

Introduction

Green Criminology and Political Economy

The purpose of this book is first, to describe the green criminological literature, and second, to explore and illustrate how political-economic theory is useful for analyzing green crime, harm, law, and justice. Our goal is to create an overview of this field of research and add our own perspective on the study of green crime, law, and justice to that literature. This book, therefore, does not provide solely a review of research and theories related to green criminology for students, it also includes chapters that apply green criminological concepts to new issues and supplies unique applications for studying green criminological issues relevant to researchers. To make this work accessible to these audiences, we attempt to simplify, where appropriate, concepts and idea, but we also include additional detailed information related to more complex material for those who wish to pursue research related to green criminology. At the end of each chapter, there are “student” and “researcher” sections. The student sections outline major points students should be able to conceptualize and address, while the researcher section provides some ideas for additional research that might be worthwhile undertaking. As a result, this book can be used as a textbook and to further academic research on green criminological issues.

ORIGINS OF AN IDEA

The idea of a green criminology emerged in the early 1990s (Lynch 1990; Frank and Lynch 1992), at a time when people were becoming increasingly troubled about large-scale environmental disasters that resulted from negligent and even criminal behavior. For example, in 1984, the Union Carbide gas leak disaster in Bhopal, India, instantly killed at least 2,200 people and exposed half a million people to the dangerous chemical methyl isocyanate (Lynch, Nalla, and Miller 1989; Mehta et al. 1990; Sheehan 2011). Over time, the estimated number of deaths associated with the incident was as high as 16,000 victims (Eckerman 2006). The Indian government charged several individuals with crimes related to the gas leak, including former Union Carbide CEO Warren Anderson, who was accused of homicide. Anderson, however never appeared in court in India to stand trial, and under the laws of India he remained an absconder from justice until his death (September 2014) in the United States, which, much to the frustration of the Indian government, had refused to extradite him. Several other Union Carbide employees, who worked in the Indian Union Carbide subsidiary, were convicted of lesser crimes (Pearce and Tombs 2011).

Legal remedies responding to the incident took years to unfold. For example, the eight ex-Union Carbide employees convicted of crimes related to the disaster were not found guilty and sentenced until 2010—twenty-one years after the event occurred. The site of the disaster was not “fully remediated”—cleaned up—at least officially, until 1998. Research suggests, however, that the remediation was not completed, and that as late as 2005 pollutants on the site continued to contaminate groundwater supplies (Broughton 2005). Some of those contaminants remained because the site was also used to store hazardous waste unrelated to the incident. For the people of Bhopal, this long, slow path to justice was frustrating and led to various long-term social protests, which continue today (see fig. 1.1 and resource box 1.1).

Other serious environmental disasters, which promoted interest in developing green criminology, also occurred just before the 1990s. In 1986, the Chernobyl power plant in Pripyat, Ukrainian Soviet Socialist Republic, suffered a nuclear meltdown (Petryna 2003). The meltdown did not immediately result in a large number of deaths, but long-term exposure to the nuclear pollutants released at Chernobyl are estimated to have caused anywhere between 4,000 and 93,000 deaths (see, e.g., Cardis et al. 2006; Ivanov et al. 2001). Workers at the facility who died from the accident received an average radiation dose of 6,000 millisieverts (mSv) on a scale in which exposure to 10,000 mSv is likely to cause death within a week, and 5,000 mSv is likely to kill half of those exposed in one month. The precise number of deaths attributable to Chernobyl is difficult to estimate because of two factors. First, the radiation contamination was widespread, and studies have detected radiation from the incident far from the

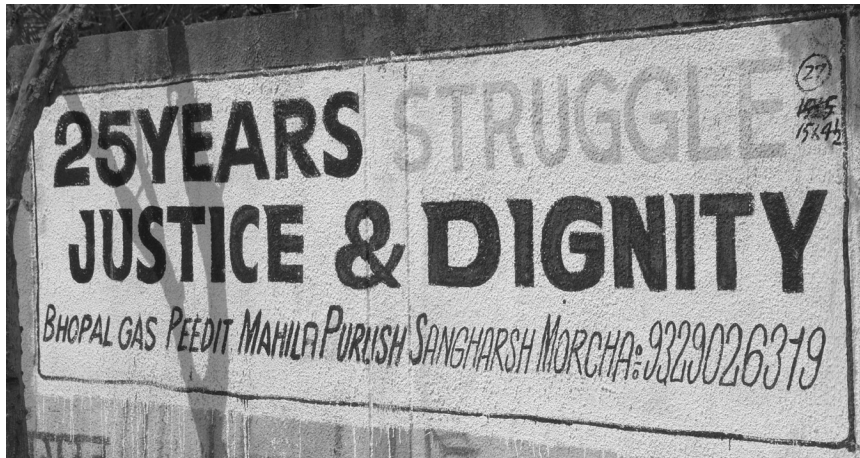


Figure 1.1 Bhopal, twenty-five years of struggles. Residents of Bhopal, India, have long struggled to have their legal rights, and the environmental harms caused by the Bhopal disaster, addressed and have continued to engage in public protests concerning the disaster. *Source:* Photograph © Yann Forget. Wikimedia Commons.

site—some suggest worldwide—though in low doses. The radiation band from the incident that contained significant radiation spread as far as Sweden, Finland, and Eastern European nations, more than 750 miles away. Second, because the radiation was so widespread, and because its effects can take decades to develop, linking an individual’s disease or death directly to the incident is not always possible. Studies, however, have linked the accident to increased thyroid cancer and leukemia rates, especially among children (Cardis and Hatch 2011; Williams 2008). As a result of this meltdown, there have been calls to treat such “accidents” as corporate crime (Slapper 2009). But one could also frame this accident as an example of green harms or crimes that result from the economic organization of production, the main theme of this book.

