

**Where and How Do Movements Matter? The United States Environmental Movement and
Congressional Hearings and Laws, 1961-1990**

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* This research was supported by the National Science Foundation (grant # SES-0201992), the Nonprofit Sector Research Fund of the Aspen Institute (grant # 2003-NSRF-07) and the Pennsylvania State University. Direct all correspondence to Erik Johnson. Department of Sociology, Washington State University, Pullman WA 99164. E-mail address:

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Abstract

Research examining the political outcomes of social movement activities has been characterized by a nearly exclusive focus on the final stage of the political process, the passage of laws, as well as an impoverished conceptualization of how movements affect that process. Here, we empirically assess, for one social movement, the importance of organizational capacity, protest and insider institutional influence activities, public opinion, and political opportunities in garnering policy-maker attention to movement-salient issues at two distinct stages in the U.S. national policy making process. Our findings strongly suggest that the environmental movement spurred Congressional agenda setting activities and that, as political mediation theory would suggest, the effects of movement organizational capacity and institutional activities are amplified during politically opportune periods. Though we find no evidence that environmental movement influence activities directly impacted the passage of federal environmental laws, even under favorable political conditions, successful agenda setting activities and high levels of *both* protest and institutional actions do facilitate this outcome.

Beginning in the late 1960s and continuing through the mid 1980s, the U.S. environmental movement experienced an upsurge in organization building and direct action protest activities. Environmental issues, meanwhile, became an increasingly institutionalized element of the federal policy making agenda during this period (Andrews 1999; Portnoy 1990). Although many observers have assumed a link between citizen mobilization around environmental issues and federal attention to those same issues, this link remains largely unexplored empirically. What role, if any, did the environmental movement play in affecting federal policy making during this period? Has the movement been more influential at certain stages of the legislative process than others? And, *how* has the movement exerted influence: does the use of disruptive tactics, participation in institutionalized politics, greater organizational capacity, or some combination of these factors best account for political success?

In addressing these questions this research contributes to our understanding of the United States environmental movement, one of the largest and most politically active social movements in the U.S. today. Beyond this substantive contribution, we advance the study of social movement outcomes generally by explicitly addressing two shortcomings in the existing literature. First, previous empirical analyses have tended to emphasize single causal factors of policy change, such as the role of social movement organizations (McVeigh, Welch and Bjarnason 2003), movement activities (Soule et al 1999), public opinion (Page and Shapiro 1983; Stimson, MacKuen and Erikson 1995), or political opportunities (Jenkins and Perrow 1977). Movement scholars have tended to view these factors in a linear and additive manner, with only very limited, and recent, exploration of the ways in which they interact to effect policy change (e.g. Amenta, Caren and Olasky 2005; Cress and Snow 2000; Soule and Olzak 2004; Olzak and King forthcoming). We simultaneously account for each of the major causal factors

hypothesized to influence policy change and test theoretically driven hypotheses about conditions under which movement activities are more or less effectual in prompting a policy response. Specifically, we test political mediation claims (Amenta, Caren and Olasky 2005; Amenta Carruthers and Zylan 1992; Cress and Snow 2000) that movements are most successful when operating within a favorable political climate and movement infrastructure claims (Andrews 2001) of a synergistic effect where movements successfully employ both insider and outsider activities.

Second, reviews of the empirical literature on social movement outcomes in the political arena make clear that this work has had a nearly exclusive focus on the final, and most visible, outcome of political action: the passage of laws that align with the goals of a social movement (Andrews and Edwards 2004; Burstein 1998; Burstein and Linton 2002; Giugni 1998). Here, we conceive of federal policy making as a continuous process. Rather than examine only the end-point of that process, we also attend to earlier agenda setting activities in the United States Congress. While high agenda salience does not necessarily assure outcomes desired by “the movement,” it does represent an intermediary step that is expected to increase the likelihood of achieving desirable outcomes (Baumgartner and Jones 1993; Cobb and Elder 1975; Kingdon 1984). We suspect that social movement mobilization is more successful at garnering congressional attention to its key issues than it is at achieving desirable policy change outcomes.

In what follows we first review the relevant literature on the political outcomes of social movements in order to develop hypotheses about the ways in which social movements, political opportunities and public opinion effect policy change, both directly and in combination, across the policy process. We then test these hypotheses using poisson regression techniques to analyze the incidence of legislative agenda setting and law passage activities. Importantly, our

methodology relies on publicly available data, or data soon to be made publicly available, which will allow researchers to replicate our analyses for a variety of social movements beyond the environmental case. Our findings highlight the importance of studying various stages of the political process when assessing social movement outcomes, rather than focusing exclusively on the passage of laws, as both direct and interactive effects of relevant factors assessed here are expected to differ across this process (see also Soule and King, forthcoming). We find that the environmental movement exerts direct and independent effects on the incidence of legislative agenda setting activities, but not on law passage, and that the salience of environmental issues on Congressional agendas is itself positively related to the incidence of law passage. Further, the effectiveness of environmental movement insider institutional influence activities and organizational capacity are amplified within a favorable political opportunity structure at the agenda setting stage but not the law passage stage; while protest activities positively affect the incidence of law passage under a closed political opportunity structure. Finally, we find that protest and insider institutional influence activities combine in a synergistic manner to increase the likelihood of law passage, although we do not find evidence for a significant interactive effect on agenda setting. We conclude with a discussion of the implication of our findings for both current debates in social movement theory and future research directions.

THE MODERN ENVIRONMENTAL MOVEMENT

Though rooted in the late nineteenth and early twentieth century conservation movement, it is the extensive period of organization building beginning in the late 1960s, and continuing through the 1980s, which marks the beginning of the modern environmental movement in America (Brulle 2000; Gottlieb 1993). The rate of new environmental movement organization (EMO) foundings surged after 1965, peaked in 1970, and remained high throughout the 1980s as

the total number of active national EMOs, continually expanded (Johnson and McCarthy 2004). A great many of the EMOs founded during this period can be aptly characterized as proto-typical professional movement organizations (McCarthy and Zald 1977), with a heavy reliance on a paper membership along with full-time paid staff scientists, lawyers, and lobbyists rather than an active membership. The professional skills these organizations brought to environmental issues translated into the movement embracing a greater diversity of tactics than its conservationist predecessor. Over the period under observation, the environmental movement and its organizational representatives came to rely increasingly on lobbying, litigation, civil disobedience, and the mass media to make their voices heard rather than remain committed solely to the more conventional and elitist tactics typically employed by progressive conservationists (e.g., technical negotiations and corporate sponsors).

Public support for environmental issues, meanwhile, also rose rapidly in the late sixties, peaking around the first Earth Day in 1970 (Erskine 1972). Though experiencing modest declines during the 1970s, public support for environmental issues remained higher than in the mid-60s and further increased over the course of the 1980s (Dunlap and Scarce 1991). The rapid emergence and growth of a popularly supported national environmental movement with a large organizational infrastructure and increasingly diverse tactical repertoire is thought to have spurred the development of a federal environmental regulatory framework, institutionalizing environmental issues on the American political landscape.

Indeed, over the course of the 1970's "environmental era," in particular, there was unprecedented attention to, and bi-partisan support for, ecological issues in national policy. The national Environmental Protection Agency (EPA) began operations in 1970, centralizing in one agency federal responsibility for environmental protection and regulation, and more than thirty

major pieces of federal environmental legislation were passed during the 1970s (Miller 1991). While the inauguration of Ronald Reagan decidedly shifted the political climate in which the movement operated, environmental issues remained firmly institutionalized within the U.S. political system. Legislative attention to these issues remained fairly high during the 1980s, even as the federal regulatory machinery for enforcing environmental laws was systematically weakened through a policy of deregulation, defunding and devolution (Andrews 1999: 257).

While a link between the growth and diversification of the national environmental movement, public support for environmental issues, and federal attention to those issues has generally been assumed, empirical assessments of the process remain undeveloped. What has been the role of the U.S. environmental movement in garnering federal attention to, and affecting policy change on, environmental issues? How has the national environmental movement influenced the political process: has the use of disruptive tactics, participation in institutionalized politics, or greater organizational capacity been most effective? In what ways do these factors interact with each other and with the political opportunity structure to effect change? And, has the movement been more influential at certain stages of the legislative process than others?

EXPLAINING SOCIAL MOVEMENT OUTCOMES

In attempting to explain the political outcomes of social movements, analysts have typically focused on the role of, alternately, social movement organizations, movement activities, public opinion or the political opportunity structure. Where these factors have been combined in models of policy change it has primarily been accomplished within a linear empirical, and conceptual, framework. But, there are strong theoretical reasons to believe that these factors often operate in a synergistic manner. We briefly summarize the literature on each of these

factors, focusing on theoretical accounts for, and empirical assessments of, the ways in which these factors are hypothesized to interact.

