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The International Politics of National Parks

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National parks are the keystone institutions of environmental conservation. Because national parks make certain lands part of the state itself, international agencies and nongovernmental organizations that promote national parks propose, in effect, to alter the state, as well as the local economy and state relations with social groups. Has international political pressure caused states to create national parks? I consider whether countries highly involved in international politics have the largest proportions of land in national parks. I conclude that many states create minimal park systems as symbolic gestures to the international community. Field researchers may find it easier to explain the success or failure of parks if they identity why state officials decide that adopting international conservation norms will enhance state authority over people and state sovereignty over land.

KEY WORDS: development; environment; national parks; state policy.

INTRODUCTION

After 400 years of strengthening their sovereignty over land and people, states appear to be ceding influence to international organizations and relationships such as regional trade blocs, treaties regulating resource use, and environmental programs. Intergovernmental agencies and international nongovernmental organizations have worked since World War II to convince states to make the national park the primary institution for environmental protection (Miller, 1983), and park creation did increase greatly in the two decades following the war (Harrison et al., 1984). Does this increase indicate that international groups convinced states to build extensive park systems?

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Even though international groups have provided designs and funding for parks, states remain the major agents of land conservation. When making decisions about land, states impose "state property regimes" (Dei, 1992) that may alter social stratification by redistributing resources and hazards (Bullard, 1990; Schnaiberg et al., 1986). International conservation projects add new players to the ongoing relations between states and citizens.

The common wisdom among conservation scientists and development bureaucrats is that states seldom create environmental policies unless domestic advocacy organizations, foreign states, and international groups apply pressure (Miller, 1983; Morell, 1985). What cross-national empirical findings support this? Buttel's (1974) quantitative study of worldwide data shows that countries with large upper-middle classes and numerous voluntary organizations advocating conservation are likely to create parks, a finding supporting the assertion that domestic organizations influence states.

I use similar data and methods to test the assertion that states also respond to pressure from foreign states and international groups. Writings about international environmental politics often define international "pressure" operationally to include meetings, exchanges of scientific information, and the incentives of aid and technical assistance; by these means, international groups communicate norms for conservation. Here, I use the participation of countries in international treaties as an indicator of the exposure of state officials to international conservation norms.

The national park is an ambiguous modern institution, created in response to changes in the political and economic status of land. In the next two sections, I survey case studies to demonstrate that common underlying social processes have produced national parks around the world—a finding that justifies my use of cross-national data—and I show how the environment became a subject of international politics.

LAND RESERVES IN HISTORY

In the context of broad struggles over land use that have shaped political and economic relations, those with political power have often built preserves to restrict commoners' use of land. Premodern rulers in many regions created game parks, forest reserves, and gardens for their own use (Adams, 1962; Haines, 1977). Hindus in Nepal, India, and Sumatra, Buddhist monks in Korea, and Muslims in the Arabian peninsula designated sacred natural areas, often overseen by local political authorities (Burton, 1991).

In the modern period, states and economic elites split political and economic authority over land, but they have often joined their efforts to control access to land. As feudalism declined in Europe, elites enclosed nearly all

agricultural and forest lands, placing most land into commercial production and reserving some for upper class leisure use (Dobb, 1963). Peasants (idealized as Robin Hood and other figures) resisted enclosures and reserves, but because states had begun to recognize private property rights, peasants seldom won more than a delay of privatization (Hobsbawm, 1959; Neeson, 1984). In the nineteenth century, city authorities and middle class moral reformers in industrial England and the United States aroused worker protest by building tidy urban parks to approximate the healthy countryside, to end outdoor gambling and boxing matches, and to control economic uses of the commons (MacMaster, 1990). In colonial Africa, officials instituted conservation laws and built game reserves to control the slaughter of wildlife by colonists and Africans using guns (even as they blamed the decline in game on Africans using snares and traps) (Beinart, 1990).