In 1989, the Exxon Valdez oil tanker crashed in Prince William Sound in Alaska (see fig. 1.2 for an example of the consequences of this spill). Official estimates place the size of the oil spill at eleven million gallons, which were released along the Alaskan Coast, though numerous sources suggest that estimate is well below the thirty-eight million gallons that may have been spilled. The size of the spill had a devastating impact on the natural environment and on the fishing industry in Alaska. Many Alaskan citizens were impacted by the spill, and they assumed the spill was deviant, if not criminal, in nature, as “there was willful deception on the part of authorities—particularly Exxon” to cover up the extent of the problem and cleanup (Ritchie, Gill, and Farnham, 2013, 661). In the end, criminal charges were brought against Exxon and the Valdez captain, Joe Hazelwood (Mauer 2010). However, a plea deal allowed the

1.1. RESOURCES

About the Bhopal Disaster

International Campaign for Justice in Bhopal. www.bhopal.net. In the view of the victims of the Bhopal disaster, an adequate legal and social response to their victimization has never been achieved. On this page click on "OUR DEMANDS" to see what the victims desire as a response to the disaster. To find out more about the disaster, click on "WHAT HAPPENED IN BHOPAL?" To access images of the disaster, click on "RESOURCES."

Toronto Star, "The Ghosts of Bhopal." www.thestar.com/news/world/2014/11/21/the_ghosts_of_bhopal.html. This news story, published on the thirtieth anniversary of the Bhopal disaster, takes readers back in time to explore how the disaster affected individual victims of the disaster.

Bhopal Offender Convictions. news.bbc.co.uk/2/hi/south_asia/8725140.stm. This BBC World News article examines the eight criminal convictions that eventually resulted from the Bhopal disaster in June 2010. In 1991, Warren Anderson, chairman and CEO of Union Carbide when the disaster occurred in 1984, was charged by the Indian government with manslaughter and was declared a fugitive from justice when he failed to appear for trial. Later, the Indian government filed extradition papers with the United States to force Anderson to appear, which the US government ignored.

Bhopal Litigation in the United States. www.bhopal.com/Bhopal-Litigation-in-the-US. This site links to Union Carbide's documents on civil suits against Union Carbide.

company to avoid a criminal label by paying a \$125 million fine. Hazelwood was found guilty of a misdemeanor (Mauer 2010). (For more information on the Exxon Valdez and on continued monitoring of the effects of the spill, see the Exxon Valdez Oil Spill Trustee Council n.d.).

Earlier environmental problems also influenced public and official concern with environmental harms. In the 1950s, high levels of air pollution were having serious public health consequences, and it was only much later that it became clear to public health researchers that adverse air pollution were causing numerous deaths worldwide. For example, a "killer smog" in London in 1952 resulted in an estimated 12,000 deaths (Bell and Davis, 2001); the British government places the estimate at 4,000 (Met Office 2015). Similar serious smog incidents linked to industrial pollution have occurred in several other areas of the world: Muse Valley, Belgium (1930: 60 deaths); Donora, Pennsylvania (1948: 20 deaths, 600 hospitalizations); New York City (1953: 170–260 deaths; 1963: 200 deaths; 1966: 169 deaths); and London (1991: 160 deaths). In



Figure 1.2 Workers cleaning Exxon Valdez oil spill from Rocky Beach. Evidence of the Exxon Valdez oil spill in Prince Williams Sound soon after the incident. A massive cleanup effort was required to wash the oil spill from beaches and save affected marine life, mammals, and birds caught in the spill. Here workers are seen using high-pressure hoses to clean the oil from a rocky beach. In other rescue efforts, bird and sea animals coated in oil were washed by workers in an effort to save their lives. *Source:* Alaska Resource Library and Information Service.

the 1940s, the first smog alerts were issued in Los Angeles (Davis 2003), where they were routine throughout the 1950s and 1960s (for an example of air quality in Los Angeles, see fig. 1.3). Similar smog incidents now plague many cities in China (for examples, perform a Google image search using the phrase “smog in Chinese cities”). In March 2014, the United Nations’ World Health Organization (WHO) estimated that, globally, 7 million people die prematurely from exposure to outdoor air pollution. More recently (September 27, 2016), the United Nations also indicated the seriousness of the extent of global air pollution. The WHO notes that 6.5 million people worldwide die each year from exposure to air pollution and that more than 80% of the global population lives in urban locations, where air pollution levels exceed recommended limits. The WHO observed that these impacts are unevenly distributed; of WHO-monitored cities with more than 100,000 residents, 98% in low- and middle-income nations are exposed to air quality that fails to meet WHO standards, whereas the percentage is only 56 in high-income nations. That difference, we suggest, has much to do with the nature of the global economy and the transference of polluting industries from developed to developing and underdeveloped nations.

Other large-scale ecological issues also influenced the emergence of green criminology. In the late 1980s, climate change became a significant environmental and social problem, and a number of widely cited studies of climate

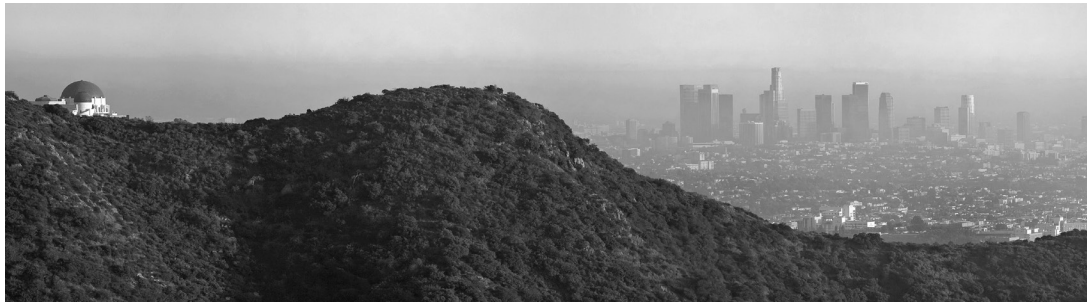


Figure 1.3 Air pollution today in Los Angeles. Even today, the level of pollution in Los Angeles remains high. This photograph from 2005 shows extensive evidence of smog. *Source:* Photograph by David Iliff. Creative Commons license CC-BY-SA 3.0, Wikimedia Commons.

