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Citation: 58 Case W. Res. L. Rev. 753 2007-2008

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This work was originally published in
58 Case W. Res. L. Rev. 753 2007-2008

MAKING NUISANCE ECOLOGICAL

J.B. Ruhl[†]

INTRODUCTION

“The essential premise of much environmental law is . . . that the physical characteristics of the ecosystem generate spatial and temporal spillovers that require restrictions on the private use of natural resources far beyond those contemplated by centuries-old common law tort rules.”¹

Common law nuisance doctrine has the reputation of having provided much of the strength and content of environmental law prior to the rise of federal statutory regimes in the 1970s.² Beginning in the

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¹ RICHARD J. LAZARUS, *THE MAKING OF ENVIRONMENTAL LAW* 121 (2004).

² Most comprehensive treatments of the evolution of environmental law begin with the common law as the first meaningful stage of development. *See, e.g.*, E. Donald Elliott et al., *Toward a Theory of Statutory Evolution: The Federalization of Environmental Law*, 1 J.L. ECON. & ORG. 313, 315 (1985). In particular, over time the nuisance doctrine developed into a powerful means of regulating the environment, so much so that Professor Bill Rodgers, Jr. observes in his environmental law treatise that

[t]here is no common law doctrine that approaches nuisance in comprehensiveness or detail as a regulator of land use and of technological abuse. Nuisance actions reach pollution of all physical media—air, water, land, groundwater—by a wide variety of means. Nuisance actions have challenged virtually every major industrial and municipal activity that today is the subject of comprehensive environmental regulation . . .

WILLIAM H. RODGERS, JR., *ENVIRONMENTAL LAW* § 2.1 at 112–13 (2d ed. 1994). The extent to which state legislation was effective in controlling regulation prior to the emergence in the

1960s, however, two trends pushed nuisance doctrine into the background of environmental law and public legislation into the foreground.³ The first was the growing attention given to the development of pollution standards that could be applied broadly across regions and across industries. The premise of turning to public legislation was that this objective would much more easily and effectively be met through regulatory approaches relying on promulgation of technology-based standards, permitting requirements, and administrative enforcement than it would through judicial mediation of common law nuisance actions.⁴ The Clean Air

1970s of federal legislation and its nationwide scope is a hotly debated topic, though there is substantial empirical evidence that improvements in air quality, for example, were well underway prior to the 1970s. See Indur M. Goklany, *Empirical Evidence Regarding the Role of Nationalization in Improving U.S. Air Quality*, in *THE COMMON LAW AND THE ENVIRONMENT: RETHINKING THE STATUTORY BASIS FOR MODERN ENVIRONMENTAL LAW* 27–53 (Roger E. Meiners & Andrew P. Morriss eds., 2000). The debate over whether states exhibit the so-called “race to the bottom” without federal intervention is summarized in Jody Freeman & Daniel A. Farber, *Modular Environmental Regulation*, 54 *DUKE L.J.* 795, 806–13 (2005).

³ For a thorough account of stages in the development of statutory environmental law, about which I do not go into more detail herein, see LAZARUS, *supra* note 1. Lazarus places little emphasis on the common law origins of environmental law, mentioning the relevant common law doctrines in only a few passing references in his 254-page history of environmental law, and even there mainly to suggest their limitations. See *id.* at 36, 114, 121, 134, and 179. By contrast, almost 20 years earlier he observed that

the substantive scope of both public and private nuisance law has quite willingly embraced environmental and natural resource concerns. In public nuisance cases, courts have had no difficulty finding that threats to the natural environment and to public health from environmental pollution implicate “rights common to the public.” The *Restatement (Second) of Torts* quite clearly draws the connection between public nuisance doctrine and environmental protection. Moreover, the relevance of environmental protection to private nuisance law is axiomatic. Private nuisance law by definition restricts activities that interfere with the use and enjoyment of land. Land is such a fundamental natural resource that most environmental threats, whether directed at natural resources or public health, can easily be read as interfering with the land’s use and enjoyment, and thereby potentially raising private nuisance claims.

Richard J. Lazarus, *Changing Conceptions of Property and Sovereignty in Natural Resources: Questioning the Public Trust Doctrine*, 71 *IOWA L. REV.* 631, 660–61 (1986) (footnotes omitted).