TACTICS

Early work on the effect of a movement's tactical repertoire (Tarrow 1998) for achieving desired outcomes focused squarely on the dramatic and disruptive nature of social movement activities and how the resulting threat to elites prompts a response, be it concession or repression (Gamson 1975; Piven and Cloward 1979). More recent work on the political outcomes of social movements, while continuing to attend to protest and other "outsider" tactics (e.g. McAdam and Su 2000), has examined the full range of tactical repertoires invoked by movements and generally suggests that routine, or institutionalized, "insider" political activities can be a viable alternative to disruptive protest in influencing public policy (Agnone 2004; Andrews 2001; Banaszak 1996; Cress and Snow 2000).

Long standing observations of a radical flank effect within social movements (Jenkins and Ekert 1986; McAdam 1982), whereby the existence of a radical fringe element prompts elite concessions in an effort to co-opt more moderate elements of a social movement, suggest that the simultaneous adoption of both insider and outsider tactics can lead to synergistic effects. Building on this observation, Andrews' (2001), examining the Mississippi civil rights movement in the late 1960s, proposes a formal movement infrastructure model which posits that neither disruptive protest nor routine access alone is sufficient to garner favorable changes in public policy. In the model which he develops, Andrews points to the need for movements to employ both "outsider" and "insider" tactics in achieving policy gains, asserting that movements have the greatest policy impact "when they... create leverage through multiple mechanisms."

Despite its' theoretical appeal, support for the notion of a synergistic interaction between movement insider and outsider activities remains largely circumstantial, with no systematic empirical analyses of which we are aware testing the hypothesized relationship. Where Andrews' (2001) clearly indicates the necessity of movements employing both insider and outsider tactics, he does not directly test for the existence of an interaction or, indeed, observe actual movement activities in the empirical analysis. Instead, the analysis presumes that the existence of strong social movement organizations allows for the invocation of a wide range of strategic activities. While we think there is some merit to this approach, the assumption that movements with strong organizational infrastructures are necessarily more diverse in the strategies which they employ is somewhat dubious. Here, we develop direct measures of movement activities in order to test the hypothesized interaction between insider and outsider movement activities in effecting policy change.

H1: Both insider and outsider activities on the part of the environmental movement will be positively associated with the incidence of environmental agenda setting activities and law passage.

H2: The simultaneous invocation of *both* insider and outsider activities is positively associated with the incidence of agenda setting activities and law passage.

PUBLIC OPINION

Research on the impact of social movements has been strongly criticized for failing to account for public opinion in theories and models of political outcomes. Drawing on democratic theory (Dahl 1989; Page and Shapiro 1983), which asserts that elected representatives most often vote in a manner consistent with the majority of public opinion in order to facilitate re-election, Burstein (1998; Burstein and Linton 2002), in particular, has generally asserted the pre-eminence

of public opinion, over social movement organization, in accounting for political outcomes. In a meta-analysis of research on policy outcomes employing measures of both social movement organizations and public opinion Burstein and Linton (2002) conclude, however, that while public opinion is an important factor to be accounted for in explaining policy change, there is no evidence to suggest that the influence of movement organizations is reduced once public opinion is taken into account. Favorable public opinion as well as social movement organizational capacity are both found to contribute to the state level adoption of same-sex marriage bans (Soule 2004) and ratification of the Equal Rights Amendment (Soule and Olzak 2004), for example. Based on the balance of available evidence, we (cautiously) speculate that:

H3: Public opinion will be positively associated with Congressional attention to environmental issues as well as the passage of environmental laws.

STRUCTURE OF POLITICAL OPPORTUNITIES

Originally developed to explain the emergence and incidence of social movement activities (McAdam 1982; Tilly 1978), the concept of a political opportunity structure (POS) has also been invoked to account for the success (and/or failure) of movements (Almeida and Stearns 1998; Banaszak 1996; Meyer and Minkoff 2004). Though there is considerable variation among researchers in their conceptualization of what constitutes the relevant dimensions of POS, the same factors that facilitate mobilization (e.g. the presence of elite allies, degree of openness in the political system, the stability of political alignments) are thought to affect the attainment of SMO policy change goals. In addition to having direct effects on the likelihood of movements achieving outcomes of interest, political mediation models (Amenta, Caren and Olasky 2005; Amenta Carruthers and Zylan 1992; Cress and Snow 2000; Soule and Olzak 2004) suggest that dimensions of the POS mediate the effect of social movement activities. Advocates of this

approach argue that conventional insider tactics and organizational capacity are most likely to be successful in instances of favorable political opportunities, while a relatively closed political opportunity structure privileges the use of more aggressive outsider tactics.

H4: An open political opportunity structure will be positively related to environmental issue agenda setting and the passage of environmental laws.

H5: Across the political process, the effect of social movement institutional activities and organizational capacity will be amplified, and outsider tactics moderated, under favorable political conditions.

ORGANIZATIONAL INFRASTRUCTURE

A relatively dense organizational infrastructure facilitates influence on political agendas by allowing “a movement” to claim large numbers of adherents and bring greater amounts of resources to bear on the political process. As Andrews’ (2001) aforementioned movement infrastructure model suggests, existing stable and diverse organizational infrastructures also offer the possibility of subsequently more effectively exploiting routinized political channels through activities such as lobbying, testifying at Congressional hearings, presenting scientific research, and even drafting legislation and regulations. By employing professional staff scientists, lawyers and lobbyists (as well as organizers), SMOs can act as stable policy making “partners,” providing important information and assistance in framing issues to Congressional members and staff (Baur, Pool and Dexter 1963; Milbrath 1963). Though social movement scholars have tended to assume the efficacy of social movement organizations in the political arena, empirical analyses of the effect of social movement organizations on policy enactment have produced decidedly mixed results (Burstein and Linton 2002). Despite these mixed findings, we follow convention in social movement analyses by hypothesizing that:

H6: Environmental movement organizational capacity is positively related to both political attention to environmental issues and the passage of environmental laws.

Though there have been repeated calls to combine in empirical models indicators of all of the principle causal factors thought to shape policy change, even the best research generally fails to accomplish this. Recent cutting edge analyses (Soule and Olzak 2004; Soule and King forthcoming) exploring the “interactive and contingent effects of [social] movements, public opinion and political climate” (Soule and Olzak 2004: 473) on state-level suffrage legislation, for example, focuses on movement organizations to the neglect of movement activities. Here, we account for each of the major factors hypothesized to influence policy change and test for direct effects as well as the interactions suggested by political mediation and movement-infrastructure models. Importantly, we do so at two important stages in the policy making process by examining the convening of environmental hearings and the passage of environmental laws.

MEASURING MOVEMENT OUTCOMES

Rather than focus solely on the final legislative outcome of collective action (i.e. passage of laws), we conceive of policy making as a continuous process. Arguably the most important stage in that process, in the U.S. and elsewhere, is placing appropriate issues of importance to social movements on governmental agendas (Baumgartner and Jones 1993; Cobb and Elder 1975; Kingdon 1984).¹ Agenda setting is the process by which issues rise or fall on the public agenda, the set of problems and issues being seriously considered by policy makers. Placing an issue on the public agenda represents the initial phase of the legislative process. Before

¹ Though social movement outcomes research has traditionally emphasized political outcomes of interest, an emerging literature has increasingly focused attention on other non-governmental targets of social movements as well (see Van Dyke, Soule and Taylor 2004 for a summary).

decisions can be made and policies enacted on any given issue, the problem must first garner the attention of political decision makers via, for instance, the introduction of relevant bills or convening of Committee hearings. While increased agenda salience does not necessarily assure desired outcomes, it is an important and logically necessary precursor to the development of public policy.

Research on other forms of political pressure groups, such as PACs and lobbyists, suggests that they are much more able and likely to influence earlier stages in the political process than the passage of laws (for a review, see Baumgartner and Leech 1998: Ch. 7). Likewise, it is at the agenda setting stage that social movements are thought to have the greatest potential to influence the policy making process (Andrews and Edwards 2004: 492-3; King, Cornwall and Dahlin 2005). As an initial stage in the legislative process, agenda setting activities respond more easily to changing information flows and demands by special interests than do later stages (Jones and Baumgartner 2004). Unfortunately, even more so than the body of research examining movement outcomes generally, work on agenda setting has been marked by a paucity of empirical analyses, relying primarily on interviews with officials and case studies of policy initiation/non-initiation.

