers through which ecological offsetting emerged and gained popularity. The latter pinpoints the institutional arrangements and exercise of power necessary for these kinds of environmental markets to develop and function in practice. For these conditions to cohere in particular contexts, we argue offsetting requires stabilisation of certain state-capital relations of power with respect to land development and nature conservation, alongside articulation of specific deregulatory and re-regulatory processes. The combined theoretical framework allows us to compare and contrast California and England at the macro and meso levels, and to ask what facilitated this form of environmental market-making in California in the 1990s, but what has inhibited it so far in England in the 2010s.

Neoliberal natures

Literature on the neoliberalisation of nature helps to situate ecological offsetting within historical and political economic trends whereby 'selling nature to save it' (McAfee, 1999) became common sense in environmental policymaking. In his seminal piece, Castree (2008a) distinguishes four crucial dynamics of such processes: (1) privatisation and marketisation of aspects of the social, cultural or biophysical world previously outside those relations; (2) deregulation of existing 'command-and-control' regimes of governance combined with market-enabling reregulation; (3) increased use of market-like organisational practices in the public sector; and (4) the devolution of regulatory and administrative responsibility to non-state actors. Scholars studying the distinct subfield of 'neoliberal conservation' have documented the increasing pervasiveness of market rationality and techniques of economic valuation used in nature conservation, and wider subordination of other environmental protection regimes to

accumulation and elite interests (Büscher et al., 2014). Ecological offsetting is frequently held up by proponents and critics alike as a prime example of these types of marketising and liberalising trends. Indeed, the compromise between the development lobby and environmentalists, which helped constitute wetland banking, can be understood as one element of what Harvey (2005) calls the reconstitution of class power. For Harvey, this defines the neoliberal project, aiming towards the long-term defeat or co-optation of the forces arrayed against capital. In California and the United States more broadly, the embrace of wetland mitigation banking signalled a partial submission to deregulatory forces, while lending legitimacy to the market logic underpinning offsetting.

Deregulation, however, was never absolute. A reregulatory logic was at play too, driven by growing acknowledgement of environmental limits, and ecological and political threats posed to accumulation (McCarthy and Prudham, 2004). As Felli (2015) has argued, the increasing appeal of MBIs rested on the promise of addressing environmental limits, albeit in ways that would simultaneously dissipate oppositional environmental politics. Ecological offsetting fits this bill. Even as the co-optive and market-like institutional features of ecological offsetting became well-established in the United States and beyond, it also depended upon relatively clear-cut extensions of state-directed ecological regulation and enforcement, most visibly in the form of legal mandates for ecological compensation.

This distinctive mix of market liberalisation and expanding state control has fostered analytical ambiguity in studies of ecological offsetting and similar MBIs. Many studies have, for instance, questioned the market status attributed to the wide and heterogeneous range of real-world offset systems, pointing to their partial reliance on command-and-control mechanisms and highlighting other deviations from 'real' markets (Vaissière and Levrel, 2015; Boisvert et al., 2013). This distinctive mix of market liberalisation and expanding state control has fostered analytical ambiguity in studies of ecological offsetting and similar MBIs. Many studies have, for instance, questioned the market status attributed to the wide and heterogeneous range of real-world offset systems, pointing to their partial reliance on command-and-control mechanisms and highlighting other deviations from 'real' markets (Vaissière and Levrel, 2015; Boisvert et al., 2013). This institutional complexity, however, is consistent with the wider literature on neoliberal natures, which theorises neoliberalisation as always contradictory, incomplete, geographically-specific and hybrid in character (Dressler and Roth, 2011; Lockwood and

Davidson, 2010; Lockie and Higgins, 2007; see also Brenner et al., 2010). 'Actually existing' neoliberalism has always departed somewhat from the airy rhetoric around it, refracted through social, biophysical and contextual contingencies and resistances (Bakker, 2010; Dempsey and Robertson, 2012; Holmes and Cavanagh, 2016; McAfee and Shapiro, 2010; McElwee, 2012).

Bringing in economic sociology: power and institutions

Insights from economic sociology are useful for sorting out the seemingly contradictory and muddled institutional features of ecological offsetting and other regulatory markets. First, we argue these kinds of regulatory market crystalise a distinctive configuration of authoritative and economic social power, which we call command-and-commodify regulation. This label distinguishes ecological offsets (and comparable institutions, like cap-and-trade schemes) as hybrid instruments which are not straightforwardly market-based, even as they channel certain neoliberal logics and are borne out of neoliberal conditions. Second and more importantly, through these conceptual distinctions we show how these forms of regulation work on a practical level. Literature on neoliberal natures has long recognised that marketising trends require processes of reregulation. Our command-and-commodify framework adds analytical specificity to these insights. In particular, identifying the specific ways that new markets in nature are built of concomitant expansions of authoritative and economic dimensions of regulatory power helps make clear the institutional articulations and political economic compromises that allow for the development of reforms like ecological offsetting.

Authoritative and economic power

Max Weber (1978: 943-8) originally articulated the distinction between what he called "diametrically contrasting" authoritative and economic forms of "domination." Authoritative power, Weber (1978: 948) explained, is direct, unilateral social control "of a princely sort", wherein actors are subject to direct mandates and have to comply with the given command. In environmental policy, institutions characterized largely by authoritative power have become commonly (and pejoratively) referred to as command-and-control forms of regulation (Cox, 2016; Ioris, 2014), which neoliberal and market-oriented reforms supposedly work against. Typically, regulatory agencies authoritatively command firms and other actors to adopt specific production practices or 'best available technologies'. Compliance in practice may depend on levels of regulatory oversight and the cost of sanctions, but the basic character of social power

remains direct and authoritative: specific standards and requirements are set by the state and in principle, must be followed.

