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# Network governance for large-scale natural resource conservation and the challenge of capture

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# Network governance for large-scale natural resource conservation and the challenge of capture

## **Abstract**

Large-scale natural resource conservation initiatives are increasingly adopting a network governance framework to respond to the ecological, social, and political challenges of contemporary environmental governance. A network approach offers new modes of management that allow resource managers and others to transcend a single institution, organization, resource, or landscape and engage in conservation that is multi-species and multi-jurisdictional. However, there are challenges to network governance in large-scale conservation efforts, which we address by focusing on how special interests can capture networks and shape the goals, objectives, and outcomes of initiatives. The term “network capture” is used here to describe an array of strategies that direct the processes and outcomes of large-scale initiatives in ways that advance a group's positions, concerns, or economic interests. We outline how new stakeholders emerge from these management processes, and how the ease of information sharing can blur stakeholder positions and lead to competing knowledge claims. We conclude by reasserting the benefits of network governance while acknowledging the unique challenges that networks present.

## **Disciplines**

Critical and Cultural Studies | Environmental Health and Protection | Journalism Studies | Natural Resources and Conservation | Social Influence and Political Communication

## **Comments**

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# Network governance for large-scale natural resource conservation and the challenge of capture

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Large-scale natural resource conservation initiatives are increasingly adopting a network governance framework to respond to the ecological, social, and political challenges of contemporary environmental governance. A network approach offers new modes of management that allow resource managers and others to transcend a single institution, organization, resource, or landscape and engage in conservation that is multi-species and multi-jurisdictional. However, there are challenges to network governance in large-scale conservation efforts, which we address by focusing on how special interests can capture networks and shape the goals, objectives, and outcomes of initiatives. The term “network capture” is used here to describe an array of strategies that direct the processes and outcomes of large-scale initiatives in ways that advance a group’s positions, concerns, or economic interests. We outline how new stakeholders emerge from these management processes, and how the ease of information sharing can blur stakeholder positions and lead to competing knowledge claims. We conclude by reasserting the benefits of network governance while acknowledging the unique challenges that networks present.

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The stewardship of large-scale natural resource systems for multiple purposes, such as water provision, wildlife protection, recreation, and agriculture, requires the appli-

cation of landscape-level decisions (Aycrigg *et al.* 2013), an understanding of ecosystem connectivity (Peters 2008), and the accommodation of multiple – and often competing – forms of land use (Parrott and Meyer 2012). Resource-based conservation efforts must consider the larger picture and develop landscape-scale strategies across regional and national boundaries (Locke 2011). Network governance has responded to this need by offering an approach to expand “collaborative conservation” into large-scale natural resource management contexts (Peters 2008; Leong *et al.* 2011; Locke 2011). As several articles in this Special Issue illustrate, network governance has emerged as a means of considering management across multiple geographic and temporal scales (see Panel 1 in Scarlett and McKinney 2016). For instance, as Bixler *et al.* (2016) describe, a network approach in Montana, Alberta, and British Columbia has provided opportunities for over 100 governmental and non-governmental organizations to communicate and coordinate conservation efforts across private, state/provincial, and federal boundaries, as well as across the US–Canada border (see also Wyborn and Bixler 2013; Jedd and Bixler 2015). However, as conservation initiatives have grown in scope, size, and scale, the unique challenges of scaling-up collaborative conservation efforts among a broader and more diverse base of participants, while at the same time managing their multiple and often competing interests, have become more acute. This paper examines a heretofore largely neglected barrier to network governance: that of how different types of interest groups may capture this process.

