

Environment and security

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“As we move to the 21st century, the nexus between security and the environment will become even more apparent.” So said former Secretary of State Warren Christopher (1996) following his April 1996 announcement of the State Department’s unprecedented initiative to put environmental issues near the top of the foreign policy agenda.¹ Coming from a veteran foreign policymaker with little environmental background, Christopher’s speech raised hopes among many environmentalists that U.S. foreign policy was finally embracing a principle long espoused by environmental and population experts: namely, that the unprecedented pace and scale of population growth, resource depletion and global environmental change demand a redefinition of security. But to many foreign policy experts inside and outside the State Department, raising the profile of international environmental issues now—at a time of diminishing budgets and declining public and congressional interest in foreign affairs—seemed a dangerous distraction. Furthermore, characterizing environmental issues as security issues struck others as inappropriate and analytically muddled.

The number of U.S. government and scholarly endeavors incorporating the environment and security (or “environmental security”) theme is proliferating—in large part because of the intellectual substance underlying the ideas, but in part too because this alluring, catch-all concept engages the concerns and interests of an array of actors and institutions.² Many senior figures in the Clinton administration have embraced environment and security ideas. While these ideas have not produced a common policy agenda or focus, numerous rhetorical statements and government initiatives considering the environment in the context of U.S. security interests have appeared since 1993.³

Foci of environment and security conceptions differ on what is being secured (what is the object of security), what is being secured against, who is trying to provide security, and what methods are being employed to provide security. Key differences arise among the *goals* sought by various institutions and policies. Some efforts are fundamentally geared towards broad sustainable development goals to address the root *causes* of environmental problems and enhance human, economic, and international security. Others, are focused on preventing or containing specific threat or *symptoms* of environmental problems to protect more traditional national security interests. Similarly, observers disagree over the appropriate institutions, tools, and *means* actors should use to construct solutions. In some cases, policy responses include methods and goals that are sometimes at odds with one another if not mutually exclusive.

Yet despite its perceived shortcomings, the environment and security framework offers a new explanatory and analytical tool to help decision makers, scholars and the public conceptualize problems, set priorities and organize responses to a range of environmental and demographic changes that will increasingly demand attention. The following is an overview of the major scholarly arguments and U.S. government activities to date concerning environment and security ideas.^{4, 5} This broad ranging treatment is intended to provide a baseline for discussions. Given this wide scope, no one aca-

democratic argument or policy manifestation is treated with the attention each individually deserves. We divide the field into three main categories: (1) debates regarding environment and new definitions of security, (2) debates regarding environment and traditional definitions of security, and (3) debates regarding how security institutions affect the environment. Within each of these categories, we detail arguments from what we loosely refer to as the proponents and critics of the various conceptions. It should be emphasized that considerable diversity in opinion persists both within and among these three categories regarding the degree of “threats” and the prioritization of issues.

Debates on the environment and new definitions of security

Proponents linking environmental problems to nontraditional security concerns tend to reject the state-centric and militarized definitions of security that dominated security studies during the Cold War. They support more holistic or “redefined” conceptions of security that extend beyond protecting the state from external aggression, arguing that global, regional, and local environmental problems seriously threaten human health and well-being and/or economic security.⁶ According to this line of thinking, it is in the common interest of all actors, not merely states, to guard against environmental degradation for the same reason they must protect against organized violence: because both have the potential to harm human, material, and natural resources on a potentially large and disruptive scale.⁷

Citing human health concerns, proponents argue that ozone layer depletion, for example, will lead to a marked increase in certain cancer rates as a result of increased exposure to ultraviolet radiation. Similarly, global warming may create conditions more conducive to the spread of infectious diseases.⁸ As temperatures and weather patterns change, certain species that are vectors for disease may multiply and/or migrate—spreading tropical diseases like dengue fever and malaria to previously unaffected areas. Similarly, local environmental problems, like arable land and fresh water scarcity, forest destruction, and the spread of pollution can lead to high incidences of sickness, malnutrition, and mortality.⁹ Even the loss of biological diversity is cited as a development that will erode gradually the health and well-being of individuals and national economies. As the world loses more species, humans also lose part of the important genetic library available for scientific research—and therefore preclude potential discoveries of life-saving drugs, new agricultural crops, and ways to counter human-induced ecological changes.

Environmental problems are also believed to threaten economic security. If a country does not manage its forests sustainably, for example, it could do more than just lose an important part of its export base. It could also begin to experience changes in local climate, increased flooding, and siltation problems that would degrade arable land, decimate fisheries, and severely restrict the navigability of important waterways. Any and all of these problems could require huge economic adaptation costs, assuming that meaningful adaptation is itself possible. Environmental problems may also impose burdensome, sometimes crippling, retroactive expenditures as nations grapple with actual or potential disasters connected to the inadequate handling of chemical, nuclear, and other toxic materials. Similarly, countries adapting to climate change may be

saddled with enormous costs to address future problems associated with more frequent and intense weather events, rising sea levels, salt water intrusion, and fundamental changes in agricultural systems.

