
INTRODUCTION TO ENVIRONMENTAL PRACTICE AND POLICY

CHAPTER ONE

AN INTRODUCTION TO ENVIRONMENTAL LAW IN PRACTICE

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I. ENVIRONMENTAL PROTECTION IN CONTEXT—THE VIEW FROM THE TRENCHES

The leading compilations of the most important environmental statutes contain nearly 2,000 pages of law. Within those pages one encounters the Clean Air Act, the Clean Water Act, the Endangered Species Act, the National Environmental Policy Act, the Noise Control Act, and the Pollution Prevention Act, to name just a few. The enforcement of these statutes, in turn, is variously assigned to the Environmental Protection Agency, the Fish and Wildlife Service, the Forest Service, the Bureau of Land Management, and the Army Corps of Engineers, with other agencies playing

important roles as well. And those are just the federal laws and federal agencies. In nearly every instance states have a parallel statute administered by a parallel agency. Dozens of states also expressly incorporate environmental protection into their constitutions. For example, the “right to a clean and healthful environment” is the first of the “inalienable rights” that Montana’s itemizes in its constitution. MONT. CONST. Art. II, § 3. Moreover, there are many instances in which the law beyond “environmental law” addresses environmental concerns. Local zoning ordinances account for environmental concerns when deciding whether to permit a proposed use of the land. State and federal tax laws can reward or punish designated activities depending upon how they affect the environment.

These environmental laws affect lots of people. A list of just a few of the parties involved in recent environmental litigation includes the AFL-CIO, City of Albuquerque, American Society for the Prevention of Cruelty to Animals, Association of Irrigated Residents (AIR), Biodiversity Legal Foundation, Black Hills Regional Rail Shippers Association, California Air Resources Board, Chesapeake Bay Foundation, Desert Fishes Council, E.I. Dupont De Nemours & Co., Federal Aviation Administration, Fruit of the Loom Inc., Montana Farm Bureau, National Association of Home Builders, New Mexico Council of Churches, New Jersey Institute of Technology, State of New York, Pierre Chamber of Commerce, Rio Grande silvery minnow, Shell Oil Company, South Dakota Wheat Growers Association, Tennessee Valley Authority, Zoological Society of San Diego, and innumerable government officials and private individuals. Of course, the reported cases represent just a tiny fraction of the instances in which industry, developers, individuals, environmental groups, and others were affected by the provisions of environmental law.

Then there are the lawyers. More than 10,000 attorneys are members of the ABA’s Section on Environment, Energy, and Resources. Again, that figure neglects the many attorneys who occasionally encounter an environmental issue in the course of corporate transactions, land development, and many more unexpected contexts.

This collection of laws, affected parties, and lawyers can produce a nearly infinite combination of legal questions involving the protection of the natural environment. We will encounter many, though assuredly not all, of the most interesting and important laws and legal issues in the course of this book. Before we begin that survey, though, we will begin with two case studies that illustrate the tasks confronting environmental law, and how that affects the institutions, regulated parties, and lawyers that make environmental law work. Environmental law is often described as covering two broad areas—pollution and natural resources. The first case is short and focuses on pollution, setting out the challenges of pollution to the Neuse River watershed in North Carolina. The second case addresses natural resources through a conflict on the other side of the country, exploring the difficult balance between development and conservation of the endangered Delhi Sands Flower-Loving Fly.

POLLUTION IN THE NEUSE RIVER

American Rivers is a non-profit organization—founded in 1973 and boasting 65,000 members—that is dedicated to “standing up for healthy

rivers so our communities can thrive.” Each year, American Rivers announces its list of the most endangered rivers in the United States. Those rivers are threatened by a variety of events, such as industrial pollution, the unintentional runoff of toxic chemicals, the construction or operation of dams, and excessive withdrawals for irrigation. The eighth river on the 2007 list was the Neuse River in North Carolina. American Rivers explained its selection in the following document (which also appears on its website, <www.americanrivers.org>).

#8 Neuse River, North Carolina Threat: Poorly Planned Development

SUMMARY

It would be hard to match the damage done to the waters of the Neuse River by massive hog operations in the watershed, but if developers get their way, human sewage, stormwater runoff and habitat destruction could earn that dubious distinction. With sprawling coastal development creeping inland, and urban growth in the headwaters, the Neuse is the new frontier for poorly planned development. The North Carolina Division of Water Quality (NCDWQ) must tackle the issue; otherwise human sewage, polluted runoff and other municipal pollution will soon present a problem as serious as runoff from factory hog operations.

THE RIVER

Beginning near Durham, the Neuse River flows through Raleigh and empties into Pamlico Sound. Despite suffering from decades of pollution, many endangered species including the Carolina madtom (a freshwater catfish), Tar River spiny mussel, piping plover, dwarf wedge mussel and loggerhead turtle remain in the Neuse River basin. Dolphins and alligators are seen regularly in the estuary, and sharks and manatees occasionally appear as far upriver as New Bern.

The Neuse, whose name is derived from the Neusiok—a Native American tribe that inhabited the New Bern area—has a rich history of human interaction. With more than 3,400 miles of tributaries, the river flows 250 miles from the Piedmont to Pamlico Sound. Approximately 2 million people, one-sixth of the state’s population, reside in the basin. The river, via Falls Lake, provides drinking water to 400,000 Raleigh-area residents and its estuary serves as a primary nursery for commercially and recreationally important fish and shellfish. Water sports such as kayaking and sailing as well as other forms of tourism are important economic drivers for the region.

THE THREAT

For many years, nutrient-laden waste from millions of hogs living in concentrated animal feeding operations (CAFOs) in the state’s Coastal Plain has overloaded the entire Neuse basin with nitrogen, phosphorus and ammonia. [Since 1991, North Carolina has been the fastest growing hog producer in the country.] Excessive amounts of these nutrients feed explosive algal growth, which depletes oxygen in the water and has caused some of the largest fish kills in the nation. Nutrients from hogs and other

sources have also led to outbreaks of *Pfiesteria*, a tiny one-celled organism that produces a neurotoxin deadly to fish and exceedingly harmful to humans.

A growing basin-wide threat is poised to exacerbate the problems associated with factory hog production. Now that the Atlantic Coast is saturated with homes and buildings, residential development is creeping up along rivers and tributaries into many counties that have been collectively identified as the “Inner Coast.” With population in the Neuse River basin projected to increase by one million in the next 20 years, major developments are being proposed in both the upper and lower watersheds.

This threat is far-reaching and multifaceted. Sediment running off poorly managed developments significantly degrades water quality, but the problems continue even after construction ends. Greater populations generate more nitrogen from human and pet wastes, lawn fertilizers and auto exhausts. The spread of paved surfaces leads to huge surges in polluted runoff after storms. New construction can also harm or completely destroy vital wetlands and protective buffers along rivers. In response to projected growth, an alarming number of municipalities are not only targeting the Neuse for increased drinking water withdrawals, but also as a depository for additional sewage discharges.

WHAT’S AT STAKE

While state and federally mandated pollution reductions have been implemented in recent years, the benefits to the health of the Neuse River have been minimal. Now, runaway development threatens to negate any progress made in improving water quality. [North Carolina’s population is expected to increase by over 25% through 2020, much of it in the Neuse River watershed.] Upstream discharges and development have already landed Falls Lake, the second largest drinking water reservoir in the state, on the 2008 list of impaired waters from excessive nutrients. The building boom is also destroying the cultural heritage of eastern North Carolina as family-owned fishing piers and fish houses are demolished to make way for condominiums. North Carolina risks losing the cultural legacy of these water-dependent communities.

WHAT MUST BE DONE

As sewage and wastewater treatment facilities reach capacity, counties throughout the Neuse River basin are gearing up to request permits to increase wastewater discharges into the river. The city of Raleigh and many counties in the upper watershed are planning to expand their sewage discharges. These activities will require permits from the CDWQ. Rulings could come as early as summer 2007. The state agency must resist pressure to hand out more pollution permits without fully evaluating the cumulative impacts to the entire Neuse River. Furthermore, discharge permits for virtually all sewage treatment plants in the Neuse River basin come up for renewal in 2008. This is an important opportunity to clean up the river.

Second, a moratorium on new large-scale hog operations in eastern North Carolina ends in August 2007. Alternative technologies have been developed and are available to replace lagoons and spray fields. In 2007, the

North Carolina Legislature must implement a permanent ban on new lagoons and spray fields, and require the phasing out of existing lagoons and spray fields over a five-year period.