⁴ This premise was spelled out clearly in the famous New York case of *Boomer v. Atlantic Cement Co.*, 257 N.E.2d 870 (N.Y. 1970), in which New York’s highest court declined to enjoin a cement plant’s air emissions found to constitute a nuisance, ruling instead that a damages remedy, previously not available under New York law, was the more efficient approach. While known mostly for that shift in nuisance remedial doctrine, the court’s rationale for backing off injunctive relief sent a loud message to legislatures that their help was needed. As the court warned:

It seems apparent that the amelioration of air pollution will depend on technical research in great depth; on a carefully balanced consideration of the economic impact of close regulation; and of the actual effect on public health. It is likely to

require massive public expenditure and to demand more than any local community can accomplish and to depend on regional and interstate controls.

A court should not try to do this on its own as a by-product of private litigation This is an area beyond the circumference of one private lawsuit. It is a direct responsibility for government and should not thus be undertaken as an incident to solving a dispute between property owners

Id. at 871. The date of the opinion, not coincidentally, marks the advent of the wave of federal legislation regulating air, water, and land pollution. Similarly, Lazarus asserts that nuisance and other common law “‘background principles’ have never been adequate to deal with environmental concerns, which is why environmental law evolved beyond those principles to fill the gap with detailed standards and regulatory controls.” LAZARUS, *supra* note 1, at 134. He is joined by many. *See, e.g.*, Andrew Jackson Heimert, *Keeping Pigs Out of Parlors: Using Nuisance Law to Affect the Location of Pollution*, 27 ENVTL. L. 403, 414–15 (1997); Glenn P. Sugameli, *Takings Bills Threaten Private Property, People, and the Environment*, 8 FORDHAM ENVTL. L.J. 521, 560 (1997). After almost forty years operating under this central tenet of modern environmental law, it is no surprise that law students are taught today, quoting from a leading property law casebook, that “nuisance litigation is ill-suited to other than small-scale, incidental, localized, scientifically uncomplicated pollution problems.” JESSE DUKEMINIER ET AL., PROPERTY 665 (6th ed. 2006). Similarly, a leading environmental law casebook asserts that “there is wide agreement that private nuisance actions alone are grossly inadequate for resolving the more typical pollution problems faced by modern industrialized societies.” ROBERT V. PERCIVAL ET AL., ENVIRONMENTAL REGULATION: LAW, SCIENCE, AND POLICY 72 (4th ed. 2004). With emphasis on the *alone* in that proposition, there would be few quarrels. Many environmental law scholars and practitioners contend, however, that the common law has a larger role to play than is conventionally portrayed by supporters of the dominant public legislation model. *See generally* CREATIVE COMMON LAW STRATEGIES FOR PROTECTING THE ENVIRONMENT (Clifford Rechtschaffen & Denise Antolini, Eds., Environmental Law Institute 2007); THE COMMON LAW AND THE ENVIRONMENT: RETHINKING THE STATUTORY BASIS FOR MODERN ENVIRONMENTAL LAW (Roger E. Meiners & Andrew P. Morriss eds., 2000) [hereinafter COMMON LAW AND THE ENVIRONMENT]. For the most part this conversation has taken place with respect to the role of the common law in regulating pollution, *see, e.g.*, Jason J. Czarnecki & Mark L. Thomsen, *Advancing the Rebirth of Environmental Common Law*, 34 B.C. J. ENVTL. AFFS. 1 (2007); Keith N. Hylton, *When Should We Prefer Tort Law to Environmental Regulation?*, 41 WASHBURN L.J. 515 (2002); Alexandra B. Klass, *Common Law and Federalism in the Age of the Regulatory State*, 92 IOWA L. REV. (545 (2007); and Tom Kuhnle, *The Rebirth of Common Law Actions for Addressing Hazardous Waste Contamination*, 15 STAN. ENVTL. L.J. 187 (1996), whereas my focus is on the role of the common law in managing ecological integrity. A few other authors recently have suggested an increased role for the common law in ecological contexts. *See, e.g.*, Ray Kirsch, *What’s the Buzz? Common Law for the Commons in Anderson v. State Department of Natural Resources*, 29 HAMLIN L. REV. 338 (2006); Alexandra B. Klass, *Adverse Possession and Conservation: Expanding Traditional Notions of Use and Possession*, 77 U. COLO. L. REV. 283 (2006); Christine A. Klein, *The New Nuisance: An Antidote Justin Pidot, Note, The Applicability of Nuisance Law to Invasive Plants: Can Common Law Liability Inspire Government Action?*, 24 VA. ENVTL. L.J. 183 (2005). One recently published property law casebook covers the topic in a section on “protecting natural services” situated between the materials on nuisance law and lateral and subjacent support, all three of which are topics covered in the chapter on “some basic rights and responsibilities of the landowner.” PAUL GOLDSTEIN & BARTON H. THOMPSON, JR. PROPERTY LAW: OWNERSHIP, USE, AND CONSERVATION 167–76 (2006). Law casebook coverage is also found, appropriately, in JOHN COPELAND NAGLE & J.B. RUHL, THE LAW OF BIODIVERSITY AND ECOSYSTEM MANAGEMENT 402–09 (2nd ed. 2006).