Economic power, or what some economic sociologists call 'structural power' (Roy, 1997; Dobbin and Dowd, 2000) or power based on 'dependence' (Granovetter, 2017), works differently. Instead of direct, authoritative commands, the state or other actors (e.g. social movement organisations) wield economic power by reconfiguring incentive structures and morally encoded meanings of exchange in markets (Fourcade and Healy, 2007) such that it 'makes more sense' for market participants to take one course of action over another. Many neoliberal policy reforms and MBIs rely on economic power of this sort. Emissions taxes and voluntary product labelling schemes (e.g. fair trade coffee; sustainable forestry) do not mandate that market participants change their behaviour. Instead, these forms of regulation shift the moral terrain and profitability of market exchanges, such that selling fair trade coffee is not only more profitable, but profitable because it is virtuous – or, conversely, emitting less pollution is not only virtuous, but profitable, since (under a cap-and-trade scheme) surplus emissions credits can be sold to other polluters. These shifts in meanings and profitability of market exchanges create what Weber termed a 'constellation of interests' that incentivises some behaviours over others. Market logic and profitability, rather than hierarchical authority, undergirds economic power – in a similar vein to Foucault's distinction between neoliberal governmentality and sovereign forms of power (e.g. Fletcher, 2010). However, distinctions between economic and authoritative dimensions of social power are analytical, not strictly substantive. Authoritative and economic means of controlling behaviour are often entwined or "fluid" (Weber, 1978: 943). States, after all, use authoritative power to enforce property rights regimes that structure economic action and make markets possible in the first place (Campbell and Lindberg, 1990; Fligstein, 2001). As Polanyi (2001: 146) made clear, even the 'freest' of markets are built and maintained by "continuous, centrally organized and controlled interventionism".

Forms of neoliberal governance and institutional requisites for their emergence

Still, conceptualising economic power as orthogonal to authoritative power enables the two analytical moves noted above. First, it allows for separation of ecological offsetting and similar examples from other instruments of neoliberal environmental governance dependent on a different configuration of economic and authoritative sources of power. Many neoliberal policy reforms, like product labelling schemes (Bartley, 2007; Guthman, 2007) or private forms of

conservation, such as land trusts (Kay, 2016), are voluntary. They rely on economic but not on authoritative forms of power to shape human relationships with nature. Ecological offsetting, like cap-and-trade, is different. On the one hand, economic power is crucial. By putting a price on ecological impact, offsetting imposes costs on land developers and creates opportunities for generating revenue for offset providers. Economic power and market exchange thus clearly shape how and where harm to nature plays out, and attempts to neutralise it. On the other hand, offsetting policies also heavily depend upon authoritative mandates for land developers to offset. These requirements create the demand necessary for offset markets to function. In comparison to prevailing regimes where such regulatory compulsion was unusual or uneven, offsetting therefore implies an extension of state control over ecological regulation of land development. This combination of expanded economic and authoritative control is the institutional signature of command-and-commodify regulation, summarised in Table 1.

Regulatory Form	**Authoritative Power**	**Economic Power**	**Examples**	**Sample Studies**
Command-and-control	High	Low	"Best available technology" mandates; industry specific emissions requirements;	Sinclair, 1997; Hubner, 2009; loris 2014; Cox 2016
Private or voluntary	Low	High	Product labelling schemes; voluntary production standards; corporate social responsibility	Vogel, 2005; Guthman, 2007; Bartley, 2007; Farley and Costanza, 2010; Locke, 2013; Kay, 2016, 2018
Command-and-commodify	High	High	Wetland mitigation banking; species conservation banking;	Robertson, 2004; Lave, 2012; Lederer, 2012; Lockhart, 2015;

	biodiversity offsetting; cap-and-trade	Vaissière and Levrel, 2015; Rea, 2017

Table 1: Three forms of regulation and their characteristic configurations of power

Beyond simply classifying different regulatory approaches, focusing on how command-and-commodify regulation institutionally articulates economic and authoritative dimensions of social power reveals quite specific political economic circumstances and social relations required for these environmental markets to emerge. In drawing out the ways offsetting relies upon authoritative power, it becomes apparent that these forms of regulation can only develop where regulators are able and willing to extend the scope of regulatory intervention in ways which consistently and uniformly mandate compensatory action for ecological harm. By examining offsetting's dependence upon economic power at the same time, it becomes clear that actors must also be able to successfully commodify and circulate units of nature as fungible offset 'credits', to lubricate compliance processes rather than allowing environmental laws to impede land development.

Towards a theoretical synthesis

Referencing broader insights of the neoliberal natures literature, we argue this two-dimensional shift of authoritative and economic power rests on the maintenance of a very particular balance of power, where developers – individually and as a political force – will concede to policymakers and environmental regulators that compromise and acquiescence is beneficial to their material interests, at least more so than active noncompliance. Equally, environmental regulators and movement groups must cede to land developers a level of ecological loss, provided some level of ecological protection and restoration is provided as 'compensation'. Since offsetting has developed in an era of capital ascendency and increasing political turbulence, creating and maintaining conditions for this economic-ecological compromise is far from straightforward. Subtle shifts away from market liberalisation and towards stronger authoritative state control, on one hand, or towards harder pro-market, 'anti-regulation' politics and away from state intervention, on the other, could each thwart the development of ecological offsetting and other comparable forms of regulatory markets (Figure 1). The key insight is this: command-and-commodify institutions are not just the products of capital ascendency under late neoliberalism.

They are instead relatively delicate institutional compromises forged where loosely 'statist' and 'pro-environment' forces can expand their authoritative reach *at the same time as* new markets and circuits of exchange are created which generate economic forms of power.