change were published (e.g., Hansen et al. 1988; Jones, Raper, and Wigley 1986; Lorius et al. 1985; Manabe and Wetherald 1987; Mitchell 1989; Mitchell, Senior, and Ingram 1989; Pastor and Post 1988; Peters and Darling 1985; Ramanathan 1988; Ramanathan et al. 1985; Roble and Dickinson 1989; E. Wilson 1989). Scientific knowledge relating to climate change was being rapidly modified, and these studies were beginning to produce social awareness concerning the problems it would present. While the science of climate change was undergoing rapid transformation, it took criminologists decades to recognize the relevance of climate change to the study of crime and justice (Agnew 2012; South 2015; Brisman and South 2015; Kramer 2013; Lynch, Burns, and Stretesky 2010; Lynch and Stretesky 2010; White 2012, 2016; White and Kramer 2015). As an example of these effects, in 2003 an extensive heat wave in France, which has been held up as an example of the consequences of climate change, was estimated to have caused nearly fifteen thousand excess deaths (Poumadere et al. 2005), a figure that is greater than the average number of homicides that occurred annually in the United States over the past five years (2011–16).

In the context of discussions focused on global environmental problems, Lynch (1990) issued a call for the development of green criminology. As noted, that call came at a time when environmental harm appeared to be increasing in intensity and scale, but also at a time when public concern for the environment was at an all-time high. In 1989, for instance, a Gallop poll reported that 72% of Americans worried “a great deal” about the pollution of rivers, lakes, and reservoirs; 63% worried “a great deal” about air pollution; and 69% worried “a great deal” about contamination of the soil by toxic waste (Jones 2010). More recently, various studies (e.g., Capstick et al. 2015) examining trends in public concern with the environment across nations have noted that concern with climate change was increasing in many nations from the 1980s through 2007. But

in some nations, particularly in the United States and United Kingdom but in other developed nations as well, the public has more recently lost confidence in scientific evidence related to climate change, leading to a decline in public concern from about 2007 through 2010. This may be related to the fact that US and UK media more often contain skeptical commentary on climate change (Capstick et al. 2015).

GREEN CRIMINOLOGY: ORIGINAL PREMISE

Lynch (1990) suggested green criminology as an extension of radical criminology and political-economic analysis (see also, Lynch et al. 2013; Frank and Lynch 1992; Ruggiero and South 2013; Stretesky, Long, and Lynch 2013a). The greening of criminology was, above all, a call for criminologists to focus on the economic origins of crimes against the environment. When green criminology emerged, environmental crimes—even though they were the focus of public attention and concern—were largely neglected in the criminological literature. And when they *were* discussed, they were examined in reference to state, corporate, and organized crime, and not as important topics in their own right. For instance, Block and Scarpitti (1985) analyzed the extent of the Mafia's participation in the illegal disposal of hazardous waste and the consequences of the movement of organized crime into the profitable toxic waste business in New York. Later, Block and Bernard (1988) examined how changes in the petroleum industry intersected with changes in environmental laws, to open up a hazardous waste market that was taken over by the Mafia and used to illegally dispose of toxic wastes in fuel sold on the free market to consumers. Criminologists and sociologists also examined violations of environmental laws in corporate crime research (e.g., Clinard and Yeager 1980; Frank and Lynch 1992). To be sure, researchers continue to study organized, state, and corporate crimes relating to toxic waste (e.g., Massari and Monzini 2004) and natural resources violations, including poaching (Hauck and Sweijd 1999). However, green criminology has also come of age and is now orienting the field of criminology around concepts related to the production of environmental/green harms.

More than twenty-five years later, the field of green criminology has expanded considerably. As a result, there are now numerous explanations of what green criminology does or is about. Not surprisingly, many of these descriptions are tied to the theoretical orientation of the researcher. Thus, references to green criminology are no longer exclusively focused on political-economic explanations, as Lynch (1990) once envisioned. As a result, we are reminded of what Alvin Gouldner (1971, 490) suggested: social scientists “must—at the very least—acquire the ingrained habit of viewing [their] own beliefs as [they] view those held by others.” Consistent with that argument, we

acknowledge that this book specifically focuses on political-economic approaches to green criminology, while still attending to the kinds of issues green criminologists have drawn attention to over the past quarter of a century.

WHAT IS GREEN CRIMINOLOGY?

We begin our description of green criminology by drawing on the view of Rob White (2008, 50), who proposed that “green criminology emphasizes environmental justice, with a special focus on human rights and social equity; and ecological justice, with a special focus on the biosphere generally and the rights of non-human as well as human.” Indeed, some of the earliest green criminological studies explored the problem of environmental justice or the uneven distribution of ecological harms in society as they affect humans (Lynch and Stretesky 1998, 1999; Stretesky and Lynch 1998, 1999; see also ch. 9 on environmental justice).

Like White, Carrabine et al. (2009, 316) pointed out that “green criminology suggests that we reappraise more traditional notions of crimes, offences and injurious behaviours and start to examine the role that societies (including corporations and governments) play in generating environmental degradation.” Building on prior descriptions of green criminology, Lynch and Stretesky (2011, 2) stated that the purpose of green criminology is to “provide space within criminology to examine the nexus between environmental problems, the definition of harms against nature as crimes, the need to reconsider criminal justice practices and policy in relationship to the environmental harms they produce, the variety of victims environmental offenses create (for human and non-human species, as well as ecological segments such as wetlands, forests, air, and land, etc.) and the effect of environmental toxins on ecological systems and species’ health and behavior.” Finally, the definition of green crime tells researchers what they should explore. As Eman, Meško, and Fields (2009, 576–77) stated, “Green criminology . . . represents the branch of criminology that deals with research into criminality against the environment and associated phenomena.” Other definitions of green crime can be found in resource box 1.2.