DEVELOPMENT AND THE DELHI SANDS FLOWER-LOVING FLY

Our second problem takes us across the country to the Delhi sand dunes (also known as the Colton Dunes), the only inland sand dune system in the Los Angeles basin. The Delhi sand dunes were created long ago when the Santa Ana winds picked up sand from several creeks and deposited it over about 35,000 acres of land located about sixty miles east of the Pacific Ocean in southern California. At first glance, the dunes are inhabited only by blowing sand and scattered shrubs. But contrary to the popular image of deserts as barren of wildlife, desert ecosystems are in fact teeming with birds, insects, reptiles, mammals and plants. The Delhi Sands are a good example of what one finds in a coastal sage scrub ecosystem. Birds such as Western meadowlarks and burrowing owls frequent the area. The San Diego horned lizard and the legless lizard live in the dunes, as do insects such as the Delhi sands metalmark butterfly and the Delhi sands Jerusalem cricket. The onset of night entices the Los Angeles pocket mouse, the San Bernardino kangaroo rat and other small mammals to survey the land. Primrose, goldfields and other wildflowers flourish after the winter rains, replaced later in the year by the wild buckwheat and the colorful butterflies that the plant attracts. The yellow flowers of telegraph weeds appear in the summer.

Increasingly, though, the Delhi Sands are home to many people, too. The area had long been inhabited by many different Native American peoples, including the Serrano, the Cahuilla, the Chemehuevi and the Mojave. Spanish and Mormon missionaries traveled across the land during the eighteenth and early nineteenth centuries, and the first European settlements in what is now western San Bernardino and Riverside Counties began after California became a state in 1850 and after the railroad reached the area in the early 1870's. The city of Colton, for example, was first settled in 1874 and named after a Civil War general who also served as the vice president of the Southern Pacific Railroad. The settlers immediately began planting citrus orchards despite concerns that the land was inadequate for farming. The citrus thrived in the warm climate once irrigated water was delivered from the nearby Santa Ana River, and much of the land was cultivated for grapes, oranges and other fruits by the late 1800's. Dairies, residential homes, and commercial and industrial development were the next to appear on the scene.

The results of the human settlements have not been especially attractive. The California Portland Cement Company mined Slover Mountain for over 100 years, leaving a pile of granite and no dunes in its wake. Similar enterprises have taken the sand for road fill and other purposes. Junk yards and petroleum tank farms abound. The Southern Pacific Railroad and Interstate 10 bisect the area. A landfill, a sewage treatment facility and

many illegally dumped cars are also nearby. Off-road vehicle enthusiasts alter the terrain of the little bit of the dunes that remains.

Yet the land is in great demand. The population of Colton, in the heart of the dunes, is expected to grow from 45,000 in 1995 to 53,160 in 2000, and then to 69,710 in 2020. The entire western San Bernardino and western Riverside County region is expected to see even more explosive growth. The two counties are expected to add 128,000 people each year through 2010. The additional people bring additional demands for housing, shopping, offices, road, and other facilities to be built on the previously barren land. The attractiveness of the area has spiked land prices to as high as \$160,000 per acre.

The human population of the dunes is as diverse as the wildlife population. Nearly sixty percent of the residents of Colton, for example, are of Hispanic origin. Another fifteen percent of Colton's residents are African-Americans, Asians, or Native Americans. The city's median family income is only slightly above \$30,000, making it one of the poorest cities in California. The closure of many military bases and the loss of defense jobs in San Bernardino County caused the region to suffer a significant economic recession beginning in the 1980's. The economic plight of the area was illustrated by the creation of the Agua Mansa Enterprise Zone, which was established by San Bernardino and Riverside Counties and the cities of Colton, Rialto and Riverside in an effort to lure economic development to a 10,000 acre site in the region. The 1986 environmental study preceding the creation of the enterprise zone assured that there were no rare or endangered species living on the affected land.

The growth in the human population has produced a corresponding shrinkage of the original Delhi sands. Most of the original dunes were destroyed by the onset of agricultural uses at the end of the nineteenth century. Over the next one hundred years, commercial, industrial and residential development eliminated much of the remaining dunes. A shopping center replaced seventy acres of dunes in the early 1990s, and a county park split another segment of the dunes in 1998. Only about forty square miles of dunes—or about two percent of the original sands—exist in several patches stretching between the cities of Colton and Mira Loma.

As the Delhi sands have disappeared, so has the native wildlife. Pringle's monardella, a wildflower that once grew only in the Delhi sands, has already gone extinct. The number of meadowlarks and burrowing owls has diminished as their habitats have been converted into human uses, though both birds have displayed a surprising resiliency in the presence of bulldozers and landfills and the like. And the area is still the only place on earth where the Delhi Sands Flower-Loving Fly clings to life.

The Fly—known to entomologists as *Rhaphiomidas terminatus abdominalis*—is colored orangish and brown, with dark brown oval spots on its abdomen and emerald green eyes. It is one inch long, much larger than a common house fly. Beyond that, entomologists do not know a whole lot about the Fly. They think that the Fly undergoes a metamorphosis from egg to larva to pupa to adult fly over a three-year period. Once it emerges from the sand at the end of the three years, an individual Fly lives for about a week in August and September. As its name suggests, the Fly loves

flowers. It hovers like a hummingbird as it removes nectar from the native buckwheat flowers with its long tubular proboscis, thus serving as an essential pollinator. There is no indication, though, that the Fly provides any nutritional, medicinal or other tangible benefit to people. The first Fly was collected in 1888, but it was not until a century later that the Fly was identified as a separate subspecies. The Fly probably lived throughout the full historic extent of the Delhi Sands, but today it survives in just five locations within an eight mile radius along the border of San Bernardino and Riverside Counties. No one knows for sure how many Flies are alive today, though estimates run from a couple hundred to less than a thousand. What everyone agrees upon, though, is that the number of Flies is shrinking and that the species may soon become extinct.

The Fly faces a variety of threats to its survival. Birds, reptiles, dragonflies, and the Argentine ant—an insect that is not native to the area—sometimes attack and kill a larval or adult Fly. Pesticides used for agricultural purposes eliminate the native vegetation upon which the Fly relies for its survival. Native plants have been smothered by local dairies that have dumped tons of cow manure on sections of the dunes—often without the landowner’s permission—thus providing nutrient-rich soil for exotic plants. Mustard, cheeseweed, the Russian thistle, and other plants that are new to the area affect the soil in a way that is harmful to the Fly. The native vegetation is trampled by off-road vehicle riders and removed for fire control efforts. The Fly lives best in those few areas that have yet to be disturbed by human activities. Also, the fact that so few populations of the Fly still exist makes the entire species vulnerable to catastrophic events such as fires and droughts. The small, scattered populations reduce the genetic variability of the Fly—and thus, its ability to respond to environmental stresses—as well.

Mostly, though, the Fly is on the brink of extinction because the Delhi sands are disappearing in the wake of human development. An estimated 98% of the Fly’s original habitat has been destroyed. By 1993, the Delhi sands that remained were threatened by a host of residential, commercial and industrial development projects. The most notable development to threaten the Fly was a hospital. Plans to replace San Bernardino’s aging County Medical Center began in the late 1970s. County officials designed a large regional medical center that could resist earthquakes and satisfy the demands of federal health officials. The site of the hospital was a vacant piece of land just north of I-10 in Colton. By September 1993, the county was finally ready to break ground for its new Arrowhead Regional Medical Center.

Meanwhile, the Fly had attracted the attention of Greg Balmer, a graduate student in entomology at the University of California at Riverside. Balmer viewed the Fly as “spectacular,” yet he quickly became concerned about its plight. The rapid residential, commercial and industrial development of the region posed a grave threat to the survival of the dunes, and thus to the survival of the Fly. So Balmer did what any smart entomologist would do: he filed a petition with the United States Fish & Wildlife Service (FWS) to list the Fly as “endangered” under the Endangered Species Act of 1973.

Congress had enacted the ESA in 1973 during the heyday of federal environmental legislation. The proponents of the law evoked images of bald eagles, grizzly bears, alligators and other national symbols that were on the brink of disappearing from this land. Almost immediately, though, the ESA was deployed to protect much less popular creatures. The listing of the snail darter as endangered just months after the ESA became law resulted in the Supreme Court's decision in *Tennessee Valley Authority v. Hill*, 437 U.S. 153 (1978), confirming that the multi-million dollar Tellico Dam project could not be completed because of the threat that the dam posed to the snail darter's survival. In more recent years, the law's application to the northern spotted owl became a focal point for broader debates between the timber industry and environmentalists in the Pacific Northwest.

Balmer had asked the FWS to list the Fly on an emergency basis because of the urgency of the development pressures on all of the Fly's remaining habitat. The agency did not act until September 1993, when it agreed to add the Fly to the permanent list of endangered species. That also happened to be the day before construction was to begin on San Bernardino County's new hospital project smack in the middle of some of the Fly's prime habitat. At the first meeting between local officials and the FWS, a FWS employee surveyed the scene and suggested that nearby I-10—the major east-west highway between the San Bernardino Valley and Los Angeles—would have to be closed two months each year when the Fly was above ground.