To illustrate these dynamics, we turn to an empirical discussion of the patterns of reregulation that led to the emergence of ecological offsetting in California in the early 1990s, allowing for the development of command-and-commodify regulation in the form of species banking (Carreras Gamarra and Toombs, 2017; Pawliczek and Sullivan, 2011; Rea, 2017). As we subsequently show, the same institutional articulation of forces which made this possible in California proved to be more volatile in the early 2010s in England (Lockhart, 2015, 2016; Sullivan and Hannis, 2015; Taherzadeh and Howley, 2017), when and where politics and ideology were dissonant with patterns of reregulation required for command-and-commodify regulation to emerge.

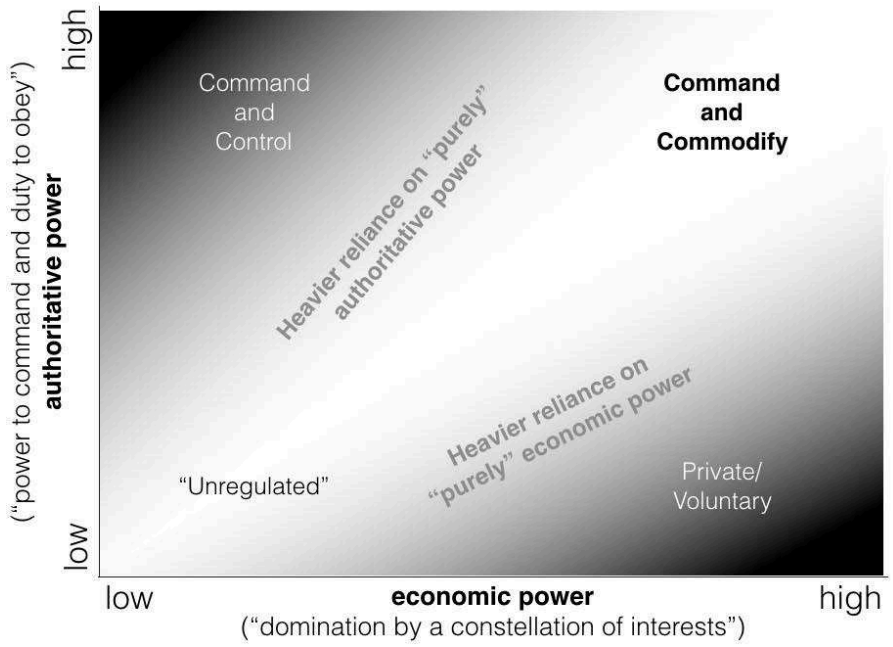

Figure 1: The balance of authoritative and economic power for command-and-commodify regulation to emerge.

Successful market-making in California

The first commercial, for-profit species conservation banks in the United States were officially approved in late 1994 and early 1995. These market-oriented regulatory innovations drew legal

authority from the federal Endangered Species Act (ESA), built on the institutional template provided by wetland mitigation banking and compensatory mitigation (permitted under the CWA)[2]. Like ecological offsetting and wetland mitigation banking more concretely, species banking aims to create or restore sizable pieces of endangered species habitat (usually hundreds of acres) that can be divided up into smaller 'credits', offered for sale to offset 'unavoidable' harm to species habitat caused by development projects. Most development projects' 'impacts' to endangered species habitat are relatively small. Fractions of an acre are typical. Consolidating offsets for such harm into larger 'banks' of land, the argument goes, helps minimise the creeping threat of 'extinction by a thousand cuts', wherein many individually 'insignificant' reductions in habitat – and fragmented, piecemeal bits of habitat set aside to 'offset' those impacts – collectively threaten the survival and recovery of a protected species.

The market-like features of species conservation banking are most visible in the production and exchange of species credits themselves, which bank owners, including public agencies, sell to generate revenue or profit. Prices for such species credits are not regulated. In most cases the central determinant of price is the real estate market and habitat restoration costs in the surrounding area. Where adjacent to prime development land in coastal California, for instance, vernal pool fairy shrimp credits can exceed a half-million dollars per acre. In rural Alabama, gopher tortoise credits garner only a few thousand dollars each. Panther habitat units (in Florida), salmon spawning ground credits (in Washington State), San Joaquin kit fox credits (in California), and golden-cheeked warbler credits (in Texas) are among the many examples of commodified ecologies currently for sale in the thriving market for endangered species offset credits in the United States.

Exploiting California exceptionalism

When the first species conservation banks were established in the early 1990s, however, they were confined to the environmentally progressive state of California. It took until 2002 – nearly a decade – before a single species bank appeared in any other U.S. state (Texas and then Arizona) – despite almost all species conservation banks in California having been authorised under the

[2] The first commercial, for-profit *wetland mitigation* bank was approved by the Corps in 1990 in Louisiana; the second was approved in 1992 in Georgia. See the U.S. Army Corps of Engineers Regulatory In-Lieu Fee and Bank Information Tracking System (RIBITS) database, available at https://ribits.usace.army.mil/. See also (Robertson, 2004; Gardner, 2011; Lave, 2012)

auspices of the U.S. Fish and Wildlife Service (FWS), the federal agency charged with enforcing the ESA across the entire United States. What was happening in California such that a new and market-oriented form of nature protection took hold there in the 1990s, but not elsewhere in the United States?

In ecological terms, California is home to one of the world's few 'biodiversity hotspots' (Myers et al., 2000) and has the highest number of officially listed threatened and endangered animal species of any U.S. state. It is also the most populous state in the country and the site of extensive urban and suburban sprawl that might spur demand for endangered species offset credits. Yet a number of other states, notably Florida, Georgia, Tennessee, and Alabama, share similar overlaps of land development and endangered species ranges – and Florida at substantially and consistently higher levels than California (Rea, 2017: pp. 28-9). The question of *why there and then*, in other words, is not simply a matter of ecology, but of political economy.