As part of its efforts to direct the settlement and development of western territories in the late nineteenth century, the United States government created the first national parks, romantic assertions of the natural beauty of the New World against the historical heritage of Europe (Runte, 1987). The most intensive period of timber cutting in history had left that country's eastern portions denuded (Zaslowsky, 1986). Naturalists (seeking to protect natural beauty) and land promoters (seeking to increase values of nearby unsettled lands) pressed the government to evict miners and the remaining few indigenous people and to organize Yellowstone and Yosemite as the first national parts, areas for tourism only (Haines, 1977).

Under encouragement by upper class naturalists, the governments of Canada, Australia, New Zealand, Britain, The Netherlands, Sweden, and other industrializing countries and their colonies soon created international conservation plans and national parks. Governments of densely settled European countries designated parks to preserve scenic farming and grazing areas; colonial governments created restrictive parks similar to Yellowstone, often incorporating the locally resented game reserves (Adams, 1962; Ghimire, 1994). Before World War II, scientists and naturalists held the first international environmental conferences in Europe, and several industrialized countries entered into minor, largely ineffective, treaties protecting migratory birds in North America and game in Africa (Caldwell, 1990; McCormick, 1989).

THE RISE OF INTERNATIONAL ENVIRONMENTAL POLITICS

Following World War II, the world's land became decisively organized under the authority of modern states, cooperation increased between state and capital in international politics and in local land relations, and inter-

national politics were extended beyond the European powers; as a result, international politics became more salient in decisions about land use, including decisions to create national parks.

Europeans pulled out of most of their remaining colonies in the 1960s, and these international forces became especially influential in the subsequent development of the former colonies. In a world where the dominant political powers were aggressive, territorially defined states, and where Cold War politics kept tensions high in many regions, each state increased the intensity of its domestic territorial rule through taxation, military conscription, and infrastructure projects, drawing resources from the population for military and economic defense. Most developed countries were experienced in international relations and had well-established state sovereignty and stable class structures, and they were able to intensify their rule while maintaining largely peaceful relations with their populations. But adjustments to world trends were difficult for the former colonies. Economic development efforts in these least developed countries, whether led by internal political authorities, industrialized countries, international aid agencies, or the World Bank, intensified the use of land, decreased control over land by resident land users, and sometimes challenged the authority of the state (Amin, 1990; Stein and Johnson, 1979). Governments in most of the land-dependent developing countries promoted the export of agricultural produce and raw materials to build domestic capitalism, to generate hard currency for the import of manufactured goods, and to pay international debts. While citizens in developed countries often were protected by their states from displacement by capitalist development, this was unlikely in the developing countries. Like the enclosure movement of Europe, land privatization and increased state authority in the developing world, including the creation of restrictive parks, pushed many resident land users into cities or onto marginal lands; wars and state repression (especially in Asia and Africa) also created millions of refugees and increased the burden on some lands (Amin, 1990; Morell, 1985).

The institutionalization of international political relations in the form of the United Nations (UN) and other intergovernmental and nongovernmental organizations enabled environmentalists from developed countries to apply their ideas to developing countries; but because membership in some of these international bodies was by country (rather than by population, wealth, or military power), the least developed countries gained some influence over aid decisions. European governments and the UN Educational, Scientific, and Cultural Organization (UNESCO) organized the International Union for Conservation of Nature (IUCN, now the World Conservation Union) in 1948, an unusual network of states and nongovernmental organizations that monitors environmental treaties, links the UN

to nongovernmental organizations, and organizes park aid (McCormick, 1989). New activist nongovernmental organizations founded in developed countries in the 1960s and 1970s, such as Friends of the Earth and Greenpeace, created environmental awareness campaigns, communicated with domestic activists around the world, mounted their own conservation projects, and lobbied intergovernmental agencies (Caldwell, 1990). Before 1949, governments around the world created 619 protected areas, but between 1950 and 1990 they established nearly 3000 more, with many created in newly independent countries (the creation date of 711 other areas is unknown) (Harrison et al., 1984; Reid and Miller, 1989).

Engagement in international environmental politics has varied greatly among countries, but one can make some generalizations based on economic status, colonial history, regime status, and environmental conditions. Until the 1970s, industrialized countries focused the environmental agenda on animal extinction and on problems of industrialization, although each of these countries has resisted certain environmental proposals, such as whale protection (Norway), acid rain control (United States), and nuclear testing (France) (Caldwell, 1990). State communist countries moving from agrarianism to industrialism often characterized environmental conservation as bourgeois and suggested that western environmentalists intended with their projects to dominate nonindustrial countries, critiques that influenced debates in many developing countries (Amin, 1990). Grave domestic environmental problems and the precipitous decline of communist party authority have led these states to more actively participate in international environmental programs.