Local officials were stuck. They protested to Congress. And they tried to cut a deal with the FWS. At first, the parties agreed that the hospital could be built if it was moved three hundred feet to the north and if the county established a refuge for the Fly. The "refuge" was vacant land adjacent to the hospital that was bordered by orange plastic fencing. Happily, the Flies loved the fencing. Then the county realized that they would need to build a new electrical substation to power the hospital; that resulted in seven more acres for the refuge. But when the county sought permission to reconfigure the roads in the area surrounding the hospital, the FWS balked. The county sued, joined by local developers, claiming that the ESA could not be constitutionally applied to regulate construction projects involving a species like the Fly that lived in only one state and that neither moved within nor affected interstate commerce itself. The district court held that such an application of the ESA was constitutional, as did a divided D.C. Circuit, and any hope for a constitutional exit disappeared in June 1998 when the Supreme Court denied certiorari. *See National Ass'n of Home Builders v. Babbitt*, 949 F.Supp. 1 (D.D.C. 1996), *aff'd*, 130 F.3d 1041 (D.C.Cir. 1997), *cert. denied*, 524 U.S. 937 (1998).

The Fly, thanks to the ESA, now occupied a position of great strength in future discussions about the development of the region. A host of developments were challenged because of their possible impact on the Fly and its remaining habitat. The projects included:

- A 2.8 million square foot Wal-Mart distribution facility to be built in the dunes near Colton.
- A 27 hole golf course and accompanying 202 home development slated for Fontana which a city official defended because the sighting of a couple of

Flies there over a two-year period is “just not enough science to put people’s land at risk.”

- A truck stop and industrial center to be built by Kaiser Ventures, which estimates that the project could create 5,300 jobs and \$75 million per year to the San Bernardino County economy.
- A cement plant and a facility that produces sidewalk pavers in Rialto that was blocked by a federal court when the FWS claimed that the plant would wipe out a major portion of the Fly’s habitat, but which the FWS approved in 1999 when the company agreed to set aside 30.5 acres of land for Fly habitat.
- A large project that would include new homes, theaters and restaurants in Fontana.
- The proposal of Viny Industries, a paper products company, to create 400 jobs by building on sixty acres of land in Colton.
- A \$110 million plant to make fiberboard from recycled waste wood which opened in the Agua Mansa Industrial Center in May 1999 only after the industrial center contributed \$450,000 to purchase other habitat for the Fly.
- In August 2002, a single Fly was discovered on a parcel of land where the city of Colton had hoped to build a small-scale replica of an historic major-league sports complex. The project immediately stalled. The city finally abandoned it in 2006, complaining that the FWS “took a project and doubled it in price and shrunk it down over a fly.”

The hospital itself finally opened in March 1999 after the county set aside a total of twelve acres of land for a Fly refuge. The county estimated that moving the site of the hospital, establishing the Fly preserves, and otherwise accommodating the Fly cost the county nearly \$3,000,000.

The Fly also interfered with environmental cleanup activities in the area. When petroleum leaking from a nearby tank farm contaminated the groundwater, the presence of the Fly underground so complicated any remediation work that the tank farm owner planned to wait for the plume of contamination to migrate past the Fly’s habitat. Additionally, the vacant, sandy land favored by the Fly was an attractive spot for the illegal dumping of trash, including abandoned appliances, used diapers, and yard debris. Local officials wanted to remove that trash, but the FWS insisted that the trash must be picked up by hand instead of by the ordinary heavy machinery that could disturb the Fly larvae that are buried in the sand. To prevent additional trash from being dumped in the area, Riverside and Colton enacted ordinances authorizing the forfeiture of any vehicle used to transport trash that is dumped in the sands. Other local towns are considering similar ordinances, in part because of concerns that they will become havens from trash dumpers who fear the more stringent sanctions imposed in neighboring communities.

In early 1999, Fontana officials warned that the Fly could cause the city to default on \$42 million in municipal bonds. The city had issued the bonds in 1991 to build streets, sewers, lighting, and other improvements on vacant land adjacent to a small shopping center. The possibility that the

Fly lives on the land prevented the expected commercial development of the land, and when the landowner stopped paying taxes on the land, the city began to use its reserve funds to pay the bondholders. The Fly did facilitate one source of new employment: developers hired consultants to determine the extent of the presence of the Fly in the area. It was only when the landowner paid its taxes after one such survey failed to find any Flies on the property that Fontana barely avoided defaulting on the bonds in October 1999.

The Fly continued to block the proposed road construction projects that resulted in the commerce clause litigation. Colton officials and the FWS had not reached an agreement that would permit the realignment of roads near the new hospital despite meetings held throughout 1999. Similarly, when Riverside County asked the FWS for permission to build new ramps for I-15 in Mira Loma, the federal agency responded that the county would need to establish a 200 acre preserve for the Fly. The agency reasoned that although the ramps would only displace a little more than eight acres of Fly habitat, the effect on the Fly of the accompanying development and increased traffic justified a larger reserve. The purchase of that much land would cost the county as much as \$32 million in an area where land sells for up to \$160,000 an acre, which would make the Fly reserve more expensive than the highway ramps themselves. More generally, when officials representing Colton, Fontana, Rialto and other local cities met with the FWS in July 1999 to propose setting aside 850 acres of land for Fly habitat in exchange for permission to develop throughout the area, they were told that FWS biologists were seeking 2,100 acres that could cost \$220 million to purchase. Much of that land—including a former dairy in Ontario—would have to be rehabilitated in order to serve as viable habitat for the Fly.

The Fly was vilified. Fontana Mayor David Eshleman complained that the Fly “is costing the Inland Empire thousands of jobs and millions of dollars. I think we should issue fly swatters to everyone.” Colton’s city manager estimated the stalled development, uncollected tax revenue, and lost jobs attributable to the Fly as totaling \$661 million. Local residents were quick to offer their own reactions to the predicament: one man claimed that the Fly “larva is the same I’ve seen in tequila bottles being imported here from Mexico,” and a woman worried that children and schools were “an endangered species that gets no help.” Julie Biggs, the Colton city attorney, characterized the Fly’s habitat as “a bunch of dirt and weeds.” Jerry Eaves, the chairman of the San Bernardino County Board of Supervisors, stated that “the Endangered Species Act was intended to save eagles and bears. Personally, I don’t think we should be spending this money to save cockroaches, snails and flies.” Advocates for reform of the ESA seized on the controversy as an example of the kinds of problems that the law created, with the “people vs. flies” argument being voiced frequently.

The Fly has been featured on network television news shows, leading newspapers across the country, *National Geographic*, and other national media. CBS described it as “superfly, with the power to stop bulldozers.” The *Los Angeles Times* reported that the Fly could become “the snail

darther of the 1990s.” Many portrayals of the Fly have been unsympathetic. The *Washington Post* described the Fly as “a creature that spends most of its life underground, living as a fat, clumsy, enigmatic maggot.” The *Washington Times* editorialized that “one could build the flies their own mansion in Beverly Hills . . . fill it up from top to bottom with leftover potato salad and other fly delicacies, and it would still be cheaper than the royal estate Fish & Wildlife has in mind for them.”

By contrast, UCLA professor Rudy Mattoni described the Fly as “a national treasure in the middle of junkyards. . . . It’s a fly you can love. It’s beautiful.” A FWS official told CNN that the Fly “isn’t as charismatic as a panda bear or a sea otter, but that doesn’t make it any less important.” Another FWS official insisted that “the value of the fly to mankind is a very difficult thing to judge. It’s much more of a moral issue. Do we have the right to destroy another creature when we, in our day-to-day activities, have the ability not to destroy a creature?” The statement of county supervisor Jerry Eaves that the ESA was not intended to save flies provoked a letter to the editor of the *Los Angeles Times* complaining that “developers and their minions in public office will go to any length to satisfy their corporate greed.” Environmentalists also emphasized the importance of the dune ecosystem rather than the Fly. Greg Balmer, the entomologist who proposed the Fly’s listing under the ESA, explained that the Fly “is an umbrella species in that preserving its habitat preserves for posterity the entire community with which it lives.” A FWS biologist reminded that “every ecosystem has its intrinsic value, and maybe we can’t quite put a dollar value on it. But every time one disappears, it’s an indication that something else is wrong.” Dan Silver, the head of the Endangered Habitats League, asserted that the ESA “is saving Riverside County from itself, its own short-sightedness. It is forcing people to take a longer view.”

Having lost in the courts, the local communities turned to Congress. They paid \$48,000 for a Washington lobbyist to persuade Congress to remove the Fly from the list of protected species. Democratic state representative Joe Baca introduced a resolution in the California legislature calling for lifting of the ESA’s protection of the Fly; the voters rewarded him by electing him to Congress in 1999. Republican Senate candidate Matt Fong was not so fortunate in 1998: he campaigned against the Fly’s impact on development in the region, but he lost to incumbent Senator Barbara Boxer, a supporter of the ESA. The lobbying effort continued in 2002 when Colton Mayor Deirdre Bennett wielded a giant flyswatter while speaking at the press conference denouncing the Fly and its protectors. “To us and the majority of Americans with any common sense at all,” protested Mayor Bennett, flies “are pests, nothing more, nothing less—pests we have historically grown up swatting.” The protected status of the Fly survived all of these efforts.