## In a nutshell:

- Successful network governance has the potential to improve environmental stewardship efforts by promoting inclusive and equitable partnerships
- The benefits of network governance, which include flexibility and inclusive participation, also present distinct challenges, such as network capture, shifting stakeholder boundaries, and competing knowledge claims
- New stakeholders often emerge from the network governance process but often do not fit into traditional stakeholder categories or hold traditional positions
- Special interests can influence the governance process to maximize social, political, and economic benefits
- Strategies of network influence include corporate capture, philanthropic capture, and agency capture

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Non-hierarchical network theory uses the term “apparatus of capture” to describe the ways in which particular interests can capture and control the central logic governing socio–natural relationships (Deleuze and Guattari 1987). We apply the rationale of apparatus of capture to extend the traditional notion of agency capture – meaning the transfer of power in public-lands management to narrow special interests (Culhane 1981) – to newly emerging models of natural resource governance. Here, we use the term “capture” to describe the ways that special interests can control the underlying dynamics, including shaping the processes and the objectives, of large-scale natural resource stewardship initiatives. By extension, we use the term “network capture” as shorthand for an array of strategies that direct the outcomes of network governance efforts in ways that align with a particular group’s agenda, concerns, and economic or political interests.

Several characteristics of networks make them vulnerable to capture, as we demonstrate throughout this paper. First, technological advances in online and social media technologies have greatly enhanced the speed and effectiveness with which information is spread through networks. This proliferation of information has increased the visibility of competing claims to environmental science and expertise. Second, the configuration and structure of participants in network governance are flexible over time, which allows networks to reorient as functions and goals change. In traditional multi-stakeholder processes, stakeholder interests and categories tend to be well defined to include representatives from resource agencies, private-sector interests, environmental organizations, and so forth (Decker *et al.* 1996), but stakeholder positions are becoming increasingly more fluid as the boundaries between government, special interests, and philanthropic efforts become distorted within contemporary environmental policy and management contexts. Such boundaries tend to be clearly defined in more traditional processes, but in networks their imprecision creates opportunities for network capture to occur.

Here, we elaborate on the processes of network capture, and outline three different strategies that are used by special interests. We then discuss particular challenges, including the “blurring” of stakeholder boundaries and positions, the ease of information sharing, and contested claims to technical expertise. We argue that these dynamics of network capture influence the processes and outcomes of governance, and should be balanced with the benefits of networks that are discussed elsewhere in this Special Issue.

### ■ Forms of capture

The idea of “capture” is not unique to network governance; it has a long history in public land management policy and politics, with much of the literature focusing on the phenomenon of “agency capture” (Culhane 1981;

Davidson and Frickel 2004). More recently, scholars have identified new forms of capture associated with neoliberal environmental politics (that is, governing nature through forms of commodification [Igoe and Brockington 2007]), as discussed below, which we describe as “corporate” and “philanthropic” capture.

In the tradition of interest group theory, Culhane (1981) argued that mining, grazing, and timber groups control the flow of public goods, thereby transferring the power of agencies to narrow special interests. Capture, therefore, came to describe situations where organized interest groups successfully act to vindicate their goals through government policy at the expense of the public interest. The term “agency capture” has been used to describe the ways in which industry constrains and dictates regulatory outcomes (Shepard 1975). Agency capture also occurs when natural resource agencies are incapable of moving beyond traditional “command and control” forms of governance (Holling and Meffe 1996), given that agency partners, sometimes based on past experience, are often skeptical about the ability of community partners to manage natural resources. Despite agency efforts to shift toward more participatory approaches, many current US policies continue to promote the idea of the manager as being the primary trustee and owner of a defined set of wildlife, land, and/or resources (Smith 2011). Agency culture tends to be conservative and hierarchical (Briggs 2003).

Agency norms, perceptions, and policies often promote a single jurisdictional authority, a stance that leads to the delayed adoption of network initiatives and the exclusion of new and/or diverse network collaborators. This results in management strategies based on policies and norms that prevent operational shifts toward more collaborative approaches to governance (Leong *et al.* 2011), which is fundamental to network governance. Moreover, there are considerable benefits to retaining jurisdictional authority. The literature on US natural resource agencies suggests that, as with many bureaucracies, the most successful agencies (defined in terms of budgets, staffing, and public support) are those that stake out specific areas of expertise and defend them (Clarke and McCool 1996; Ogden 2008). Defending boundaries of expertise leads to situations where agencies can capture, control, and guide the objectives of networks.