In resource box 1.2, each researcher offers a slightly different view about green crime and green criminology. Nevertheless, there is some general agreement that green criminology focuses on ecosystem harm, or what we will often refer to as *ecological disorganization* or *ecological destruction*. These latter terms are used often in political-economic analyses of environmental harms. Moreover, many descriptions of green criminology continue to emphasize the connections between environmental harm, social equity, and power relations (called *environmental justice*). This diversity of views is useful for promoting a wide range of studies and different interpretations of the harms caused by ecological destruction. Green criminological researchers note, however, that the

1.2. RESOURCES

Definitions of Green Criminology and Green Crimes

These sources, listed from earliest to most recent, offer varying definitions of green criminology and green crimes.

Lynch (1990, 4). Lynch argues green criminology should include “the study of crimes committed against humanity through environmental destruction.”

Beirne and South (2007, xiii). “At the most abstract level” a green crime involves “the study of those harms against humanity, against the environment (including space) and against non-human animals committed by both the powerful institutions (e.g., governments, transnational corporations, military apparatuses) and also by ordinary people.”

White (2008). White’s typology of environmental crimes is as follows: (1) brown crimes, which include environmental harms in urban landscapes; (2) white crimes, or those that develop from new technologies; and (3) green crimes, or environmental harms that relate to wildlife harm.

Wyatt (2009, 145). “Wildlife trafficking or the illegal wildlife trade is the specific name of the green crime that involves the illegal trade, smuggling, poaching, capture or collection of endangered species, protected wildlife (including animals or plants that are subject to harvest quotas and regulated by permits), derivatives or products thereof.”

Walters (2010, 180). Eco-crime “extends existing definitions of environmental crime to include licensed or lawful acts of ecological *degradation* committed by states and corporations.”

White (2010). White defines the scope of green criminology research as encompassing three primary focuses: (1) environmental justice, (2) ecological justice, and (3) animal rights.

Brisman and South (2013, 116). Brisman and South suggest the need to distinguish between “*primary* and *secondary* green crimes, classifying some as resulting *directly from the destruction and degradation of the earth’s resources*, such as pollution of the air and oceans, abuse of non-human species, and deforestation, and others as *crimes or harms that are symbiotic with or dependent upon such destruction and efforts made to regulate or prevent it*, such as those arising from the exploitation of conditions that follow after environmental damage or crisis (e.g., illegal markets for food, medicine, water) and/or those arising from the violation of rules that attempt to regulate environmental harm and to respond to disaster” (our emphasis).

Stretesky, Long, and Lynch (2013b, 2). Define green crime as “acts that cause or have the potential to cause significant harm to ecological systems for the purpose of increasing or supporting production.” They note that, in identifying those harms, green criminologists should refer to “scientific evidence” of ecological destruction.

Beirne (2014, 55). Beirne defines the specific green crime he calls “theriocide” as the “socially acceptable or unacceptable, legal or illegal” and “intentional or unintentional” killing of animals by humans.

diversity of views about what constitutes green criminology may also present a problem for this field of study. Eman, Mesko, and Fields (2009, 577) state that because within green criminology there is a “lack of an adequate terminology and commonly accepted internationally acknowledged definition problems at all levels of discussion” are appearing. For them, this means that “the lack of an agreed definition of green criminology presents an additional problem in the field of research surrounding environmental criminality,” that is, “it is difficult to develop satisfactory theoretical frames of green criminology as a new branch of criminology.” Lynch and Stretesky (2011, 293) also lament that “the issues and problems approach that has dominated green criminology has delayed efforts to construct a conceptual framework that describes and organizes the field so that it may continue to advance.”

We address that theoretical problem by taking a political-economic approach to green crimes, or *human behaviors that cause ecological destruction and ecological disorganization*. Such an approach draws attention to the ways in which a society’s economic and political structures generate activities that result in green crimes. Ecological disorganization is a measure, determined on the basis of scientific studies, of the disruption of ecosystems and ecosystem functions by human activity. Disruptions may be direct, as when the extraction of raw materials (e.g., mining, drilling, timber harvests) pollutes or destroys environments. Or they may be indirect, as when clear-cutting a forest eventually causes a decline in species living there that play important roles in maintaining a healthy ecosystem. The following chapters explore particular kinds of ecological destruction and disorganization—such as pollution; ecological withdrawals and additions; overproduction and overconsumption; wildlife trafficking; and smuggling—and illustrate some directly and indirectly harmful outcomes in towns that have been contaminated by toxins.

Green criminology is still developing, and scholars have described the field in diverse ways, since it lacks a theoretical focus and no shared definition of green crime exists. Some have adopted existing definitions and theoretical arguments. For example, Carrabine et al. (2009) argued for constructing typologies of green crimes from existing green criminological research (see also, Lynch and Stretesky 2011). Others have used quite different terminology. Gibbs et al. (2010), for instance, proposed that green criminology be reorganized and renamed “conservation criminology,” a multidisciplinary framework that integrates criminology, natural resource management, and risk and decision analyses. Still others (Herbig and Joubert 2006) have questioned whether merely giving the field a new name is an adequate solution.

We examine green crime and harm from the perspective of political-economic theory, by which we mean theoretical approaches that frame environmental problems in terms of how society’s economic organization

influences the type and amount of ecological destruction, and how society responds, as well as the social responses to green crime.

IS GREEN CRIMINOLOGY A DISCIPLINE?