A shift towards 'the market' and economic power

The emergence of species banking in California, we contend, must be situated in an increasing reliance on economic power – dynamics of markets and exchange – to regulate society's relation to nature, and the related pro-business, anti-environment backlash that had been unfolding since the 1970s. Globally, the late 1980s and 1990s were characterised by uneven but sweeping embraces of deregulation, liberalisation, and policy marketisation across policy domains (Fourcade-Gourinchas and Babb, 2002; Harvey, 2005; Prasad, 2006; Mann, 2013). These shifts in governance were enmeshed in environmental policy (Liverman, 2004; McCarthy and Prudham, 2004), made manifest in developments like market-oriented approaches to limiting ozone depleting chemicals (Gareau, 2013), the ecosystem services paradigm (Daily, 1997; de Groot et al., 2002), and private and voluntary environmental regulation, like fair-trade and sustainable forestry labeling schemes (Bartley, 2007; Guthman, 2007). At the national level, these marketising trends were apparent in, for example, George H.W. Bush's embrace of the 'no net loss' approach to wetlands in 1988 and his and the subsequent Clinton administration's support for the then-novel idea of cap-and-trade programs to reduce sulfur dioxide and carbon emissions (Cook, 1988; Solomon and Gorman, 2002; Layzer, 2012b).

Within California, the centre-right administration of governor Pete Wilson, in office from 1991 to 1999, was aligned with these marketising trends. The governor and his allies were eager to streamline environmental protections to appease developers and stimulate economic growth

following the savings and loan crisis of the late 1980s. Feldman and Jonas (2000) analyse land development politics in California that flowed from these political commitments. We reiterate that the logic of offsetting provided an appealing path forward within the historically specific intersection of pro-growth and pro-environment politics characteristic of the place and time. In this context, state-level bureaucrats in California drafted the first-of-its-kind regulatory guidance on species conservation banking in 1995, and federal-level FWS regulators based in California began to include offsetting requirements in land development permits. As one high-level bureaucrat put it:

> *the developers … validated what we were proposing [species conservation banking], and that carried a lot of weight with the governor who'd been elected with their support and who understood, I think appropriately, that one of the things he had to do was to break the log jam [i.e. the conflict between pro-growth and pro-environment factions].*

By offering offsets, environmental regulators in California helped to create Weber's 'constellation of interests' that made it 'make sense' for land developers comply with environmental protection law. Offsetting, they surmised, was more cost effective and efficient than the risk of having to relocate a planned land development project, providing one's own ecological compensation, or stopping a planned project altogether.

"A perfect storm" for expanding authoritative power

These institutional changes still required substantial concessions from developers – namely, their willingness to bear the costs of endangered species offsets. Such requirements were relatively new in endangered species protection. In California's recent past (i.e. the 1980s and earlier) and in the 1990s and 2000s across the rest of the United States, the administrative consensus was that compensatory mitigation could not be made a requirement in the most common applications of the ESA[3]. So why did land developers in California acquiesce to costly expansions of authoritative regulatory power, when nationally dominant interpretations of the ESA suggested federal regulators in California were overstepping their authority?

[3] Specifically, policy guidance issued by the FWS forbids the use of compensatory mitigation under Section 7 of the Endangered Species Act – the most commonly invoked section of the law in the context of land development projects.

The answer is twofold and particular to the political economic features of California at that historical moment. First, a thicket of state-level environmental legislation in California provided regulatory cover for federal bureaucrats in the FWS – not directly accountable to state-level laws – to expand their authority. In southern California, the first implementation of the Natural Community Conservation Planning Act of 1991 paved the way for inclusion of offsets in large-scale development plans at the level of state law (Feldman and Jonas, 2000). The stringent California Environmental Quality Act (CEQA) also supported such provisions. FWS regulators working in California may have lacked formal authority to make parallel demands under the national-level ESA, but as multiple informants put it, they nonetheless 'piggybacked' on the authority of their state-level colleagues. Land developers, facing multiple levels of regulation (federal, state, local) found compliance easier than fighting these demands on different fronts.

An expansion of legal activism by environmental advocacy groups provides the second reason environmental regulators in California could make new demands on developers. In the 1990s, environmental groups in California began to regularly sue the federal government for not robustly enforcing provisions of the ESA. Such activism was less common in other states, but in California, faced with this legal pressure, developers and regulators alike increasingly saw offsets as a means of demonstrating to advocacy groups and to courts their commitment to meeting or exceeding basic legal requirements for nature protection. By including formally voluntary 'conservation measures' in their construction plans – as apart from mandatory mitigation measures not formally allowed in many ESA applications – developers and regulators alike could claim robust compliance with the law[4]. Coupled with supportive state-level environmental laws, these lawsuits helped federal environmental regulators extend their authoritative power to mandate offsets in California. The lawsuits also made it more cost-effective for developers to buy offsets than refuse compliance and risk a lawsuit that could slow down development. This coupled expansion of economic and authoritative forms of regulatory power, and the political economic compromises enabling their institutionalisation, facilitated establishment of a new command-and-commodify form of environmental regulation in California in the 1990s.

[4] The traces of this creative legal-administrative maneuvering are in fact embedded in the confusing terminology of offsetting in the United States. The name species *conservation* banking refers to the formally voluntary "conservation measures" that U.S. Fish and Wildlife regulators "recommended" to land developers as a means of complying with the Endangered Species Act. Wetland *mitigation* banking, by contrast, refers to unambiguously mandatory "mitigation measures" that U.S. Army Corps of Engineers regulators routinely *require* under the Clean Water Act.