Act and Clean Water Act are the classics of this public legislation model of pollution control.⁵ The second trend—the one of particular importance for my purposes—was the growing attention being given to protecting and managing species and ecosystems for their intrinsic and ecological qualities. Once again, nuisance doctrine was widely perceived to be a poor fit,⁶ and statutory regimes such as the Endangered Species Act (“ESA”) blossomed.⁷

The effect of these two trends and their associated rise of federally legislated environmental law was to put nuisance doctrine into a state of hibernation for the last quarter of the twentieth century insofar as ecological attributes of the environment were concerned. Although nuisance has continued not infrequently to provide a viable cause of action in pollution contexts,⁸ one will search in vain for decisions prior to 2000 applying nuisance law in contexts anything like those addressed through statutory programs such as the Endangered Species Act and other ecosystem management statutes.⁹ Perhaps nuisance law lacked the capacity to do so, or was made superfluous in this respect by the statutory regime, or even was inherently biased against it,¹⁰ but whatever the explanation, it is hard to describe nuisance doctrine in that era as having had anything to do with being *ecological*.¹¹

There is a new trend afoot, however, and it is one I believe could awaken nuisance doctrine to make it more relevant to ecological concerns. The discipline of ecological economics, which emerged in the 1980s and gained full steam in the 1990s, has focused on putting an economic price tag on degradation of ecological integrity.¹²

⁵ See LAZARUS, *supra* note 1, at 70–72.

⁶ As reflected in the quote from Lazarus that opens this article. See LAZARUS, *supra* note 1 and accompanying text.

⁷ For thorough histories of the emergence of ecologically-oriented statutes and the development of ecosystem management law in general, see RICHARD O. BROOKS, ROSS JONES, & ROSS A. VIRGINIA, *LAW AND ECOLOGY: THE RISE OF THE ECOSYSTEM REGIME* (2002); NAGLE & RUHL, *supra* note 4, at 361–409 (2nd ed. 2006).

⁸ See Alexandra B. Klass, *From Reservoirs to Remediation: The Impact of CERCLA on Common Law Strict Liability Environmental Claims*, 39 WAKE FOREST L. REV. 903, 942–61 (2004) (discussing modern state common law cases dealing with waste contamination).

⁹ As one court observed at the close of the twentieth century, there was then “no authority for the proposition that knocking down a[n endangered] bird’s nest on one’s property has ever been considered a public nuisance.” *Boise Cascade Corp. v. State*, 991 P.2d 563, 570 (Or. Ct. App. 1999).

¹⁰ I explore these three explanations in J.B. Ruhl, *Ecosystem Services and the Common Law of “The Fragile Land System”*, 20 NAT. RESOURCES & ENV’T, 3 (2005).

¹¹ I develop this point in more detail in J.B. Ruhl, *The Background Principles of Natural Capital and Ecosystem Services—Did Lucas Open Pandora’s Box?*, 22 J. LAND USE & ENVTL. L. 525 (2007) [hereinafter *Background Principles*].