Large parts of Latin America remain agrarian and poor; but most countries there have long been independent, and many have industrial and agricultural elites who support parks for recreational use and for the preservation of "traditional" rural scenic beauty (Morell, 1985). Despite political conflicts in some countries (including interventions by the United States), many countries have had long periods of political stability (often under dictators), and most have well-entrenched class systems and active civil organizations. When scientific studies revealing the unequalled biological diversity of tropical moist forests prompted UN administrators to make aid for tropical parks a priority (Udvardy, 1975; Wilson, 1988), many in Latin America questioned why their countries should bear such a high burden of conservation. Nonetheless, many Latin American states have participated in international environmental politics.

In Asia and Africa, former British colonies entered statehood already legally committed to environmental treaties and in possession of national parks, and these countries continue to be active in international conservation politics (McCormick, 1989); however, recurrent famines and political

disruption in parts of these continents (sometimes linked to Cold War proxy conflicts) have often distracted countries from international environmental politics. Few sub-Saharan African countries have built industrial economies or highly productive agricultural sectors, and most have weak state and civil political structures, making it difficult to establish socially useful conservation projects (Amin, 1990; McCormick, 1989). Countries practicing isolationism under communist or nationalist regimes, or building programs to rapidly exploit timber and mineral resources under regimes of state-guided capitalism, have avoided environmental politics (Amin, 1990; Caldwell, 1990). In northern Africa and the Near East, which have been grazed and irrigated to excess since the earliest human settlements, modern states have forced pastoralists to settle, waged wars, and promoted the fast exploitation of oil and gas resources, in part to gain economic and cultural independence from Europe (Amin, 1990; Burton, 1991). Although many in the developing world are still suspicious of environmental projects initiated in the same industrialized countries that sponsor global corporate investment, suspicion has lessened somewhat, especially among the elites, because the structure of intergovernmental relations has changed.

The 1972 UN Conference on the Human Environment in Stockholm marked the turning point when the environment became defined as an international issue. Years of preparation made it possible for delegates from developing and developed countries to agree to principles of resource conservation as well as rational resource use in developing countries, while at the same time affirming state sovereignty; participation of representatives from 113 countries, 19 intergovernmental agencies, and hundreds of nongovernmental organizations gave legitimacy to the delegates' work. The conference created the UN Environment Programme (UNEP), a small and underfunded coordinating agency that brokers multilateral agreements and distributes funding for projects, and that has become favored by many developing countries. But the UNEP has had difficulty gaining the cooperation of regular UN agencies that promote economic development, such as the Food and Agriculture Organization (FAO) (Caldwell, 1990; McCormick, 1989). Redefining environmental protection was probably a more important, if less tangible, outcome of the Stockholm conference.

Support for development and conservation in the least developed countries at Stockholm and other international meetings, increased recognition of indigenous peoples' rights, and new scientific evidence have led many environmentalists and planners to shift from plans to protect wildlife to plans to protect ecosystems that include humans as part of the natural environment. People in the developing world have organized many nongovernmental organizations since the 1970s to improve environmental problems that affect living conditions, such as water pollution or the declining

supply of grass and wood for cooking fires (McCormick, 1989). Some of these groups have directly challenged internationally supported conservation projects, as when petty extractors in Brazil protested restrictive national parks and cattle ranches that deny them access to forest resources (Hecht and Cockburn, 1989). Anthropologists, archaeologists, and biologists working in many settings, often inspired by questions raised by these activists, find that biodiversity has declined even in the most restrictive parks, that biodiversity is often higher in areas long used by indigenous people than it is in restrictive parks, that peasants resettled into new areas often degrade the local environment because they lack techniques for long-term use, and that prehistorical human use shaped ecosystems (often for the worst) that were long believed to be pristine (Janzen, 1990; Saterson, 1990; Soulé, 1991; Talbot, 1989). Planners have taken this evidence together with the competing demands of political and economic stakeholders and created new models of multipurpose national parks, redesigning this nineteenth-century institution. Park managers now manage lands using longtime human practices such as burns, and they have urged states to create corridors to link gene pools in isolated parks. Coupled with reevaluations of international development projects and monetary policies (which have created new economic inequalities and frequently severe environmental damage), various intergovernmental organizations and nongovernmental organizations have argued that parks can promote human resource use and environmental protection in the form of "sustainable development," a concept that defies precise definition (IUCN, 1980).