Scholars interested in hybrid forms of environmental governance (eg Lemos and Agrawal 2006), such as network governance, are particularly concerned by the potential of *corporate capture* in the context of neoliberal governance (Fletcher 2010). Neoliberal governance arrangements have increasingly transformed the landscape of environmental management around the world, through “private–public partnerships”, private protected areas, and other market-based resource management strategies and incentive programs (Heynen *et al.* 2007; Igoe and Brockington 2007). Market-based approaches, or what political scientists have called the “privatization

### Panel 1. Blurring stakeholder boundaries in the Baltimore Urban Stewardship Network

As network governance becomes more common, scientists, practitioners, and policy makers can benefit from understanding the different roles that stakeholders play in the network, but accurate social network analysis requires that researchers explicitly define “stakeholder”. Although it is possible to analyze relationships between, for example, individuals and organizations, it becomes much more challenging when an identified group of individuals is embedded within an organization or an identified organization is embedded within another network. It is often left to the researcher to determine how to place stakeholders into discrete categories, even though the distinction is not always clear.

Such was the case in a study of environmental stewardship organizations in Baltimore, Maryland (Figure 1), conducted by MR (one of the authors of this paper). The intent was to inventory and survey Baltimore’s stewardship organizations, and then analyze the resulting data to better understand network roles and relationships. Stewardship organizations could be any combination of non-profit, state, and private-sector stakeholders working to conduct a wide variety of stewardship activities in their local neighborhoods and surrounding areas. Both in the inventory and survey analysis stages, we were faced with the question: what defines an organization? For instance, the City of Baltimore’s Office of Sustainability, Recreation and Parks Department, and Department of Public Works all conduct stewardship activities and have independent relationships with other stewardship organizations, yet they are also key agencies of the city, which many survey respondents identified as a partner. Another stakeholder identified by survey respondents was the Community Greening Resource Network (CGRN), a member-based net-

work led by the Parks & People Foundation ([www.parksandpeople.org](http://www.parksandpeople.org)). The CGRN is not a stand-alone organization but rather a network facilitated by staff and members to provide information and tools for stewardship organizations. Including CGRN as a stakeholder in the network more accurately depicted how stewardship organizations view their relationships within the network but at the same time blurred the lines of defining an organization because CGRN is part of the Parks & People Foundation, and many of the stewardship organizations are members of CGRN.



Figure 1. Duncan Street Miracle Garden in Baltimore, Maryland.

of governance”, include the corporate sponsorship of conservation initiatives, and a singular reliance upon ecotourism as a strategy for economic and ecological sustainability (see Igoe and Brockington 2007; Castree 2010). For example, in the mid-1990s, a network of grassroots ecotourism businesses, manatee-monitoring organizations, and conservation organizations developed in Gales Point Manatee, Belize, with the goal of spurring an ecotourism industry that supported local livelihoods. However, as the network evolved and reconfigured over the course of 6 years, local and non-local “elites” (individuals of superior status) inequitably accumulated tourism income and misappropriated international grant monies, which unintentionally instigated a privatized approach to tourism development (Belsky 1999).

By dismantling state-based regulations, neoliberal forms of governance set the stage for the growing popularity of network governance efforts. Both trends are reliant upon market-based incentives and the decentralization of state authority over the governance of nature (McCarthy 2006). Cashore (2003) provided an analytic framework for understanding the ways that governing authority is captured by an array of non-governmental entities, such as global forest certification programs, which utilize market incentives to remake social–ecological relations at a

global scale (see also Cashore *et al.* 2004). Examples of market-based social change initiatives, such as Fair Trade coffee and Forest Stewardship Council certifications, offer strategies that harness market forces to pursue social and environmental objectives. However, a serious challenge for both certification schemes is to operate in the conventional market without undermining their original objectives. Case studies and research have illustrated that – despite its good intentions – the market’s conventional logic, practices, and dominant actors capture certification networks (Taylor 2005).