¹² The discipline of ecological economics was well underway by the 1990s, with the journal by that name starting in 1989 and a full-length book on the topic breaking the path for more to follow. See *ECOLOGICAL ECONOMICS: THE SCIENCE AND MANAGEMENT OF SUSTAINABILITY* (Robert Costanza ed., 1991). And with their publication of *Ecological*

Ecosystems have long been regarded as the source of valuable commodities and recreational pursuits, uses which, obviously, do not always align with the goal of maintaining ecological integrity.¹³ Statutory programs aimed at maintaining ecological integrity as a priority thus have resorted to rattling off other values in support of their underlying purposes, such as the ESA's declaration that endangered species "are of esthetic, ecological, educational, historical, recreational, and scientific value to the Nation and its people."¹⁴ A major thrust of ecological economics, however, has been to illuminate the role of ecosystems as providing economically valuable services to "the Nation and its people." These *ecosystem services* include flood mitigation and groundwater recharge from wetlands, water filtration and sediment capture from forests, nutrient cycling, gas regulation, pollination, thermal regulation, carbon sequestration, and so on.¹⁵ Although monetizing the value of these services is more complex than estimating the economic value of

Economics, Herman Daly and Joshua Farley have firmly planted the discipline on the university curriculum landscape. See HERMAN E. DALY & JOSHUA FARLEY, *ECOLOGICAL ECONOMICS: PRINCIPLES AND APPLICATIONS* (2004).

¹³ See NAGLE & RUHL, *supra* note 4, at 1003–35.

¹⁴ 16 U.S.C. § 1531(a)(3) (2000).

¹⁵ The concept of ecosystem services is not new, but it is sufficiently recent that it is yet to be fully developed into coherent policy terms, and surely not yet into hard law to be applied. Mooney and Ehrlich trace references to "services" in connection with ecosystems as far back as 1970. See Harold A. Mooney & Paul R. Ehrlich, *Ecosystem Services: A Fragmentary History*, in *NATURE'S SERVICES: SOCIETAL DEPENDENCE ON NATURAL ECOSYSTEMS* 11, 14 (Gretchen C. Daily ed., 1997). Walter Westman was the first to attempt to assign numbers to the values of what he called "nature's services," relying on the postulated technology costs of replacing or repairing impaired ecosystem functions. See Walter E. Westman, *How Much Are Nature's Services Worth?*, 197 *SCI.* 960 (1977). Soon thereafter, in a little-noticed article, Edward Farnsworth *et al.* outlined one of the earliest comprehensive frameworks for considering the value of services provided by natural ecosystems. See Edward G Farnsworth *et al.*, *The Value of Natural Ecosystems: An Economic and Ecological Framework*, 8 *ENVIRONMENTAL CONSERVATION* 275 (1981). Edward O. Wilson later gave ecosystem services prominent mention in his epic study of biodiversity, *The Diversity of Life*, published in 1992. See EDWARD O. WILSON, *THE DIVERSITY OF LIFE* 305–10, 396 (1992). Then a research team led by Robert Costanza grabbed national media headlines in 1997 with their estimate that global ecosystem service values were over \$30 trillion. See Robert Costanza *et al.*, *The Value of the World's Ecosystem Services and Natural Capital*, 387 *NATURE* 253 (1997). Later that year the highly-influential book *Nature's Services* established the ecological basis for ecosystem service theory in many different ecosystem settings. See *NATURE'S SERVICES: SOCIETAL DEPENDENCE ON NATURAL ECOSYSTEMS* (Gretchen C. Daily ed., 1997). Most recently, the United Nations' Millennium Ecosystem Assessment published a global survey of the production and delivery of ecosystem services. See *MILLENNIUM ECOSYSTEM ASSESSMENT, ECOSYSTEMS AND HUMAN WELL-BEING: SYNTHESIS* (2005), available at <http://www.millenniumassessment.org/en/synthesis.aspx>. For a more detailed history, including coverage of the emergence of the ecosystem services concept in legal literature, see James Salzman, *A Field of Green? The Past and Future of Ecosystem Services*, 21 *J. LAND USE & ENVTL. L.* 133 (2006) [hereinafter *Field of Green*].

timber or hunting,¹⁶ no reasonable argument can be advanced that ecosystem services are not economically valuable.