Failed market-making in England

Two decades later, development of a biodiversity offsetting programme in England unfolded quite differently. The proposed use of a formal offsetting system, to quantify the value of habitat with the explicit goal of achieving of no net loss, first appeared in late 2011, little over a year after a new Conservative-led coalition came to power[5]. While these moves were acrimoniously aborted in 2014 and appeared dead, they gradually re-emerged under the guise of biodiversity net gain in 2018. At the time of writing (April 2019), this recalibrated set of proposals is expected to be put before the UK parliament as part of a new wide-ranging Environment Bill, to be passed into legislation. Back in 2011, piloting offsetting in six local areas was a centrepiece of a new Natural Environment White Paper, a 50-year national strategy promising a reconfiguration of nature conservation policy around the 'green economy' (Defra, 2011). At the core of the White Paper was the notion that, in line with Defra's emerging 'natural capital agenda' (Lawton and Rudd, 2013; UK NEA, 2011), economic and environmental goals were not intrinsically opposed. Meeting international and domestic targets to halt biodiversity loss could be met, it claimed, by mobilising novel techniques of economic valuation and MBIs to deliver win-win outcomes through green growth. As in California, this embrace of market-orientated nature conservation emerged at a specific historical juncture, during the turbulence following the 2008 global financial crisis and ensuing domestic recession. The Conservatives' election platform had rested on a programme of deep austerity and deregulation to restore economic stability and growth (Cameron, 2010; Gamble, 2015).

Under the new government, the planning system and environmental legislation came under particular attack (Cowell, 2013; Kaminski, 2015; Lord and Tewdwr-Jones, 2014). Both had long been characterised as bureaucratic fetters on growth by development lobbyists, conservative think tanks and the national press (Haughton and Allmendinger, 2013, 2016). The Conservatives seized on this narrative to explain slow growth and spiralling problems of unaffordable housing, especially in London and the southeast. When the government's fiscal austerity threatened to choke the fragile economic recovery, government leaders redirected blame at stringent environmental legislation for blocking or delaying vital housing and infrastructure development (e.g. Carrington, 2013; Harvey, 2011; Watt, 2012). Under Defra's Secretary of State Owen

[5] Mitigation, including offsite compensation, for ecological impact was already stipulated under existing planning policy, but was only used on an *ad hoc* basis and rarely enforced, without standard rules or forms of measurement (David Tyldesley and Associates, 2012).

Paterson – an environmental sceptic and opponent of business regulation (Carrington, 2012) – offsetting was positioned as a discrete mechanism within a raft of planning reforms to accelerate land development (e.g. Paterson, 2013). Its orientation was shaped heavily by strict deregulatory criteria, based on the principle that command-and-control authoritative power was suffocating economic dynamism. Under the 'Red Tape Challenge', against which all new government policy was tested, 'additional burden' on business was prohibited, unless two – and later three – pieces of regulation were removed in compensation (BIS, 2013).

Win-win narratives

Offsets, it was hoped, would lubricate the moment of development control, where planning consent required demonstration of suitable mitigation measures to address significant damage to biodiversity (Defra, 2013; see also Aldersgate Group, 2013; EMTF, 2013; Environment Bank, 2013; Newey, 2012). In short, a market-based offsetting regime would provide an economically advantageous way for developers to meet their regulatory requirements. However, since it remained uncertain if this claim could be realised, the experimental policy framework trialled locally remained strictly voluntary. While compliance with biodiversity duties was necessary, it would be entirely up to developers whether to use the new offsetting framework to meet the requirements (ENDS Report, 2011).

While this non-negotiable deregulatory logic dominated, it was not the whole story. The ability for the government to simply remove environmental protections was limited by European law, most importantly the EU Habitats and Wild Birds Directives. The prevailing mitigation regime, meanwhile, was performing particularly poorly at tackling loss of habitats at lower level designation, contributing to the UK government's failure to meet legally binding EU targets to halt biodiversity loss by 2020 (Lawton et al., 2010). State regulation was proving ineffectual, with planning authorities either unwilling or unable to exercise authoritative power over developers. As part of the natural capital agenda, offsetting was put forward as a mechanism to consolidate and standardise regulation of land development, while simultaneously enrolling NGOs, landowners, consultant ecologists and developers more effectively into the process of delivery. Contingent upon the success of the trial program, Defra would introduce a nationwide system of voluntary offsetting that, it argued, would meet both development and conservation goals simultaneously without additional costs on business or government.

The rise and fall of biodiversity offsetting in England

Trialling of the government's proposals in England began in April 2012 and ran for two years, led by ecology officers within local planning authorities (LPAs). The pilots aimed to encourage use of offsets for planning applications where biodiversity was a 'material consideration' according to policy; to identify potential offset sites and providers; and to ensure regulatory compliance and long-term delivery (Defra, 2012a). The government published a habitat-based metric for measuring biodiversity, together with guidance on how offsetting should be applied (Defra, 2012b). In late 2013, the policymaking process was accelerated when Paterson was appointed as Secretary of State at Defra, with what staff called a "strong growth mandate" (interview with Defra official). A Biodiversity Offsetting Green Paper was rapidly published for public consultation in September 2013, and nationwide rollout was set for early 2014 (Defra, 2013).

Yet this ultimately proved to be the high-point of the proposals. Over the next six months, ongoing disagreements around the policy's core objectives between government and stakeholder groups became highly polarised (Mathiesen, 2013; Vidal, 2014). This shattered a fragile consensus built on the promise of market-generated benefits for all. By mid-2014 – at which time economic growth had returned – the proposals were abandoned. Major stakeholders had effectively withdrawn from the process, while the pilots fizzled out in failure (CEP and IEEP, 2014a, 2014b). Ultimately, the Treasury department blocked the policy's further development, on the grounds that Defra officials were unable to unequivocally demonstrate a cost-saving potential for developers. Paterson was unceremoniously sacked by the Prime Minister (Sparrow, 2014), and offsetting was quietly dropped. As another General Election approached, the policy was deemed too controversial and complex to pursue in its existing form.

A multiplicity of tensions and disputes contributed to the abandonment of offsetting in 2014. These reflected challenges commonly identified in the policy and academic literature, from questions of biodiversity's fungibility and appropriate forms of measurement, to those surrounding institutional arrangements, responsibilities and rules (Defra, 2016; EAC, 2013; Sullivan and Hannis, 2015; Taherzadeh and Howley, 2017). These debates became extremely fractious and politicised, and played a significant role in the government's decision to abandon nationwide implementation.