Corporate capture also occurs when the costs of environmental standards or environmental management are high as compared with the benefits of compliance or collaboration (Lemos and Agrawal 2006). Given a lack of resources and the high costs of management, some networks are vulnerable to capture by interests that can provide resources and, in so doing, the influence of network members becomes diminished or is discarded completely. Some scholars see these trends as leading to “increasing democratic deficit and higher levels of inequality in the allocation of environmental resources” (Lemos and Agrawal 2006); in one case, California’s agricultural interests circumvented international efforts to ban the use of methyl bromide, an ozone-depleting substance (Gareau 2008).

### Panel 2. Competing claims to aquifer knowledge in Texas

Working across boundaries is both a benefit and challenge in network governance. In the central Texas Hill Country, as it is locally known, a considerable degree of climate variability is driving patterns of extended drought that, along with rapid population growth and land fragmentation, are imperiling freshwater resources (Banner *et al.* 2010). In the region, governance is further complicated by access and allocation issues associated with how best to meet the water demands of urban populations, new residential developments, agriculture, and minimum environmental flows. Competing networks of organizations, agencies, land developers, and rural water users have emerged to govern water resources, although this conflict is affiliated with competing knowledge claims. At stake is the future of water allocation and distribution from overlapping aquifer and surface water systems. Although private-sector hydrological modeling studies indicate negligible drawdown of aquifer levels with increased pumping (in many cases to move water from rural to metropolitan areas), other investigations not only contradict these findings but also report negative impacts on surface-water flows (Figure 2). These competing technical claims, in combination with a fragmented policy and governance framework (Wagner and Kreuter 2004), have resulted in a network of governance that is vulnerable to capture by corporate interests promoting “water sustainability”,

given the underlying scientific uncertainty as to what constitutes sustainable water use.



**Figure 2.** Medina River in the Texas Hill Country. Drought conditions and reduced groundwater levels decrease river flows.

Many network governance initiatives are driven by investments from charitable organizations. Numerous philanthropic efforts have undergone a shift in their own underlying logic to “link up to scale up” the impact of their investments (Kania and Kramer 2011). This has led many philanthropic foundations to fund the efforts of networks, even with the challenges present in measuring the impacts and outcomes of those efforts (see Bixler *et al.* 2016). However, this also creates situations where networks are vulnerable to *philanthropic capture*. Philanthropic capture explains the ways that the funders of networks and network governance initiatives can shape the agendas and set the objectives of the networks (Himmelstein 1997), often overriding the goals of the network members.

#### ■ Blurred boundaries

Boundaries appear prominently in discussions of network governance. As a management strategy, network governance is valued for its ability to operate across ecological, jurisdictional, and political boundaries (Scarlett and McKinney 2016). Although social and political boundaries in environmental governance have been addressed to some degree (Sternlieb *et al.* 2013), the *blurring of stakeholder boundaries* in network governance is a major challenge that remains largely underexplored. Stakeholders – who were once distinguished between those who affect and those who are affected by a decision or action (Freeman 1984), or more simply between “polluter” and “victim” (Coase 1960) – now represent

broad and various positions on an issue. The blurring of boundaries is illustrated by the debate over renewable energy development; as low-carbon wind energy production is balanced against other environmental values (eg aesthetics, noise pollution, avian and bat conservation), novel network configurations have emerged. In some places, networks of carbon energy industrialists, environmentalists, and grassroots activists have joined forces (Pasqualetti 2011); elsewhere, however, such networks have produced pro-wind and anti-environmental emergent stakeholders (Jepson *et al.* 2012).

The shifting and often ambiguous boundaries of stakeholders pose a challenge to network governance initiatives (for an example of this challenge in an urban environmental stewardship network, see Panel 1). Positions, both within the actual structure of the network as well as value positions on an issue, are often hard to identify, and individual members are part of overlapping and sometimes conflicting networks.