Some proponents believe that framing environment and population issues as security issues—and raising international awareness of environmental “threats”—may prompt collective solutions, better compliance with international environmental agreements, and improved relations between groups and nations. Environment and security rhetoric may also generate the widespread domestic public support, funding, and action-oriented responses necessary to achieve sustainable development and population goals. Early writings in particular employed this rhetoric explicitly to gain support and reorder priorities.

Critics of redefining security to include the environment do not often dispute the important connections between environment, health, and economics. They disagree, however, with the characterization of environmental, social, and economic issues as security concerns, and argue that environmentally related health and well-being issues are fundamentally different from military threats. Critics express concern about categorizing these issues as “threats,” since they are fundamentally different than military ones. Both kill people, but grouping such phenomena as disease and natural disasters under the term security is conceptually muddled (Deudney 1990, 461-476; Deudney 1991, 23-28). Military threats are most often targeted and intentional, two characteristics not commonly associated with environmental problems. Traditional military threats typically present an immediacy of danger in the form of direct violence. Environmental “threats” are often, but not always, manifested over longer and incremental time scales and therefore differ fundamentally in how they should be addressed. With these differences in mind, the addition of such a diversity of “threats” to security makes the concept boundless and therefore considerably less useful as an analytical tool.¹⁰

Critics also raise the concern that combining environment and security will have the unintended and inappropriate “securitizing” of environmental issues.¹¹ Expressing a pessimism about the ability to change existing security institutions and mind-sets, these observers think a militarization of approaches to the environment is more likely than a greening of security. According to this perspective, specific departments and agencies (and environmental nongovernment organizations [NGOs]) are employing the honorific term of “security” only to win more attention and funding for environmental priorities (Deudney 1991; Levy 1995a and 1995b). Therefore the receptivity of traditional security structures—including the Department of Defense (DoD), Department of Energy, and the intelligence community—to new green missions represents a classic bureaucratic politics effort to retain comparable budgetary outlays and to derive public relations benefits (Finger 1991).

Furthermore, critics maintain that framing these environmental issues as security issues could damage relations among groups and states. Environment and security rhetoric focuses disproportionate attention and blame for environmental problems on the developing world. The spotlight on the global South de facto diverts attention and responsibility away from the central role played by northern development and consumption practices in the environmental problematique. Environmental problems are characterized as “threats” from outside, providing an “us” versus “them” perspective that reinforces rather than breaks down North–South divisions. This interpretation

limits the appeal of the environment and security paradigm. Other observers fear that environment and security ideas will simply provide another justification in a long line of historical excuses for developed countries to infringe upon the sovereign rights of weaker developing nations (Deudney 1990 and 1991; Saad 1991; Conca 1994).

Because the scope of this conception of environment and security is so broad, U.S. policymakers have been unable, or unwilling, to agree on a cohesive, overarching environment and security policy or plan. Many agencies and departments, however, have used environment and security arguments or terminology to explain activities or raise the profile of international environmental concerns.

The Clinton administration's early decision to elevate environmental issues in policy making, for example, led to the creation of several high-level positions in more traditionally focused bureaucracies, including a senior director post for global environmental affairs at the National Security Council in early 1993, an office of the deputy under secretary of defense for environmental security in early 1993, an office of the under secretary of state for global affairs in early 1993, and a national intelligence officer for global and multilateral issues at the National Intelligence Council in late 1993.¹²

The first formal interagency mechanism on environment and security was established in July 1996 through a memorandum of understanding (MOU) on environmental security between the Departments of Defense and Energy, and the Environmental Protection Agency. The MOU states that "threats to environmental quality affect broad national economic and security interests, as well as the health and well-being of individual citizens" and sets forth a framework to strengthen coordination of efforts on a broad range of scientific and technical topics.¹³ In addition, the 1996 State Department initiative to integrate environmental concerns throughout U.S. foreign policy has been justified in part by environment and security arguments, but has been framed more broadly in terms of U.S. national interests.¹⁴

Debates on environment and traditional definitions of security

A second set of arguments surrounding the environment and security fits more easily into the traditional security discourse. At the center of the debate is the assertion that local and regional environmental degradation and/or resource scarcity (exacerbated by population pressures, wealth distribution, and global environmental changes) may be an important contributing factor to political instability and/or violent conflicts. Because of the daunting rate and scale of environmental and population change, the cases of environmentally related strife and instability are expected to proliferate in the coming decades—leading to more subnational conflicts reminiscent of Somalia, Haiti, Rwanda, and Burundi that demand U.S. attention. Some argue that environment and population forces will be key determinants in the political and economic success or failure of nations that are geostrategically important to the United States.¹⁵ The result of further environmental degradation and resource scarcity may be a more unstable and "chaotic" international system—the effects of which may extend beyond national borders.