States and international groups now ostensibly choose from a variety of environmental and economic strategies. Prompted by scientists who noted that many "biogeographical zones" in the world were unrepresented in parks, UNESCO and UN member states in 1971 created the Man and the Biosphere program to work with states to establish one Biosphere Reserve in each zone. Reserves have areas designated for scientific study, recreation, and low-intensity economic use by farmers or petty extractors (Udvardy, 1975). Industrialized countries have built most of the Biosphere Reserves, constructing them around existing national parks (Batisse, 1982). International agencies and treaties have also set criteria for Marine Reserves, World Heritage sites, Ramsar Convention wetland sites, and sustainable forestry and agriculture projects (a given parcel may be counted as a "national park" by the World Conservation Monitoring Centre and may also have one or more of these other designations; see Appendix). A handful of peasant and indigenous groups have gained firm rights to resources through various institutional arrangements (e.g., horticulturists in Columbia's Chiribiquete park and the Kuna people in Panama), but others have made only partial gains (e.g., the Chipko "tree huggers" of India) or

have little voice in policy (e.g., peasants living under Zimbabwe's black rhino preservation policies) (Agarwal, 1988; Burton, 1991; Hill, 1991; McCormick, 1989; West and Brechin, 1991). Industrialized countries fund parks through taxes and voluntary contributions, and developing countries use these and international aid, eco-tourism, and "debt for nature swaps" negotiated with nongovernmental organizations and commercial banks (Klinger, 1994; Saterson, 1990; Stein and Johnson, 1979; World Resources Institute, 1986). But sustainable development projects have disappointed participants because few displaced indigenous people now know subsistence practices, because the environment's complexity confounds scientifically-based plans, and because states, investors, landowners, environmentalists, and residents often have incompatible goals and are often only partially committed to cooperation. More importantly, states may experiment with sustainable development, but nearly all new parks are restrictive parks, which are easier to manage (Ghimire, 1994; Hecht and Cockburn, 1989; West and Brechin, 1991). The national part is ambiguously defined and troubled in its implementation but remains the primary institution for conservation.

SOCIAL PROCESSES OF CONSERVATION

Strikingly similar social processes create parks in developed and developing nations, in colonizing countries and in colonies, in countries receiving international assistance and in those creating parks on their own. As case studies show, states carve national parks from government lands (e.g., the United States and Australia), convert colonial game reserves on crown lands into parks (e.g., Nepal and Tanzania), extend park status to the lands of estate-holders who seek protection for open spaces (e.g., Belgium and Latin America), and create parks from land that environmental organizations purchase and donate (e.g., Central America and the United States) (Burton, 1991; Hamilton, 1984; Morell, 1985; Mormont, 1987; Runte, 1987). Regardless of the ways that states obtain parkland, they create parks on low value, if beautiful, land (often in mountains) because capitalist land developers resist the creation of restrictive parks on productive land, even if the state owns the parcel (Miller, 1983; Mormont, 1987; Runte, 1987).