In part, this blurring of boundaries is driven by *ease of information sharing* supported by internet technologies and social media, which enable multiple and diverse communities of interest to become networked, and to readily acquire and exchange knowledge relevant to their concerns. This ease of information sharing has also increased engagement in environmental decision making and politics. For example, the effect of being connected through social media has recently been documented as a conservation stakeholder-building strategy (Kreakie *et al.* 2015) and – for example through the use of Twitter – as a science communication tool (Bombaci *et al.* 2015). Some have even asserted that

### Panel 3. Gladesmen: new environmental subjects

Over a decade ago, LAO (one of the authors of this paper) used the term “gladesmen” to describe the white rural hunting culture prevalent in Florida’s Everglades (Figure 3; Simmons and Ogden 1998). At the time, the term was not commonly used by scholars or by local communities, although LAO felt the term evoked the centrality of the Everglades to local livelihood strategies and cultural identity (Ogden 2011). Since then, the term has become ubiquitous, and today there are scores of “gladesmen” webpages, Facebook pages, blogs, and recreational events.

Notably, the term has also become “politically charged”, as local hunting and recreational groups now use it to assert their rights not only to the landscape and but also to inclusion within the decision-making process. This transformation from a cultural to a political identity reflects the ways that network activism can shape network governance initiatives. Restoration initiatives in the Everglades include many features common to network governance approaches, including the spanning of multiple political and legal jurisdictional boundaries. Since the early years of restoration planning, several collaborative decision-making organizations have helped shape Everglades restoration planning and programs (Ogden 2008). These organizations have primarily included groups considered to have a “stake” in restoration outcomes, such as government agencies, farming and real estate interests, and environmental non-governmental organizations, but gladesmen and their affiliated organizations were typically excluded

from these early restoration-planning efforts. More recently, gladesmen have adopted and used network-activism strategies to compel lead agencies, such as the US Army Corps of Engineers, to consider their heritage and rights when evaluating the impacts of restoration projects.



**Figure 3.** Glen Simmons, foreground, pushing a traditional Everglades skiff.

interactions between distant places and people are rapidly becoming so pervasive and influential that a new social-ecological sustainability paradigm based on telecoupling (referring to socioeconomic and environmental interactions over long distances) is needed (Liu *et al.* 2013).

Although facilitating network governance, internet technologies and social media that build and maintain connections also blur stakeholder boundaries through *competing claims to technical expertise*. Contemporary environmental politics are driven by the inherent tensions over the benefits of democratic knowledge on the one hand and the ongoing disputes concerning scientific expertise on the other (Fischer 2000). Networks of competing interests consistently counter and challenge the legitimacy of science-based information concerning, for instance, air and water quality, water availability, the evidence for climate change, and the impacts of extractive industries on ecosystem health. This is particularly acute in contexts of scientific uncertainties (Sarewitz 2004). Panel 2 shows how competing claims to technical expertise with regard to aquifer levels and recharge rates in central Texas affect governance.

In southern Florida, decreasing phosphorus levels to 10 parts per billion (ppb) in waters flowing from agricultural areas into the Everglades remains one of the central and most-litigated targets for achieving Everglades restoration. Yet many farmers throughout the agricultural areas affecting the Everglades found these water-quality standards to be “unreasonable”, asserting that 10 ppb is “lower than the levels in rainfall or in bottled drinking water”

(Cattellino in press). Academic and agency scientists have consistently argued against this claim, but scientific authority has become delegitimized in the highly contentious anti-agricultural politics of Everglades restoration. Conflicts such as these can be particularly difficult for agency partners, who are often responsible for providing environmental expertise, to respond effectively.