Where green criminology stands in relation to criminology and sociology has yet to be addressed by researchers who consider themselves green criminologists. According to the Council of Graduate Schools, an area of study becomes a discipline when (1) there are a sufficient number of researchers working in the field, (2) journals and books regularly publish research on it, (3) there is demand for this research, and (4) the field has been defined and theorized in the literature (Minton 1983). On the basis of these criteria, green criminology is an emerging subdiscipline within criminology and sociology. Google Scholar searches on “green criminology” produce hundreds of articles, books, and book chapters (e.g., a Google Scholar search on “green criminology” [in quotation marks] in September 2016 generated over thirteen hundred reference works). Key journals have published numerous articles and devoted special issues to green criminology, including *Theoretical Criminology* (South 1998), the *International Journal of Comparative and Applied Criminal Justice* (McGarrell and Stretesky 2011), *CrimSoc* (White 2013b), *Critical Criminology* (2013, vol. 21, no. 3), and the *International Journal for Crime, Justice and Social Democracy* (2014, vol. 3, no. 2). As White (2013b, 8) observed, “Articles on environmental crime and related topics are now featured regularly in journals such as the *British Journal of Criminology*, the *Asian Journal of Criminology*, and *Crime, Law and Social Change*. Specialist conferences and special issues of international journals on ‘green criminology’ and on the substantive concerns of eco–justice have also bolstered the presence and standing of green criminology worldwide.” There are also book series (e.g., the Ashgate/Routledge and Palgrave series on green criminology), numerous books on green criminology (e.g., Beirne and South 2007; Burns, Lynch, and Stretesky 2008; Clifford and Edwards 2012; Ellefsen, Sollund, and Larsen 2012; Lynch and Stretesky 2014; Nurse 2013; Situ and Emmons 2000; South and Brisman 2013; Stretesky, Long, and Lynch 2013; Westerhuis, Walters, and Wyatt 2013; White 2009, 2010a). In short, green criminology contains sufficient publications to be considered an emerging discipline.

In 2009, Rob White founded the International Green Criminology Working Group, which consists of well over a hundred members globally. In 2012, Michael J. Lynch helped create a website for the working group (www.greencriminology.org), so that green criminologists could better communicate, share their work, and provide publicly accessible information. Green criminologists have also organized conferences, and major universities across the globe have begun to advertise for green criminologists.

Finally, theories of green criminology are beginning to develop (Lynch and Stretesky 2014; Stretesky, Long, and Lynch 2013b). Nevertheless, much work still needs to be done. Green criminology draws in part on mainstream or traditional criminology for inspiration (e.g., Agnew 2012; Pires and Clarke 2012), and some researchers question whether it needs to be a distinct discipline and whether it contributes to an understanding of green crime that other criminologists might overlook (for a discussion, see Clarke 2013). We ourselves welcome both mainstream and more specialized studies, but we also believe that green criminology has not yet reached disciplinary status in terms of theory. Therefore, we refer to green criminology as an emerging subdiscipline within criminology and sociology, though White (2013a, 8–9) suggests that “green criminologists are no longer on the fringe insofar as a critical mass of academics and activists has now forged their place within conventional forms of criminology.”

Researchers are beginning to develop theories for green criminology, and new approaches to the field are emerging.

WHAT IS GREEN CRIME?

While green criminology continues to develop, researchers are debating what constitutes green crime on the bases of their own theoretical assumptions. For instance, Situ and Emmons (2000, 3) defined an environmental crime as “an unauthorized act or omission that violates the law and is therefore subject to criminal prosecution and criminal sanction.” This legalistic definition implies that only acts that violate the criminal law can be considered environmental crimes. Clifford and Edwards (2012, 114) support this view, suggesting that an “environmental crime is an act in violation of an environmental protection statute that applies to the area (jurisdiction) in which the act occurred and that has clearly identified criminal sanctions for the purposes of police enforcement.” They argue that this definition is preferable because it allows law enforcement to *do something* about these horrific problems.

To be sure, some forms of ecological destruction such as poaching can be described in legalistic terms (Eliason 2012). However, a strict legal definition of green crime may be problematic for regulations that govern toxic waste and pollution, since companies can legally pollute if they obtain a pollution permit. But these acts still cause ecological destruction. As Wilson (1996, 151) suggests, “Environmental criminal law is simply a harsher sanction attached to a regulatory process in which little, if any, destruction is forbidden, and little, if any ecologically-conscious action is commanded. . . . [It is] . . . used as a tack-on to the regulatory process.” For this reason, Clifford and Edwards (2012, 115) suggest that environmental crime is distinct from environmental harm,

pointing out that “environmental harm is an act committed with the intent to harm or with the potential to cause harm to ecological and/or biological systems,” but such acts are not necessarily unlawful.

We appreciate this distinction, but our approach to green criminology is grounded in political economy. Shortly after the concept of green criminology first appeared, green crime was broadened to include not only traditional crimes against the environment (as described by Situ and Emmon) but also environmental harms that were not illegal (Frank and Lynch 1992, ch. 6). This interpretation of green criminology, which we share, maintains the focus on political economy but incorporates political and other forces that shape the formal or legal definition of green crimes. Examining how environmental policy and laws are made and enforced, and the ways these policies shape green crime, is crucial. In the current context of global capitalism, we define a green crime as an *act that regardless of its legality causes significant identifiable harm to ecological systems—what we call ecological destruction and disorganization—for the purposes of promoting capital accumulation*. Identifying these acts and understanding the kinds and degree of harm they produce require familiarity with scientific studies. This definition is fundamental to this book, and throughout we show how scientists identify green crimes. Our broad definition is intended to enable a theory of green criminology that lays out the causes, consequences, and mechanisms of green crime. Our political-economic approach allows for input from different theoretical positions within green criminology.

