

Corporate Swine and Capitalist Pigs: A Decade of Environmental Injustice and Protest in North Carolina

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Introduction

SINCE THE 1970s, AGRICULTURAL GROWTH AND DEVELOPMENT IN NORTH AMERICA have become more closely linked to a wide range of social and environmental problems. Soil and water resources have been degraded, wildlife habitats have been destroyed, and rural communities have been dissolved and uprooted due, in part, to various changes accompanying the industrialization of farming and food production (Gertler, 1992). The scale, mechanization, specialization, capital-intensity, and chemical-intensity of agricultural production have dramatically increased, with the result that large agribusinesses and individual farm operators have come under greater environmental scrutiny associated with the broader "greening" of public opinion since 1970 (Buttel, 1992). For many observers, the growing corporate control over the nature of land use and food production in the U.S. constitutes a major crisis for independent farmers, American culture, and the larger ecosystem (Berry, 1977; Dalecki and Coughenour, 1992; Rifkin, 1992). Such events are also becoming integrated into the emerging theoretical framework of the "new environmentalism" and its social justice focus on the struggles of grassroots movements against racism, sexism, and classism (Belkhir and Adeola, 1997; Belkhir and Butler, 1998; Taylor, 1997).

Perhaps nowhere are the socio-environmental implications of agro-industrialization and corporate control better illustrated today than in the case of North Carolina's swine industry (Edwards and Ladd, 2000; Furuseth, 1997; Molnar et

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al., 1997). Since the early 1990s, North Carolina has been the fastest growing swine producing state in the country, as well as the national innovator in industrialized pork production (Diforio, 1996; Furueth, 1997; Swine Odor Task Force, 1995; Whittle, 1996). The number of hogs in North Carolina soared at an unprecedented rate of growth — from 3.7 million in 1991 to almost 10 million by 1997 — before a statewide moratorium temporarily capped the growth of large swine operations (Clean Water Network et al., 2000). Nevertheless, industry expansion catapulted the state from sixth to second in swine production, surpassing poultry and tobacco as the state's top agricultural commodities (Nowlin, 1997; Shiffer, 1997; Silverstein, 1999; Whittle, 1996). Clearly, the state's booming swine industry has allowed it to close the distance on Iowa as the "Porkopolis" of the U.S. Had it not been for the passage of the 1997 moratorium on hog farms and increased public opposition to the swine industry, North Carolina could have been headed toward as many as 16 million head by the early part of the 21st century. In some counties, hogs already outnumber humans by more than 50 to 1 (Edwards and Ladd, 2001; Whittle, 1996).

Moreover, the state's explosive growth in swine has also been marked by a dramatic restructuring and industrialization of its mode of production (Furueth, 1997). The recent transformation of hog farming in North Carolina, beginning in the early 1980s, from small, local enterprises to large, multi-million dollar "hog factories" has paralleled national and global agro-industrialization trends and become one of the most contentious political conflicts in the state's recent history (Cecelski and Kerr, 1992; Ladd and Edwards, 2001; Lyson and Geisler, 1992; Molnar et al., 1997; Warrick and Stith, 1995). The average size of swine farms in the state has risen sixfold since 1989, while the number of farms dropped from at least 11,400 in 1982 to less than 2,400 permitted facilities (Edwards and Ladd, 2000). Moreover, about 95% of all production occurs on large, concentrated animal feeding operations (CAFOs) of over 2,000 hogs (Benjamin, 1997; Schaffer, 1997; Shiffer, 1999: 3A). In turn, swine operations have also become more geographically concentrated in the eastern coastal plain, which is now home to almost all of the state's regulated hog facilities (Edwards and Ladd, 2000). Economically integrated corporate pork producers in North Carolina, as in other states, now own the hogs from "birth to bacon" (Bryce, 1997: 12).

The growth and concentration of corporate pork production in North Carolina has come to represent, for many constituencies, an industrial invasion of "environmental carpetbaggers." These agricultural factories are seen as endangering the future of the small independent farm, the economic health of rural and minority communities, the vitality of the state's recreational, commercial fishing, and tourist industries, the quality of air, and the safety of ground and surface waters throughout the region (Cecelski and Kerr, 1992). Compared to humans, for example, hogs can produce as much as two-to-five times as much waste and a large swine CAFO of 10,000 mature pigs can produce a sewerage output comparable to

a city of 25,000 people. Overall, 20 million tons of hog wastes are produced each year in North Carolina out of over 116 million tons nationally (Silverstein, 1999: 30). These wastes are pumped out of the hog confinement buildings into adjoining football field-size cesspools, termed "lagoons" by the industry, for anaerobic decomposition and liquidification, which then often evaporate or are sprayed on crop fields as fertilizer. North Carolina has approximately 4,000 active and 650 abandoned inactive waste lagoons tied to hog production (Clean Water Network et al., 2000).