Ecosystems services flow from the *natural capital* found in ecosystems such as forests, wetlands, coastal dunes, estuaries, and other ecologically defined units of study.¹⁷ However we define ecosystems and delineate their boundaries, though, one thing is certain: in many contexts an ecosystem will overlay a patch-work of private and public property ownership boundaries, and in such cases it is likely that the natural capital from which ecosystem services flow frequently will be located on parcels different from those where the service benefits are enjoyed. From the viewpoint of owners of natural capital, therefore, ecosystem services often are positive externalities leaking off the parcel, the value of which is difficult to capture in the market.¹⁸ From the viewpoint of the owners of land where the services are enjoyed, however, curtailment of the services through degradation of the natural capital could pose significant economic injury. So, when an owner of land wants to transform a wetland or forest into, say, a shopping center, and the owner of other land receiving ecosystem services from that natural capital objects on the basis of the economic injury that will result because of increased flooding or decreased pollination, who wins?

Neither the common law nor statutory law has established coherent baseline norms for resolving this property rights issue. Legislation is all over the board, reflecting attention to political expediency more than forging a consistent system of property rights. Thus some statutory programs prohibit landowners (usually developers) from degrading natural capital,¹⁹ while other statutory programs pay landowners (usually farmers) for not degrading natural capital.²⁰ The common law's history of ecological inertness hasn't helped shed light

¹⁶ Of course, this has proven to be the most significant obstacle to recognizing ecosystem services in environmental decision-making. See James Salzman, *Valuing Ecosystem Services*, 24 *ECOLOGY L.Q.* 887 (1997).

¹⁷ Land has always been treated in classical and neoclassical economics as one of the essential factors of production. In ecological economics, the concept of natural capital provides a major extension beyond "land" in terms of recognizing the importance of natural resources to the production of economically valuable goods and services. See Paul Elkins, Carl Folke, & Rudolf De Groot, *Identifying Critical Natural Capital*, 44 *ECOLOGICAL ECONOMICS* 159, 160 (2003).

¹⁸ For background on the economics of ecosystem services, see GEOFFREY HEAL, *NATURE AND THE MARKETPLACE: CAPTURING THE VALUE OF ECOSYSTEM SERVICES* 21–60 (2000).

¹⁹ Chief among these are the Endangered Species Act and Section 404 of the Clean Water Act, which regulates discharge of fill material into waters of the United States, including wetlands. See NAGLE & RUHL, *supra* note 4, at 274–310, 659–97.

²⁰ The Conservation Reserve Program and other "green subsidies" are designed to do this on agricultural lands. See NAGLE & RUHL, *supra* note 4, at 1003–16.

on the relative property rights in natural capital and ecosystem services either. Yet the door was opened for pressing nuisance doctrine into service in this regard by, of all events, the Supreme Court's 1992 regulatory takings decision in *Lucas v. South Carolina Coastal Council*.²¹

Justice Scalia's majority opinion in *Lucas* set up the now infamous categorical takings test for environmental regulation: if a statutory provision removes all economic value from all of a parcel of land, it will be treated as a per se taking of property *unless* the statute goes no further than to duplicate restrictions that would already have been imposed under the state's common law of private and public nuisances and other "background principles" of property law.²² All that is of interest about that test for my purposes is the "background principles" exception to the categorical takings rule. Before the Court was a South Carolina coastal protection program that met the rule for treatment as a categorical taking, thus raising the issue of whether the "background principles" exception applied. Although leaving that question to the state courts, Justice Scalia speculated that because other landowners in the area had been developing their beach lots prior to the state adopting the statute, it was "unlikely that common-law principles would have prevented [development] on petitioner's land."²³ Yet he also acknowledged that past practices do not paralyze the common law, but rather that "changed circumstances or new knowledge may make what was previously permissible no longer so."²⁴ His recognition of the evolutionary force of the common law

²¹ *Lucas v. South Carolina Coastal Council*, 505 U.S. 1003 (1992).