One exception to this is a pair of analyses (King et al 2005; Soule and King forthcoming) examining state level women's suffrage legislation where the authors outline how the influence of social movements at different stages in the legislative process is conditioned upon a "legislative logic" of increasingly stringent rules being applied at each step in the legislative process, as the results of action become increasingly consequential. Agenda setting is the least consequential stage of the process they examine (which also includes Congressional roll-call voting and the passage of suffrage legislation). Their results indicate that, at least at the state

level, the women's movement did significantly affect the setting of legislative agendas, but that there is only a minimal impact on the incidence of law passage. Following their lead, we hypothesize that:

H7: Both environmental movement organizational capacity and insider/outsider activities will be more likely to result in legislative attention to environmental issues than the passage of environmental laws.

Although we subscribe to a legislative logic in which earlier stages of the legislative process are seen as less consequential, and thus subject to less restrictive rules, than final policy adoption, we also suspect that earlier agenda setting activities themselves are consequential for final policy adoption. While agenda setting is less consequential for environmental policy than law passage, we believe that it represents an intermediary step that increases the likelihood of achieving legal policy adoption (Baumgartner and Jones 1993; Cobb and Elder 1975; Kingdon 1984). In other words, issues which achieve relatively higher agenda salience are more likely to result subsequently in the adoption of laws which address those issues. We build on the work of King et al (2005) and Soule and King (Forthcoming), who examine the legislative process as a series of discrete binary outcomes where policies are "funneled" through the system, by examining whether or not placing issues of importance to a social movement on the Congressional agenda itself increases rates of final policy adoption (rather than simply allowing for the possibility of policy adoption). Therefore, we hypothesize that:

H8: Environmental agenda setting activities in Congress will be positively associated with the incidence of environmental law passage.

DATA AND METHODS

POLITICAL OUTCOMES

As two of the pre-eminent contemporary researchers on public agenda setting note, the largest impediment to systematic empirical analysis of agenda setting has been the lack of readily available data (Baumgartner and Jones 1993). Following their lead (Jones and Baumgartner 2004) and employing data they have assembled, we use the annual number of Congressional hearings convened on environmental issues as an indication of Congressional attention and priority regarding this policy arena. The convening of Congressional hearings on an issue signals the importance of that issue to Congress writ large. Collectively, committee hearings provide an indication of an issue's relative ranking on the Congressional agenda. Importantly, committee hearings are consequential beyond the limited confines of the particular committee in which they are held. These hearings provide information to the *entire* Congress, both through the intrinsic generation of information and, importantly, from the very decision to hold a hearing on a particular topic (Diermeier and Feddersen 2000). Further, hearings provide outlets for interest groups to express policy preferences and allow members of Congress to develop policy proposals that are then available in the event that conditions conducive to major policy change occur.

Congressional agenda setting activities are measured by yearly counts of Congressional hearings convened on environmental issues. These data come from the Policy Agendas Project (PAP) Congressional Hearings Database, containing information on each U.S. Congressional hearing held between 1947 and 1998, coded from the Congressional Information Service Abstracts. Each hearing is coded according to 19 major topics, and 225 subtopics from which we select all hearings in the "environment" topic.

We also follow the majority of empirical research in analyzing the outcomes of social movement mobilization by employing a yearly measure of the incidence of laws passed. These

data come from the Policy Agendas Project (PAP) Public Laws Database, containing information on each public law passed in the United States between 1947 and 1998.² Each law is coded according to the same 19 major topics categorizing laws and, again, we select all hearings in the “environment” topic.

THE ENVIRONMENTAL MOVEMENT

Movement Activities

Data on the incidence of environmental movement collective action events were drawn from a massive dataset assembled by a consortium of social-movement researchers (principal investigators: McAdam, McCarthy, Olzak and Soule call it “The Dynamics of Social Protest Project.”) containing 19,143 discrete social movement events, collected from daily editions of *The New York Times* between 1961 and 1990 (see Earl et al. 2003; McAdam and Su 2002; Soule and Earl 2005 for discussion of these data). To be included in this dataset an event had to be collective in nature, have articulated some claim (either a grievance against, or expression of support for, some target) and must have occurred in the public sphere or have been open to the public. We extracted all events (n=482) for which the organizing claim was coded as environmental. This final dataset includes both events that can be characterized as employing primarily “insider” institutional influence tactics (e.g. information distribution, press conference/statement, lawsuit/legal maneuver) as well as those primarily utilizing “outsider” protest influence tactics (e.g. demonstration, march, civil disobedience).

² The data used here were originally collected by Frank R. Baumgartner and Bryan D. Jones, with the support of National Science Foundation grant number SBR 9320922, and were distributed through the Center for American Politics and Public Policy at the University of Washington and/or the Department of Political Science at Penn State University. Neither NSF nor the original collectors of the data bear any responsibility for the analysis reported here.

While there is a venerable tradition in social movement research of relying on newspaper reports of protest events (see Olzak 1989 and Earl et al 2004 for reviews), this method has not been above reproach. Critics (e.g. Ortiz et al. 2005; Myers and Caniglia 2004) have focused on the existence of description and, especially, selection biases in newspaper coverage.

Assessments of newspaper description bias, or the accuracy of newspaper reports, have generally found a high degree of correspondence between news reports and reports by independent sources for “hard” news items (e.g. the form and goal of the event) when they are reported (Earl et al. 2004; McCarthy et al. 1999). Instead, description bias appears to be more problematic for “soft” news items (impressions and interpretation of events by reporters). Because we collect data only on “hard” news items, the form and goals (i.e. claim) of an event, we suspect description bias to be relatively unproblematic for the analyses presented here.

Selection bias refers to potential bias in the subset of events which are reported in newspapers, and is potentially more problematic for this analysis. Numerous researchers have pointed out that the more “newsworthy” an event is, the more likely it is to be reported. Factors that influence the perceived newsworthiness of an event include size (Hug and Wisler 1998; McCarthy, McPhail and Smith 1996; Oliver and Maney 2000; Oliver and Myers 1999), intensity (Mueller 1997; Oliver and Maney 2000), location (McCarthy, McPhail and Smith 1996; Oliver and Myers 1999), and the presence of counterdemonstrators or police (Oliver and Maney 2000). Clearly, not all social movement activities are created equal in terms of the likelihood that they will be covered by a newspaper, some types of events (especially large, intense and/or conflictual, and spatially proximate ones) are more likely to be included. While selection bias poses a potentially large problem for analyses that employ newspaper generated events as the dependent variable, in our review of the literature we come to the same conclusion as others

(Earl et al. 2004; McAdam and Su 2002; Ortiz et al. 2005) that, when employed as an independent variable newspaper event data is somewhat less problematic. In part, this is because newspapers may be construed as capturing the relevant events; like the proverbial tree falling in the forest “there is no protest unless protest is perceived and projected” (Lipsky 1968, 1151 as cited in Earl et al. 2004, 76). Though data on movement activities generated from newspapers may be less problematic when employed as an independent, rather than a dependent, variable, as is done here, the limitations of newspaper generated event data, and warnings considering its useage (e.g. Ortiz et al., 2005), must be taken seriously. Interpretations of our results should be made carefully in light of the potential selection bias issues, a subject to which we return in the discussion section of this paper.

Organizational Capacity

Data on environmental movement organizational capacity come from the *Encyclopedia of Associations, National Organizations of the U.S.* (Gale Research Inc. 1956-2003), a yearly survey of national non-profit associations active in the United States published annually since 1974 and intermittently back to 1956. The *Encyclopedia* has been employed in a broad array of analyses as a census for bounding populations of SMOs (Baumgartner and Jones 1993; Nownes 2004; Minkoff 1997). Recent work (Martin, McCarthy and Baumgartner 2005) evaluating the representativeness of this data source concludes that, although the *Encyclopedia* is somewhat more likely to include the largest and most well-known groups in any category, it provides an adequate sampling frame for populations of national SMOs. Comparison with the *Conservation Directory*, the primary source of data in many analyses of national EMOs (e.g. McLaughlin and Khawaja 2000), confirms the adequacy of coverage presented in the *Encyclopedia* for

environmental organizations (for a detailed comparison of these two sources see Johnson 2005, appendix A).

National EMOs were identified using headings that indicate environmental concern (see Johnson and McCarthy 2004 for detailed discussion of methods used to identify national EMOs). Both highly institutionalized issue advocacy organizations (e.g., Sierra Club or National Wildlife Federation) and more confrontational, loosely structured direct action groups (e.g., Earth First! or The Clamshell Alliance) are included in the sample (n=608). Collectively, these organizations exhibit a wide range of tactics, discourse frames, structures, and constituencies. As a measure of movement organizational capacity the total number of U.S. national EMOs active in each year, or population density, was computed from organizational birth and death information contained in the *Encyclopedia*.