This article examines the growth of the controversy over swine production in North Carolina and the role that environmental justice concerns and grassroots protest played in its evolution to date. The implications of these recent developments are discussed in terms of how community concerns over corporate hog production are converging with wider environmental justice and anticorporate, sustainable agriculture movement goals.

Social and Environmental Impacts of Swine Production

The environmental, economic, and health impacts of industrial swine production are extensive. *Airborne emissions* from hog houses, waste lagoons, and crop fields can contain ammonia, hydrogen sulfide, carbon dioxide, volatile organic compounds, dusts, and endotoxins, which nearby residents experience as sickening and noxious odors, and produce mood-altering symptoms like tension, depression, fatigue, and anger. CAFO workers can also contract various types of respiratory and pulmonary disorders (Schiffman et al., 1998). Atmospheric deposition also occurs, as much of the nitrogen in hog wastes evaporates as ammonia and is then carried and redeposited on nearby lands and waterways in the form of precipitation (Marks, 2001). *Water pollution* is another major problem as waste lagoons, spray fields, and even dead hog carcasses can contribute to the nutrient pollution, pathogen content, eutrophication, and oxygen depletion of ground and surface waters, local aquifers, and private wells through spills, leaching, seepage, and runoff, especially during storms or heavy rains. Pathogens in hog and other livestock wastes have also been identified as contributors to outbreaks of pfiesteria-induced fish kills in several mid-Atlantic states (*Ibid.*). Nutrients from animal wastes have also contributed to a hypoxic, 7,000-square-mile "dead zone" in the Gulf of Mexico that cannot support most aquatic life. *Human health risks* stemming from the threat of pathogen transfers between pigs and people can lead to such human diseases as salmonella, giardia, chlamydia, meningitis, worms, "baby blue syndrome," and influenza, as well as viruses such as E. Coli. Finally, *socioeconomic devaluations* from the siting of hog operations in rural communities can include the displacement of small, independent farmers, lowered property values, the disruption of recreational and tourist industries, and the impeding of future community development (for more details on the environmental and human health impacts of swine operations, see Clean Water Network

et al., 2000; Furuseth, 1997; Harris, 1997; Nowlin, 1997; Marks, 2001; Schiffman et al., 1998; Swine Odor Task Force, 1995; U.S. EPA, 1998).

Given these direct impacts on the local ecology, economy, and community, it should not be surprising that opposition to industrial-style hog production has been one of the fastest growing environmental controversies on the American landscape (Edwards and Ladd, 2000, 2001; Silverstein, 1999; Williams, T., 1998). Moreover, many environmentalists, minority groups, and low-income residents have framed the growth of corporate hog operations as an "environmental justice" and/or "environmental racism" issue. Broadly defined, the goal of the environmental justice movement is to stop the disproportionate burdens of pollution and "development" from being placed on people of color and the poor (Stephens, 1996; Wing et al., 2000). In particular, the movement's ideology charges that "black communities, because of their economic and political vulnerability, have been routinely targeted for the siting of noxious facilities, locally unwanted land uses, and environmental hazards" (Bullard, 1990: *xiv*). Similarly, activists in North Carolina argue that poor and African-American residents and farmers of the eastern Black Belt have been bearing more than their fair share of the hog industry's pollution, economic costs, and land displacement pressures (Burke, 1997; Diforio, 1996; Edwards and Ladd, 2000, 2001; Harris, 1994, 1997; Molnar et al., 1997; Tursi, 1997; Wing et al., 1996, 2000). As large, vertically integrated corporations and intensive hog operations have moved into the state's eastern coastal plain, the various negative social and environmental impacts associated with industrial swine production have become increasingly visible and contested in the public arena (Edwards and Ladd, 2000). Indeed, the controversy has emerged as North Carolina's most dramatic environmental justice conflict since the landmark struggle in Warren County against a PCB landfill in 1982 (Bullard, 1990; Bullard et al., 1997; Edwards, 1995).

Despite the dramatic sociopolitical conflict surrounding the "hog wars" in North Carolina (as well as in other areas of rural America), little sociological research has examined the escalating environmental controversy surrounding the growth of corporate swine production and its impacts on rural communities. Moreover, few social scientists have examined conflicts over the siting and waste-disposal problems of hog operations as emerging "equity" or, "technology" movement controversies (Walsh, Warland, and Smith, 1993); with some exceptions, neither have they examined such issues within the larger framework and claims of the growing environmental justice movement (Diforio, 1996; Edwards and Ladd, 2000, 2001; Molnar et al., 1997; Wing et al., 1996, 2000). Beyond existing environmental justice research on the impact of mineral extraction on Native American lands, or the exposure of Hispanic-American farm workers to pesticide poisoning (see, for example, Bullard, 1993; Chavez, 1993; Pulido and Pena, 1998; United Church of Christ, 1987; Gedicks, 2001), relatively little attention has been paid to the environmental equity impacts on rural populations

of agro-industrialization and its "treadmill of production" (Goldschmidt, 1998; Noble, 1993; Schnaiberg and Gould, 1994).