A failure to command commodification

Yet what was striking about this case as a policymaking failure was not the controversies over detailed implementation plans, but the difficulties of assembling a functioning regulatory market at all. The command-and-commodify framework helps illuminate the deeper structural, political-economic constraints that made this market-making process so difficult. Specifically, **t**he government found that by failing to extend authoritative power over developers, it was impossible to constitute the economic power required to enrol the different actors needed to stimulate market participation. This failure took two related forms: (i) undermining the capacity of regulatory bodies through austerity planning reform; and (ii) insisting that offsetting would be voluntary for regulators and developers.

It was well understood that chronic lack of capacity and expertise was seriously affecting LPAs' ability to meet their statutory duties with respect to conservation before offsetting was put forward in 2011. Only around one third of LPAs employed a trained in-house ecologist (Newey, 2012), and biodiversity had been found to be materially undervalued throughout the planning system, as a result of overriding economic imperatives and the considerable power and resources available to developers (Oxford, 2013). Compensation for biodiversity loss was imposed ad hoc in a vanishingly small number of cases, and rarely monitored or evaluated (CEP and IEEP, 2013; David Tyldesley and Associates, 2012). For many environmentalists, the initial appeal of offsetting was that a formalised system for explicitly quantifying biodiversity impact could partially address these issues. They also understood effective implementation of a complex policy instrument like offsetting would equally require significant investment in regulatory oversight and expertise (e.g. CIEEM, 2013; RSPB, 2013). Establishing the offsetting programme, in short, would necessitate clear and multivalent expansions of authoritative power in LPAs and other regulatory agencies. These were ultimately the preconditions set by many environmental groups if they were to participate in and lend legitimacy to the policy.

Instead of extending institutional capacity to address problems of regulatory oversight, however, the government's programme of austerity undercut them further. Contemporaneous cuts to local government and regulatory agencies were extreme. The Association of Local Government Ecologists found that 10 of 13 areas of local biodiversity work underwent "at least a 60% budget cut" in 2011/12, expressing concern:

> *over the apparent 'mis-match' between the aspirations and expectation expressed in the Natural Environment White Paper, when weighed against diminishing availability of resources within local government to actually engage with and undertake the sorts of biodiversity initiatives outlined (EFRA Committee, 2012, p. 116).*

Moreover, the government's planning reforms – aimed at removing what was seen as state interference – reduced the scope for ecological regulation of land development. Pitched as a radical simplification exercise, the creation of the new National Policy Planning Framework (NPPF) not only removed hundreds of pages of planning guidance, it substantially reconfigured the relationship between growth and conservation duties in favour of the former (Cowell, 2013; DCLG, 2012; Tait and Inch, 2016). For instance, as part of wider reforms, responsibility for delivering five-year housing supply was passed to LPAs. If local strategies were judged to be inadequate in this regard, it could lead to LPAs' powers of development control being overridden from above, under challenge from developers or central government (e.g. CPRE, 2015). This shift in focus was backed by a controversial 'presumption in favour of sustainable development' clause institutionalised under the NPPF, while confidential and opaquely measured 'viability assessments' allowed developers to dispute 'unreasonable' planning conditions which might jeopardise individual projects (Colenutt et al., 2015). Regulators were also made subject to a growth duty under a new law aimed at facilitating infrastructure development (Kaminski, 2014, 2015). Under the constrained conditions of austerity, LPAs were reluctant to extend their environmental reach – especially if they lacked in-house expertise – on such ambiguous ground, for fear of costly legal processes and other disciplinary measures used to enforce economic priorities over conservation ones.

The second factor undermining offsetting was the insistence that any such programme must remain voluntary, both for regulators and developers. Any compulsory scheme, which could have resulted in 'additional regulatory burden' on business, would have contravened government policy under the Red Tape Challenge. For government leaders, this was non-negotiable, and a position supported by the development lobby (e.g. HBF, 2013). Yet it went against the unanimous advice of the environmental NGOs, professional organisations representing ecologists, green business and policy consultants, who firmly held that offsetting was a regulatory market which had to be mandatory. A voluntary system, they argued – one we would identify as founded on

economic power alone – gave the impression to all stakeholders that compliance with no net loss was optional. In this scenario, developers had no incentive to use offsets unless it demonstrably saved them money or accelerated planning consent, stoking widespread fears that the proposals were nothing more than a 'license to trash' (Mathiesen, 2013). Given that under the status quo mitigation and compensation were largely not happening, the proposed rules were extremely unlikely to lead to meaningful outcomes, since any extension of ecological regulation of land development would constitute additional cost.

Without authoritative compulsion to use offsets, then, there would be no way of stimulating effective demand, nor sufficient supply from potential offset providers, since a voluntary system would give them no certainty of a sustainable income stream (e.g. CLA, 2013). This effectively stymied the possibility of constituting a functioning market: blunting expansions of authoritative regulatory power in turn undermined the exercise of economic power that could have structured land development decisions in a functioning 'market for nature'. The final nail in the coffin occurred when the Treasury blocked the policy altogether, on the grounds that even the rollout of a voluntary mechanism would likely have placed unacceptable administrative costs on developers, by requiring them to understand the mechanics of a new planning instrument.

The revival of offsetting as net gain?