Consider the issue of climate change, which has garnered significant scientific attention. Until recently, most criminologists had little to say about this important contemporary social problem, even though it has implications for crime and justice (e.g., Agnew 2012; Lynch, Burns, and Stretesky 2010; Lynch and Stretesky 2010; White and Kramer 2015; White 2016). One exception is Rob White (2012), who edited an important work that allowed green criminologists to explore climate change, but much work remains. If political-economic theory, for example, is to contribute to the discussion, it will need to draw on other disciplines, and include discussions of the association between capitalism and climate change (Clark and York 2005; York, Rosa, and Dietz 2003), and empirical studies by sociologists and ecologists on the connections between capitalism, climate change, and ecological footprints (Clark, Jorgenson, and Auerbach 2012; Jorgenson 2004; Jorgenson and Clark 2011; Jorgenson and Rice 2005; Rice 2009; Rosa and Dietz 2012). Green criminologists have yet to undertake empirical studies to investigate the hypothesis that the rising temperature leads to increased crime (Agnew 2012; White 2016), as existing studies don’t go beyond measuring what is called “seasonality”—the idea that, within a year, seasonal temperature changes and crime are related (e.g., Mares 2013; Mares and Moffett 2016). Climate change is altering the

nature of the world's ecosystem, generating a wide variety of green harms, including specific forms of green victimization (Lynch and Stretesky 2010), that require further attention from criminologists. Later chapters include examples of how climate change fits with our political-economic analysis of green crime.

OUR VIEW

Like most green criminologists, we believe the consequences of ecological crime, harm, and disorganization are so serious that they deserve significant criminological attention. Ecological destruction is perhaps the most important contemporary issue in the world today. For example, excessive harvesting of forests accelerates climate change (Ramankutty et al., 2007), while climate change in turn causes increases in sea level that will affect worldwide as many as 150 million people who live within one meter of high-tide areas (Jevrejeva, Moore, and Grinsted 2012; see fig. 1.4).

Similarly, pollution is everywhere, and criminologists must pay attention to the deleterious effects of unregulated behaviors that generate pollution, cause ecological destruction, and threaten the health of human and nonhuman animals. Moreover, green crimes should not be studied in conjunction with crimes committed by corporations and other powerful actors that adversely impact people and economies but do not cause ecological destruction. Instead, they should be informed by research from the sciences (Lynch and Stretesky 2011), including careful reading of ecology, biology, medicine, epidemiology, toxicology, and ecotoxicology literatures, that provides empirical/quantitative analyses of ecological harms and their consequences. Figure 1.4 graphs NASA scientific data on the rise in sea level since 1992.

Scientific studies, however, are mainly descriptive, rather than theoretical, meaning they do not attempt to answer questions such as the following: Why are ecosystems polluted in the first place? Why do corporations generate so much pollution? Could corporations behave differently and generate less pollution? Scientific research can explain how ecosystem toxins cause disease, and determine the probability that certain diseases follow exposure to a toxin (e.g., Walker et al. 2012), but those studies do not explain why exposure to toxins occurs in the first place. Green criminology, informed by political-economic theory, is relevant to considering whether green harms should be considered governmental crimes, and how economic interests affect the social construction of green crime; explaining capitalism's role in producing green crimes; examining how scientific definitions of ecological harm are or are not translated into environmental regulations; and investigating the unequal distribution of ecological harms among communities according to race, ethnicity, and class.

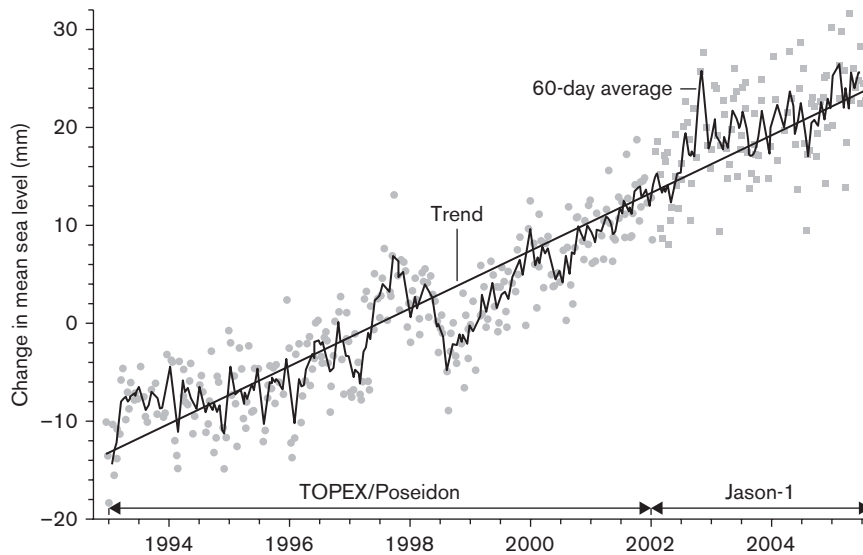


Figure 1.4 NASA graphic depiction of rising sea levels. This image shows the rise in sea level as measured by the US National Aeronautics and Space Administration from 1992 through 2007. Source: NASA.

POLITICAL ECONOMY

Our work is based on the proposition that understanding green crimes, justice, and law requires a grasp of political-economic theory and analysis of the economic organization of capitalism. When we refer to political economy, we are speaking in particular of Karl Marx's theoretical model of how capitalism works, and its inherent limitations, or what political economists call contradictions. That view has been extended by environmental sociologists and ecological Marxists.

Political-economic analysis relies on the observation that a society's economic organization strongly influences a society's social structure, which includes the kinds and volume of green crime, the nature of environmental regulations, and how or whether environmental harm/green crime is labeled and controlled. Of particular importance is understanding that worldwide the predominant form of political-economic organization is capitalism, which takes different forms from nation to nation. Because capitalism depends above all on the pursuit of profit, anything that interferes with this goal, including the stability and health of the ecological system, may be sacrificed.