In recent years, researchers have investigated connections between environmental stress and conflict. In case studies, scholars have shown that scarcities of basic re-

newable resources—like cropland, water, fish, and forests—can harm economic productivity and overwhelm a state's capacity to provide citizens with basic needs. Environmental scarcities can also seriously deepen poverty, exacerbate divisions between the haves and the have-nots, and lead to population movements. These negative effects can, in turn, be the underlying cause of "subnational," "diffuse," and "persistent" conflict taking the form of ethnic or relative deprivation clashes due to environmentally induced population growth movements and civil strife.¹⁶ Such conflicts have the potential to contribute to a state's fragmentation or, conversely, to its authoritarian "hardening." The same research suggests that global issues such as climate change and ozone depletion will exacerbate local and regional scarcities, but are unlikely to make significant contributions in and of themselves to conflict in the coming decades.

The leading researchers on this topic are often quick to emphasize that renewable resource scarcities are more likely to cause conflicts and violence within countries than between nations—with the possible exception of situations involving shared *water* resources (the Middle East being a prime example).¹⁷ Others argue that even if they do not provoke large-scale military conflicts, dwindling natural resources shared among nations will at the very least be a significant source of continued diplomatic tensions and episodic outbreaks of violence, as illustrated by the 1995 diplomatic crisis between Canada and Spain over Spanish fishing off the Grand Banks and similar fishing disputes between Japan and its neighbors.

Some critics believe that shared environmental problems are less likely to cause conflicts than to defuse them. They argue that shared environmental problems prompt collective action that, in turn, may generate goodwill and trust among disputing groups and thereby defuse tensions that could lead to conflict. Other critics assert that environmental scarcity does not produce a unique form of conflict and demonstrates little propensity to contribute to *inter*-state conflicts (Lipschutz and Holdren 1990). The environmental variable therefore does not carry as much priority because it is less likely to relate to the traditional academic and policy focus on state-to-state conflict.

Beyond this lower prioritization, cases in which the environment is assigned a role in *intra*-state conflict are sometimes dismissed because the environment–conflict relationship is said to be spurious. Antecedent political and economic variables more likely represent the necessary and sufficient conditions that are responsible for the conflict. Critics believe their arguments are strengthened by the fact that some environment and conflict researchers have been unable, or unwilling, to assign a relative weight to the environmental variable in conflict formation. The almost exclusive focus on cases from the developing world has raised methodological questions such as case selection bias. Before conclusions can be drawn about the causal role of the environment in conflict, research must explain cases in which environmental scarcities are present but violent conflict does *not* occur. Critics also cite the need to incorporate environmental variables into larger studies of conflict rather than focusing first and foremost on the environmental variable in individual case studies (Levy 1995a, 1995b). Aside from the importance of other political and economic variables, the argument is made that the interdependent international trading system, coupled with technological substitutes, will ameliorate serious resource shortages that could contribute to conflicts (Deudney 1991).

Relative to other conceptions of environmental security, the academic literature

on environment and conflict linkages is arguably the most developed. It has also received the most sustained attention by policymakers and a broader group of scholars, perhaps in part because it easily fits into predominant state-centered views of security. The connections between environmental problems and international stability were formally recognized in the U.S. National Security Strategy beginning in 1991, with additions in subsequent years (Butts 1994).¹⁸ In late 1993, following a briefing by Thomas Homer-Dixon of the University of Toronto at the National Security Council (NSC), the NSC global environmental affairs directorate and the office of the deputy under secretary of defense for environmental security began to incorporate environment and conflict ideas into their work. Previously, the DoD environmental security office had focused almost exclusively on addressing the toxic legacy of past, current, and future military activities. The publication of journalist Robert Kaplan's (1994) article "The Coming Anarchy" in *The Atlantic Monthly*—which identified "the environment" as "the national-security issue of the early 21st century"—played a catalytic role in bringing the environment-conflict thesis to the highest levels of the Administration and the larger Washington policy community.

Numerous statements have since been made by Clinton administration officials—including the president, the secretary of state, the director of central intelligence and the deputy under secretary of defense for environmental security—identifying the environment as a contributing factor to conflict and instability.¹⁹ These statements have been accompanied by numerous related government activities. One of the first such initiatives was the commissioning in fall 1994 of a panel of scholars known as the Task Force on State Failure to examine the historical conditions most closely associated with "state failures," including environmental and demographic factors.²⁰ DoD joined with NATO partners in 1995 through the Committee on Challenges to a Modern Society to launch a pilot study on "Environment and Security in an International Context"; the study will "assess security risks posed by environmental problems, prioritize those risks for action, and devise an action plan to address them—with a strong emphasis on preventive actions." (Goodman 1996)²¹