The location, goals, and success of parks depend on state relations with social groups. Because the urban middle class most strongly supports parks (Mormont, 1987), states in developed and developing countries design most park sites for recreational use, rather than scientific or subsistence use (Miller, 1983). Nationalist sentiments motivate some park

advocates (Beinart, 1990; Morell, 1985; Runte, 1987). States usually use economic incentives or coercion to remove petty extractors not already removed by the advance of capitalism (e.g., miners, trappers, hunters, and gatherers). Rural residents may win limited economic use of parkland, even in industrialized countries (Agarwal, 1988; Campbell, 1960; Ghimire, 1994; Hecht and Cockburn, 1989; Hill, 1991). In both developed and developing countries, members of some subordinated ethnic groups have opposed parks and avoid touring parks because parks are culturally or financially inaccessible or are built on land appropriated from their groups (Beinart, 1990; Hill, 1991; Woodard, 1988). Although the social actors vary, parks are usually proposed by social groups or government agents in an area where capitalist investment or state decisions are intensifying land use; other groups contending over the use of land in that area will react to the park proposal according to their overall interests in the region's land. The histories of several well-known parks illustrate these processes.

In southern Africa, although hunters and gatherers and agrarian tribes apparently had maintained systems regulating customary hunting rights, European settlers imposed new systems of property ownership and started intensive mine, sheep, and cattle operations. In the late nineteenth century, as game became scarce, mine owners and Boer ranchers in the Transvaal began to prohibit hunting on their own lands by poor Whites and Blacks and urged the state to establish game reserves; the South African Republic created game reserves in the Transvaal in 1892 and in Natal in 1894 (these became the Kruger and Pongola National Parks). Siting of game reserves near the state's reservations for Black Africans made the game parks a means for the White state to limit self-support by Blacks. Under the Union of South Africa in the early twentieth century, the national park as an institution was shaped by game-protection groups, by scientists, and by tourism. Parks were also expressions of nationalism by European settlers promoting a distinctive White African culture in the context of domestic conflicts between Afrikaaner and English settlers, between Blacks and Whites, and between South Africa and England (Adams, 1962; Beinart, 1990; Burton, 1991).

The Great Smoky Mountains National Park is one of a handful of national parks in the eastern United States. Private conservation groups headed by business leaders organized a park campaign in the 1920s to preserve scenic beauty in the east, raising money from middle class subscribers and large donors and lobbying government officials for help (the area had mines and lumber operations supported by various government agencies, and park supporters had to gain priority for their park over parks proposed for other regions). Western parks had been created mostly from government lands. To build the Smoky Mountains park, central government, subnational state governments, and conservation groups organized purchases, trades, and

condemnation proceedings to obtain lands from paper and timber companies (most of these plots had been cut once or more), from Cherokee Indians, and from long-isolated resident hill people (who were ethnically distinct from the majority White culture and often bewildered by the process). It took 15 years for political and legal proceedings at all levels of the federal state system to create this tourist-oriented park (Campbell, 1960).

Urgent conservation efforts have developed in the Amazon Valley as capitalist production supported by state incentives has accelerated degradation of the tropical moist forest. Groups extracting material from Brazil's Amazon basin range from mining, timber, and rubber corporations (some international, most Brazilian), to large ranchers, peasants, small miners, independent rubber tappers, and many small groups of indigenous people, social groups that have often clashed bloodily. Indigenous peoples and other extractors became engaged in conservation politics by first organizing to gain legal rights to land use. International and domestic conservationists, who had typically promoted restrictive parks, began to recognize and promote extractors' rights at the urging of extractor groups and organizations such as Conservation International and Cultural Survival; but joining the interests of all of these groups and gaining state recognition has been difficult. The first of several extractive reserves benefitting rubber tappers and indigenous people, Sao Luis de Ramanso, was created by the Governor of Acre in 1988 (these are not counted as national parks); but the Brazilian state continues to promote intensive forest uses of the Amazon, and these reserves may become little more than anthropological museums (Hecht and Cockburn, 1989). These three cases illustrate patterns of interaction among the social groups most typically involved in initiating parks (the rural landed class, managerial and middle class workers, and resident users), and they illustrate the range of state responses, from strong support (South Africa) to responsiveness after being lobbied (United States), to resistance until being confronted (Brazil).

How do international groups engage these domestic processes? Domestic mechanisms known to redistribute resources include market forces, state regulation, state market stimulation, state creation of artificial markets, and social movement demands on the state. Among international groups, the European Union has state-like regulatory powers. Certain international agencies (e.g., the International Monetary Fund) can influence markets, and other agencies can create artificial markets in aid. International advocacy organizations use politics and moral suasion, but lack the voter base that domestic advocacy groups can rally (McCormick, 1993). But above all, because their resources are limited, all international groups promote conservation norms in order that states might create their own parks.