Background to the North Carolina Swine Controversy

Before the agro-industrialization of the U.S. swine industry in the early 1980s, conventional hog farming, as Furuseth (1997: 397) notes, had few social or ecological impacts:

From the beginning of European settlement, the raising of hogs has been an integral part of the agricultural scene in large portions of the United States. For much of this time, hog production was largely a casual, supplemental activity. That is to say, farmers' primary production focus was on cash crops such as tobacco, cotton, or wheat. Hogs were kept in small numbers on the farm, pasture fed, and raised from farrow to finish. They were either butchered for personal consumption or sold off-farm for additional income.... Animal waste was contained on-site and collected by the farmer. Manure was spread as supplemental fertilizer on the crops and pasture.

Although intensive livestock production operations first appeared in the 1940s with poultry production, for most of the 20th century, hog farming was both small-scale and widespread, as well as confined to traditionally rural populations throughout the state (Marks, 2001). Few farms either specialized in swine production or contained more than a few dozen animals. As recently as 1982, there were nearly 11,400 North Carolina farms producing hogs and pigs, but almost 60% had fewer than 25 hogs (Furuseth, 1997: 397).

Moreover, unlike many Midwestern states that had curtailed or limited corporate ownership of farmland since the Depression as a way to protect smaller, independent farms from being devoured by larger agricultural giants, North Carolina hog operations were essentially unregulated before the early 1990s (Benjamin, 1997; Killman, 1994). Although sporadic grassroots protests against newly developing hog facilities had erupted in states like Michigan and Missouri during the mid-1980s, North Carolina's evolving swine industry was still underdeveloped, independently owned and operated, and given enormous legal protection from the kinds of economic and environmental restrictions placed on other businesses and communities (Benjamin, 1997; DeLind, 1995; Schaffer, 1997; Warrick and Stith, 1995). By and large, the pork industry had yet to experience the shift from independent producers to large-scale integrated systems utilizing either contract growers or corporate farmers, which had already transformed much of the Midwestern pork industry and North Carolina's poultry industry (Furuseth, 1997). As legally constituted "farms," regardless of their size or ownership, intensive hog operations had been traditionally exempted from a host of environmental restric-

tions, zoning laws, labor regulations, and nuisance suits that applied to other industries, towns, or even private homes (Harris, 1997). In short, hog farming was protected by a web of "Right-to-Farm" laws, powerful multinational and state economic forces, and supportive governmental and agricultural institutions. Legitimated further by the romantic image of the rugged individualist farmer toiling on the land, intensive livestock operations had, by the end of the 1980s, escaped much of the heated societal debate that characterized other environmentally hazardous industries (DeLind, 1995; Furuseth, 1997).

Environmental Justice Concerns and Protest over Swine Operations

A New Environmental Justice Issue

The initial stages of organized opposition to swine operations in eastern North Carolina began in the early 1990s with the formation of a number of grassroots groups who "were tired of hogs stinking up their environment and decided to fight back" (Fennel, 1991: 1B). Hundreds of permit violations involving improper hog waste disposal practices by companies like Smithfield Foods, Carrol's Farm, and Murphy Family Farms had already occurred in the region since the late 1970s. When Smithfield Foods announced plans in 1990 to build a large hog slaughterhouse in Bladen County on the banks of the Cape Fear River, local residents calling themselves Citizens for Clean Industry (CCI) organized, petitioned elected officials, spoke out at public hearings, recruited supporters statewide, and filed several lawsuits against the proposed \$50 million, 32,000 hogs-a-day slaughtering facility. Although the suits to delay construction and force the company to conduct an Environmental Impact Study were dismissed, CCI sparked concern across the state and residents in 14 counties formed a coalition to meet regularly and share information on challenging the spread of corporate hog farms (Cecelski and Kerr, 1992). Succinctly framing the groups' concerns, one spokesperson charged that:

We are not opposed to the hog industry. We would like to see them prosper as any American industry prospers. At the same time, we would like for them to consider us as homeowners and residents of areas where they are putting the hog facilities. We want our properties to be free of odor, to be free of water pollution. And we don't want property values lowered because of nearby hog operations (Fennel, 1991: 1B).