Also in 1994, the office of the deputy under secretary of defense for environmental security began to play a key role in generating interest and cooperation among many agencies and departments on these and a wide range of other environment and security issues. It co-organized with the intelligence community the first major interagency conference in June 1995 on "Environmental Security and National Security," which heightened government interest in these topics and inspired a range of follow-up activities. Among them was the previously mentioned joint 1996 DoD-DOE-EPA memorandum of understanding on environmental security, which reflected these agencies' interest in addressing a broad set of environmental concerns—including those that could contribute to instability. In recent months, senior DoD officials have characterized the environment as a "key component" of its strategy of preventive defense. They argue that if the U.S. military engages on international environmental issues—identifying problems, addressing them early enough to make a difference, and promoting cooperation with other nations' militaries on environment—it will help to build trust and understanding, forge new partnerships, and promote democracy abroad (ECSPP 1995; Goodman 1996).²²

Below the level of top leadership, there is evidence that some environment and

security concepts are being integrated into traditional security institutions. Increasingly, analysts within military and intelligence institutions are adding environmental factors to the list of variables they consider when anticipating coups, political instability, mass migrations, and violent conflict. Director of Central Intelligence John Deutch (1996) stated that analysts must take into account the “essential connection between environmental degradation, population growth, and poverty” because “environmental factors influence the internal and external political, economic, and military actions of nations important to our national security.” These factors are considered important by some military planners who want to anticipate situations in which the U.S. military might be asked to intervene.²³

Debates regarding how security institutions affect the environment

Debates on how security institutions affect the environment invert the environment and security causal relationship; they do so by arguing that security institutions, like the military and the intelligence communities, can dramatically affect the environment—in either a harmful or a beneficial way. One argument is that the military and intelligence communities have unique and powerful capacities to help analyze, predict, and ameliorate international environmental problems. These include monitoring and enforcing international environmental agreements; gathering, analyzing, and disseminating scientific data on the natural environment; responding to mitigate environmental crises and disasters; providing technical expertise to other nations’ militaries; implementing environmental sustainability programs; guaranteeing access to natural resources; spinning off environmental cleanup technologies; and protecting natural parks and reserves.²⁴ The intelligence community offers environmental monitoring capabilities and multidisciplinary analytical tools to integrate environmental factors into complex political and economic assessments. Similarly, the Defense Department has publicly raised the priority of environmental compliance and restoration within its ranks, and it has sought to share its specialized knowledge and experience with other nations’ militaries on resource management and pollution cleanup and prevention. Given DoD’s enormous holdings of land worldwide and vast network of foreign military contacts, the military wields considerable control over the natural environment both within and outside of the United States.

An alternative perspective focuses on the deleterious environmental effects of military operations and war-fighting.²⁵ Based on this record of incurring environmental damage, some argue that the tangible and theoretical instruments of traditional security conceptions should be excluded from playing a role in addressing environmental problems. The military should be viewed as part of the problem, not part of the solution.

Critics also maintain that the conflictual orientation of national security makes the military and intelligence tools—designed to safeguard the state—inappropriate for addressing transnational environmental problems. The capabilities of the conflictual and secretive security structure are mismatched with the cooperative and transparent responses deemed most appropriate for addressing environmental threats. Finally, from a more traditional security perspective, some argue that the armed forces should not sacrifice operational readiness for involvement in nontraditional activities like environ-

mental protection. Time and resources utilized to monitor environmental treaties or perform other environmental tasks detract from the military's primary war-fighting mission (Deudney 1990; Finger 1991; Dalby 1992; Butts 1994).²⁶

In addition to DoD activities concerning environment and conflict links, the DoD environmental security office has viewed environmental compliance and environmental restoration as central missions. These efforts have been pursued most visibly through the Defense Environmental Restoration Account (DERA), comprising over one-fifth of the approximately \$5 billion annual DoD environmental security budget (down from approximately \$6 billion in fiscal year 1994). This account is targeted largely at cleanup of the toxic legacy of military activity on and around bases. International programs include cooperative military-to-military partnerships for radiological pollution and military base cleanup. Examples of cooperative arrangements include a study on cross-border contamination in the Arctic (United States, Norway, and Russia), a study on reuse of military land conducted by the NATO Committee on the Challenges of Modern Society, and a cooperative project to decommission the Paldiski naval reactor training facility (Estonia, Russia, and the United States).²⁷ The agencies involved in the previously mentioned 1996 MOU on environmental security are already engaged in similar joint efforts in Russia and the Baltic region.

Many other major policy initiatives related to this conception originated in Congress. Former Senators Al Gore (D-TN) and Sam Nunn (D-GA) successfully obtained congressional funding in 1991 for what became known as the Strategic Environmental Research and Development Program (SERDP).²⁸ With the three goals of environmental compliance, environmental restoration, and data gathering and analysis, this multiyear program was designed to help clean up the toxic legacy of past U.S. military activities, make ongoing and future U.S. military activities less toxic, and provide retrospective data for environmental study.

Regarding environmental monitoring issues, former Senator Al Gore in 1991 also engineered the release of Navy ice-pack thickness data to scientists studying climate change in the Arctic Basin (Gore 1991). The subsequent efforts to routinize the release of Navy data led to the creation of a task force of scientists and CIA officials to examine whether the intelligence communities assets could be turned to the threat of environmental degradation. An Environmental Task Force (ETF) of 70 scientists—now known as the MEDEA Group—was tasked with examining retrospective data and conducting experiments to test the applicability of intelligence systems for environmental science.