Today, new information technologies and practices enable different forms of political engagement. As environmental concerns become increasingly politicized, new “environmental subjects” emerge. These new environmental subjects are individuals and groups that believe they too have a stake in environmental decision making. In some cases, new environmental subjects (also termed “emergent stakeholders”) emerge directly from the governance process and may ultimately transform environmental stewardship efforts. Research in the Everglades demonstrates that transformation from a cultural to political identity reflects the ways in which network activism can shape network governance initiatives (Panel 3).

Network governance initiatives in fisheries management illustrate the rise of emergent stakeholders and the consequent challenge of capture. For example, at present, many people believe that they have a stake in fisheries management, thanks to increased media reach and advocacy group attention to declining fish populations worldwide (Gibbs 2007). The exponential rise in the number of stakeholders currently involved in fisheries management efforts has almost displaced centralized management regimes. Gibbs (2007) highlighted the

importance of “virtual institutions” in both the production of new environmental subjects and their influence on fisheries management, a trend exemplified by the pivotal role and global reach of the Marine Stewardship Council, a fisheries certification organization, on fisheries practices, communities, and management. Occasionally network governance initiatives enable new environmental subjects to undermine the interests of groups with long-term cultural and economic ties to a landscape – in the case of fisheries, recreational anglers have become powerful participants in network governance efforts and often displace the rights of traditional and commercial fishers (Gibbs 2007). Emergent stakeholders are a part of network governance, as well as contemporary politics, but at the same time their participation may complicate stewardship initiatives.

### ■ Conclusion

The benefits of network governance over traditional models of environmental decision making outweigh the challenges we describe here. As other contributors to this Special Issue argue, network governance enables multiple forms of environmental and organizational leadership (Imperial *et al.* 2016); provides a framework for considering relationships between multiple levels of governance, cross-scale linkages, and collaboration across multiple and overlapping but separate issues (Bixler *et al.* 2016); and generally offers a workable environmental management alternative to challenges of contemporary environmental governance (Scarlett and McKinney 2016). A focus on network governance implies that the managing process is less formalized and focused on adaptability, with implications on how environmental management institutions *should* be designed (Bodin *et al.* 2006). Through appropriate design of network governance initiatives, vulnerability to network capture can be acknowledged and addressed by matching the process of governance to the particular issue or opportunity. Risk of capture can be mitigated if a one-size-fits-all approach is avoided and stakeholders engage in the process of developing the governance system.

Despite its tendency to lead to network capture, network fluidity remains one of the strengths of network governance. Mirroring transformations within political and social movement approaches over the past several decades, network governance is characterized by decentralized decision making and the rapid sharing of information. As environmental justice advocates have noted, traditional planning approaches tend to exclude entire segments of the general public, particularly minority and/or economically disadvantaged groups, from the decision-making process (Forester 1989). These excluded groups typically endure a disproportionately large share of the negative consequences associated with the implementation of environmental planning and policy decisions

(Cole and Foster 2001). The flexible nature of network governance is appealing for many grassroots environmental activists who have felt excluded from mainstream environmental organizations and traditional governmental processes of decision making, because it offers them “a voice at the table” and thus a means of providing input (Schlosberg 1999).

As network governance initiatives continue to expand and receive greater attention, the challenges of capture in the ways we outline in this paper need to be carefully considered. As Davies (2012) warned, we must carefully consider “the nature of efficacy of networking in contemporary political economy”. The challenges of capture serve to underscore the limitations in both theory and practice of network governance, and we should continue to ameliorate these challenges to enhance governance outcomes.