Another strategy involved the crafting of a habitat conservation plan (HCP) that would set aside some land for habitat for the Fly and other wildlife while allowing other land—including wildlife habitat—to be developed. Eleven local cities joined San Bernardino County in planning a HCP that would encompass over 300,000 acres of land comprised of eight



Colton, California Mayor Deirdre Bennett speaking at a press conference concerning the Delhi Sands Flower-Loving Fly in 2002

different kinds of ecosystems and containing the Fly and other rare species such as the San Bernardino kangaroo rat and the Santa Ana River wooly-star. Several years of negotiations failed to produce an agreeable plan. Indeed, Colton and other nearby cities and counties temporarily withdrew from their negotiations with the FWS in the summer of 2002, claiming that the anticipated \$3 million cost of setting aside 33 acres as habitat for the Fly amounted to “legalized extortion.” A FWS spokesperson responded that the agency has worked with cities all across the country “in partnership to develop a plan that makes biological sense and balance the conservation needs of the species and opportunity for economic development.” The federal Department of the Interior provided local communities with nearly three million dollars in grants in 2003 for the purchase of some of the Fly’s habitat and for the continued preparation of the habitat conservation plan.

Meanwhile, both economic development and protection of the Fly proceeded on a piecemeal basis. The typical approach involved a landowner agreeing to set aside some of its property to serve as habitat for the Fly in exchange for FWS permission to build on another part of its property. In other instances a developer simply paid for the purchase of other land that could be used by the Fly. For example, in August 2000 the developer of a warehouse project agreed to pay \$82,500 so that a community group could purchase habitat for the Fly. But neither side was really satisfied by such arrangements: environmentalists worried that the haphazard patches of protected land would not sustain a healthy population of the Fly, while developers watched as their proposed building sites remained vacant as the economic boom of the 1990’s ended.

In June 2005, the FWS reached an agreement with Vulcan Materials Company, an Alabama rock and asphalt business that acquired land in Colton as a result of recent corporate mergers. According to the agreement, 150 acres of land owned by Vulcan will be permanently preserved as part of a new conservation bank containing habitat for the Fly. Greg Balmer described the land as the largest undeveloped parcel remaining of the Colton Dunes ecosystem. The conservation bank will be expanded as other businesses donate land that can serve as habitat for the Fly in order to receive development credits from the FWS. The first sale from the conservation bank occurred in January 2006, when a commercial developer paid \$300,000 for two credits, thus preserving two acres of habitat in order to obtain FWS approval to develop five acres of degraded habitat elsewhere in the area. Such conservation banks have become common throughout the nation, but this was the first such bank designed to protect a rare insect.

But even that device frustrated the city officials in Colton. In January 2006, the city council worried about the amount of lands set aside “by open space conservation agreements, easements, and other contractual mechanisms by their owners to insure that these properties will never be used for anything except open space conservation and Delhi Fly Habitat, despite the properties’ current land use and zoning designations which may allow for some reasonable development.” Accordingly, the city council passed an emergency ordinance requiring the rezoning of any protected land as “Open Space” and the receipt of a conditional use permit before any land within the city may be encumbered with an easement or other device to protect the Fly. At the same time, Mayor Bennett again asked the FWS to delist the Fly, claiming that (1) there is already sufficient habitat to protect the Fly; (2) the FWS had improperly acted as if critical habitat had been designated for the Fly without going through the formal designation process; (3) the recovery plan for the Fly is ambiguous and not achievable; and perhaps most strikingly, (4) the Fly is in fact an invasive species that is not native to the area, and actually threatens the native species there.

So government officials, developers, environmentalists, and other interested parties still debate the needs of the Fly, the dunes, and the people who live there. The FWS continues to meet with local county and city officials in an effort to resolve both specific proposed projects and the broader issues raised by the Fly. Scientists are trying to breed the Fly in captivity, though they have not succeeded yet. Private efforts to help the Fly have begun, such as the work of volunteers and local students to restore a four-acre right-of-way owned by Southern California Edison. Nonetheless, scientists and federal officials still fear that the Fly will go extinct early this century despite all of the efforts to save it.

QUESTIONS AND DISCUSSION

1. What is the role of environmental law in the Neuse River and Delhi Sands Flower-Loving Fly disputes? What laws do you expect have played a role in those controversies so far?

2. What is the role of lawyers in resolving these problems? More specifically, as an attorney, what advice would you offer to American Rivers? The State of North Carolina? Farmers who own land along the Neuse River? An environmental group that wants to protect the Delhi Sands and the Fly? A commercial landowner in Colton? The United States Fish & Wildlife Service?

Or assume that you are the land use attorney for the City of Colton, and that you have been asked to report on how to protect the Delhi Sands Flower-Loving Fly while still accounting for human needs in the economically depressed city. What would you recommend?

3. The story of the Neuse River and the saga of the Delhi Sands Flower-Loving Fly raise innumerable questions about the nature of environmental policy, whether expressed directly or indirectly through the law. How would you answer the following questions:

- What are the appropriate uses of the Neuse River? Who should make that decision?
- Why should we preserve the Delhi Sands? Why should we preserve the Fly?
- What cost should we be willing to pay to protect the Neuse River? To save the Fly? Who should pay those costs?
- Are some rivers or species more worth saving than others? Who should make that decision?
- What role should private efforts play in protecting the Neuse River and preserving the Fly? What role should the law play?
- Is the condition of the Neuse River and the survival of the Fly best addressed by common law, local ordinances, state statutes, federal law, or international law—or some combination of those sources of law?

4. September 23, 2003 marked the tenth anniversary of the listing of the Fly. The *Riverside Press Enterprise* noted the event by condemning the “[m]illions spent, millions lost in 10 years to accommodate a rare fly that has bedeviled developers and government officials from Colton to Mira Loma.” What report do you expect to read on the twentieth anniversary of the listing of the Fly in 2013?

What do you expect American Rivers to say about the condition of the Neuse River in the organization’s future reports?

5. We do not know how the stories of the Neuse River and the Delhi Sands will end. Given the complex decisions that need to be made in these two cases, perhaps that should not be surprising. In the meantime, American Rivers provides periodic updates about each of its listed rivers on its website. The best sources of new information about the controversy surrounding the Delhi Sands Flower-Loving Fly are the reports of the *Press-Enterprise* (the Riverside newspaper which is available on LEXIS and at its website at <http://www.pe.com/>). For additional material on the Fly’s happenings to date, see, e.g., Determination of Endangered Status for the Delhi Sands Flower-loving Fly, 58 Fed. Reg. 49881 (1993); U.S. FISH AND WILDLIFE SERVICE, PACIFIC REGION, FINAL RECOVERY PLAN FOR THE DELHI SANDS FLOWER-

LOVING FLY (1997); *National Ass'n of Home Builders v. Babbitt*, 130 F.3d 1041 (D.C.Cir. 1997), *cert. denied*, 524 U.S. 937 (1998); Kenneth J. Kingsley, *Behavior of the Delhi Sands Flower-Loving Fly (Diptera: Mydidae), A Little-Known Endangered Species*, 89 ANNALS OF THE ENTOMOLOGICAL SOC'Y OF AMERICA 883 (1996).

II. THE DRIVERS OF ENVIRONMENTAL CONFLICTS

Environmental law covers a vast breadth, and the Neuse River and Fly case studies address the two major fields within its coverage—pollution control and natural resource conservation. While the basic aspects of pollution control—ensuring clean air and clean water or remediating contaminated soil—might on their face seem to present fundamentally different challenges than those present in natural resource conservation—whether protecting endangered species or managing national forests—these two seemingly disparate fields share many important similarities. The actors, the location, and the nature of the concerns raised in pollution and natural resource conflicts may well be quite different in the particulars, but the *underlying* causes of the environmental problems can often be understood best as simple variants on common themes. This section briefly introduces some basic themes that run throughout environmental law and policy—the themes of scientific uncertainty, market failure, mismatched scale, and conflicting values. It is no exaggeration to say that these resonate throughout the entire field of environmental law and policy, irrespective of the particular issue. Understanding their implications is a critical first step in understanding the practical challenges of resolving environmental conflicts. To put the point more starkly, environmental law conflicts are usually about much more than the law. Particular regulations or statutes may frame the specific contours of the problem, but the cause of the conflict runs far deeper. Only by understanding these drivers can one hope to find truly sustainable solutions.

A. SCIENTIFIC UNCERTAINTY

In many respects scientific uncertainty is *the* defining feature of environmental policy. Most environmental problems involve complex technical and economic issues. But lawmakers rarely have anything approaching perfect knowledge when asked to make specific decisions. Certainty may come too late, if ever, to design optimal legal and policy responses.

In the context of the Neuse River, for example, what are the likely effects of increased hog production or increased wastewater discharges on outbreaks of *Pfisteria* and fish kills? What are the likely impacts on drinking water quality? More specifically, what are the impacts of these potential actions *on the margins*? Environmental decisions are incremental. Should we allow one more hog farm, or increase wastewater discharges by another 5%? We may be able to predict with reasonable certainty that doubling these discharges will cause particular harms, but the science is often too complicated to make such statements on the margins, where the real decisions often must be taken.