One outgrowth of Gore's efforts and the MEDEA group has been an effort to convince the Russian military and environmental agencies that they should conduct a similar effort. A multiday conference in May 1995 produced a memo of understanding for future cooperation and provided the Russians with a model of how the Americans have proceeded; special attention was paid to remote sensing and other observation data that could be declassified and released for environmental study. Follow-up has occurred at meetings of the U.S.–Russian Joint Commission on Economic and Technical Cooperation created in 1993, colloquially known as the "Gore-Chernomyrdin Commission."

The intelligence community has begun to formalize what were previously ad-hoc attempts to release data and share it with environmental scientists. In February 1995, Vice President Gore announced the declassification of 860,000 spy-satellite photo-

graphs taken between 1960 and 1972. This release had been recommended to the White House by the CIA's Classification Review Task Force that, in turn, had been led by the Central Imagery Office and the Environmental Task Force. In addition, MEDEA is working with the intelligence community to establish a "Global Fiducials Program" that will direct existing satellites to monitor certain environmentally sensitive areas around the world. Director of Central Intelligence John Deutch described the program in a major 1996 speech on the environment, explaining that it would both greatly benefit science and provide "strategic warning of potentially catastrophic threats to the health and welfare of our citizens."²⁹

The intelligence community is also playing a role in monitoring other nations' compliance with environmental agreements. This monitoring employs some of the same remote sensing capabilities that are currently utilized by the military to verify arms control agreements and nonproliferation pledges. The CIA is working with EPA to combat the black market trade in ozone-destroying chlorofluorocarbons (CFCs), which are being phased out under the Montreal Protocol (1987), and other subsequent amendments to the Vienna Convention of 1985. The U.S. intelligence community also participates in monitoring illegal drift net fishing and signatories' compliance with the Montreal Protocol.³⁰ Military and intelligence assets are also being used to react to immediate humanitarian crises that have environmental components—including "natural" and technological disasters. The Defense Intelligence Agency attempts to provide "environmental defense intelligence" that includes warning of where disasters may happen and background information for responding forces when disasters occur (Constantine 1995). This intelligence could enhance U.S. security interests by helping to avert regional instability by providing prompt humanitarian relief.

Conclusion

This overview should underscore the fundamental point that environment and security views ultimately depend upon geographic perspective and institutional affiliation. Developed countries are more likely to think of environment and security in terms of global environmental changes and the potential for instability and conflict in geostrategically important areas, while developing countries tend to be more concerned with the human security implications of local and regional problems. The diversity of views, potential for misunderstandings, and vagueness of terms should encourage many scholars and analysts to improve the clarity of their arguments and terminology in their written work.

Whether one agrees or disagrees with specific arguments, environment and security writings, rhetoric and activities—which are often accompanied by sobering statistics and trenchant analyses of environment and population dynamics—have significantly raised the profile of many environmental concerns. They have also generated many useful discussions and new ways of thinking among a diverse set of experts, including those who previously considered the environment peripheral or unimportant to their interests.

At the same time, there are serious limitations to the environment and security conceptual and linguistic framework. As convincing as certain security-related arguments may be, they are not the only reasons why the American public, decision makers

and other nations should care about the environment. Falling outside the environment and security framework, even when broadly conceived, are value-oriented considerations about the aesthetics of nature, human responsibility for global stewardship, and environmentally induced humanitarian concerns. These considerations can greatly enhance the process of formulating effective solutions and winning sustained public attention and support for international environmental action.

Policymakers might therefore be best served by framing international environmental priorities in terms of a broad set of interests, including but not limited to security concerns. They should also resist the temptation, common among security analyses, to examine environmental problems solely in terms of crises and “threats.” Threat-based analyses, while helpful in setting priorities, can have the unintentional effect of encouraging decision makers to pay attention to issues only when there are imminent crises—at which time it is often too late for effective interventions and corrective measures. The focus on threats may also distract decision makers’ attention away from other important incremental environmental changes that, if not addressed, would become equally serious problems in the aggregate. Examining how environmental preservation will enhance security and other interests over time, might lead decision makers to adopt more appropriate long-term strategies that address the underlying causes of problems.

International environmental issues will be most effectively addressed in the decades ahead through a combination of conceptual clarity, a pragmatic and multidisciplinary approach to problem solving, an emphasis on long-term strategies, and a willingness and improved ability among leaders to explain the complexity associated with environmental change. As the debates on environment and security continue, environmentalists’ arguments will be strengthened if they resist the temptation to place all their priorities under the attention-grabbing security rubric. Meanwhile, skeptical foreign-policy experts will benefit from recognizing the complexity of environmental systems and their relevance to many critical interests. As the United States considers security expenditures and priorities for the 21st century, the vibrant debates concerning environment and security matters will continue to be instructive.