PUBLIC OPINION

As noted by several scholars, environmental public opinion data is infrequent prior to 1970, with trend data nonexistent (Dunlap and Scarce 1991; Gilroy and Shapiro 1986; Guber 2003). Environmental issues are not alone in this regard, as Burstein (1985) and Santoro (2002) combined multiple survey instruments to construct annual readings of support for Equal Employment Opportunity. Given this constraint, we employ an environmental attitudes index previously created to analyze the joint impact of protest and public opinion on the passage of environmental laws (see Agnone 2004 for details). Our measure of environmental public opinion is constructed by entering the responses calling for more action on the part of the government from 64 readings of public opinion on the environment from 1954 through 2000 into Stimson's (1999) WCALC program. Several scholars have employed this technique to compile time series public opinion data on an assortment of topics, such as attitudes towards race, foreign

affairs, and various issues as they relate the intervention of business in the debate over public policy (e.g., Chanley 1999; Cohen 2000; Smith 2000; Kellstedt 2003).

POLITICAL OPPORTUNITIES

Democrats have long been identified as allies of the environmental movement in the United States (Guber 2001). As one measure of political opportunity we compute Democratic party advantage in Congress. This variable is computed as the number of Democrats, minus the number of Republicans, in the House of Representatives and Senate.³ We also control for the presence of a Democratic president (Meyer and Minkoff 2004), using a dummy variable coded 1 during years of a Democratic presidential administration. Democratic party advantage in Congress and the presence of a Democratic president are both expected to facilitate environmental issue agenda setting as well as actual political outcomes.

As a third measure of political opportunities we employ a dichotomous variable coded as 1 during Congressional election years. National elections represent periods of instability in political alignments (Meyer and Minkoff 2004; Snyder and Tilly 1972) that are expected to have disparate effects on the dependent variables examined here. Electoral campaigning requires large investments of time on the part of individual legislators running for office, thus during election years it is expected that the incidence of environmental hearings convened will decrease. Conversely, during election years, political parties and individual legislators are subject to heightened scrutiny by the electorate and can be expected to push through important legislation in an attempt to present themselves in the best light possible. At the same time, this variable

³ Information on the number of Democrats and Republicans in the House of Representatives comes from the Clerk of the House at http://clerk.house.gov/histHigh/Congressional_History/partyDiv.html. Information on the number of Democrats and Republicans in the Senate comes from the Secretary of the Senate at http://www.senate.gov/pagelayout/history/one_item_and_teasers/partydiv.htm.

accounts for regular fluctuations in the openness of the political system to each of the outcomes assessed here that result from the structure of the Congressional workload. That is, Congress's internal workload is structured with more hearings activity in the first year of a Congress and more bill passage in the second year. It is expected that the incidence of environmental hearings will decrease, and the passage of environmental laws increase, during election years.

OTHER COVARIATES

Because the media presumably plays an important role in agenda setting processes, we control for media attention to environmental issues. Specifically, we use yearly counts of the number of articles per page listed under environmental keywords within the *Readers' Guide to Periodical Literature* and the number of environmental articles from the *NY Times Abstract* as a percentage of the total articles summarized in the *Abstract*.⁴ These measures (correlated at .87) were combined by adding Z-scores to construct a yearly media attention index.

Environmental degradation is measured according to yearly U.S. emissions of five air pollutants: particulate matter less than 10 microns, carbon monoxide, sulfur dioxide, nitrogen dioxide and volatile organic compounds (U.S. Census Bureau 2003). Yearly emissions for each of these pollutants were standardized and combined to create an air pollution index, with each pollutant weighted equally. The resulting index is a direct measure of environmental degradation that represents four of the six criteria air pollutants, integrating data on a diversity of types and sources of emissions (Environmental Protection Agency 2000).⁵

⁴ Prior to 1965 the *Readers Guide* was published only bi-annually. For these early years, coding was standardized by dividing the number of articles for each volume by two. NYTimes data was made available as part of the Policy Agendas Project (PAP).

⁵ Criteria air pollutants are those for which the EPA has set health based standards and include carbon monoxide, nitrogen oxides, sulfur dioxide, particulate matter, ozone and lead. No measure for ozone emissions is available as

Finally, we control for the number of environmental hearings held in the previous year for two reasons. First, legislative inertia may be at work, as hearings on one topic may spur the need to hold hearings on related topics of interest. Second, controlling for hearings held the previous year is necessary in order to investigate the impact of agenda setting on the passage of future legislation, as most bills begin as topics explored in specialized hearings. This variable is identical to the hearings variable described above, except that it is lagged one year. Descriptive statistics for the dependent and independent variables, as well as interactions described later, are shown in Table 1. Bivariate Pearson correlations are shown in the appendix in Table A1.

[Table 1 about here]

METHODS OF ANALYSIS

Assembled data were analyzed using techniques appropriate for count data. Poisson regression, rather than ordinary least squares regression, is the preferred statistical inference technique when fitting models with count data as the dependent variable (Long 1997: Ch. 8). In poisson regression, a log transformation prevents the model from producing negative predicted values, adjusts for a skewed distribution, and models the variance in event counts as a function of the mean (Liao 1994; Long 1997). The Poisson distribution does, however, have a rather restrictive assumption that the mean equal the variance, known as *equidispersion*. If this assumption is violated, extradispersion is present in the dependent variable, which downwardly biases the standard errors while leaving the regression coefficients unaffected (Hoffmann 2003).

this pollutant is produced by photochemical reactions in the atmosphere rather than direct emissions. Data on air-borne lead emissions are available beginning only in 1970 and thus were excluded from analysis. Volatile organic compounds are included in analyses as they enable and facilitate the formation of other criteria air pollutants.

When the assumptions of the Poisson distribution are violated, such as when extradisersion is present, negative binomial regression is more appropriate. Both dependent variables in the analysis, laws and hearings, are indeed overdispersed, with variances greater than the means. In taking this into consideration, we began by fitting negative binomial models which provide a formal statistical test for the presence of overdispersion in the data. The likelihood ratio test of the dispersion parameter α was significantly different from zero for hearings but not for laws, suggesting that Poisson regression is more appropriate when modeling laws and negative binomial regression more appropriate for hearings. Plotting the observed proportion of both hearings and laws against the expected proportions for the negative binomial and Poisson distributions further confirms the results of the α test in each case (α test results available from authors upon request).

RESULTS

The results from multivariate negative binomial regression models examining the determinants of federal environmental hearings from 1961-1990 are shown in Table 2. We began by fitting a baseline model controlling for key elements of the Political Opportunity Structure, including partisan control of the Congress and Presidency and Congressional election cycles, as well as exogenous factors that may be expected to impact policy decisions on environmental issues such as public opinion, media attention to environmental issues and pollution. After establishing the legislative impact of our baseline model, we proceed in a stepwise manner to include indicators of environmental movement activity, as well as a lagged measure of environmental hearings. This modeling procedure allows us to gauge the relative impact of the environmental movement vis-à-vis the non-social movement correlates of legislative activity in

the environmental policy arena.⁶ Finally, rather than address each regression model individually, results for each legislative setting will be interpreted across models as they relate to the expected hypotheses.

[Table 2 about here]

All told, the U.S. environmental movement is extremely efficacious in directing the attention of legislators to environmental issues. Hypothesis 1, that both insider and outsider activities on the part of the environmental movement will be positively associated with agenda setting activities, is largely supported by the data. The coefficients for environmental movement institutional activity and protest activity are positive and statistically significant in Model 1 and Model 2, while protest fails to achieve statistical significance once lagged environmental hearings are included in Models 4, 5 and 6. Hypothesis 6 is also supported by the data—namely, that environmental organizational capacity will be positively related to agenda setting activities. The coefficient for environmental movement organizational capacity is positive and statistically significant in all models and remains robust to the inclusion of lagged environmental hearings.

Next we turn to the impact of public opinion on the Congressional environmental agenda. Hypothesis 3 expects public opinion to be positively associated with Congressional attention to environmental issues. We find mixed support for this hypothesis, as the coefficient for public opinion is positive and statistically significant in the baseline estimation presented in Model 1 and when environmental movement activity is taken into account in Model 2. However, the effect of public opinion on Congressional attention disappears once lagged environmental hearings are introduced in Models 4, 5 and 6..

⁶ Given the high collinearity between environmental movement insider institutional influence activity and organizational capacity, we do not jointly include these factors until the final model, from which the interaction effects are built.

Hypothesis 4 posits an open political opportunity structure to be positively related to Congressional agenda setting regarding environmental issues. We find mixed support for this hypothesis, depending on the particular aspect of the political opportunity structure examined. The most robust finding is that of Congressional elections, the coefficient of which is always negative and statistically significant, as less hearings are convened during active campaign cycles. The presence of a Democratic President is negative and statistically significant in Models 2 and 4 only, not in any of the models in which environmental organizational capacity is included. The same pattern of results is found in the case of Democratic advantage in Congress, in which the coefficient is positive and statistically significant only in Models 2 and 4. This pattern of results suggests that the environmental movement's organizational capacity may be more important than elite allies in directing Congressional attention toward environmental issues. Lastly, neither the level of environmental pollution nor media attention to environmental issues were consistent contributors in setting Congress's environmental agenda.