Troubling levels of uncertainty are present when conserving natural resources, as well. How much land needs to be set aside to provide adequate habitat for the endangered Fly population. Will an acre provide sufficient habitat for its survival? Does habitat set aside need to be connected by corridors so different Fly populations can interbreed? If so, how big should these corridors be? The simple fact is that we do not know enough about the Fly's life history or recent population declines to answer these management questions with certainty, yet actions need to be taken today or risk extinction of the species in the future, perhaps the near future.

In fact, uncertainties over the magnitude of environmental problems, their causes, and future impacts bedevil law and policy. What we would like to know as policy makers rarely approaches our actual knowledge. But if we do not understand well the current situation, then how can we predict the future impacts of our laws and policies? Does prudence dictate waiting until we have better information or taking early action in the face of potentially serious threats?

The obvious response to such arguments is that waiting for more scientific certainty, if it ever comes, imposes costs of its own. In the face of a credible and significant threat, the argument goes, we must act today so as to avoid the present and future harms (which may well be greater) imposed by delay. To employ a nautical metaphor, we should be bailing water out of our sinking ship as fast as possible, not standing on the deck studying the angle and rate of descent.

The exact same dynamic is at work in the examples of Neuse River pollution and the Fly. Delay while we study the threats to the river may result in an increase in fish kills and other environmental harms that could have been prevented. Delay in the case of the Fly may lead to greater understanding, but of a now extinct species. Yet, as the voices of caution warn, overreaction imposes its own real costs in the form of higher prices, foregone development, and scarce public monies that could have been better spent elsewhere. In these and countless other examples, there are good reasons to wait and reduce the uncertainty, and good reasons to avoid potential future costs by acting now. Thus perhaps the first question of environmental law and policy is how to act in the face of uncertainty.

There are two basic strategies to address this intractable problem. The first is to develop better information. As we shall see later in the book, many environmental statutes require generation of considerable information to provide a surer basis on which to create policy. A second strategy is known as the *precautionary principle*. Influential in the field of international environmental law, in its simplest form the principle counsels caution in the face of significant but uncertain threats. It's hard to argue against such an obvious rule of conduct but people differ significantly over how the principle should be applied in practice. In its most extreme form, the principle would forbid any activity that potentially could produce significant harms, regardless of the likelihood that these harms may occur. The problem, though, is that such a view counsels inaction in the face of uncertainty, no matter what the cost. The strategy, moreover, is paralyzing in the context of risk-risk choices, where every alternative poses significant risks and one must choose among them. Such risk-risk choices arise

commonly in the environmental field, such as deciding whether to build a nuclear power plant or a coal-fired plant. Each option poses environmental concerns and potential harms.

In the international context, the precautionary principle generally has been viewed as shifting the burden of proof from those who would challenge an offending activity to those who wish to commence or continue the activity. This shift in burden could shorten the time period between when a threat to the environment is recognized and a legal response is developed. In the climate change context, for example, the burden would fall on oil companies to establish that global warming is not a serious and credible threat. In the Fly example, the developer would shoulder the burden of proving that the loss of habitat will not threaten the survival of the Fly. Hog producers would bear the responsibility of justifying that increased effluent levels pose no significant ecological or health risks to the Neuse River.

This shift in burden changes the tenor and nature of the debate over *how well understood* the problem must be before taking action. But it does not shed light on an equally important question—*how serious* the problem must be before taking action (i.e., which risks are worth addressing), much less the appropriate action to take. As we shall see below, these are fundamentally political, not scientific, questions, and they pose additional levels of uncertainty.

B. MARKET FAILURES

Misaligned incentives underlie most environmental conflicts. While protecting the environment often provides a net benefit to society, the economic interests of individual parties involved often can encourage harmful activities. Thus a basic challenge to an environmental lawyer lies in understanding the reward structures of the parties and then changing incentives so that environmental protection reinforces rather than collides with the parties' self-interest. In the following examples, consider how costs and benefits are allocated.

In the case of hog producers in the Neuse River watershed, a company may choose voluntarily to treat its manure, but it may end up raising its operating costs and losing market share if its competitors in other parts of North Carolina, much less in other states, do not reduce their effluent as well. A downstream neighbor of a hog farm may be having constant stomach upsets because of effluent, but the bother isn't worth the cost of bringing a lawsuit. All of her neighbors have stomach aches, too, but they can't seem to get together to negotiate with or sue the hog farm.

On its face, one might think that the market would automatically promote environmental protection. The most basic principle of economics, after all, is supply and demand. As the supply of a valuable good becomes scarce, its price rises. Since clean air and water are clearly valuable, one would expect that as they become scarcer their price should also rise, making it more expensive to pollute. Yet this clearly does not happen in real life. The market has somehow failed, as it does when the hog farm refuses to reduce its effluent and the neighbors can't agree to sue. To

correct these market failures and craft an effective legal response, we first need to understand the distortions at play.

1. PUBLIC GOODS

Try to buy some clean air. Sure, you can buy real estate in the wilds of Alaska where the air is clean, but you own the land there, not the air. In fact, your neighbor can breathe it right after it blows through. It turns out that many environmental amenities, such as clean air and scenic vistas, are called *public goods*. Their benefits can be shared by everyone, but owned by no one. No one owns the air. No one can sell it or prevent others from using it.

The same is true for *ecosystem services*. Largely taken for granted, healthy ecosystems provide a variety of critical services. Created by the interactions of living organisms with their environment, these ecosystem services provide both the conditions and processes that sustain human life—purifying air and water, detoxifying and decomposing waste, renewing soil fertility, regulating climate, mitigating droughts and floods, controlling pests, and pollinating plants. Not surprisingly, recent research has demonstrated the extremely high costs to replace many of these services if they were to fail. Looking at just one ecosystem service that soil provides, the provision of nitrogen to plants, serves as an example. Nitrogen is supplied to plants through both nitrogen-fixing organisms and recycling of nutrients in the soil. If nitrogen were provided by commercial fertilizer rather than natural processes, the lowest cost estimate for crops in the U.S. would be \$45 billion; the figure for all land plants would be \$320 billion.

The value of \$320 billion is estimated by calculating replacement costs—what we'd have to pay to replace the ecosystem service of nitrogen fixing by other means. But what are these natural goods and services *really* worth? Perhaps surprisingly, in the eyes of the market they are not worth anything. We have no shortage of markets for ecosystem goods (such as clean water and apples), but the services underpinning these goods (such as water purification and pollination) are free. Make no mistake, these environmental amenities are valuable—just ask yourself how much it's worth to you to breathe unpolluted air—but they have no *market value*. There is no market to exchange public goods such as ecosystem services and, as a result, they have no price. This explains the riddle of why pollution does not become expensive as clean air is “used up.” Because there's no market for clean air or climate stability, there are no direct price mechanisms to signal the scarcity or degradation of these public goods until they fail. Hence, despite their obvious importance to our well being, ecosystem services largely have been ignored in environmental law and policy. Partly as a result, ecosystems are degraded.

2. THE TRAGEDY OF THE COMMONS

Imagine you are a shepherd who grazes twenty sheep on a village common. Along with your pan pipes and bag lunch, you herd your flock to the common every day. So long as the number of sheep on the common remains small, the grass remains plentiful and the sheep contentedly munch away. Assume, though, that shepherds from over the mountain

have heard of the wonderful grass in the common and bring their flocks. With each hour these sheep graze, there is less grass available for future grazing. In fact, you soon realize that this increased level of grazing will nibble the grass down to the roots, with the result of not enough forage in the future for anyone's flock, including your own. Yet you and the other shepherds will likely continue to allow your sheep to overgraze. Why?

The answer lies in the economic incentives. The more the sheep graze the fatter and more valuable they will be when they come to market. You could stop your flock's grazing, of course, to try and preserve the pasture for other days; but there is no guarantee your fellow shepherds will be similarly conscientious. In that case, you're a chump, sacrificing your own interests for no benefit. As a result, you may well encourage your sheep to graze as much as possible, and your neighbors will do the same. "Might as well get the grass in my sheep's tummies before it disappears in others'," you think. The result is individually rational in the short term—if the resource will be depleted, you might as well ensure you get your fair share—but collectively disastrous in the long term. It would be far better for each shepherd to restrain her flock's grazing, but seeking to maximize immediate economic gain ensures long term economic—and environmental—collapse.

This same phenomenon, known as *the tragedy of the commons*, can be identified in many open access resources, as farmers race to pump water from an underground aquifer, fishing boats with ever larger nets chase fewer and fewer fish, and wildcat drillers race to pump out oil as fast as they can. In each case, individually rational behavior is collectively disastrous. Individuals' personal incentives work *against* the best long-term solution.