The sacking of Owen Paterson in mid-2014 appeared to be the death knell for a nationwide offsetting policy. Widely seen as an ill-considered failure, even key proponents noted offsetting had become 'toxic' (Scott-Campbell, 2016). In the run-up and aftermath of the General Election of 2015, which returned Cameron as Prime Minister, offsetting no longer seemed part of the government agenda. However, in the turmoil that ensued from the unanticipated vote to leave the EU in June 2016, Cameron resigned and was replaced by Theresa May. May, who had campaigned to 'remain', was now tasked with negotiating the UK's exit from the EU, and extricating it from what the victorious Conservative right argued were overbearing and economically stifling European laws. In this context, the development lobby seemed well positioned to continue to push a strong deregulatory agenda (Kaminski, 2017; Parker, 2017), further narrowing the prospects of expanding authoritative power needed to constitute a functioning offsetting programme. Yet the post-referendum political landscape proved deeply unstable. May's authority was severely weakened in June 2017, when she unexpectedly lost her governing majority in another General Election that she herself had called. Soon after, Michael

Gove, a high profile Conservative politician and leading 'leave' campaigner who had stood against May for the leadership a year earlier, was appointed to as Secretary of State at Defra. As a result, the department suddenly found itself led by a cabinet minister with significant leverage over the Prime Minister in a fractured party, and one who was willing to prioritise Defra's policy agenda, including by backing a new biodiversity 'net gain' proposal.

Though offsetting's revival had seemed unlikely in the context of national politics, its development had persisted in local pockets. The single success story of the initial pilots, governed by the uniquely well-resourced Warwickshire County Council, provided an exemplar for local authorities trying to utilise existing policy instruments in planning (Environment Bank, 2016). Some large-scale developers had also developed their own corporate offset policies, while industry and professional organisations produced new best practice guidance (CIRIA et al., 2016). As part of continuing development of the natural capital agenda, Defra and Natural England were also working towards recalibrating offsetting as net gain. Importantly, revisions to NPPF in 2017 strengthened the requirement to deliver net gain in planning (DCLG, 2018). Under Gove, this provision was strengthened even further, with the long-awaited publication of the 25 Year Environment Plan at the start of 2018, which set delivery of net gain nationally through planning as a priority (Defra, 2018a). Reframed, offsetting was firmly back on the policy agenda, and in December two new consultations proposing an updated metric and new net gain framework were released, which concluded in February 2019 (Defra, 2018c; Natural England, 2018). **In** March, the government announced the policy would be rolled out as part of new Environment Bill to be put before Parliament (Defra, 2019).

In one sense, net gain has emerged as a symbolic repackaging of the scheme aborted in 2014. Yet the new proposals addressed numerous stakeholder criticisms of the original proposals. The most important shift is the insistence that net gain of biodiversity, set at a standard percentage using the refined metric, will be a compulsory condition of planning consent for all forms of land development (Defra, 2018c). The revisions appear to have won over the most powerful environmental NGOs and professional ecologist networks (e.g. CIEEM, 2019; TWT, 2018). In terms of benefits for business, policymakers removed the promise of cost neutrality, but claimed that costs to developers would effectively be negligible, with 90 percent of the estimated £64 million per year absorbed in windfall profits landowners accrue when planning consent is granted (Defra, 2018b). In addition, Defra argues developers' overall project costs are likely to shrink, as

a considerably simplified and standardised process of compliance is expected to significantly reduce delays, disputes and other uncertain transaction costs. This includes an option of paying of a standard tariff linked to onsite biodiversity impact, to invest in independently operated habitat banks if no suitable compensation site can be found by local actors. In terms of addressing regulatory capacity in LPAs, the proposals suggest oversight and enforcement will be more straightforward with a highly standardised system combined with best practice guidance and greater involvement of non-state actors, while random sampling and increased use of remote sensing technologies should reduce the need for costly onsite monitoring. Whether Defra and its agencies truly have the capacity to oversee such a scheme however, remains an open question (see e.g. Harvey, 2019).

Overall however, the new framework represents a significant reconfiguration of Defra's 2013 green paper. Building on other policy developments, it looks to extend the state's authoritative alongside economic power to build regulatory markets in nature. This is reflected in a decisive shift in tone in favour of environmental outcomes (as well as local community benefit), and a retreat from the previously strong rhetoric of market rationality, towards one of technocratic administration. Appeals to environmental groups, developers and regulators, for instance, are primarily made on the basis of standardised and streamlined processes, rather than market efficient outcomes. At the time of writing though (April 2019), the wider conditions for offsetting's realisation in England remain extremely unstable. Having repeatedly failing to pass its EU withdrawal agreement through the UK parliament before the original, legal deadline, the Conservative government is on the brink of collapse amid an unprecedented political and constitutional crisis. As a result, the UK's legislature is gridlocked, and May has already announced her resignation once the UK's leaves the EU. Defra's current programme and political influence could be curtailed at any moment, and there is a strong possibility the UK will have a new government – and set of priorities – before net gain of biodiversity can be brought into law. While the short term future is decidedly uncertain, offsetting's longer term fate will no doubt depend on the actions of the next government, and how state, environmental, and development forces realign.

Ecological offsetting and the sharpening tensions of late neoliberal natures

A growing critical literature on ecological offsetting has exposed social and ecological contradictions, and its role in reproducing entrenched power and cases of injustice. This work challenges offsetting's effectiveness from an ecological perspective and the political interests served and marginalised by its application. However, few critical studies have theorised how and why offsetting policies have successfully taken hold in some contexts, but not others. This seems an increasingly important task, in a historical moment when offsetting seems ubiquitous in conservation debates at the same time as it institutionally stumbles in different contexts. The two case studies compared above demonstrate the usefulness of a command-and-commodify framework in addressing this gap. In specifying these types of regulatory environmental markets as dependent on a delicate balance of authoritative and economic power, it was possible to examine how differently constituted historical and institutional settings enabled Californian species banking to flourish, while efforts to set up biodiversity offsetting in England have yet to be realised.