[Table 3 about here]

We now focus on the results from multivariate Poisson regression models of the determinants of the passage of environmental laws from 1961-1990, shown in Table 3. Contrary to what we see regarding hearings, the U.S. environmental movement has only a moderate impact on the passage of environmental legislation. While the coefficients for institutional and protest activity on the part of the environmental movement are positive in Models 1 and 2, the results are not robust to the inclusion of lagged environmental hearings. Therefore, we fail to find consistent support for Hypothesis 1. The same results are found regarding the impact of organizational capacity, which is positive and statistically significant in Model 3, but is not robust to the inclusion of lagged environmental hearings. Thus, we similarly find mixed support

for Hypothesis 6, while movement organizational capacity *is* positively related to Congressional agenda setting activities on environmental issues there is no significant relationship with the incidence of law passage.

We find null results when examining the impact of public opinion on the passage of environmental laws. Hypothesis 3 expects public opinion to be positively associated with Congressional legislative action towards environmental issues. But, while the coefficient for environmental public opinion is positive in some models it is negative and statistically significant once lagged environmental hearings are taken into account, suggesting that the impact of public opinion may act through prior hearings held on environmental issues.

In focusing on the effect of our measures of the political opportunity structure on the passage of environmental laws, we find a consistently positive impact of Congressional Democratic Advantage, although the coefficient is only marginally significant at the .10 level in three of the six models. The impact of a Democratic President on the passage of environmental laws is always negative, while marginally significant at the .10 level in half of the models. Congressional elections remain the most robust POS predictor of legislative action. This measure is positive and statistically significant in all models. It would appear, as expected, that the likelihood of Congress passing environmental legislation increases during election years, whereby political parties and individual legislators subjected to heightened scrutiny by the electorate try to push through important legislation in an attempt to present themselves as pro-environment whilst on the campaign trail. We therefore find mixed support for Hypothesis 4 depending on which aspect of the POS is considered.

As in the case of environmental agenda setting, media attention toward environmental issues does not contribute to the passage of environmental legislation. However, the level of

environmental pollution is negative and statistically significant in fully specified models that take into account environmental agenda setting. This negative result may point to a possible increase in industry lobbying against legislative action on the part of Congress as pollution increases. It also suggests, however, that the interpretation of objective conditions as problematic (through agenda setting activities) is more important to evincing action than those conditions themselves (Hannigan 1995; Yearley 1991).

All told, we find support for Hypothesis 7, which expects the environmental movement to have a greater impact in setting the legislative environmental agenda than in the passage of environmental laws. Whether we look at institutional activity, direct action protest activities or organizational capacity, the environmental movement exerts a greater level of efficacy in setting the Congressional agenda than in contributing to the passage of environmental legislation. However, the effect of the environmental movement in setting the Congressional agenda is undeniable, which in some respects tempers the lack of direct effectiveness that the movement has in the final stage of the legislative process. Specifically, the coefficient for environmental hearings held the previous year is positive and statistically significant in all the models it is presented. These results point to the importance of agenda setting on the passage of future legislation, and offer support for Hypothesis 8, which expects environmental agenda setting activities to be positively associated with the subsequent passage of environmental laws.

[Table 4 about here]

In addition to the direct effects examined above, we also posited several interaction effects built off of the saturated model for both hearings and laws. The summary results of posited interaction models are displayed in Table 4 (full models are included in appendix Tables A2 and A3 for the benefit of reviewers). We first examine the notion of a synergistic effect

between environmental movement insider and outsider activities posited in Hypothesis 2. The hypothesized relationship is positive and statistically significant in the case of laws but not in the agenda setting stage of policy development. This suggests that in the final stage of policy formation, the environmental movement is most efficacious when adopting a diverse tactical repertoire. Thus, support for hypothesis 2 is dependent upon which policy arena is examined.

Advocates of political mediation models argue that conventional insider influence tactics and organizational capacity are most likely to be successful in instances of favorable political opportunities, while a relatively closed political opportunity structure privileges the use of more aggressive outsider tactics (Hypothesis 8). We test, and find empirical support for, this supposition with several interaction models examining the mediated impact of the environmental movement across the agenda setting and final stage of the policy process. In short, the impact of environmental movement insider institutional influence activities and organizational capacity are amplified in the presence of a supportive political opportunity structure in the agenda setting arena, while the effect of protest on the passage of environmental laws is moderated when in the presence of a supportive political opportunity structure. Although we find a contextual difference in the statistical significance of the coefficients, the direction of the coefficient is the same for each political mediation interaction in the other arena.

DISCUSSION

Our results provide strong evidence that United States environmental movement has affected the federal political agenda setting processes and little evidence of a direct and independent effect on the incidence of law passage. Environmental movement organizational capacity, insider activities, and outsider “protest” activities are all positively associated with incidence of Congressional hearings on environmental issues in partial models. In our fully

saturated model, organizational capacity remains a significant predictor of the Congressional agenda setting activities. The pre-eminence of organizational capacity among movement factors indicates the importance of stable and consistent access to policy makers in garnering attention to relevant issues, as well as the important role organizations play in fostering both institutional and protest activities on the part of social movements.

While the environmental movement positively shapes Congressional attention to issues of interest, there is no indication of a direct effect between environmental movement insider institutional influence activities or organizational capacity and the incidence of law passage. This finding supports the legislative logic proffered by King (King et al 2005; Soule and King forthcoming), which argues that social movements are more likely to be effective at earlier stages in the political process than later ones, since at each successive stage there are increasingly stringent rules that apply, relative to preceding stages, and since legislative actions are increasingly consequential. We also find, however, strong and significant effects for Congressional agenda setting activities on the incidence of law passage (H7), suggesting that social movements may exert an indirect effect on the incidence of law passage that operates through previous success in agenda setting. In addition, while the evidence that movement activities directly and independently effect law passage is weak or non-existent, we do find that the simultaneous invocation of both insider and outsider activities is positively and significantly associated with the incidence of law passage, as the organizational infrastructure model predicts (H6). We think this finding should be of wide interest to movement scholars as it seems to verify empirically what some have long suspected; that a radical fringe within a movement can be very efficacious in garnering elite concessions. Importantly, our results clarify and contextualize this relationship by suggesting this is the case only when the radical fringe is

accompanied by a vibrant and moderate movement simultaneously attempting to effect change through institutionalized political means. Substantively, this finding also helps to reconcile the long-standing debate over the relative efficacy of outsider protest tactics versus insider institutional influence activities (Gamson 1975; Piven and Cloward 1979) by suggesting that these alternative paths represent a false dichotomy. Rather than constituting a zero-sum trade-off, these results demonstrate that insider and outsider tactics interact to effect policy change and that the simultaneous invocation of both types of activities is essential to securing final legislative success (i.e. law passage). In other words movements have the greatest policy impact when they “create leverage through multiple mechanisms” (Andrews 2001: 76-77). This implies both that movements hoping to secure legislative gains must employ multiple methods and, importantly, that scholars attempting to document their influence must simultaneously account for the broad range of movement related activities and the ways in which they interact to effect change.

Because our data on environmental movement insider and outsider activities is derived from newspapers, however, this finding should be interpreted with some caution. As we note in the methods section of this paper, not all social movement activities are equal in the likelihood that they will be reported by newspapers. In particular, protest activities are more likely to be reported while institutionalized insider activities are less so. To that end, research employing an alternate measure of institutional political activity, such as the annual number of lobbyists employed by the environmental movement or annual spending on environmental issue lobbying activities, would go a long way towards verifying this finding. Unfortunately, such time-series data does not yet exist.

We also assess the impact of the political opportunity structures (POS) on political outcomes of interest, paying particular attention to claims about the amplifying effects of certain dimensions of POS on movement activities that are derived from political mediation models. We find that election years are negatively associated with the incidence of Congressional agenda setting activities and positively correlated with the incidence of law passage, but found little evidence of a direct relationship between the presence of elite allies (either a Democratic president or Democratically controlled Congress) and the incidence of either environmental hearings or law passage. Our evidence in support of political mediation models is mixed. There is a positive and significant interaction between a Democratic president and/or Democratically controlled Congress and both environmental movement insider institutional influence activities and organizational capacity when looking at agenda setting activity, but not when examining law passage. This suggests that the environmental movement has been more successful at generating Congressional attention and agenda setting activities when it has supportive allies in control of the political system, but that a favorable political context does not necessarily translate directly into the passage of movement supported laws. At the same time, while we find no significant interactions between movement outsider activities and the POS at the agenda setting stage we do find that outsider activities and a supportive POS interact to suppress the incidence of law passage. This finding confirms the expectations of the political mediation model and may be interpreted to mean that movement protest is somewhat counterproductive when allies control the political system *or* that protest is more efficacious when allies are not in power. Unfortunately, the data at hand does not enable us to adjudicate between these conflicting interpretations.