For capitalism, the ecosystem is a warehouse of raw materials waiting to be exploited—through mining, well-drilling, deforestation, overharvesting of resources, and so on—in order to create and/or produce commodities. Because,

as ecological Marxists note, commodities cannot be produced without consuming nature, capitalism and nature are always in conflict with each other (J.R. O'Connor 1998; Foster 2000; Burkett 2006; Foster and Burkett 2006; Foster, Clark, and York 2010). The more capitalism expands, the more it relies on nature's resources to sustain it, and the greater the ecological crisis becomes. To be sure, *some* capitalist ventures or businesses attempt to lessen ecological damage, but most pay little attention to how they promote ecological disorganization and destruction. In the chapters that follow are examples of businesses that are more or less environmentally aware.

Capitalism causes ecological disorganization or nature's contraction and increasing instability in two significant ways. Post-World War II, capitalism's effects have been apparent, as Schnaiberg (1980) noted, as the capitalist treadmill of production (ToP) expands (for criminological applications, see Stretesky, Long, and Lynch 2013b; Lynch et al. 2013). The post-World War II ToP is a mechanism for expanding the extraction of raw materials, or what ToP theorists call "ecological withdrawals," with the intention of increasing the production of commodities. The increase in withdrawals and production results in ecological destruction or disorganization in two ways. First, increasing the amount of raw materials that go into the production process effectively shrinks the volume of nature in the ecosystem. These activities compromise the ecosystem's ability to function properly, causing, among other deleterious effects, global warming, increasing concentrations of environmental toxins, and ever-more ecological destruction. We provide an extended discussion of this process in the last chapter. This process also impedes the ecosystem's ability to create the conditions for life, a topic we will take up in greater detail in later chapters. In effect, the expansion of ecological withdrawals generated by the ToP causes ecological disorganization by limiting the ability of nature to regenerate itself (Foster, Clark, and York 2010).

The second effect occurs through *ecological additions*, or pollution. As the ToP consumes more of nature, production increases, along with the volume of pollution emitted into the environment. Over time, its effects extend globally. It is often difficult to see these effects if only one nation is examined because, in any given nation, pollution, for example, may be declining. The pursuit of profit often means shifting production, and hence pollution, across nations. So, for example, pollution may decline in the United Kingdom as its polluting industries move their facilities to developing nations (Lynch 2016b), which will see a rise in pollution. The emission of pollutants, or ecological addition, also impedes ecosystem functions and damages the ecosystem's ability to reproduce itself. There are no global estimates for the volume of pollution corporations emit, and nations measure their pollution outputs in different ways and include different chemicals, which make it quite difficult to present data on global pollution emissions. Nevertheless, some green criminologists have managed to study these effects and even model them empirically across nations

(Stretesky and Lynch 2009). As we review in a later chapter, scientists also base their estimates on data that differ significantly from what a criminologist would use, and they have estimated the global quantities of some important pollutants that affect planetary stability as part of what is called “planetary boundaries” research (see Rockström et al. 2009a, 2009b).

In each of the following chapters, we will offer examples of the wide variety of green harms caused by the capitalist ToP.

CONTENT AND ORGANIZATION

Green criminologists have explored a number of important issues related to a diverse array of environmental problems. We have noted that a number of books and journal articles have been written on this subject; drawn attention to green criminologists’ use of various perspectives to examine green crime, harm, law, and justice; and discussed this book’s emphasis on a political-economic approach to criminological research on ecological issues. Subsequent chapters will elaborate on the general observations that follow.

One of our goals was to create an accessibly written and well-documented resource for multiple audiences—from students, who would benefit from a review of green criminological research, to academic researchers, who might be inspired to follow new pathways in the study of green crime. The challenge, therefore, was to undertake simplified descriptions of complex issues without sacrificing academic rigor. We also wanted to lend our own interpretation to the green issues covered in this work, which is largely influenced by political-economic theory and scientific research on the problems of green crime and justice.

Chapter 2 presents an overview of the kinds of studies green criminologists have undertaken, and the scope of those studies. Next, we give our own spin on the study of green criminology by examining ecological additions or pollution as forms of green crime in chapter 3. In chapter 4, we discuss ecological withdrawals, or the kinds of green crimes that occur when raw materials are extracted from nature. Chapter 5 presents our ideas about green crime relative to the concepts of overproduction and overconsumption, which are key political-economic concepts. As part of that discussion, we examine studies of the ecological footprint—that is, the amount of resources humans withdraw from nature, and the harms those withdrawals can produce.

In chapter 6 we explore scientific studies that demonstrate how ecological harms such as pollution cause potentially fatal disease and illness, and draw on the notion of harm that has been developed within critical criminology (Hillyard et al. 2004; Hillyard and Tombs 2007). Scientists have published important findings that can serve as the basis for green discussions of ecological crimes and injustice associated with diseases.

Chapter 7 unifies the research on the green issues described in earlier chapters by exploring case studies on long-term and accidental chemical releases in communities. This includes so-called toxic towns that have been polluted and abandoned because the extent of the ecological destruction has rendered them uninhabitable.

In chapter 8, we turn our attention to the well-studied area of crimes against nonhuman animals, specifically poaching and wildlife trafficking, and offer our political-economic explanation of these crimes, one that has not been widely entertained in the green criminological literature.

Chapter 9 examines environmental justice—an issue that we have explored in our prior research. Environmental justice research has been undertaken largely by sociologists, but the unequal exposure to toxins by different racial, class, and ethnic groups also has important criminological implications for theories of justice (Stretesky 2008). In addition to discussing how exposure to pollutants is unevenly distributed across communities, we look at how law enforcement responses to those crimes are also unevenly distributed, and the ways political-economic forces structure these outcomes.