3. COLLECTIVE ACTION AND FREE RIDERS

So what is to be done? Perhaps you could negotiate with all the shepherds and collectively agree to graze less. This may work when there are a handful of shepherds who all come from the same village. But it becomes increasingly difficult to reach agreement as the number of shepherds increases (and more difficult still if they come from different places without shared cultural norms and informal means of enforcement). This obstacle is known as a *collective action problem* and is due to the increased transaction costs in negotiating solutions as the number of parties increases. At a certain point, it's simply too expensive and difficult to reach consensus agreement. To see this in action, try to decide on which movie to see or settle a restaurant check with more than four friends.

Perhaps, as a last resort, in frustration at the inability to agree on a common solution, some of you decide to stop grazing your flock so that the grass on the common can grow back. Noble intent, no doubt, but there is a risk that other shepherds will take advantage of your generosity and keep their sheep on the common. More food for their flocks, they may smirk. These shepherds benefiting from your sacrifice are known as *free riders*. A similar phenomenon might occur even if all the shepherds agreed to graze less. New shepherds might come in and start grazing all the time, free-riding off of your sacrifice. Thus any solution to commons problems must

overcome both the high transaction costs in reaching agreement among many parties (collective action) and counterproductive behavior by parties outside the agreement (free riders).

4. EXTERNALITIES

Assume you have sold your sheep, moved on from the now trampled and scraggly common, and own a chemical factory. When you balance your firm's financial books, you notice something odd. In figuring out your bottom line, you subtract your costs to operate (such as labor, materials, utilities, and so on) from the revenue you earn from selling your chemicals. But the pollution from your smokestacks does not reduce your bottom line. Make no mistake; your factory *is* causing real costs in the form of acid rain, smog, and reduced air visibility. But, as described above, because clean air is a public good you do not have to pay as you "use up" the clean air. It acts as a sink for your pollution at no cost. As a result, in seeking to maximize short-term economic gain, you do not consider the cost of your pollution. You can "overuse" the air and continue polluting. The costs from damage to forests, increased respiratory ailments, and reduced pleasure in clear vistas from your pollution are very real, but they are *external* to the costs you currently pay to operate. These costs are borne by the public and known as *externalities*.

If, on the other hand, your factory has to pay for the external harm it causes, then it will reduce its pollution. The process for forcing the factory to recognize environmental and social costs is known as *internalizing externalities* and reflects a basic lesson of economics—when we have to pay for something, we use less of it than if it is free. By internalizing externalities, we correct the market failure by charging for environmental harms and providing more accurate price signals to buyers.

This works both ways. Assume that you own a wetland beside your factory. The wetland provides a nursery for young fish to spend their first few months in relative safety before entering the adjacent river. The outdoors enthusiasts who fish along the river and the sporting good stores who sell fishing tackle all benefit from the services your wetland provides, but they don't pay you for them. While your factory's pollution generates *negative externalities*, your wetland provides *positive externalities*. Just as the fact that you don't have to pay for the costs caused by your pollution removes any incentive to reduce pollution so, too, does the fact that you are not paid for the benefits provided by the wetland remove any incentive to conserve rather than pave it over for a parking lot.

If all negative externalities were internalized—if all costs imposed on the environment were borne by the polluting party—then environmentally harmful products and processes would be relatively more costly and the market would reinforce environmental protection. Equally, if positive externalities were internalized—if benefits generated by ecosystem services such as flood control and water purification were paid for by the recipients—then habitat conservation would be truly valued in the marketplace. A central problem, of course, is "getting the prices right." Even if we had the authority to charge a factory for the damage its pollution caused, how much would that be? As with clean air, there are no markets for environmental

harms, either; thus their costs must be estimated. But even rough estimates would be an improvement over the current situation where negative externalities are costless to polluters and positive externalities are not rewarded. One of the key goals of environmental law is to bring environmental externalities into the marketplace.

C. MISMATCHED SCALES

Natural boundaries rarely track political boundaries. The communities downstream of the hog farms along the Neuse River suffer the impacts of pollution, yet have no political control over local land management decisions upstream. At a larger scale, a map of the western United States shows states and counties with straight lines and right angles. Map the region's watersheds, ecosystems, or forests, however, and nary a straight line will appear. Ecological concerns were, not surprisingly, far from the politicians' and surveyors' minds when these political jurisdictions were created, but the mismatch of natural and political scales poses difficult challenges for environmental management. Air pollution, water pollution, and wildlife certainly pay no heed to local, state (or national) borders, with the result that often the generator of the pollution is politically distinct from those harmed.

Acid rain was hard to control in the 1970s and 1980s because of political jurisdictions. The costs of reducing emissions downwind were borne by those who received no benefit and, similarly, those benefiting from reduced pollution upwind did not have to pay for it. Midwestern power plants were far removed from the polluted lakes and forests of the Northeast and Canada. New York, Vermont, and certainly Canadian voters couldn't vote in Ohio or Pennsylvania. Thus those with the greatest cause for concern did not live in the areas where their concerns could be most effectively expressed. Similar problems of scale are evident in wildlife protection, where draining or filling prairie potholes in the Great Plains, for example, may benefit the local farmers but imperils migratory birds from Mexico to Canada. Pumping carbon dioxide in the air may not seem significant to someone driving an SUV in Montana, but to an islander on a low-lying Pacific atoll the prospects of sea-level rise are a good deal more unsettling.

As a result of these *geographical spillovers* across jurisdictions, transboundary environmental problems often pose the challenges of collective action (the high transaction costs to bring differing parties together), equity (ensuring that the parties enjoying the benefits of environmental protection also bear a share of the costs), and enforcement (monitoring compliance at a distance from the source of authority). This is as true with national laws as with international.

Mismatched political and natural boundaries also pose challenges of management authority. This is often expressed as a problem of federalism. Who should control pollution and natural resource management: local or national authorities? Locals are closer to the problems, often understand them better, and have to live with the consequences of the environmental policy. At the same time, if the problem is one of transboundary pollution,

the locals don't live with the consequences of their pollution. Those downstream do.

With natural resources, locals may well feel an entitlement. The inhabitants of Colton are furious over the loss of potential local development because some bureaucrats from Washington say they have to protect the Fly, even if the Fly lives on private land. Does the biodiversity represented by the Fly "belong" to the nation as a whole? If so, then perhaps it should be managed at the national level. But is it just or wise to effectively overrule local decisions about land uses, when it is the locals who must bear the opportunity costs from Fly conservation?

In another variant of this problem, scales can be mismatched as markets encompass multiple political jurisdictions. Imagine, for example, that in order to attract business Arkansas decides to lower its standards for water pollution from hog farms. This not only poses a transboundary concern for the border states of Louisiana and Alabama; it also pressures states with similar industries, such as North Carolina, to lower their standards as well, in order to prevent industry relocation. The dynamic of local jurisdictions competing with one another by lowering environmental standards to attract industry is known as the *race-to-the-bottom*. Realize, as well, that concerns over the race-to-the-bottom can not only pressure jurisdictions to lower their standards but can also chill efforts in states seeking to strengthen standards (because industry will threaten to relocate if their costs of regulatory compliance are increased). If this is the case, then nationwide standards seem necessary. The same phenomenon can occur in the international context as well, as nations compete with one another for business investment.

The fact that companies choose their locations based in part on costs of doing business is indisputable. There is a strong debate, however, over the extent to which a race-to-the-bottom really occurs in the environmental field. For one thing, states can compete on many grounds, perhaps lowering tax rates or workplace safety requirements to attract business. Hence it's not a given that they would reduce environmental standards to attract industry. Indeed, because environmental quality is an important amenity, there's an argument that local jurisdictions are more likely to engage in a "race-to-the-top," competing for industry by offering *higher* environmental quality. The data on international industry relocation suggest that stringency of environmental regulation is less important to companies than proximity to markets, labor costs, raw material costs, political stability, etc. And this makes sense, since environmental costs are usually a small percentage of total business costs. In those industries where environmental costs are relatively high, though, such as in the chemicals sector, there is evidence that companies have relocated with environmental compliance costs in mind. Perhaps more important, though, is the fact that many regulators believe the race-to-the-bottom occurs, whether that is borne out in fact or not, and act accordingly.

Problems of scale occur in time as well as in space. Decisions must be made today that may prevent harm ten or twenty years from now or, indeed, in generations not yet born. Ozone depletion and climate change are two examples. CFCs (which are the major cause of stratospheric ozone

depletion) and greenhouse gases we emit today will cause impacts over the next 50 years or longer. The same distributional asymmetry is at play here as with physical scale. The costs of refraining from an action fall on us today, while the benefits are enjoyed (most likely by others) far later. Yet these future beneficiaries can't express their preferences in today's voting booth or courtroom. Indeed, the temporal scale of many environmental problems makes it difficult even to hold current elected officials accountable, since many of their actions will not cause harms until they are no longer in office. Supporting overfishing today may keep a local politician in office, for example, while the stark impacts may not be evident until years later when the stock has collapsed. As a result, many environmental advocates claim to be acting on behalf of the interests of future generations, but deciding what the proper sacrifice today should be for future benefits that may or may not be appreciated is easier said than done.