Though efforts to block construction of the Bladen County slaughtering plant failed, two more grassroots organizations that would come to play key roles in mobilizing opposition to swine industry expansion, the Alliance for a Responsible Swine Industry (ARSI) and Halifax Environmental Loss Prevention (HELP), emerged in 1992. In particular, HELP was a racially diverse group that pledged "to protect communities from environmental and economic threats posed by large-scale intensive livestock operations" (HELP pamphlet, n.d.). In addition to

supporting the broad environmental concerns already on the table, HELP was among the first activist groups to link corporate hog farms to what they saw as a larger trend: industries that singled out poor, black, or Native-American rural communities to construct facilities that posed dangers to public health, forced small and minority farmers out of business, and damaged the economic and cultural sustainability of traditional agrarian communities (Cecelski and Kerr, 1992; Tursi, 1997).

Significantly, HELP was formed almost exactly a decade after the nation's first landmark "Environmental Racism" protest in 1982 against the siting of a PCB landfill in neighboring Warren County (Bullard et al., 1997; Edwards, 1995). Joining with other grassroots groups, HELP persuaded the Halifax County Board of Health Commissioners to adopt the state's first regulatory ordinance governing intensive livestock operations, as well as a 30-day moratorium on the construction of new hog farms. Both actions became models for subsequent local and statewide efforts to place stricter regulations on swine facilities.

Working with Concerned Citizens of Tillery (CCT), the larger umbrella organization to which it belonged, HELP and CCT were vital in spearheading the introduction of environmental justice or racism concerns into the debate over swine impacts (CCT, 1994). CCT also played a key role in linking hog industry trends to farm loss. Back in 1983, for instance, the CCT created the Land Loss Fund to address the social welfare concerns of small, economically disadvantaged landowners, especially black farmers, who were rapidly losing their land in eastern North Carolina (Land Loss Fund pamphlet, n.d.). Moreover, CCT was among the first grassroots groups to model itself explicitly upon the emerging principles of the environmental justice movement that had been adopted at the People of Color Environmental Leadership Summit in 1992 held in Washington, D.C. (see Bullard, 1993). In turn, CCT helped create a *new* environmental justice issue beyond the domain of the movement's major focus on urban hazardous chemicals and waste facilities by drawing attention to the racial and class implications of siting intensive livestock operations in marginalized, rural communities.

Concerned Citizens of Tillery remained the most pivotal organization in the region for mobilizing eastern North Carolina Black Belt communities around environmental justice issues. After organizing a number of local protest rallies against swine producers, CCT/HELP cofounder Gary Grant, along with ECOFORCE, another eastern North Carolina environmental justice organization, initiated the Hog Roundtable in 1993, which grew to include 42 regional environmental and citizens' groups over the next four years. Representing a unique coalition, the Hog Roundtable brought together "grassroots, legal, and traditional environmental organizations" with the dual goal of protecting communities from the environmental health hazards associated with hog operations and forging ties between environmental justice groups and mainstream environmental organizations (Burke, 1997; Wing et al., 1996).

As noted, key environmental justice organizations framed concerns about swine industry expansion as environmental justice issues that were closely linked to patterns of farm loss, especially among small, African-American farmers. This local strategy was significantly helped by President Clinton's 1994 Executive Order 12898 on Environmental Justice, which directed government agencies to address the disproportionate impacts of all federal projects on minority and low-income communities (Cable and Shriver, 1995). However, as the controversy over corporate swine production intensified and the coalition of industry critics broadened, the emphasis on environmental justice and black farm loss was often eclipsed by other environmental concerns concerning air pollution, recreation, and water quality, around which larger political constituencies could mobilize.

Water Quality Issues Gain Support

The base of opposition broadened in 1995 when the social and environmental impacts of swine production became front-page news with the publication of the *Raleigh News and Observer's* Pulitzer Prize-winning "Boss Hog" investigative series (Warrick and Stith, 1995). This influential report was followed by the rupturing of several hog waste lagoons that spilled over 40 million gallons of untreated swine feces and urine into the streams and rivers of the Coastal Plain. Over the next months, an estimated 10 to 15 million fish died from the increased nutrient loads derived, in part, from the hog waste spills. North Carolina officials were forced to post health warnings and close 364,000 acres of fishing and recreational waters, costing the state thousands of dollars in lost revenues (Nowlin, 1997). This series of events helped galvanize public concern about swine industry growth and put water quality issues at the center of the debate.

The political fallout surrounding these disasters was magnified by the flooding accompanying Hurricanes Bertha and Fran in 1996, which resulted in even more hog wastes entering state waters from overflowing swine waste lagoons and farm run-off in inundated areas (Furuseth, 1997). Although grassroots protest continued throughout eastern North Carolina, environmental justice concerns about the adverse economic impacts of corporate hog farming on small, independent, and black farmers gave way to wider concerns over air and water quality, as well as over potential economic damage to recreation and tourism dollars. Similarly, questioning about the extent to which negative environmental impacts from large hog operations fell disproportionately on low-income and minority communities was eclipsed by concerns of more mainstream constituencies over ground and surface water pollution. Adding to this pressure were studies identifying agribusiness animal waste as a major culprit in episodes of hypoxia and pfiesteria outbreaks in the waterways of eastern North Carolina and other mid-Atlantic states (Hager and Reibstein, 1997; Shiffer, 1997: 1A).