²² *Id.* at 1029. It is not within the scope of my purpose to add to the voluminous body of literature evaluating the rule of regulatory takings law established in *Lucas*. I take it as it is. Moreover, although it is less than clear what fits in the "background principles" for purposes of Justice Scalia's test, it is perfectly clear that state nuisance law does. See Robert L. Glicksman, *Evolving Voices in Land Use Law: A Festschrift in honor of Daniel R. Mandelker*, 3 WASH. U. J.L. & POL'Y 149, 164-82 (2000) (reviewing post-*Lucas* case law on the scope of "background principles").

²³ *Lucas*, 505 U.S. at 1031.

²⁴ *Id.* This is a long and widely held conception of the common law. For example, in support of the proposition Justice Scalia pointed to the Restatement (Second) of Torts, which explains with respect to nuisance claims that

[t]he character of a particular locality is, of course, subject to change over a period of time and therefore the suitability of a particular use of land to the locality will also vary with the passage of time. A use of land ideally suited to the character of a particular locality at a particular time may be wholly unsuited to that locality twenty years later. Hence the suitability of the particular use or enjoyment invaded must be determined as of the time of the invasion rather than the time when the use or enjoyment began.

RESTATEMENT (SECOND) OF TORTS § 827 cmt. g (1979). In short, "the specific harms that nuisance governs are neither fixed nor objective. Rather, what nuisance law treats as a harm is

has spawned a cottage industry in environmental law circles examining how nuisance and other common law property doctrines might develop toward more ecologically-minded values so as to deflect regulatory takings claims lodged against applications of ecologically-minded statutes.²⁵

To be candid, my interest in this regard is not motivated by any particular sense of how large or small the *Lucas* categorical takings universe should be. Rather, I am interested primarily in advancing the broad integration of natural capital and ecosystem service values into environmental decision making, only one implication of which may be to shrink the scope of categorical takings. I recognize that many people believe stronger environmental protection through legal evolution should be based on scientific, moral, and ethical arguments on behalf of ecological integrity—*i.e.*, not based on welfare economics.²⁶ Yet I propose taking a more instrumentalist, and I think more realistic, approach based on the economic value of natural capital and ecosystem services. Integrating natural capital and ecosystem service values into environmental decision-making, however, does not preclude or even displace considering scientific, moral, and ethical factors as well. Moreover, scientific, moral, and ethical arguments have only moved the nuisance ball so far with respect to natural capital and ecosystem services, and clearly not far enough, so it seems counter-productive to refuse to consider instrumentalist arguments that focus attention of the courts and all people on the raw economic value to humans of natural capital and the provision of ecosystem services. It is not as if ecosystem services would not exist but for the efforts of economists and ecologists

highly contextual and determined by community norms.” Albert C. Lin, *The Unifying Role of Harm in Environmental Law*, 2006 WIS. L. REV. 897, 904 (2006) (citations omitted).

²⁵ See, e.g., Michael C. Blumm & Lucas Ritchie, *Lucas’s Unlikely Legacy: The Rise of Background Principles as Categorical Takings Defenses*, 29 HARV. ENVTL. L. REV. 321 (2005); John A. Humbach, *Evolving Thresholds of Nuisance and the Takings Clause*, 18 COLUM. J. ENVTL. L. 1 (1993).

²⁶ For example, Jim Chen has objected that

{t}he instrumentalist view inherent in the ecosystem services concept dictates that the “chemical, physical, and biological” integrity of basic environmental media such as water not be viewed as an objective for its own sake, but rather as the critical first step toward achieving human goals such as “propagation of fish” and “recreation in and on the water.”

Jim Chen, *Webs of Life: Biodiversity Conservation as a Species of Information Policy*, 89 IOWA L. REV. 495, 548 (2004). The environmental philosopher Mark Sagoff has more vehemently dismissed focusing on ecosystem services as excessively instrumentalist and likely to obscure the non-instrumental values of the environment. See MARK SAGOFF, PRICE, PRINCIPLE, AND THE ENVIRONMENT (2004).