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Endnotes

1. For related statements by Christopher, see the 1996 *Environmental Change and Security Project Report* (ECSPR). Washington, DC: Woodrow Wilson International Center for Scholars. 1996(2):77-85.
2. To avoid unintentionally promoting a term that still lacks a common definition, we minimize the use of the term “environmental security” throughout this overview.
3. See excerpts of official U.S. government documents and statements in the 1995 and 1996 ECSPRs. 1995(1): 47-59 and 1996(2): 72-78.
4. The scholarly literature offers a surprisingly small number of significant literature reviews or edited volumes reflecting different authors’ perspectives. Most significant are: Renner, Michael. 1992. National Security: The Economic and Environmental Dimensions. *Worldwatch Paper No.89*. Washington, DC: Worldwatch Institute; Dalby, Simon. 1992. Security, Modernity, Ecology: The Dilemmas of Post-Cold War Security Discourse. *Alternatives* 17 (1), 95-134; Matthew, Richard A. 1995. Environmental Security: Demystifying the Concept, Clarifying the Stakes. *ECSPR*. 1995(1):14-23; Dabelko, Geoffrey D., and David D. Dabelko. 1995. Environmental Security: Issues of Conflict and Redefinition. *ECSPR*. 1995 (1): 3- 13; Dokken, Karin, and Nina Grøeger. 1995. The Concept of Environmental Security—Political Slogan or Analytical Tool? *International Peace Research Institute Report*. Oslo: International Peace Research Institute. See also: Jyrki Käkönen, ed. 1994. *Green Security or Militarized Environment*. Brookfield: Dartmouth Publishing Co.; and Deudney, Daniel, and Richard A. Matthew. Forthcoming. *Contested Ground: Security and Conflict in the New Environmental Politics*. Albany: SUNY Press. For more comprehensive bibliographic guides to the literature, see issues 1 and 2 of the *ECSPR* 1995(1): 92-105; 1996(2): 153-160 .
5. The relatively few broad, orienting writings in the literature are supplemented by ongoing contributions from parallel projects. Some projects have produced original research, particularly investigating connections between environment and conflict. These include: the Project on Environment, Population and Security, headed by Thomas Homer-Dixon and co-sponsored by the University of Toronto and the American Association for the Advancement of Science; the Environment and Conflicts Project (ENCOP), a joint project of the Swiss Federal Institute of Technology and the Swiss Peace Foundation; and a large number of Nordic research institutes and university departments. Other projects provide fora for academic and policy discussions and publications and/or plans to do research. These include the Woodrow Wilson International Center for Scholars’ Environmental Change and Security Project; the International Institute for Environmental Strategies and Security headquartered at Laval University in Quebec; the International Human Dimensions of Global Change Programme Research Project on Global Environmental Change and Human Security; the Center for Environmental Security at Battelle National Laboratory; and the Stanford University Institute for International Studies.

6. See Brown, Lester. 1977. Redefining Security. *Worldwatch Paper No. 14* Washington, DC: Worldwatch Institute; Ullman, Richard H. 1983. Redefining Security. *International Security* 8. Summer: 129-153; World Commission on Environment and Development. 1987. Peace, Security, Development and the Environment. *Our Common Future*. New York: Oxford University Press: 290-307; Mathews, Jessica Tuchman. 1989. Redefining Security. *Foreign Affairs* 68 Spring: 162-177; Mische, Patricia M. 1989. Ecological Security and the Need to Reconceptualize Security. *Alternatives* (Vol. 14, No. 4): 389-429; Myers, Norman. 1989. Environment and Security. *Foreign Policy* 74 Spring: 23-41; Myers, Norman. 1993. *Ultimate Security: The Environmental Basis of Political Stability*. New York: W.W. Norton & Co.; Gore, Al. 1990. SEI: A Strategic Environment Initiative. *SAIS Review* 10 Winter/Spring; Porter, Gareth. 1995. Environmental Security as a National Security Issue. *Current History* 94 May: 218-222; Renner, Michael. 1989. "National Security: The Economic and Environmental Dimensions." *Worldwatch Paper No. 89*. Washington, DC: Worldwatch Institute. Renner, Michael. 1996. *Fighting for Survival: Environmental Decline, Social Conflict, and the New Age of Insecurity*. New York: W.W. Norton and Co.); United National Development Programme. 1994. Redefining Security: The Human Dimension. *Human Development Report*. Oxford: Oxford University Press. See also: public statements by Clinton Administration officials excerpted in the 1994 and 1995 ECSPRs.

7. For an elaboration on this point and a discussion of the "redefining security" literature, see Del Rosso Jr., Stephen J. 1995. The Insecure State. *Daedalus* 124 (2): 175-207.

8. See Pirages, Dennis. Microsecurity: Disease Organisms and Human Well-Being. *The Washington Quarterly*. Fall 1995.

9. See Feshbach, Murray, and Alfred Friendly, Jr. 1992. *Ecocide in the USSR: Health and Nature Under Siege*. New York: Basic Books.