DATA AND METHODS

Rather than study state participation in particular international programs, I measure state leaders's exposure to international norms. Has international politics stimulated the park boom? My research design is only one way to address this question, but it provides a point for debate.

I measure exposure to international politics using participation in treaties on trade and arms control (the dominant subjects of international relations) and treaties on the environment (these expose officials directly to norms about environmental protection) (see Appendix about data). Although states may violate treaties with impunity, joining a treaty indicates that state officials maintain relations with other countries and that they know about some international programs and goals.

The singular economic agreement is the General Agreement on Tariffs and Trade (GATT, which became the World Trade Organization in 1995); I code participation in the GATT as a dummy variable. The UN Department for Disarmament Affairs identifies eight major arms treaties open to any nation, and I measure participation with a weighted scale variable. I form a similar scale for eight major environmental treaties identified by the World Resources Institute (W.R.I.). I include per capita gross national product (GNP) as a control variable to roughly indicate a country's financial resources, relative to other countries.

Given the small number of world nations, I use only four independent variables to ensure statistically stable results. Because many parks include areas changed by recent human use, control variables for biodiversity or "natural" beauty are inappropriate. In scatterplots of average population density, forest cover, production of wood, metal, and energy, and UN designation as "developed," "undeveloped marked economies," and "centrally planned economies," I found no clear relations to the dependent variable, the percentage of land in parks; therefore, I rejected these as control variables. Notice that the lack of association with development status suggests that former colonies create parks in the same ways that other countries do. Buttel (1974) found a slightly negative relation between average population density and number of parks, a different dependent variable than I use. I analyze UN member nations as of 1988 (n = 136), because membership indicates sovereignty and assures minimal exposure to international politics.

In a logistic analysis of all 136 countries, presence of a national park system is the dependent variable. In a multiple regression of countries with parks, the dependent variable is percentage of land in national parks (percentages control for country land area). Percentages measure biodiversity protection poorly, but because the UN Environmental Programme (UNEP) and the IUCN set the goal of ten percent parkland in every country, per-

centages measure political success effectively (UNEP, 1989; World Resources Institute, 1986).

Cross-sectional study of parks is justifiable for several reasons. Presence of a park system, proportion of land in parks, gross national product (GNP), and treaty participation change slowly. As for causal order, there is more reason to believe that experience of international politics may influence a country to build parks than to believe that having parks may predispose a country to sign treaties.

A survey of world nations poses problems. Statistical inference addresses uncertainty introduced by sampling mechanisms but is inappropriate when analyzing data on "apparent populations" such as the world nations (to assert that present amounts of park acreage were the only possible outcomes would rule out chance, and so we can call this dataset an apparent population) (Berk et al., 1995). The validity of any worldwide database is questionable. Therefore, I make causal inferences from these data cautiously.

DATA ANALYSIS

Some of the problems of conservation are evident in the data; national parks and other reserves contain only three percent of the world's land (Soulé, 1991), and the distribution of parks in the world is very irregular. Of 136 countries, 20 have no park systems, and 20 have exceeded the IUCN and UNEP target of 10% (see Table I). I made one analysis of all 136 countries to test the relation of the independent variables to the presence of a park system (does a country have zero land in parks or does it have some land in parks?) and a second analysis to test the relation of the independent variables to the percentage of land in parks for those countries that have a park system.

In a logistic regression on the dichotomous dependent variable "presence of a national park system," I find that, net of the other variables, the odds of having a park system are higher for members of the GATT and for states joining environmental treaties (see Table II). The odds that members of the GATT will have a park system are three times the odds for countries not signing the GATT, controlling for other variables.[2] The odds of having a park system increase as the score for environmental treaties increases, net of other variables; for example, the odds for a country at the 75th percentile of the scale are four times as great as the odds for a

[2]Coefficients represent the log odds of an outcome; the ratios of the odds for the GATT are $1.8368 \times 1.8368 = 3.37$.