Threats to water quality, a desire to get stricter state regulatory controls, and support for a statewide moratorium to rein in the pork industry's meteoric growth

were the key issues that not only amplified initial environmental justice concerns, but also united the increasingly diverse coalition of hog industry opponents into an effective lobby. With public protest mounting, on August 27, 1997, the North Carolina General Assembly passed the "Clean Water Responsibility Act," implementing measures to control odor, protect water quality, and restore local zoning authority over the siting of large hog operations. However, the most significant aspect of the legislation involved the enactment of a statewide two-year moratorium on the construction of new swine facilities, as well as the expansion of existing ones containing over 250 hogs, to permit more research into alternative waste-disposal technologies (Rawlins, 1997: 1A). Although the newly created moratorium and regulations drew widespread support from a majority of residents and marked a significant step forward, skeptics from the Hog Roundtable noted that the regulations provided greater protection for golf courses than for the drinking-water wells of ordinary citizens (Edwards and Ladd, 1999; Luebke, 1998).

Moratorium on Swine Production Expansion Spurs National Debate

The passage of the 1997 Clean Water Responsibility Act and its landmark moratorium sparked wider public debate over the impacts of concentrated hog production and propelled North Carolina into the national limelight as the bellwether state for the emerging conflict over the growth and regulation of "assembly-line swine" (Claiborne, 1999; Williams, T., 1998). From North Carolina and Pennsylvania in the East, to Iowa and Oklahoma in the Midwest, to Utah and Colorado in the West, highly publicized debates, hearings, conferences, research reports, and trials captured public attention, while media such as CBS's "60 Minutes," the *Wall Street Journal*, the *New York Times*, NPR, and dozens of national news magazines, newspapers, and environmental organizations picked up the controversy (Thu and Durrenberger, 1998).

The national environmental movement also became more attentive to the issue. In December 1997, grassroots organizations introduced resolutions for the first time at the annual National Environmental Justice Advisory Council (NEJAC) meetings calling for stricter federal clean water standards on swine operations and criticizing the Environmental Protection Agency (EPA) for their inattention to the discriminatory impact of livestock operations on low-income and people-of-color communities (Harris, 1997). Additionally, the National Environmental Dialogue on Pork Production released recommendations for addressing environmental problems related to intensive hog operations (America's Clean Water Foundation, 1997). A critical U.S. Senate Agriculture Committee report documented that the U.S. produces 130 times more livestock waste than human waste and, as a result, the "Animal Agricultural Reform Act" was introduced into legislation (U.S. Senate Committee on Agriculture, Nutrition and Forestry, 1997). In response, in February 1998 the Clinton administration called for stricter limits on coastal runoff, new controls on waste from poultry and livestock operations, and more

rigorous EPA protection of minority neighborhoods from pollution sources (*The News and Observer*, 1998: 6A).

Moreover, residents in North Carolina voiced extensive concerns about the industry and its regulation, while a more regional focus on environmental justice issues pertaining to Black Belt communities and farm loss emerged (Edwards and Ladd, 1999). In February 1998, for example, the "2nd National Land Loss Summit," sponsored by the Land Loss Fund of the Concerned Citizens of Tillery, was held in Enfield, North Carolina, to increase awareness of the plight of black farmers, reemphasize the value of research on farming and land loss, and provide farmers with resources critical to their sustainability, political empowerment, and economic profitability (Land Loss Fund, 1998). In October 1998, grassroots organizations in North Carolina sponsored a statewide environmental justice organizing conference called "Save the People." The two-day event brought together representatives of urban and rural environmental justice groups, traditional environmental organizations, labor groups, and farmers' groups with state agency officials to discuss goals and strategies for a coordinated environmental justice initiative in North Carolina. The conference explicitly linked farm loss in minority and low-income rural areas with recent swine industry expansion as interrelated environmental justice concerns (Save the People! Conference Program, 1998).