10. Deudney, 1990. Deudney 1991. Walt, Stephen M. 1991. In The Renaissance of Security Studies. *International Studies Quarterly* 35 (2): 211-23; Dalby, 1992. Conca, Ken. 1994. In the Name of Sustainability: Peace Studies and Environmental Discourse. *Peace and Change* 19 (2): 91-113; Wøever, Ole. 1995. Securitization and Desecuritization. *On Security*. Ronnie D. Lipschutz, ed. New York: Columbia University Press, 46-86; Lipschutz, Ronnie D. 1995. On Security. *On Security*. Ronnie D. Lipschutz, ed. New York: Columbia University Press, 1-23; Levy, Marc A. 1995a. Time for a Third Wave of Environment and Security Scholarship? *The Environmental Change and Security Project Report..* Washington, D.C.: Woodrow Wilson International Center for Scholars, 44-46; Levy, Marc A. 1995b Is the Environment a National Security Issue? *International Security* 20 (2): 35-62; Keller, Kenneth H. 1996. Unpackaging the Environment. *World Policy Journal* 13 (3), 11-23.

11. See Deudney 1991; Dalby 1992; Conca 1994; Wøever and Ole 1995.

12. Other offices engaged in environment and security-related analyses or programs include: the Office of the Assistant Secretary of State for Oceans and International Environmental & Scientific Affairs (OES); Department of Energy Office of National Security/

Environmental Security; Environmental Protection Agency's International Activities office; Office of Science & Technology Policy; National Oceanic and Atmospheric Administration; and the Agency for International Development. See ECSPR 1995 and 1996 for summaries of State Department and other government activities relating to environment and security.

13. Memorandum of Understanding Among the U.S. Environmental Protection Agency, the U.S. Department of Energy, and the U.S. Department of Defense Concerning Cooperation in Environmental Security, July 3, 1996. Cooperative activities under the MOU include "information exchange, research and development, monitoring, risk assessment, technology demonstration and transfer, training, emergency response, pollution prevention and remediation, technical cooperation, and other activities concerned with radioactive and nonradioactive contamination and other adverse environmental impacts on terrestrial areas, the atmosphere, hydrosphere, cryosphere, the biosphere (including human health) and the global climate system; defense or defense (strategic) industrial activities, energy production, supply and use, and related waste management."

14. Representative remarks by Warren Christopher include the following: "The environment has a profound impact on our national interests in two ways: First, environmental forces transcend borders and oceans to threaten directly the health, prosperity and jobs of American citizens. Second, addressing natural resource issues is frequently critical to achieving political and economic stability, and to pursuing our strategic goals around the world." Deputy Secretary of State Strobe Talbott later said that environmental problems are "a threat to us, to our country, our health, our prosperity, our way of life: in short, our national interest." He added that other nations' "struggles over land, water, and other natural resources can lead to instability in regions of critical importance to the United States." See Christopher, Warren, April 9, 1996; Talbott, Strobe, Deputy Secretary of State, "The Global Environment and the National Interest," Speech at the Foreign Service Institute, September 10, 1996

15. See Chase, Robert S., Emily B. Hill, and Paul Kennedy. 1996. Pivotal States and U.S. Strategy. *Foreign Affairs* 75 (1): 33-51. The authors argue that environmental and demographic forces will be fundamentally important to the futures of important "pivotal states," including Egypt, Turkey, Mexico, India, and Indonesia.

16. See: Homer-Dixon, Thomas F. 1994. "Environmental Scarcities and Violent Conflict: Evidence from Cases." *International Security* 19 (1): 5-40; Homer-Dixon, Thomas F. 1991. On the Threshold: Environmental Changes as Causes of Acute Conflict. *International Security* 16 (3): 76-116. See also: Durham, William H. 1979. *Scarcity and Survival in Central America: Ecological Origins of the Soccer War*. Palo Alto, Calif.: Stanford University Press; Gurr, Ted Robert. 1985. On the Political Consequences of Scarcity and Economic Decline. *International Studies Quarterly* (29): 51-75; Mathews, 1989. Westing, Arthur H., ed. 1986. *Global Resources and International Conflict*. Oxford: Oxford University Press, 204-210; Byers, Bruce. 1991. Ecoregions, State Sovereignty and Conflict. *Bulletin of Peace Proposals* 22 (1): 65-76; Gleick, Peter H. Environment and Security: The Clear Connection. *Bulletin of the Atomic Scientists*. April 1991, 17-21; Gleick, Peter H. 1993. Water and

Conflict. *International Security* 18 (1): 79-112; Molvær, Reidulf K. 1991. Environmentally Induced Conflicts?: A Discussion Based on Studies from the Horn of Africa. *Bulletin of Peace Proposals* 22: 175-188; Libiszewski, Stephan. 1992. What is an Environmental Conflict? Occasional Paper No. 1 of the Environment and Conflicts Project. Swiss Peace Foundation and Center for Security Studies and Conflict Research. Bern and Zurich, Græger, Nina, and Dan Smith, eds. 1994. *Environment, Poverty and Conflict*. Oslo: International Peace Research Institute. It is important to note that not all environment and conflict researchers present their findings or ideas in the context of environment and security.