Given our findings, one may reasonably ask how generalizable they are likely to be, both to other movements and other time periods. Some of them, we think, are quite general. A growing body of research suggests that movements are more effectual at the agenda setting stage than the law passage stage of the political process (Baumgartner and Leech 1998: Ch. 7; King et al. 2005; Soule et al. 1999). The finding that the environmental movement was more likely to achieve political successes when it employed both insider and outsider activities is supported by examinations of the civil rights movement (Jenkins and Ekert 1986; McAdam 1982). Similarly, though we find movements to be effectual in legislative agenda setting even when the relevant features of the political opportunity structure are controlled for, our finding that movement effects are amplified at this stage in the presence of elite allies supports the claims of political mediation model advocates that emphasize the interaction between political opportunities and social movement activities generally (e.g. Amenta et al. 1992; 1994; 2005; Cress and Snow 2000; Soule and Olzak 2004).

Clearly, however, there are historically specific characteristics of the time period and movement studied here that may be rather unique as well. Chief among these is that the time period observed represents a period of extremely high mobilization within the environmental movement. The 1965-1985 period, in particular, is also one of high legislative attention to environmental issues, what Baumgartner and Jones (1993) refer to as a period of punctuated equilibrium. In periods of lower movement activity and/or legislative attention we might expect the relationship between movement and political dynamics to be altered. It may be, for example, that following a period of punctuated equilibrium and the institutionalization of a field that high movement mobilization may be focused more on implementation of laws rather than their passage. Unfortunately, we know relatively little about the political outcomes of movements in

periods of stable or declining mobilization. The majority of recent analyses of movement outcomes, for example, have studied movements in periods of extremely heightened mobilization (Andrews 2001; McAdam and Su 2002; Santoro 2002) or excluded cases from analysis once movements achieved a certain level of success, such as the passage of a state level Equal Rights Amendment (Soule and Olzak 2004). Additional research assessing the outcomes of movements in periods of stable or declining mobilization would help fill this lacunae.

We also think that future work in this area would benefit by adopting a more processual conceptualization of the political process. We presented one approach here, but this is far from the only one that could be adopted. Indeed, though we think of policy making as a continuous process, one limitation of our methodological approach is that, although an improvement on previous approaches, it assesses only two discreet steps in that process. The recent release of data on Congressional bill introductions by the PAP (cite) opens the possibility of analyses tracing bills through the contingent bill making process, much as King et al (2005) and Soule and King (forthcoming) have done examining state level ERA ratification. To reiterate a point from above, however, we also think that social movement analysts could profitably examine the effects of agenda setting activities on the content of legislation.

CONCLUSION

We assess environmental movement outcomes at two important stages in the policy making process: agenda setting and law passage. We do so while accounting for the independent and combined effects of movement organizational capacity, protest and insider institutional influence activities, public opinion and political opportunities. Our findings indicate that, indeed, the movement is more effectual at the agenda setting stage of the process than in actual law passage. Second, that success in placing issues of importance on the legislative agenda is

positively associated with the subsequent passage of relevant legislation. Third, high levels of insider and outsider movement activity interact so that, under these circumstances, the environmental movement does directly affect the incidence of law passage. And finally, we find mixed evidence in support of political mediation models. The amplifying effect of a supportive POS as regards movement organizational capacity and institutional activities is limited to agenda setting activities while outsider activities do not significantly interact with the POS at the agenda setting stage, but do at the law passage stage in a manner which makes them more efficacious when the POS is relatively closed. Taken as a whole, these results highlight the importance that researchers interested in movement outcomes continue to make efforts to study various stages of the political process.

While the environmental movement in America has affected political outcomes of interest, the ways in which it has done so are both complex and context dependent. We find ample evidence that the environmental movement is positively associated with agenda setting activities in Congress, especially when operating in the shadow of a facilitative POS. But, the same mix of factors are much less influential at the law passage stage; instead we find evidence of the environmental movement impacting the rate of law passage under instances of both high insider and outsider activity, though we do not think this is the only way in which movements affect the passage of laws. Importantly, while we do not account here for the content of laws which are passed, it stands to reason that if the environmental movement contributes to the setting of legislative agendas and if the content of those agendas affects the rate of law passage, as the present research indicates that it does, movements may also have some effect on the content of laws which are passed by legislatures. In other words, to the extent that a social movement is able to define the issues under consideration, it should also influence the alternative

policy solutions proposed, making some solutions more acceptable than others (Baumgartner and Jones 1993; Rochefort and Cobb 1994). Over the period under observation in the U.S., federal policy shifted from a nearly exclusive focus on managing the environment as a natural resource to a strong focus on issues of environmental quality. Over the same period there was a shifting emphasis within the movement itself away from issues of resource and wildlife protection and towards quality of life issues, such as environmental pollution and its human health effects (Brulle 2000; Gottlieb 1993; Johnson 2006). While we are unable to demonstrate a direct relationship between environmental movement factors and the rate at which laws are passed, the significant agenda setting results suggest that the movement does influence the content of those laws. The results of this research, however, do not speak directly to the influence of the environmental movement on the content of laws. Clearly, this is a subject meriting further empirical analysis.

We anticipate that this research will move scholars to more routinely account for the variety of factors theorized to explain policy outcomes and the ways in which they interact to effect change. We also hope that this paper contributes to and furthers recent efforts (King et al. 2005; Soule and King forthcoming) to assess the impact of movements across various stages in the political process. As we noted in the introduction to this paper, all of the data employed here is drawn from publicly available datasets, or data that will soon be made publicly available. The combination of increasingly accessible data covering multiple stages of the political process and multiple aspects of social movements with increasingly sophisticated theoretical accountings for the complex and contingent ways in which movements effect the political process, we think, has the potential to revolutionize our understanding of how movements influence the political process and under what scope and conditions they exert that influence.

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Table 1. Descriptive Statistics 1961-1990

	Mean	Std. Dev.	Minimum	Maximum	N
Environmental Laws Passed	11.13	7.66	1	31	30
Environmental Hearings Held	66.83	39.83	13	180	30
Environmental Hearings Held _(t-1)	63.23	39.46	13	180	30
Congressional Democratic Advantage	106.10	43.13	43	191	30
Democratic President	0.40	0.50	0	1	30
Congressional Election Year	0.50	0.51	0	1	30
Pollution _(t-1)	0.45	0.49	-0.31	1.35	30
Media Attention _(t-1)	0.28	2.04	-2.79	7.25	30
Environmental Public Opinion _(t-1)	52.33	5.02	48.04	66.26	30
Environmental Movement Institutional Activity _(t-1)	11.77	7.18	0	24	30
Environmental Movement Protest Activity _(t-1)	5.80	3.88	0	17	30
Environmental Movement Organizational Capacity _(t-1)	296.20	149.59	92	503	30
Interaction: Organizational Capacity & Democratic President _(t-1)	77.53	124.60	0	399	30
Interaction: Organizational Capacity & Congressional Advantage _(t-1)	29850.93	17555.12	9750	61404	30
Interaction: Insider Activities & Democratic President _(t-1)	3.27	6.73	0	24	30
Interaction: Insider Activities & Congressional Advantage _(t-1)	1190.40	905.68	0	3264	30
Interaction: Protest Activities & Democratic President _(t-1)	2.53	4.50	0	17	30
Interaction: Protest Activities & Congressional Advantage _(t-1)	631.13	618.08	0	2924	30
Interaction: Protest Activities & Insider Activities _(t-1)	76.60	77.99	0	336	30

Table 2. Negative Binomial Regression Estimates of the Effects of Environmental Movement on Congressional Hearings, 1961-1990