By 1999, the hog wars had come center stage in North Carolina politics. Governor Jim Hunt announced a "conversion plan" to start phasing out all open-air waste lagoons and spray fields within 10 years through higher performance standards and new regulatory incentives, but received little support from the state General Assembly. Soon, over 5,000 postcards from citizens were delivered to the governor's office demanding that the state increase its fight against pollution from factory hog farms and speed up its cleanup of swine waste lagoons (North Carolina Public Interest Research Group, 1999; Shiffer and Williams, 1998: 3A). Meanwhile, pork producers continued to try to expand various operations in the state using loopholes and exemptions in the moratorium regulations, while shifting hog operations to other Southern, Midwestern, and Western states with less restrictive regulations (Bryce, 1997; Claiborne, 1999). In a quest for renewed legitimacy, the pork industry launched an extensive \$2.6 million public relations campaign in eastern North Carolina's media markets. The campaign, which became the subject of various state political investigations, as well as a PBS documentary, employed television and radio ads that attacked the industry's political opponents in the state who were up for reelection and blamed North Carolina's water quality problems on municipal sewerage systems, not hog operations (Heath, 1998: 18A).

Hurricane Floyd Creates New Momentum for Waste Disposal Alternatives

In the midst of this growing controversy, Hurricane Floyd slammed into eastern North Carolina in September 1999, dropping 20 inches of rain, flooding

6,000 homes, displacing 48,000 residents, killing 48 persons, and destroying 2.3 million acres of crops. Over two million chickens and turkeys died in the rising waters, as well as hundreds of cattle and some 30,000 hogs. More than 50 swine lagoons ruptured and some 250 CAFOs were flooded out. Moreover, the flood created a veritable witches brew of sewage, bacteria, petroleum, pesticides, and farm/industrial chemicals that spread through the region, endangering wells, farms, human immune systems, and every species in its path (Bowie, 2000).

For many, this "unnatural" catastrophe represented the virtual "worst-case scenario" disaster that corporate hog critics and environmental activists had warned about for years, galvanizing not only the North Carolina anti-swine industry forces, but also the emerging protest movement nationwide. The North Carolina legislature called a special session to issue stringent rules on how hog and livestock producers should deal with overflowing waste lagoons, while the Sierra Club and other environmental organizations called for the EPA to immediately ban open-air waste lagoons and prohibit the construction of CAFOs in floodplains (Saker, 1999: 1A; Sierra Club Press Release, 1999). More emphatically, the North Carolina Environmental Justice Network pointed to how the disaster was disproportionately affecting the region's black, Hispanic, and poverty-level residents who had the most to lose from the flood damage (Edwards, 1999; Waggoner, 1999: A-33). With new moratoriums and CAFO regulations pending in at least 12 other state legislatures by the end of the year, Hurricane Floyd became to the hog industry what Three Mile Island had been to the nuclear power industry (Bowie, 2000).

In July 2000, state Attorney General and gubernatorial candidate Mike Easley announced an agreement with Smithfield Foods, the state and national leader in hog production, to develop and implement new swine waste disposal technologies to replace existing lagoon storage systems. Smithfield pledged to pay \$15 million to agricultural researchers at North Carolina State University to cover the costs of researching and developing alternative waste disposal techniques, as well as contribute \$50 million toward environmental improvements and compliance monitoring in the hog industry. Shortly afterward, Premium Standard Farms, North Carolina's number two producer, followed suit in a similar agreement with the state and the university to pay \$2.5 million toward the retrofitting of their CAFO waste lagoons and spray fields (Bonner, 2000: 1A; Shiffer, 2000a: 1A).

Viewing these industry agreements as little more than public relations ploys, nationally known environmental attorneys Robert F. Kennedy, Jr., and Jan Schlichtmann, representing environmental groups and independent farm advocates, announced plans to sue North Carolina swine producers for violating water pollution and nuisance laws. The lawsuits were part of a national campaign in which 15 law firms with experience litigating against tobacco and asbestos harms had agreed to spend at least \$50,000 each in a coordinated effort to force the industry to clean up its operations and abandon lagoons and spray fields in seven states. Despite protests from the North Carolina Pork Council that it was moving

forward with “science-based” solutions to hog waste problems, Schlichtmann denounced modern hog farms as “animal concentration camps” and Kennedy charged that the industry had benefited from “pollution-based prosperity” that externalized environmental costs onto the public and small farmers (Shiffer, 2000b: 1A).

Claims by North Carolina activists and researchers who framed the impact of the agro-industrialization and expansion of the hog industry as an environmental justice issue have been empirically supported (Burke, 1997; Concerned Citizens of Tillery, 1994; Edwards and Ladd, 2000, 2001; Harris, 1994, 1997; Wing et al., 1996; Wing and Wolf, 2000; Wing et al., 2000). As a region, eastern North Carolina lags behind the rest of the state in income and political clout and has a substantially higher concentration of African-American residents (Wimberley and Morris, 1997). The region has also suffered more extensively from recent trends of farm loss and is now home to over 95% of the state’s hog population. Thus, whatever the negative impacts of intensive, industrialized hog farming may be, they are most pronounced for the rural residents of the eastern coastal plain. Within eastern North Carolina, counties that had higher proportions of African-American residents, higher rates of poverty, and less local political capacity in 1980 have also been more likely to have growing hog populations throughout the 1980s and 1990s. Moreover, the counties in eastern North Carolina with higher proportions of black residents and higher rates of black poverty have also suffered greater farm loss since the early 1980s. In turn, farm loss since the early 1980s has been associated with hog industry growth, rising rates of black poverty, and falling rates of white poverty (see Edwards and Ladd, 2000, 2001).