Table I. Countries Having No Park Systems and Countries Having Reached International Goals for Parklands (n = 136)

No park systems	10% of total land in parks	
Africa		
Burundi	Botswana	17.7
Cape Verde	Malawi	11.3
Comoros	Rwanda	10.5
Equatorial Guinea	Senegal	11.3
The Gambia	Tanzania	13.4
Guinea-Bissau		
Mozambique		
Somalia		
North and Central America		
Barbados	Costa Rica	12
Jamaica	Dominican Republic	11.4
	Panama	17.3
	Chile	16.0
	Ecuador	38.4
Asia and Near East		
Iraq	Bhutan	18.6
Kuwait	Israel	11.6
Laos	Sri Lanka	11.4
Qatar		
Syria		
United Arab Emirates		
Yemen Arab Republic		
Democratic Republic of Yemen		
Europe		
Malta	Austria	19.3
	Czechoslovakia	15.8
	Federal Republic of Germany	11.3
	Luxembourg	25.1
	Norway	15.5
	United Kingdom	10.6
Oceania		
Solomon Islands	New Zealand	10.5

country at the 25th percentile.[3] Because the arms treaty scale and the variable for per capita GNP are not significant, I do not interpret these variables. These results suggest that countries active in international politics are likely to create national park systems.

[3]Countries at the 75th percentile score 10 points, those at the 25th percentile score 4 points. Multiplying the difference by the coefficient produces $(10 - 4) \times (0.2306) = 1.384$, and the antilog ($e^{1.384}$) is 3.989.

Table II. Coefficients for Logistic Regression of Existence of National Park Systems on Treaty Participation and per Capita GNP, 1987–1989 (n = 136)[a]

Independent variables	Coefficient (standard error)	Antilog of coefficient
GNP per capita, $1000	−0.1388 (0.0726)	0.8704
GATT (member = 1, nonmember = −1)	0.6080* (0.2959)	1.8368
Arms treaty scale	0.0402 (0.0430)	1.0411
Environmental treaty scale	0.2306* (0.0764)	1.2593
Constant	0.0467 (0.6325)	
−2 log likelihood for baseline model (no regressors)	117.04	
Change in −2 log likelihood ("Model chi squared")	27.41	($p < 0.001$)
Degrees of freedom	4	

[a]These coefficients, b_i, are found by fitting the logistic model,

$$\ln\left(\frac{\text{Prob (parks)}}{\text{Prob (no parks)}}\right) = b_0 + b_1x_1 + \ldots + b_4x_4$$

where x_i is the ith independent variable.
*$p < 0.05$.

In the second analysis, I perform a multiple regression on the 115 nations having park systems to test whether these same independent variables also influence the proportion of land that states place into parks (using a logistic transformation on the dependent variable). Only membership in the GATT yields a positive effect on parkland percentage, net of the other variables (see Table III). These results suggest that conditions other than involvement in international politics or domestic productivity cause states to set aside large proportions of land.

CONCLUSION

I conclude that many states make symbolic commitments to international goals by creating park systems but that international groups have failed to compel states in rich or poor countries to place large proportions

Table III. Unstandardized OLS Coefficients for Regression of the (Transformed) Percent of Total Land Area in National Parks on Treaties and per Capita GNP in 115 UN Member Nations with Park Systems, 1987–1989[a]

Independent variables	Coefficient (standard error)
GNP per capita, $1000	0.0309 (0.0346)
GATT (member = 1, nonmember = 0)	0.786* (0.304)
Arms treaty scale	0.0167 (0.0243)
Environmental treaty scale	0.00368 (0.0300)
Constant	–4.47* (0.356)
Adjusted R^2	0.0808

[a]The dependent variable for this regression is

$$\ln\left(\frac{P}{1-P}\right)$$

with P = fraction of land in national parks. The transformation stretches out cases near the lower and upper ends of the range (0 and 1); this is appropriate, because cases cluster near the lower end (Atkinson, 1985).
*$p < 0.05$.

of rural land into parks. Other indicators of participation in international politics may yield different results. Determining whether strategic politics, financial interdependence, or other features of foreign relations change park policy would require separate study. It is likely that a combination of domestic and international forces would best explain the results of this study.