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Intercept	-1.149 (1.573)	1.147 (1.108)	2.209* (0.874)	3.451** (1.122)	3.401** (1.042)	3.489** (1.041)
Congressional Democratic Advantage	0.259 ^{e-2} (0.228 ^{e-2})	0.264 ^{e-2*} (0.131 ^{e-2})	0.064 ^{e-2} (0.079 ^{e-2})	0.193 ^{e-2+} (0.113 ^{e-2})	0.058 ^{e-2} (0.085 ^{e-2})	-0.006 ^{e-2} (0.097 ^{e-2})
Democratic President	-0.369 (0.262)	-0.647** (0.198)	-0.291 (0.195)	-0.519** (0.200)	-0.277 (0.182)	-0.167 (0.211)
Congressional Election Year	-0.273+ (0.160)	-0.375** (0.100)	-0.338** (0.079)	-0.566** (0.106)	-0.463** (0.097)	-0.440** (0.100)
Pollution _(t-1)	0.374 (0.302)	0.013 (0.218)	0.272 (0.184)	0.116 (0.180)	0.294+ (0.168)	0.373* (0.185)
Media Attention _(t-1)	0.108 (0.083)	-0.018 (0.046)	-0.005 (0.031)	-0.089* (0.035)	-0.049 (0.036)	-0.027 (0.040)
Public Opinion _(t-1)	0.097** (0.026)	0.044* (0.019)	0.013 (0.015)	-0.006 (0.022)	-0.011 (0.019)	-0.015 (0.019)
Insider Institutional Influence Activities _(t-1)		0.041** (0.009)		0.029** (0.008)		-0.018 (0.014)
Protest Activities _(t-1)		0.048** (0.018)	0.037* (0.017)	0.026 (0.019)	0.025 (0.017)	0.024 (0.017)
Organizational Capacity _(t-1)			0.341 ^{e-2**} (0.046 ^{e-2})		0.282 ^{e-2**} (0.060 ^{e-2})	0.392 ^{e-2**} (0.125 ^{e-2})
Environmental Hearings Held _(t-1)				0.010** (0.003)	0.006* (0.003)	0.005+ (0.003)
Observations	30	30	30	30	30	30
Pseudo R-squared	0.0889	0.1551	0.2039	0.1823	0.2159	0.2207
Log Likelihood	-136.715	-126.791	-119.458	-122.703	-117.664	-116.942

Robust standard errors in parentheses

+ significant at 10%; * significant at 5%; ** significant at 1%

Table 3. Poisson Regression Estimates of the Effects of Environmental Movement on Congressional Laws, 1961-1990

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Intercept	-0.446 (1.228)	0.517 (1.422)	0.933 (1.333)	4.585** (1.531)	4.882** (1.460)	4.732** (1.540)
Congressional Democratic Advantage	0.323e ⁻² + (0.183e ⁻²)	0.316e ⁻³ + (0.163e ⁻²)	0.218e ⁻² (0.151e ⁻²)	0.191e ⁻² (0.127e ⁻²)	0.185e ⁻² (0.118e ⁻²)	0.241e ⁻² + (0.126e ⁻²)
Democratic President	-0.226 (0.236)	-0.353+ (0.210)	-0.178 (0.230)	-0.229 (0.146)	-0.233+ (0.131)	-0.334+ (0.184)
Congressional Election Year	1.107** (0.149)	1.055** (0.134)	1.069** (0.135)	0.761** (0.109)	0.736** (0.112)	0.720** (0.113)
Pollution _(t-1)	0.054 (0.058)	-0.010 (0.056)	0.007 (0.049)	-0.149** (0.036)	-0.151** (0.038)	-0.168** (0.042)
Media Attention _(t-1)	0.101 (0.291)	-0.075 (0.330)	0.072 (0.337)	0.146 (0.237)	0.128 (0.248)	0.059 (0.236)
Public Opinion _(t-1)	0.035+ (0.019)	0.011 (0.022)	-0.001 (0.022)	-0.075** (0.028)	-0.080** (0.026)	-0.075** (0.028)
Insider Institutional Influence Activities _(t-1)		0.026* (0.012)		0.002 (0.009)		0.015 (0.015)
Protest Activities _(t-1)		0.026 (0.017)	0.017 (0.018)	-0.009 (0.013)	-0.010 (0.013)	-0.006 (0.013)
Organizational Capacity _(t-1)			0.169e ⁻² * (0.072e ⁻²)		-0.028e ⁻² (0.063e ⁻²)	-0.114e ⁻² (0.111e ⁻²)
Environmental Hearings Held _(t-1)				0.017** (0.003)	0.018** (0.003)	0.018** (0.003)
Observations	30	30	30	30	30	30
Pseudo R-squared	0.3965	0.4276	0.4288	0.4771	0.4774	0.4792
Log Likelihood	-81.454	-77.249	-77.092	-70.577	-70.535	-70.290

Robust standard errors in parentheses

+ significant at 10%; * significant at 5%; ** significant at 1%

Table 4. Summary of Interaction Terms for Hearings and Laws, 1961-1990

	Hearings			Laws		
		Pseudo R-Squared	Log Likelihood		Pseudo R-Squared	Log Likelihood
Baseline ^a	-- --	0.2207	-116.942	-- --	0.4792	-70.290
Interaction: Organizational Capacity & Democratic President (t-1)	.382e ^{-2**} (.111e ⁻²)	0.2503	-112.492	.167e ⁻² (.146e ⁻²)	0.4814	-69.998
Interaction: Organizational Capacity & Congressional Advantage (t-1)	.152e ⁻⁴⁺ (.808e ⁻⁵)	0.2294	-115.636	.107e ⁻⁴ (.721e ⁻⁵)	0.4814	-69.991
Interaction: Insider Activities & Democratic President (t-1)	0.047** (0.012)	0.2461	-113.135	0.017 (0.015)	0.4806	-70.104
Interaction: Insider Activities & Congressional Advantage (t-1)	.296e ^{-3**} (.106e ⁻³)	0.2312	-115.369	.176e ⁻³ (.158e ⁻³)	0.4809	-70.064
Interaction: Protest Activities & Democratic President (t-1)	-0.021 (0.041)	0.2223	-116.696	-0.096** (0.021)	0.4966	-67.938
Interaction: Protest Activities & Congressional Advantage (t-1)	-.321e ⁻³ (.375e ⁻³)	0.2249	-116.317	-.704e ^{-3**} (.197e ⁻³)	0.4914	-68.645
Interaction: Protest Activities & Insider Activities (t-1)	-.284e ⁻² (.222e ⁻²)	0.2271	-115.987	.488e ^{-2**} (.178e ⁻²)	0.4897	-68.876

Observations = 30

Robust standard errors in parentheses

+ significant at 10%; * significant at 5%; ** significant at 1%

^a Model 6 in Table 2 for Hearings and Table 3 for Laws

Table A1. Pearson Correlation Coefficients: Effects of the U.S. Environmental Movement on Congressional Hearings and Laws, 1961-1990

	1	2	3	4	5	6	7
1 Environmental Laws Passed	1.000						
2 Environmental Hearings Held	0.217	1.000					
3 Environmental Hearings Held _(t-1)	0.666	0.738	1.000				
4 Congressional Democratic Advantage	0.004	-0.248	-0.266	1.000			
5 Democratic President	-0.204	-0.523	-0.535	0.585	1.000		
6 Congressional Election Year	0.752	-0.215	0.310	0.001	0.000	1.000	
7 Pollution _(t-1)	-0.104	-0.250	-0.274	0.021	-0.025	-0.044	1.000
8 Media Attention _(t-1)	0.191	0.212	0.358	-0.097	-0.465	0.033	0.607
9 Public Opinion _(t-1)	0.223	0.634	0.663	-0.328	-0.329	0.038	-0.753
10 Insider Institutional Influence Activities _(t-1)	0.338	0.563	0.612	-0.194	-0.416	0.052	0.163
11 Protest Activities _(t-1)	0.326	0.182	0.302	0.097	0.114	0.245	0.376
12 Organizational Capacity _(t-1)	0.395	0.828	0.832	-0.253	-0.568	0.051	-0.361
13 Interaction: Organizational Capacity & Democratic President _(t-1)	0.074	-0.109	-0.137	0.554	0.775	0.023	0.141
14 Interaction: Organizational Capacity & Congressional Advantage _(t-1)	0.399	0.585	0.567	0.450	-0.099	0.048	-0.190
15 Interaction: Insider Activities & Democratic President _(t-1)	0.150	0.057	0.014	0.438	0.605	0.020	0.189
16 Interaction: Insider Activities & Congressional Advantage _(t-1)	0.339	0.407	0.413	0.370	-0.015	0.042	0.192
17 Interaction: Protest Activities & Democratic President _(t-1)	0.029	-0.164	-0.148	0.505	0.701	0.151	0.200
18 Interaction: Protest Activities & Congressional Advantage _(t-1)	0.242	0.056	0.144	0.478	0.374	0.225	0.274
19 Interaction: Protest Activities & Insider Activities _(t-1)	0.344	0.348	0.434	0.051	0.020	0.081	0.307