These findings have been supported by similar research demonstrating that intensive hog operations in North Carolina have been disproportionately located in poorer communities with larger black and non-white populations (Wing et al., 2000). Clearly, studies such as these, as well as others (see Wing et al., 1996; Diforio, 1996; Molnar et al., 1997), represent a newly emerging environmental justice literature that compliments and extends existing research on grassroots environmental movements.

Implications and Reflections for the Future

As of 2002, constituencies on both sides of the issue continue their efforts to mobilize stakeholders throughout the state over how to best proceed with cleaning up the industry. With the moratorium on swine production expansion in effect until at least 2003, the public debate and grassroots protest has continued to revolve around the issues of: (1) limiting or reducing future pork production; (2) requiring swine producers to phase out the state’s existing 4,000 waste lagoons, as well as limiting the practice of spraying liquefied hog wastes on agricultural fields; (3) cleaning up the state’s abandoned lagoons; (4) requiring that the pork industry, not the public, pay the cleanup costs; and (5) developing new alternative technologies

and methods of swine waste disposal (Clean Water Network et al., 2000; Lancaster, 2001; Marks, 2001). Like many expanding sectors of production today faced with citizen resistance, however, the hog industry continues to vertically integrate and globalize, migrating into other states and countries where political opposition is minimal and environmental costs are lower (Ladd and Edwards, 2001).

In the wake of continuing waste lagoon spills into state waterways, grassroots environmental justice groups have maintained their fight for new state and county ordinances to restrict future industry expansion (Shiffer, 1999: 3A). As the clock continues to tick away the remaining time on the current moratorium, activists, state agencies, cooperative services, and various researchers have continued to study new scientific evidence, assess current regulatory impacts, and prepare for the possibility of renewed industry growth — and public conflict — ahead. Whatever the future, events in North Carolina signify the tip of the political iceberg in the growing citizen mobilization for stricter state and federal regulations on non-point sources of pollution from animal wastes (Ingersoll, 1998). Clearly, the controversy has made North Carolina the national exemplar in the emerging conflict over the regulation of “assembly-line swine” (Williams, T., 1998). The impact of the North Carolina moratorium and the public debate over the growth of corporate hog production has become increasingly national in scope, with other state regulators and lawmakers considering or approving similar moratoriums in Kansas, Illinois, Indiana, Minnesota, Mississippi, Nebraska, Colorado, and Oklahoma (Associated Press, 1998: B1; Bryce, 1997; Clean Water Network et al., 2000). Moreover, dozens of rural counties across the United States are actively engaged in political battles to restrict industrial livestock operations from operating in their communities (*U.S. Hog*, 2002).

Such events point to the growing convergence of environmental justice concerns with the pollution impacts and public health problems generated by corporate agricultural production. With respect to farm loss issues, for instance, studies in 1997 by the General Accounting Office and U.S. Department of Agriculture (USDA) highlighted the longstanding inability of black farmers to secure farm loans and other subsidies from the federal government (Land Loss Fund, 1998). Consequently, in January 1999, the USDA agreed to pay over \$300 million to more than 1,000 black farmers who had filed a class-action lawsuit charging the government with discriminatory lending practices since 1983 (Jones, 1999: A18).

Key national environmental organizations have also become active on the issue. In March 1999, the Board of Directors of the Sierra Club passed a resolution to expand its current funding and staffing for environmental justice organizing to support its new campaign for stricter regulations on livestock wastes from confined animal feeding operations (Sierra Club Board of Directors Resolution, 1999). Similarly, Environmental Defense is supporting increased research and advocacy needed to get better waste management technologies and policies

implemented (Rader et al., 1998). The Natural Resources Defense Council (NRDC) has also been particularly aggressive in researching and organizing the public around the equity impacts of hog operations in various states (see Clean Water Network et al., 2000; Marks, 2001). Although local environmental justice groups often tend to be wary of working with mainstream national environmental organizations on grassroots issues, both movement constituencies seem to have fashioned a reasonably respectful and cooperative partnership in their fight against corporate hog production.