The particular historical junctures in the Californian and English cases suggest broader lessons about when and where new markets in nature may emerge, and when and where they may not. In California, the environmental backlash of the 1980s and the economic slowdown following the savings and loan crisis set the stage for the governor's moves to stimulate land development by streamlining environmental regulation. However, the relative power and resources available to environmental advocates and regulators provided a basis for considerable ecological reregulation of land, enabling a certain institutional compromise between development and conservation interests. This resulted in a partially redirected rollout of neoliberal policy where a market mechanism – rhetorically at least – played a substantive role in depoliticising competing economic and environmental demands and, arguably, generating marginal gains in protections for endangered species themselves.

When the UK government announced an offsetting programme with similar aspirations, it did so under different historical conditions. Decades of attacks on the planning system and environmental laws combined with chronic underinvestment in regulatory agencies had steadily eroded the material value of biodiversity in planning. Part of the response from the incoming coalition government to the post-2008 crisis was to instigate yet another attack on environmental protection and planning for holding back the recovery, alongside a programme of

deep fiscal austerity. Whereas in California environmental and regulatory forces were able to shape efforts to streamline environmental protection, institutionalising a similar balancing act in England has proven difficult. While species banking emerged as something of a practical and depoliticising solution to competing demands in California, in England the creation of a biodiversity offsetting 'market' in its first iteration was constructed in far more utopian and ideological terms – at a time when the legitimacy of the free market was seriously damaged and when conservatives were objecting to nearly any environmental regulatory expansions. Instead of neutralising conflicts between development and conservation, offsetting politicised them further. As a result, the latest proposals signal a technocratic turn, with rhetorical emphasis on procedural improvements and standardisation rather than market forces, and with substantive focus on expanding the state's authoritative control over land development.

Overall, we argue that the failure to establish a biodiversity offsetting system in England, 20 years after species banking took off in California, suggests that the successful rollout of new environmental markets is increasingly unlikely in conditions akin to the English case, where (neo)liberalisation has so profoundly shaped institutional context and regulatory capacity. Ironically, it appears that rhetorical commitments to 'free' market solutions to social and ecological problems progressively undermined conditions for the constitution of regulatory 'command-and-commodify' markets, ceding yet more ground to deregulatory forces. The original unspoken pact of offsetting, which allowed developers flexibility over how to comply with environmental law, while taking more land, as long as regulators could simultaneously expand their power, broke down. The same may be true in similar institutional settings, including in the United States, where staunch conservative opposition to regulatory expansion has stymied efforts to implement a nationwide, market-oriented cap-and-trade system for regulating greenhouse gas emissions.

In the context of austerity and neoliberal restructuring, which has seen the ascendency of development and industrial interests in relation to ecological regulation, governments like those in the UK may find it increasingly hard to create new environmental markets. On the other hand, nature's neoliberalisation has always unfolded unevenly. In situations where the balance of authoritative and economic power still more closely resembles the conditions we observe in California in the 1990s, the project of environmental market-making may still be gaining steam. In places where the economic crisis has been more contained, and where governments remain

capable of expanding their authoritative control and face public pressure to address environmental issues, we expect that new forms of neoliberal nature and novel markets in environmental goods may continue to grow. China's recent embrace of cap-and-trade and the increasingly marketised character of ecological offsetting in Germany are clear examples. Even in England, recent recalibrations of political power and the resilience of pro-environment factions may yet facilitate the emergence of command-and-commodify regulation. Such dynamics have wider implications, given the expansion of environmental markets forms a core component of the neoliberalisation of nature. Are conditions conducive to this kind of environmental policymaking evermore elusive, undermined by the very politics that initially drove them forward? Or is there life left in the project of neoliberalising nature? The answer, we suggest, depends upon context, and how ecologically-focused authoritative and economic power are crystalised in different historical and geographical moments. Even Brexit may have rather unexpectedly created the conditions – perhaps fleetingly – for offsetting to be revived in the UK.

In 2012, James McCarthy (2012) highlighted the renewed urgency of debates around the relationship between neoliberalism and environmental governance in the United States, suggesting an increasingly antagonistic recalibration of nature-society relations looked likely. As Bigger and Dempsey (2018) point out, this tension has, if anything, become more pronounced. Their own review of the literature is bookended by the global financial crisis and election of Donald Trump. This shift to the nationalist and authoritarian right is in no way unique, taking various forms in places as diverse as India, Italy, Hungary, the Philippines, Russia, Turkey, the UK and Brazil. While 'green' concerns have rarely been front and centre in this moving political landscape, hostility to environmental issues and multilateralism is a common thread. Interrogating the evacuation of the political centre-ground – to the left as well as right – is an important task for scholars of neoliberal natures today.

The wider premise of the neoliberalisation of nature was always that neoliberalism itself was something of a historical compromise – part constituted by emerging environmental limits, at once biophysical and political, which needed to be tamed in the service of continued accumulation (McCarthy and Prudham, 2004; Nelson, 2015). Where the balance of power looks more like California in the 1990s than England in the 2010s, bargains like these may continue to be struck. Moreover, in terms of ecological offsetting and environmental markets, those already established appear to remain resilient, supported by the interest groups they have helped create

(e.g. capitalists who profit from them; states that derive revenue from them). Carbon finance may not have boomed, but markets in ecological offsets continue to steadily grow. 157 new for-profit ecological offsetting 'banks' were approved in the United States in 2017, more than in any other previous year. Cap-and-trade schemes proliferate around the globe. Our analysis points to the importance of understanding development – arrested or not – of these markets in nature by looking at the institutions and conditions that enable them. It is in these specific contexts, after all, where the various compromises and fixes that comprise neoliberal natures have to be enacted, held together, and operationalised. As a final point, we caution against premature celebrations of the difficulties faced by neoliberal policies like biodiversity offsetting in England. While we may agree environmental markets have always been a false solution to the seriousness of our socio-ecological predicament, their failure in these circumstances may prove no less deleterious to our efforts to navigate the converging crises of the present.

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