### ■ References

- Aycrigg JL, Davidson A, Svancara LK, *et al.* 2013. Representation of ecological systems within the protected areas network of the continental United States. *PLoS ONE* 8: e54689.
- Banner JL, Jackson CS, Yang Z-L, *et al.* 2010. Climate change impacts on Texas water: a white paper assessment of the past, present, and future recommendations for action. *Texas Water J* 1: 1–19.
- Belsky JM. 1999. Misrepresenting communities: the politics of community-based rural ecotourism in Gales Point Manatee, Belize. *Rural Sociol* 64: 641–66.
- Bixler RP, Johnson S, Emerson K, *et al.* 2016. Networks and landscapes: a framework for setting goals and evaluating performance at the large landscape scale. *Front Ecol Environ* 14: 145–53.
- Bodin Ö, Crona B, and Ernstson H. 2006. Social networks in natural resource management: what is there to learn from a structural perspective? *Ecol Soc* 11: r2.
- Bombaci SP, Farr CM, Gallo T, *et al.* 2015. Using Twitter to communicate conservation science from a professional conference. *Conserv Biol* 30: 216–25.
- Briggs S. 2003. Command and control in natural resource management: revisiting Holling and Meffe. *Ecol Manage Restor* 4: 161–62.
- Cashore B. 2003. Legitimacy and the privatization of environmental governance: how non-state market-driven (NSMD) governance systems gain rule-making authority. *Governance* 15: 503–29.
- Cashore B, Auld G, and Nesom D. 2004. Governing through markets: forest certification and the emergence of non-state authority. New Haven, CT: Yale University Press.
- Castree N. 2010. Neoliberalism and the biophysical environment: a synthesis and evaluation of the research. *Environ Soc Adv Res* 1: 5–45.
- Cattellino J. Unsettling nature: an Everglades ethnography. Durham, NC: Duke University Press. In press.
- Clarke JN and McCool D. 1996. Staking out the terrain: power and performance among natural resource agencies. Albany, NY: State University of New York Press.
- Coase RH. 1960. The problem of social cost. *J Law Econ* 3: 1–44.
- Cole LW and Foster S. 2001. From the ground up: environmental racism and the rise of the environmental justice movement. New York, NY: New York University Press.
- Culhane J. 1981. Public lands politics: interest group influence on the Forest Service and the Bureau of Land Management. Baltimore, MD: The Johns Hopkins University Press.
- Davidson DJ and Frickel S. 2004. Understanding environmental governance: a critical review. *Organ Environ* 17: 471–92.