The federal government has responded as well. The EPA and the Department of Agriculture issued regulatory guidelines for the management of animal wastes generated from large livestock operations for the first time in 1998 (*The News and Observer*, 1998: 6A; U.S. EPA, 1998; Rosen, 1998: 1A; Williams, T., 1998). As of this writing, the EPA is continuing to develop new guidelines that would essentially regulate agricultural runoff in same manner as hazardous wastes from industries and sewage plants. Although the Bush administration has delayed implementing these rules, originally initiated during the Clinton years, livestock producers are bracing themselves for mandates they say could cost them as much as \$1.2 billion over the next 10 years (Lancaster, 2001: A1). In addition, the pending NRDC lawsuits against the industry in North Carolina have kept alive the possibility that the federal Resource Conservation and Recovery Act, usually only applied to hazardous wastes, can also be used to force tighter regulations on hog wastes.

This move toward stronger national waste standards represents another important landmark. Historically, intensive livestock operations have been treated as “nonhazardous,” “non-point,” and “nondischarging” facilities. Thus, they have been exempt from most state and federal waste management regulations applicable to other polluting industries. Given the array of organic materials, heavy metals, and other potentially harmful substances now identified in swine wastes, industry critics and grassroots organizations are beginning to advocate that large-scale livestock operations be subjected to the same (or higher) sewerage treatment regulations that currently govern municipal sewerage treatment facilities (Rader et al., 1998). As Silverstein (1999: 30) concludes, “the situation in North Carolina is part of the growing nationwide crisis: farms have now replaced factories as the biggest polluters of America’s waterways.”

For over a decade, environmental justice organizations in North Carolina have been in the forefront of helping to mobilize communities against intensive swine operations and their myriad socio-environmental impacts. In so doing, these organizations have provided themselves and the national environmental justice movement with a comparatively new issue around which to organize poor, minority, and politically marginalized rural residents — thus extending the movement’s parameters beyond its historical focus on toxic landfills and urban air pollution (Cable and Shriver, 1995). Moreover, the swine conflict and its sur-

rounding events have been especially helpful in bolstering local claims that North Carolina represents, at least since Love Canal, the "birthplace of the Environmental Justice Movement" (Edwards, 1995; Save the People! Conference Program, 1998).

Beyond the discriminatory impacts of hog waste issues on disadvantaged populations, however, the escalating debate over corporate swine production parallels other social and environmental concerns regarding issues like the decline of family farms, sustainable agricultural practices, food security, and the destruction of rural landscapes (Barkenbus et al., 1996; Buttel, 1992; Gottlieb and Fisher, 1996). Indeed, a critical body of research links the rationalization of agricultural production with the erosion of family farming, increased class polarization of the community, and greater social and environmental problems (e.g., Goldschmidt, 1998; Thu and Durrenberger, 1998). In turn, larger, more mechanized farms, combined with urban and metropolitan sprawl, increase the loss of traditional farmland and rural spaces. Moreover, with the rise in global production chains, dependent largely on the actions of agribusiness, the state, and various NGOs concerned with trade and the environment, the family farm has become relegated to the margins of the local economy, social institutions, and the food supply. Even though the mode of production for industrial agriculture is usually viewed as inherently unsustainable, some have argued that the growth of global agribusiness also creates new opportunities for smaller, niche-oriented farmers engaged in sustainable agricultural practices to serve local markets (Lobao and Meyer, 2001).

These trends have particularly uprooted African-American farmers who produced swine and other livestock animals for subsistence, especially in North Carolina (Edwards and Ladd, 2000). For decades, small-scale, independent black farmers in the South have been the "canaries in the coal mine" of American agriculture. Their continuing decline since 1920 signals not only the demise of independent food producers working their own land, but also the inability of most minority farmers in the U.S. to survive the structural transformations accompanying the industrialization of agriculture in the late 20th century (Lobao and Meyer, 2001). Today, transnational agricultural giants are finding themselves increasingly targeted by a growing anti-globalization movement that views the accumulation of corporate wealth as derived from the plunder of natural resources, as well as the decimation of local environmental regulations, food production, and the autonomy of small independent farmers (Ladd and Edwards, 2001). Nevertheless, the growing concerns of many communities over the increasing control of the food supply by agribusiness on the one hand, and the environmental benefits of sustainable agriculture on the other, represent new social equity issues capable of integrating diverse political constituencies into the unfolding tapestry of the environmental justice movement.

In conclusion, the escalating controversies over hog production illustrate how social researchers are beginning to incorporate wider dimensions of class, occu-

pation, and geopolitical location into their treatment of environmental “injustices,” as well as expanded frameworks for analyzing environmental “victimology” (see Stephens, 1996; White, 1998; Williams, C., 1996). As swine and various other livestock waste conflicts become a more common feature of rural life in the U.S., their impacts on minority communities and independent farmers are evolving into one of the most prominent social justice issues underlying the environmental struggles of the 21st century.

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