	8	9	10	11	12	13	14	15	16	17	18	19
1												
2												
3												
4												
5												
6												
7												
8	1.000											
9	-0.268	1.000										
10	0.560	0.180	1.000									
11	0.314	-0.108	0.310	1.000								
12	0.220	0.669	0.754	0.113	1.000							
13	-0.115	-0.294	0.136	0.423	-0.108	1.000						
14	0.230	0.283	0.589	0.257	0.701	0.376	1.000					
15	-0.006	-0.229	0.343	0.493	0.064	0.958	0.468	1.000				
16	0.452	-0.045	0.788	0.409	0.538	0.538	0.851	0.679	1.000			
17	-0.129	-0.283	0.051	0.670	-0.158	0.832	0.264	0.790	0.400	1.000		
18	0.160	-0.201	0.202	0.881	0.035	0.629	0.416	0.630	0.502	0.864	1.000	
19	0.423	-0.030	0.663	0.836	0.369	0.503	0.467	0.644	0.698	0.562	0.728	1.000

Table A2. Negative Binomial Regression Estimates of the Interaction Effects of Environmental Movement on Congressional Hearings, 1961-1990

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Intercept	3.489** (1.041)	2.677** (0.768)	3.717** (0.943)	3.020** (0.756)	3.619** (0.879)	3.665** (1.180)	3.395** (1.063)	3.324** (1.071)
Congressional Democratic Advantage	-5.61e-4 (.971e-3)	-8.93e-4 (.953e-3)	-4.25e-2+ (.251e-2)	-2.13e-3 (.923e-3)	-.330e-2* (.162e-2)	.576e-4 (.994e-3)	.992e-4 (.103e-2)	.134e-2 (.190e-2)
Democratic President	-0.167 (0.211)	-1.242** (0.393)	-0.190 (0.205)	-0.759** (0.268)	-0.219 (0.204)	-0.144 (0.191)	-0.038 (0.279)	-0.106 (0.182)
Congressional Election Year	-0.440** (0.100)	-0.373** (0.100)	-0.424** (0.091)	-0.355** (0.103)	-0.417** (0.094)	-0.533** (0.137)	-0.425** (0.119)	-0.419** (0.118)
Pollution _(t-1)	0.373* (0.185)	0.145 (0.178)	0.330+ (0.183)	0.189 (0.176)	0.319+ (0.174)	0.291 (0.197)	0.396* (0.196)	0.376* (0.184)
Media Attention _(t-1)	-0.027 (0.040)	-0.002 (0.031)	-0.028 (0.037)	0.019 (0.034)	-0.020 (0.036)	-0.041 (0.043)	-0.031 (0.040)	-0.026 (0.036)
Public Opinion _(t-1)	-0.015 (0.019)	0.021 (0.015)	-0.008 (0.015)	0.010 (0.013)	-0.007 (0.015)	-0.021 (0.023)	-0.016 (0.019)	-0.017 (0.019)
Insider Institutional Influence Activities _(t-1)	-0.018 (0.014)	-0.020+ (0.011)	-0.016 (0.012)	-0.032** (0.012)	-0.044** (0.015)	0.004 (0.023)	-0.019 (0.013)	-0.021 (0.014)
Protest Activities _(t-1)	0.024 (0.017)	0.013 (0.013)	0.021 (0.017)	0.014 (0.013)	0.020 (0.016)	0.067+ (0.038)	0.038 (0.036)	0.067 (0.058)
Organizational Capacity _(t-1)	.392e-2** (.125e-2)	.184e-2 (.119e-2)	.221e-2 (.156e-2)	.298e-2** (.103e-2)	.349e-2** (.115e-2)	.336e-2* (.131e-2)	.427e-2** (.144e-2)	.439e-2** (.135e-2)
Environmental Hearings Held _(t-1)	0.005+ (0.003)	0.003 (0.003)	0.005+ (0.003)	0.002 (0.003)	0.005+ (0.003)	0.007+ (0.004)	0.005 (0.004)	0.005 (0.003)
Interaction: Organizational Capacity & Democratic President _(t-1)		.382e-2** (.111e-2)						
Interaction: Organizational Capacity & Congressional Advantage _(t-1)			.152e-4+ (.808e-5)					
Interaction: Insider Activities & Democratic President _(t-1)				0.047** (0.012)				
Interaction: Insider Activities & Congressional Advantage _(t-1)					.296e-3** (.106e-3)			
Interaction: Protest Activities & Insider Activities _(t-1)						-2.84e-2 (.222e-2)		
Interaction: Protest Activities & Democratic President _(t-1)							-0.021 (0.041)	
Interaction: Protest Activities & Congressional Advantage _(t-1)								-.321e-3 (.375e-3)
Observations	30	30	30	30	30	30	30	30
Pseudo R-squared	0.2207	0.2503	0.2294	0.2461	0.2312	0.2271	0.2223	0.2249
Log Likelihood	-116.942	-112.492	-115.636	-113.135	-115.369	-115.987	-116.696	-116.317

Robust standard errors in parentheses
+ significant at 10%; * significant at 5%; ** significant at 1%

Table A3. Poisson Regression Estimates of the Interaction Effects of Environmental Movement on Congressional Laws, 1961-1990

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Intercept	4.732** (1.540)	3.984* (1.887)	4.627** (1.437)	4.369** (1.600)	4.652** (1.445)	4.264** (1.357)	4.371** (1.451)	4.326** (1.396)
Congressional Democratic Advantage	0.241e-2+ (0.126e-2)	.261e-2* (.111e-2)	-.423e-3 (.252e-2)	.241e-2* (.117e-2)	.591e-3 (.229e-2)	.276e-2** (.969e-3)	.325e-2** (.952e-3)	.546e-2** (.117e-2)
Democratic President	-0.334+ (0.184)	-0.813* (0.392)	-0.353* (0.172)	-0.550** (0.210)	-0.366* (0.165)	-0.467* (0.235)	0.355* (0.167)	-0.119 (0.151)
Congressional Election Year	0.720** (0.113)	0.776** (0.126)	0.745** (0.110)	0.764** (0.132)	0.744** (0.116)	0.862** (0.117)	0.818** (0.119)	0.783** (0.114)
Pollution _(t-1)	0.059 (0.236)	-0.013 (0.216)	0.066 (0.226)	-0.005 (0.226)	0.049 (0.227)	0.187 (0.206)	0.129 (0.220)	0.034 (0.226)
Media Attention _(t-1)	-0.168** (0.042)	-0.148** (0.052)	-0.169** (0.040)	-0.144** (0.055)	-0.161** (0.043)	-0.173** (0.047)	-0.149** (0.035)	-0.140** (0.038)
Public Opinion _(t-1)	-0.075** (0.028)	-0.052 (0.040)	-0.066* (0.026)	-0.063* (0.031)	-0.068** (0.026)	-0.062* (0.025)	-0.085** (0.028)	-0.081** (0.026)
Insider Institutional Influence Activities _(t-1)	0.015 (0.015)	0.012 (0.014)	0.015 (0.015)	0.009 (0.017)	-0.003 (0.025)	-0.014 (0.013)	0.006 (0.012)	0.005 (0.013)
Protest Activities _(t-1)	-0.006 (0.013)	-0.009 (0.013)	-0.007 (0.013)	-0.007 (0.012)	-0.008 (0.013)	-0.073** (0.023)	0.052** (0.018)	0.089** (0.030)
Organizational Capacity _(t-1)	-0.114e-2 (0.111e-2)	-.178e-2+ (.104e-2)	-.220e-2+ (.122e-2)	-.131e-2 (.100e-2)	-.124e-2 (.106e-2)	-.719e-3 (.992e-3)	.114e-2 (.928e-3)	.275e-3 (.107e-2)
Environmental Hearings Held _(t-1)	0.018** (0.003)	0.015** (0.005)	0.017** (0.003)	0.016** (0.004)	0.017** (0.003)	0.016** (0.003)	0.014** (0.003)	0.016** (0.003)
Interaction: Organizational Capacity & Democratic President _(t-1)		.167e-2 (.146e-2)						
Interaction: Organizational Capacity & Congressional Advantage _(t-1)			.107e-4 (.721e-5)					
Interaction: Insider Activities & Democratic President _(t-1)				0.017 (0.015)				
Interaction: Insider Activities & Congressional Advantage _(t-1)					.176e-3 (.158e-3)			
Interaction: Protest Activities & Insider Activities _(t-1)						.488e-2** (.178e-2)		
Interaction: Protest Activities & Democratic President _(t-1)							-0.096** (0.021)	
Interaction: Protest Activities & Congressional Advantage _(t-1)								-.704e-3** (.197e-3)
Observations	30	30	30	30	30	30	30	30
Pseudo R-squared	0.4792	0.4814	0.4814	0.4806	0.4809	0.4897	0.4966	0.4914
Log Likelihood	-70.290	-69.998	-69.991	-70.104	-70.064	-68.876	-67.938	-68.645

Robust standard errors in parentheses

+ significant at 10%; * significant at 5%; ** significant at 1%