My review of case studies identified several conditions that are worthy of systematic and detailed comparative case studies; applying the results of this study, researchers could consider conditions that favor the original creation of a park system apart from conditions that favor the expansion of an existing system. How might such work proceed? Regarding the creation of a park system, it is unlikely that state officials refuse to create systems because they fear foreign intervention; it may be that they find reasons to create park systems only if they judge that it improves foreign relations. Officials may then expand parklands, using parks as a tool to manage conflicts over rural lands, especially if one or more of the groups involved in the conflict proposes a park. The interactions between states and citizens and among states them-

selves have long been recognized as processes that spread welfare state institutions to many countries; that literature can be a model for research on the diffusion and adaptation of environmental practices.

For example, nationalism is commonly but not universally associated with modern state formation, and several case studies have identified nationalism in some campaigns for parks; is nationalism necessary for the creation of a park system, and is sustained association with nationalistic ideas necessary for later increases in park acreage? Or one could consider how the state's adoption of the park as an institution affects subsequent state interactions with citizens. Is rural resistance to recreation parks likely to increase or decrease after a state builds its first parks, or does park building in one region have little effect on the reaction to parks being proposed in other regions?

Considerations of the social and environmental effects of parks can also be related to the distinction between symbolic and substantive park systems. When local social groups participate in environmental policy-making, with or without alliances to international groups, the resulting state policies are likely to enhance local living conditions and land quality (Dei, 1992; Hill, 1991; West and Brechin, 1991). Perhaps countries with insulated state bureaucracies, few domestic advocacy organizations, and low political participation among rural residents are likely to create symbolic park systems; and perhaps international groups can help alter these conditions when working to create parks by facilitating state relations with rural residents.

Even so, researchers should identify ways in which the modern state's relation to land is inherently coercive. These issues will remain important as scientists, environmentalists, and residents press states to create increasingly complex projects to achieve multiple social and biological goals, while other pressures intensify the economic use of land.

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APPENDIX: DATA SOURCES

Population. UN members as of September 1988; membership had been stable prior to the collapse of the Soviet Union (UN Protocol and Liaison Service, 1988).

[136 countries analyzed + 7 countries missing data (for GNP) + 14 tiny countries W.R.I. omits + 35 countries outside the UN (mostly dependent states) = 192 "countries" in some UN databases]

Dependent Variable. Park area (data source: W.R.I., 1990 from World Conservation Monitoring Centre; as of 1990). Country area (source: W.R.I., 1990 from UN sources; as of June 1989).

Independent Variables. Countries may sign a treaty, but they are not said to be contracting parties until they place the treaty's terms into domestic laws. For each treaty scored in one of the two scale variables, a country scores 3 points in that variable if it is a contracting party and one point if it is only a signatory. Because each scale variable includes scores for eight treaties, any country can score a maximum of 24 points for that scale.

The actual scores on the disarmament scale range from 0 to 24. Treaties: Nuclear Test Ban, 1963; Biotoxin Weapons, 1972 (source: W.R.I., 1990 from UN and U.S. sources; as of 1989); Protocol to the Geneva Convention; Antarctic, 1961; Peaceful Use of Outer Space, 1967; Nuclear Weapons in the Sea-bed, 1972; Military Use of Environmental Modification, 1978; Conventional Weapons, 1983 (source: UN Department for Disarmament Affairs, 1988; as of December 31, 1987).

The actual environmental scale scores range from 0 to 21. Treaties: Ocean Dumping, 1972; Endangered Species, 1973; Ship Pollution, 1978; Migratory Species, 1979; Law of the Sea, 1982; Ozone Layer, 1985; Chlorofluorocarbon Reduction, 1987; Hazardous Wastes, 1989 (source: W.R.I., 1990, from UN and U.S. sources; as of 1989).

Communist countries were outside the GATT, but as such this indicated their political isolation (source: UN Office of Legal Affairs, 1990; as of December 31, 1989).

GNP is "jerry built from a variety of sources, reliable and otherwise" (Hamilton, 1990, pp. 15-16) but is the only worldwide productivity measure (source: W.R.I., 1990 from World Bank and U.S. sources; data for 1987 and 1988).

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