- Davies JS. 2012. Network governance theory: a Gramscian critique. *Environ Plann A* 44: 2687–704.
- Decker DJ, Krueger CC, Baer JRA, *et al.* 1996. From clients to stakeholders: a philosophical shift for fish and wildlife management. *Hum Dimens Wildl* 1: 70–82.
- Deleuze G and Guattari F. 1987. *A thousand plateaus: capitalism and schizophrenia*. Massumi B (Translator). Minneapolis, MN: University of Minnesota Press.
- Fischer F. 2000. *Citizens, experts, and the environment: the politics of local knowledge*. Durham, NC: Duke University Press.
- Fletcher R. 2010. Neoliberal environmentalism: towards a post-structuralist political ecology of the conservation debate. *Conserv Soc* 8: 171–81.
- Forester J. 1989. *Planning in the face of power*. Berkeley, CA: University of California Press.
- Freeman RE. 1984. *Strategic management: a stakeholder approach*. New York, NY: Basic Books.
- Gareau BJ. 2008. Dangerous holes in global environmental governance: the roles of neoliberal discourse, science, and California agriculture in the Montreal Protocol. *Antipode* 40: 102–30.
- Gibbs MT. 2007. Network governance in fisheries. *Mar. Policy* 32: 113–19.
- Heynen N, McCarthy J, Prudham S, and Robbins P. 2007. *Neoliberal environments: false promises and unnatural consequences*. New York, NY: Routledge.
- Himmelstein J. 1997. *Looking good and doing good: corporate philanthropy and corporate power*. Bloomington, IN: Indiana University Press.
- Holling CS and Meffe GK. 1996. Command and control and the pathology of natural resource management. *Conserv Biol* 10: 328–37.
- Igoe J and Brockington D. 2007. Neoliberal conservation: a brief introduction. *Conserv Soc* 5: 423–49.
- Imperial MT, Ospina S, Johnston E, *et al.* 2016. Understanding leadership in a world of shared problems: advancing network governance in large landscape conservation. *Front Ecol Environ* 14: 126–34.
- Jedd T and Bixler RP. 2015. Accountability in networked governance: learning from a case of landscape-scale forest conservation. *Environ Policy Gov* 25: 172–87.
- Jepson W, Brannstrom C, and Persons N. 2012. “We don’t take the pledge”: environmentalism and environmental skepticism at the epicenter of US wind energy development. *Geoforum* 43: 851–63.
- Kania J and Kramer M. 2011. Collective impact. *Stanford Soc Innov Rev Winter*: 36–41.
- Kreakie BJ, Hychka KC, Belaire JA, *et al.* 2015. Internet-based approaches to building stakeholder networks for conservation and natural resource management. *Environ Manage*; doi:10.1007/s00267-015-0624-8.
- Lemos MC and Agrawal A. 2006. Environmental governance. *Annu Rev Env Resour* 31: 297–325.
- Leong KM, Emmerson DP, and Byron R. 2011. The new governance era: implications for collaborative conservation and adaptive management in Department of the Interior agencies. *Hum Dimens Wildl* 16: 236–43.
- Liu JV, Hull M, Batistella R, *et al.* 2013. Framing sustainability in a telecoupled world. *Ecol Soc* 18: 26.
- Locke H. 2011. Transboundary cooperation to achieve wilderness protection and large landscape conservation. *PARKScience* 28: 24–28.
- McCarthy J. 2006. Neoliberalism and the politics of alternatives: community forestry in British Columbia and the United States. *Ann Assoc Am Geogr* 96: 84–104.
- Ogden L. 2008. The Everglades ecosystem and the politics of nature. *Am Anthropol* 110: 21–32.
- Ogden L. 2011. *Swamplife: people, gators, and mangroves entangled in the Everglades*. Minneapolis, MN: University of Minnesota Press.
- Parrott L and Meyer WS. 2012. Future landscapes: managing within complexity. *Front Ecol Environ* 10: 382–89.
- Pasqualetti MJ. 2011. Opposing wind energy landscapes: a search for common cause. *Ann Assoc Am Geogr* 101: 907–17.
- Peters DP. 2008. Ecology in a connected world: a vision for a “network of networks”. *Front Ecol Environ* 6: 227.
- Romolini M. Adaptive governance for 21st century sustainable cities: comparing stewardship networks in Baltimore and Seattle (PhD dissertation). Burlington, VT: University of Vermont. Unpublished.
- Sarewitz D. 2004. How science makes environmental controversies worse. *Environ Sci Policy* 7: 385–403.
- Scarlett L and McKinney M. 2016. Connecting people and places: the emerging role of network governance in large landscape conservation. *Front Ecol Environ* 14: 116–25.
- Schlosberg D. 1999. Networks and mobile arrangements: organizational innovation in the US environmental justice movement. *Environ Polit* 8: 122–48.
- Shepard J. 1975. *The forest killers*. New York, NY: Weybright and Talley.
- Simmons G and Ogden L. 1998. *Gladesmen: gator hunters, moonshiners, and skiffers*. Gainesville, FL: University of Florida Press.
- Smith CA. 2011. The role of state wildlife professionals under the public trust doctrine. *J Wildlife Manage* 75: 1539–43.
- Sternlieb F, Bixler RP, Huber-Sterns H, and Huaska C. 2013. A question of fit: reflections on boundaries, organizations, and social–ecological systems. *J Environ Manage* 130: 117–25.
- Taylor P. 2005. In the market but not of it: Fair Trade coffee and Forest Stewardship Council certification as market-based social change. *World Dev* 33: 129–47.
- Wagner MW and Kreuter UP. 2004. Groundwater supply in Texas: private land considerations in a rule-of-capture state. *Soc Natur Resour* 17: 349–57.
- Wyborn C and Bixler RP. 2013. Collaboration and nested environmental governance: scale dependency, scale framing, and cross-scale interactions in collaborative conservation. *J Environ Manage* 123: 58–67.