D. CONFLICTING VALUES

Why should we care about protecting the Fly or the fish and freshwater ecosystems along the Neuse River? "Because it's important to do so" may be a heartfelt answer, but the fact is that not everyone attributes the same importance to environmental protection or nature conservation and, in a democracy, that can (and does) make environmental management a tricky business. Consider, for example, the conflict in Colton. On the one side are those, supported by the Endangered Species Act, who argue that conserving the remnant populations of the Fly are important enough to slow, or even halt, commercial development. And Mayor Deirdre Bennett's fly swatter pretty well sums up the contrasting perspective on the value of the Fly.

A vast subject in itself, environmental ethics encompasses our relationship with the environment. While seemingly secondary to the hard nuts and bolts of environmental law and policy, "soft" values often in competition with one another lie at the core of many environmental conflicts, and understanding the nature of the values conflict is essential to crafting durable solutions.

At one end of the spectrum lies the ethic of biocentrism. The term "deep ecology," for example, is based on the premise of a kinship with nature. Consider, for example, the core principles set out below.

1. The well being and flourishing of human and nonhuman life on Earth have value in themselves. These values are independent of the usefulness of the nonhuman world for human purposes.
2. Richness and diversity of life forms contribute to the realization of these values and are also values in themselves.
3. Humans have no right to reduce this richness and diversity except to satisfy *vital* needs.
4. The flourishing of human life and cultures is compatible with a substantial decrease of the human population. The flourishing of nonhuman life requires such a decrease.

5. Present human interference with the nonhuman world is excessive, and the situation is rapidly worsening.

6. Policies must therefore be changed. These policies affect basic economic, technological, and ideological structures. The resulting state of affairs will be deeply different from the present. * * *

BILL DEVALL & GEORGE SESSIONS, *DEEP ECOLOGY: LIVING AS IF NATURE MATTERED* ix, 65–70 (1985)

Certain animal rights advocates would likewise argue that non-humans have basic rights that must be respected.

At the other extreme lies the anthropocentric, human-based perspective. In the well known text of Chapter 1, Verse 28, of Genesis, for example, God commands Adam (and by extension his descendents) to “Be fruitful and multiply and replenish the earth and subdue it: and have dominion over the fish of the sea, and over the fowl of the air and over every living thing that moveth upon the earth.” Through this vantage, the most important measure of something’s value is its value to us. Utilitarianism is perhaps the most widely accepted argument for anthropocentrism. As John Stuart Mill famously described, utilitarianism seeks to provide the greatest good to the greatest number of people. While some may find it odd to think of utilitarianism as an ethical viewpoint, it is a rights-based view of the world insofar as decisions ought to be made on the basis of social welfare (as measured for humans). In a classic defense of utilitarianism as the proper guiding ethic for environmental policy, William Baxter described a report that the use of DDT was harming penguin populations. Even if that were true, however, he denied that we must therefore stop use of DDT.

My criteria are oriented to people, not penguins. Damage to penguins, or sugar pines, or geological marvels is, without more, simply irrelevant. One must go further, by my criteria, and say: Penguins are important because people enjoy seeing them walk about rocks; and furthermore, the well-being of people would be less impaired by halting use of DDT than by giving up penguins. In short, my observations about environmental problems will be people-oriented, as are my criteria. I have no interest in preserving penguins for their own sake.

It may be said by way of objection to the position, that it is very selfish of people to act as if each person represented one unit of importance and nothing else was of any importance. It is undeniably selfish. Nevertheless I think it is the only tenable starting place for analysis for several reasons. First, no other position corresponds to the way most people really think and act—i.e., corresponds to reality. . . . I do not know how we could administer any other system. . . . Penguins cannot vote now and are unlikely subjects for the franchise—pine trees more unlikely still. Again each individual is free to cast his or her vote so as to benefit sugar pines if that is his inclination. But many of the more extreme assertions one hears from some conservationists amounts to tacit assertions that they are specially appointed representatives of sugar pines, and hence that their preferences should be weighted more heavily than the preferences of other humans who do not enjoy equal rapport with “nature.” * * *

I reject the proposition that we *ought* to respect “the balance of nature” or to “preserve the environment” unless the reason for doing so, express or implied, is the benefit of man.

I reject the idea that there is a “right” or “morally correct” state of nature to which we should return. The word “nature” has no normative connotations. Was it “right” or “wrong” for the earth’s crust to heave in contortion and create mountains and seas? Was it “right” for the first amphibian to crawl up out of the primordial ooze? . . . No answers can be given to these questions because they are meaningless questions.

All this may seem obvious to the point of being tedious, but much of the present controversy over environment and pollution rests on tacit normative assumptions about just such nonnormative phenomena: that it is “wrong” to impair penguins with DDT, but not to slaughter cattle for prime rib roasts. . . . Every man is entitled to his own preferred definition of Walden Pond, but there is no definition that has any moral superiority over another, except by reference to the selfish needs of the human race.

WILLIAM BAXTER, PEOPLE OR PENGUINS: THE CASE FOR OPTIMAL POLLUTION 4–9, 12 (1974)

Somewhere between the nature-based ethic of biocentrism and the human-based ethic of anthropocentrism lies what has probably become the most influential ethic in the American environmental movement—the Land Ethic. Its champion, Aldo Leopold, was a pioneer in the field of resource management. In addition to his efforts in the U.S. Forest Service to preserve wild tracts of land, Leopold helped found the Wilderness Society in 1935. In his collection of essays, published posthumously in *A Sand County Almanac*, Leopold traced the development of ethics, arguing that subsequent generations had progressively expanded the community of rights-holders. In the time of ancient Greece, girls suspected of misbehavior were hanged. “This hanging involved no question of propriety. The girls were property. The disposal of property was then, as now, a matter of expediency, not of right and wrong.” ALDO LEOPOLD, *A SAND COUNTY ALMANAC—AND SKETCHES HERE AND THERE* 201 (1949). Over time, ethics established rules over the relations between the individual and society. Yet “There is as yet no ethic dealing with man’s relation to land and to the animals and plants which grow upon it.” *Ibid.* In his Land Ethic, Leopold proposed:

The “key-log” which must be moved to release the evolutionary process for an ethic is simply this: quit thinking about decent land-use as solely an economic problem. Examine each question in terms of what is ethically and esthetically right, as well as what is economically expedient. A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise.

Id.

QUESTIONS AND DISCUSSION

1. Using the case of climate change, give examples of how the following drivers play out in the climate setting:

- Uncertainty over impacts (biophysical and economic, current and future)
- Uncertainty over policies (current and future)
- The market failure of public goods
- The market failure of externalities
- The market failure of collective action and free riders
- Problems of physical and political scale
- Conflicting values

Explain the types of obstacles these drivers present to reducing greenhouse gas emissions.

2. Uncertainty can cut both ways—acting today to address an uncertain future harm may be an overreaction, causing immediate economic and social harm; yet not acting in the face of an uncertain future harm may prove an underreaction, causing economic and social harm at a later date. Discuss the issue of nuclear power in terms of uncertainty and policy choices. Does the uncertain, though potentially massive, harm from climate change suggest we should move with all deliberate speed to shift toward non-carbon energy sources, including nuclear power? Or does the potential harm from the operation of nuclear power plants and dangers from transport and disposal of hazardous waste caution against its use? How should policy makers balance these competing sources of uncertainty?

3. For each school of environmental ethics described above, in whom (or what) do the rights inhere?

- In inanimate objects (e.g., rocks or a river)?
- In living things (e.g., a newt or whale)?
- In living communities (e.g., a particular forest)?
- In people living today in America?
- In future generations of people?

4. How would the major schools of thought described above (i.e., deep ecology, the land ethic, utilitarianism, etc.) analyze the decisions:

- (1) to kill a few individual Delhi Sands Flower-Loving Fly to build a new hospital;
- (2) to kill half the population of the Fly to build a new hospital;
- (3) to kill the only known population of the Fly to build a new hospital.

Assume that the Fly has been studied and has no clear commercial value. Assume the hospital will provide jobs and health care to an economically depressed community. Would the answers differ if the species were a cuddly panda instead of the Fly?

III. WHAT DO ENVIRONMENTAL LAWYERS DO?

What is an *environmental* lawyer, and what do they do? To answer this requires some appreciation of the field of environmental law and the different settings within which it is practiced. Indeed, the remainder of this text is devoted to answering this question: the chapters in Part I explore the depth and breadth of substantive environmental law; Part II places the substance in different practice contexts; and Part III examines current policy issues in anticipation of the evolution of both the substance and the practice of environmental law.

A. AN EVOLVING FIELD OF LAW

The substantive scope of environmental law has evolved substantially since its emergence in the 1970s and is continuing to change rapidly. Of course, it is to some degree arbitrary to draw lines between what is and is not *environmental* law. Many fields of law have a profound influence on the environment. Land use law, for example, necessarily must consider environmental impacts of land use decisions. But that is not the primary focus of land use lawyers; rather, they are concerned with how particular land uses are approved or disapproved by government authorities, and the environment is just one consideration among many (others would include traffic, schools, aesthetics, demographics, fiscal burden, and so on). Likewise, environmental law at its broadest ought to include substantive laws the primary objective of which is managing the relation of humans to the physical environment.