17. See Homer-Dixon, 1991, 1994. Arthur Westing maintains, however, that at least 12 inter-state conflicts in the 20th century contained distinct and significant resources components. Westing, 1986.

18. See *ECSPR*, 1995, 1996 for detailed discussion and quotation of the evolving U.S. National Security Strategy.

19. For excerpts of speeches by these officials and others including the Administrator of the Agency for International Development and the Under Secretary for State for Global Affairs, see the *ECSPR*, 1995:47-58, and 1996:72-77. Most recently, see Deutch, John, Director of Central Intelligence, The Environment on the Intelligence Agenda, speech at the World Affairs Council in Los Angeles, July 25, 1996; Talbott, Strobe, September 10, 1996; and Goodman, Sherri Wasserman, Deputy Under Secretary of Defense for Environment and The Environment and National Security, speech at the National Defense University, August 8, 1996. One such excerpt comes from President Clinton's June 19, 1994, remarks to the National Academy of Sciences:

...[W]hen you look at the long-run trends that are going on around the world—you read articles like Robert Kaplan's article in *The Atlantic* a couple of months ago that some say it's too dour...you could visualize a world in which a few million of us live in such opulence we could all be starring in nighttime soaps. And the rest of us look like we're in one of those Mel Gibson "Road Warrior" movies...I was so gripped by many things that were in that article, and by the more academic treatment of the same subject by Professor Homer-Dixon...

20. For a description of the activities of the Task Force on State Failure, see the *ECSPR*, 1995: 80.

21. For other DoD activities, see the *ECSPR*, 1995: 80.

22. For other DoD activities, see the *ECSPR*, 1995: 80.

23. See Deutch speech on July 25, 1996.

24. See Butts, 1994. Funke, Odelia. 1994. Environmental Dimensions of National Security: The End of the Cold War. *Green Security or Militarized Environment*. Jyrki Käkönen,

ed. Brookfield: Dartmouth Publishing Co., 55-82. Also Fleishman, Rachel. 1995. Environmental Security: Concept and Practice. *National Security Studies Quarterly* 1 (2).

25. See Ehrlich, Anne H., and John W. Birks, eds. 1990. *Hidden Dangers: Environmental Costs of Preparing for War*. San Francisco: Sierra Club Books. The intentional modification of the natural environment as an instrument of war—and potential for “eco-terrorism”—is another grouping of issues sometimes considered under environment and security. In the recent historical context, the use of chemical defoliants and weather modification techniques in Southeast Asia in the 1960s and early 1970s helped give rise to the Convention on the Prohibition of Military or Other Hostile Use of Environmental Modification Techniques (ENMOD) banning such practices. The Iraqi sabotage of Kuwaiti oil facilities in the 1991 Persian Gulf War presented the U.S. military with a mission that involved using force to counter an environmental threat. Reacting to mitigate the symptoms of environmental catastrophe, the U.S. Air Force successfully deployed fighter planes to stem the international flow of oil into the Persian Gulf. For guidance to the body of literature in this area, see: Westing, Arthur H. 1994. *Environmental Warfare*. London: Taylor and Francis, Westing, 1986; Westing, Arthur. 1988. *Cultural Norms, War and the Environment*. Oxford: Oxford University Press; and Westing, Arthur. 1990. *The Environmental Hazards of War: Releasing Dangerous Forces in an Industrialized World*. Newbury Park, CA: Sage.

26. See *Green Security or Militarized Environment*. Jyrki Käkönen, ed. Brookfield: Dartmouth Publishing Co., 83-110; Conca, 1994; Lipschutz, 1995; and Woever, 1995.

27. See *ECSPR*, 1995: 83; Department of Defense. 1995. “Report on a Joint U.S.-Russia Ecological/Environment Seminar.” Washington, D.C. (May 15-19).

28. For more detailed discussions of SERDP budgets, see Butts, 1994. Also Dabelko, David D., and Geoffrey D. Dabelko. The International Environment and the U.S. Intelligence Community. *International Journal of Intelligence and Counter Intelligence* 6. Spring 1996: 21-41.

29. Deutch, John. The environment on the intelligence agenda. Speech at the World Affairs Council, Los Angeles, July 25, 1996. Deutch claimed that the intelligence community’s environmental monitoring would enhance, not duplicate, the important work of civilian groups including the National Science Foundation, the National Oceanic and Atmospheric Administration, NASA, and academic institutions.

30. While potentially useful, such assistance could be problematic if the incriminating data were gathered by classified means and could not be readily declassified. The potential to link negative or embarrassing findings for one country to unrelated issues fits squarely in a competitive or conflictual framework of state behavior. One hypothetical scenario might include evidence of whaling or fishing treaty violations, gathered by classified means, being employed as a bargaining chip in unrelated trade negotiations on electronics import quotas.