In chapters 10 and 11, we examine some formal responses to green crimes, which have not received widespread attention from green criminologists. Green criminologists have paid some attention to environmental law, but have not sufficiently explored how environmental law behaves, why it is structured in given ways, and how that structure tends to facilitate rather than limit green crime. To these ends, chapter 10 takes up state responses to green crimes while chapter 11 looks at nongovernmental responses to green crimes. Nongovernmental organizations and citizens groups have not received sufficient attention by green criminologists, nor has the development of environmental movements and their efficacy in controlling green crimes.

In the final chapter, we take what we have learned in the earlier chapters to explore green crime theory (i.e., the explanation for green crimes) in the context of the political-economic forces, notably capitalism's hegemony and the concept of accumulation, that are central to our definition of green crime.

It is, perhaps, unusual for the theoretical chapter in a book of this type to appear at the end of the book, and reviewers of this book asked us to explain this placement. In our view, such a chapter must appear at the end because significant knowledge—the knowledge delivered in the first eleven chapters—is required to enable readers to understand it. We reserve our theoretical discussion for the conclusion because we believe theory emerges from research, including one's own observations, familiarity with the work of other scholars, and the testing of hypotheses. Often theory is treated as though it should be based on conjecture. But a researcher cannot know if his or her hypotheses are useful until they have been tested.

To be sure, this understanding of how theory is constructed, posited by Sir Francis Bacon in his 1620 book *Novum Organum* (*The New Method*), is a

more traditional, scientific one. Bacon suggests that theory is built on inductive reasoning, or generalizing from numerous specific observations of a relationship. A theory is something with probabilistic limits, that is, what is known has a probability of being “correct” but may not be in a particular instance (e.g., disease X is related to exposure to pollutant X in 83% of cases; therefore, when a new instance of disease X is discovered, exposure to chemical X is highly probable, but exposure to pollutant X is not always present where disease X is found). Theories that result from inductive investigation can produce strong or weak conclusions.

In contrast, deductive reasoning, which some researchers find more conducive to their fields, is in theory a logical process, in which the conclusion is formed on the basis of the logic of the system itself. The researcher poses premises that are presumed to true, and bases the conclusion on the initial premise. Such an approach is common in mathematics, where the initial premises define the conclusion (e.g., $2 + 2 = 4$). Such conclusions are not always possible outside predefined systems (e.g., mathematics, some parts of physics, or chemistry), in which the logic of the system must always generate the same outcome. The social world is messy and contains a wide range of things that *might* be related to each other. For example, scientists suggest processes that erode or destroy portions of an ecosystem feedback on species living in the affected ecosystem, and this damage is accelerated when the form of ecological destruction reduces the concentration of species in that ecosystem. While not all ecosystems will be affected, or affected in the same ways, scientists have found a high probability of this outcome.

Some uncertainty is attached to inductive reasoning that is not present when deductive reasoning is employed. The natural world is complex, and achieving 100% certainty about an outcome is seldom possible. Testing the validity of a theory requires amassing enough evidence about the relationship between cause and effect to persuade others that a particular outcome is probable, even if not inevitable, and that the theory can be usefully applied in most of the cases. In our view, inductive reasoning is the better approach for forming theories about green crime, and researchers are responsible for collecting persuasive evidence of how things relate to one another before posing a theory.

CONCLUSION

As green criminologists, we are interested in establishing the objective dimensions of the harms caused by behaviors that generate ecological disorganization, and believe doing so requires using scientific methods for measuring harm. Relying on scientific data avoids making moral judgments. Thus, for instance, when trees are harvested from nature, we are interested in the scientific evidence of the harm that behavior produces, and object to practices such

as deforestation on scientific rather than moral grounds. We apply the same kind of scientific approach to other forms of ecological disorganization.

In the criminological literature, ecological disorganization is not always, or even usually, defined relative to scientific measures of harm. More often, a researcher first posits that a behavior causes some form of harm, and then investigates the nature of that harm. In contrast, we prefer to begin with the scientific evidence of harm and then build a case around that evidence.

Green criminology offers an important alternative to studying harmful behaviors that damage ecosystems and cause widespread green victimization that goes beyond the forms of street crime criminologists ordinarily study. Today, there are a number of green criminological studies that focus on a wide variety of issues, all of which have to do with damage to ecosystems and their inhabitants. Since all species, from humans to insects, inhabit ecosystems, any species can be a victim of green crime.

STUDY GUIDE

Questions and Activities for Students

1. What are the origins of green criminology?
2. Provide examples of the kinds of environmental issues that have increased environmental concern and promoted the development of green criminology.
3. Review and demonstrate an understanding of how green crime is defined.
4. What is the definition of political economy?
5. Explain how political economy is used to discuss green harms, using such concepts as the ToP, global capitalism, ecological disorganization, ecological additions, and ecological withdrawals.

Lessons for Researchers

1. For a quarter century, green criminologists have been unable to fully agree about the definition of green crime. Researchers need to help clarify and attempt to reconcile existing definitions. Further, green criminological research needs to address whether dividing green crimes into various types is necessary or useful, and, if so, what each divi-

sion contributes to current understanding of green crime and injustice.

2. Researchers should pay some attention to green criminology as a discipline. In part, this will involve determining whether green criminologists prefer green criminology to be a subdiscipline within criminology, or a stand-alone academic discipline. Choosing the latter will mean developing specific concepts that differentiate green criminology from criminology in general. Choosing the former will require illustrating the connection between green criminology and mainstream criminology more clearly.
3. This chapter begins to draw attention to the ways in which the political economy of global capitalism affects the distribution of green harms, crime, and injustice across nations. Those observations point to the need for green criminologists to study the differential impact of pollution and the ToP across nations, using a wide range of studies to test the validity of this hypothesis.