Of course, there are many such laws, and we don't intend to list them all here. Rather, it is instructive to see how lawyers who hold themselves out as environmental lawyers have described their field. As mentioned above, for example, the American Bar Association has a section devoted to environmental law known as the Section on Environment, Energy, and Resources (SEER), which in turn has committees devoted to different topics. The history of that section in the past 20 years tells a lot about the evolution of environmental law as a field.

To begin with, SEER is the current denomination of the ABA section that originally went by the Section of Natural Resources Law (SNRL). For decades SNRL was focused primarily on the law of natural resource extractive industries, such as mining, water uses, oil and natural gas, and forestry. Indeed, even as of 1987 SNRL had only four committees in the section's "environmental group" (see Table 1). By 1997, SNRL had been renamed the Section on Natural Resources, Energy, and Environmental Law (SONREEL), and the number of committees had more than doubled. By 2007 SONREEL had become SEER, with "environment" getting top billing, and the number of committees was close to 20.

Table 1: ABA SEER Environmental Committees 1987–2007

1987	1997	2007
Air Quality	Air Quality	Air Quality
Environmental Quality	Environmental Quality	-
Solid and Hazardous Waste	Solid and Hazardous Waste	Waste Management
Toxic and Environmental	Environmental Litigation	Environmental Litigation and Toxic Torts
Torts Litigation		Water Quality and Wetlands
Water Quality	Water Quality and Wetlands	
	New Committees	
	Agricultural Management	Agricultural Management
	Brownfields	Environmental Transactions and Brownfields
	Endangered Species	Endangered Species
	Environmental Crimes and Enforcement	Environmental Crimes and Enforcement
	International Environmental Law	International Environmental Law
	State and Regional Environmental Cooperation	State and Regional Environmental Cooperation
		New Committees
		Environmental Disclosure
		Environmental Justice
		Pesticides, Chemical Regulation, and Right to Know
		Site Remediation
		Superfund and Natural Resources Damages Litigation
		Sustainable Development, Ecosystems, and Climate Change
		Environmental Impact Assessment
		Environmental Values and Ethics
		Innovation, Management Systems and Trading

Notice also how the committees proliferated over time. In the days of SNRL, they were the obvious choices: air, water, waste, litigation, and the catch-all “environmental quality.” Air, water, waste, and litigation had staying power, but by 2007 SEER had unpacked environmental quality into over a dozen subfields, every one of which, we are pleased to say, is covered in substantial detail in this text. Moreover, many of the committees that have traditionally been housed in the section’s “resource group” have come to look increasingly like environmental law topics. For example, SEER includes in that category committees on forest resources, marine resources, Native American resources, public land resources, and water resources. All of those topics also are covered in this text.

Of course, few environmental issues involve more than a few of the different topics covered in that list, but most do involve more than one. Consider the Delhi Fly case study from Part I of this chapter. Clearly, it was first and foremost about the Endangered Species Act, the domain of SEER’s Endangered Species Committee. But it raised questions that also would have fallen in the zone of interest of other SEER committees:

- The Agriculture Management Committee would have an interest in how the agricultural land uses affected the Fly and were regulated under the ESA. (See Chapter 13)
- The Environmental Transactions and Brownfields Committee would have an interest in the effect of Fly habitat on transactions involving

the transfer of land and facilities in the area of the Fly's range. (See Chapter 11)

- The Environmental Disclosure Committee would have an interest in how landowners and companies operating in the Fly's range disclose the presence of Fly habitat. (See Chapter 8)
- The Environmental Justice Committee would have an interest in the impact of ESA regulation on communities of color and low income. (See Chapter 15)
- The Sustainable Development, Ecosystems, and Climate Change Committee would have an interest in exploring how the Fly's habitat is being managed at an ecosystem scale and the long term ecological, economic, and social impacts. (See Chapter 12)
- The Environmental Impact Assessment Committee would have an interest in how the presence or absence of Fly habitat in the region is reflected and evaluated in environmental impact assessments public and private entities prepare in connection with land use and environmental permits. (See Chapter 5)
- The Environmental Values and Ethics Committee would be interested in the ethical dimensions of protecting the Fly. (See Chapter 2)
- The Innovation, Management Systems and Trading Committee would be interested in exploring mechanisms to make protecting the Fly more efficient and effective, such as a habitat conservation bank or incentive subsidies to farmers. (See Chapters 2 and 13)

Suffice it to say, in other words, that environmental law has evolved considerably since its “air, water, waste, litigation” days. It is a broad field reaching far and wide into the social and economic life of Americans. And it changes rapidly, not only as we learn more about the environment, but also as the nature of human impacts on the environment change and as norms toward the environment change. Needless to say, this makes the practice of environmental law challenging, but by the same token this makes it stimulating and rewarding.

B. AN EVOLVING PRACTICE OF LAW

SEER's evolution of substantive topics also traces an evolution of the practice of environmental law. In the “air, water, waste, litigation” days of environmental law, practitioners generally focused on rules, permits, and litigation in those narrow fields. Today, however, environmental practitioners necessarily must follow where the substantive law leads them, and that has become quite a diverse array of practice settings. Whereas it may have been possible in the early 1970s for one lawyer to grasp a wide reach of the field at the time—to be an “air, water, waste” lawyer—today that kind of Renaissance practitioner would likely commit malpractice in no time. It is simply not possible to practice competently in all of the substantive fields mentioned above. Most environmental lawyers today specialize, and private and public interest law firms as well as government agencies employ numerous specialists in practice groups to be able to offer “full service” environmental representation to their clients.

Consider the possibilities once again in the context of the Fly case study from Part I of this chapter. Which environmental lawyers doing what kind of practice might have become involved? Tracking the chapters in Part II of this text, the answer is, quite a few:

- *Rulemaking and Permits.* The listing of the Fly was a rulemaking event carried out by the U.S. Fish and Wildlife Service (FWS) pursuant to Section 4 of the Endangered Species Act. Lawyers for FWS review listing rules to ensure compliance with the standards of the ESA, and lawyers for potentially regulated parties, which could include state and local governments and private landowners, routinely do as well. So do lawyers for non-governmental organizations that represent environmental advocacy groups and trade and industry groups. (See Chapter 7)
- *Compliance Counseling.* Landowners and businesses in the area where the Fly is found face regulation under the “take prohibition” of Section 9 of the ESA (see Chapter 2), which as the case study reveals can impose significant constraints on land development and business operations. Lawyers for these regulated entities may be asked to assist in evaluating the legal consequences and compliance strategies associated with the ESA. (See Chapter 8)
- *Enforcement.* The ESA contains a “citizen suit” provision allowing any citizen to bring an enforcement action against alleged violators of the ESA, including those who violate the take prohibition of Section 9 by modifying Fly habitat in such a way as to injure a Fly. Also, Section 7 of the ESA requires all federal agencies to “consult” with FWS regarding whether proposed funding and permit actions could jeopardize the Fly as a species. Lawyers for citizen groups and for their targeted defendants, public and private, would advise their respective clients about the litigation risks, procedures, and strategies associated with such suits. (See Chapter 9)
- *Private Litigation.* The impact of the Fly listing on the local economy and social context could lead to numerous private disputes. What if, for example, a landowner who knew that the Fly listing was imminent and that his or her parcel had Fly habitat on it sold the land to someone else without revealing those facts, or even while disclaiming the presence of Fly habitat? A contract fraud action might follow. (See Chapter 10)
- *Business Transactions.* Many businesses and land parcels affected by the Fly nonetheless are likely to forge ahead with plans to sell facilities and parcels. Lawyers for buyers and seller thus may be asked to advise about how to identify the risks associated with Fly habitat and reflect those risks in the business transaction negotiations. (See Chapter 11)

Like any complex legal matter, moreover, the mix of layers in the Fly events changed over time. As the case study discusses, in the early stages of the matter lawyers for FWS and the County negotiated a set of measures the hospital would take to avoid causing injury to the Fly. This set of lawyers consisted primarily of ESA permitting experts, the goal being to

avoid the need for a permit by avoiding injury to the Fly. Later, however, litigation ensued over the need for a permit, and litigation expertise entered the area. And as the regulatory effects of the Fly spread over time throughout the region, likely more and more of the kinds of environmental law practice settings mentioned above came into play.

For today's students of environmental law—the readers of our text—there is good news in the rapid evolution of environmental law substance and practice: even the most seasoned practitioner cannot remain an expert in the law or practice for very long without a constant effort to keep pace with the changes, meaning that new entrants to the field can relatively quickly “catch up.” Like the Red Queen from *Alice in Wonderland*, all environmental lawyers must run just to stay in place! The remaining chapters of this text, we hope, will give you a head start.

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