examining their economic potential. They have measurable value to humans, and whether we know their precise economic value or not, the fact that society has to choose how to allocate natural resources necessarily requires valuation of ecosystem services in some form or another. Failure to refine our understanding of their economic values, and the consequent inability to account for those values in regulatory and market settings and, more importantly, in the public mind, is unlikely to promote the conservation of natural systems. As David Pearce has put it, “the playing field is not level; rather, it is tilted sharply in favor of economic development. Two things have to be done to correct this situation. First, one has to show that ecosystems have economic value—indeed, that all ecological services are economic services. Second, a way has to be found to ‘capture’ the nonmarket values of ecosystems and turn them into real benefits for those who practice conservation.”²⁷ Robert Costanza et al. made the point more succinctly in urging that “although ecosystem valuation is certainly difficult and fraught with uncertainties, one choice we do not have is whether or not to do it.”²⁸

Pursuing that theme, in other work I have suggested that efforts in ecological economics to develop the principles of ecosystem services identification and valuation provide the kind of “new knowledge” that common law property doctrines use to “make what was previously permissible no longer so,”²⁹ and I have examined the handful of recent cases that do exactly that in connection with applications of public nuisance and public trust principles.³⁰ In this installment of my exploration of the topic, I delve deeper into the fit between ecosystem services and the doctrines of private and public nuisances.³¹ Part I of the Article outlines the *prima facie* case of an “ecosystem services nuisance,” showing that the conventional doctrine of private and public nuisance is aptly suited to engaging situations when one landowner manages his or her property so as to deprive another of economically valuable ecosystem services. Temporal, spatial, and cumulative effects may complicate such cases, but do not shift this form of injury outside the scope of nuisance. Part II examines the advantages and disadvantages of relying on nuisance law in this

²⁷ David Pearce, *Auditing the Earth: The Value of the World's Ecosystem Services and Natural Capital*, 40 ENV'T 23, 23 (1998).

²⁸ Robert Costanza et al., *The Value of the World's Ecosystem Services and Natural Capital*, 387 NATURE 253, 255 (1997).

²⁹ See Ruhl, *Fragile Land System*, *supra* note 10, at 8.

³⁰ See Ruhl, *Background Principles*, *supra* note 11.

³¹ In our work on a companion article, James Salzman and I do the same for the public trust doctrine. See J.B. Ruhl and James Salzman, *Ecosystem Services and the Public Trust Doctrine—Working Change from Within*, 15 SOUTHEASTERN ENVTL. L.J. 223 (2006).

context. The primary advantages are the local focus of nuisance law and its information-producing effects, whereas the disadvantages normally associated with common law claims are not strongly operative. Part III argues that the ecosystem services nuisance theory of liability should be pursued alongside statutory regimes designed to manage natural capital and ecosystem services, so as to promote legitimacy of the statutory program and to help insulate it from regulatory takings claims. On the other hand, Part III also argues against a more expansive common law theory designed to encompass moral, ethical, and scientific harms to our sense of ecological integrity.

I. ECOSYSTEM SERVICES AND THE PRIMA FACIE CASE—AN EASY FIT

In *Palazzolo v State*,³² a Rhode Island trial court considered a regulatory takings claim the United States Supreme Court had left dangling in *Palazzolo v. Rhode Island*.³³ The Supreme Court had rejected the claim that state agency denial of a permit to fill and develop a marsh area adjacent to a pond constituted a categorical taking or property under *Lucas*, on the ground that the agency allowed Palazzolo to develop some of his parcel, leaving it to the state courts initially to decide whether the permit denial was a regulatory taking. The state trial court reasoned that *Lucas* “establish[ed] public nuisance as a preclusive defense to takings claims,”³⁴ and found that “clear and convincing evidence demonstrates that Palazzolo’s development would constitute a public nuisance”³⁵ on the following grounds:

Palazzolo’s proposed development has been shown to have significant and predictable negative effects on Winnapaug Pond and the adjacent salt-water marsh. The State has presented evidence as to various effects that the development will have including increasing nitrogen levels in the pond, both by reason of the nitrogen produced by the attendant residential septic systems, and by the reduced marsh area *which actually filters and cleans runoff*. This Court finds that the effects of increased nitrogen levels constitute a

³² *Palazzolo v. State*, No. WM 88-0297, 2005 WL 1645974 (R.I. Super. Ct., July 5, 2005) [hereinafter *Palazzolo*].

³³ *Palazzolo v. Rhode Island*, 533 U.S. 606 (2001).

³⁴ *Palazzolo*, 2005 WL 1645974 at 5.

³⁵ *Id.*

predictable (anticipatory) nuisance which would almost certainly result in an ecological disaster to the pond.³⁶

Palazzolo thus involved the type of transboundary property rights issue that is likely to be ubiquitous for the law and policy of natural capital and ecosystem services, and the case demonstrates the easy time public nuisance law should have for integrating those values into a straightforward analysis: Palazzolo owned the marsh; the marsh filtered and cleaned runoff into the pond; those services were positive externalities flowing off of Palazzolo's property; the public in general enjoyed the economic benefits of that service; Palazzolo therefore had no property right to fill the marsh. It's that simple.

Nevertheless, as easily as the court's decision integrated ecosystem services into public nuisance doctrine, the decision also illustrates the difficulty of making the same move in private nuisance doctrine or in affirmative claims of public nuisance. The nuisance analysis arises in cases like *Palazzolo* only in connection with the government's assertion of the nuisance exception to the landowner's regulatory taking claim. If the government can establish the exception under the public nuisance branch simply by demonstrating the *qualitative* effect on ecosystem service delivery, it need not establish proof of *quantitative* economic harm to specific property owners. The government's litigation incentives thus are far different from those a private landowner or sovereign might advance through an affirmative nuisance claim against conduct like Palazzolo's filling of the marsh.

In *Palazzolo*, for example, although the court acknowledged the "valuable filtering system" the marsh provided³⁷ and that the pond and marsh system provided "amenity value to . . . the land owners in the area,"³⁸ the curtailment of ecosystem service values to private landowners did not register in the record or with the court. The court simply noted that "no neighboring landowner has made a private nuisance claim" and that the potential for obstruction of views of the water would not constitute a private nuisance under Rhode Island law.³⁹ It would have been unlikely, however, that any neighboring landowner would advance a private nuisance claim having to do with loss of the marsh filtering function before it was known whether the state would grant the permit for the project in the first place, and such litigation was unnecessary after the state rejected the permit. In short, the law of ecosystem services in nuisance doctrine is unlikely to

³⁶ *Id.* (emphasis added).

³⁷ *Id.* at 3.

³⁸ *Id.*

³⁹ *Id.* at 6.

develop significantly in the context of government defense of regulatory takings claims—it will emerge only when private landowners and sovereigns start suing over the adverse effects of natural capital degradation.

Consider four possible scenarios in which one landowner's degradation of natural capital might cause economic injury to another landowner, group of landowners, or larger segment of the public by curtailing the flow of ecosystem services:

- *The Simple Scenario*: Landowner A modifies Parcel A in such a way as to degrade natural capital (e.g., coastal dunes) on Parcel A supplying ecosystem services (e.g., storm surge mitigation) to Landowner B on Parcel B. Parcels A and B are adjacent; the effects of Landowner A's conduct are felt on Parcel B very soon after Parcel A is modified (e.g., during the next major storm); and the effects on Parcel B are clearly and exclusively attributable to Landowner A's conduct.
- *The Spatially Complex Scenario*: The same as the Simple Scenario, but in this case Parcels A and B are located at a considerable distance apart (e.g., ten or more miles).
- *The Temporally Complex Scenario*: The same as the Simple Scenario, but in this case the effects on Parcel B are not felt until a considerable time after Landowner A's conduct (e.g., three or more years).
- *The Cumulative Impacts Scenario*: A few or many landowners (Group A) modify their respective parcels in such a way as to degrade natural capital (e.g., wetlands) supplying services (e.g., downstream flood mitigation) to a few or many other landowners (Group B) on their respective parcels. Some parcels in Groups A and B are in close proximity, but others are not; the effects of Group A's conduct are felt on some of Group B's parcels soon after the Group A parcels are modified, but only after a significant time for others; and while the effects on Group B's parcels are clearly and exclusively attributable to Group A's conduct, particularly as the number of landowners in Group A increases it is not clear which Group B parcels are affected by modifications on particular Group A parcels.

Presumably, if private and public interests believe they are harmed substantially in these "ecosystem service nuisance" circumstances,

they will invest in, among other things, litigation designed to find some fit between a common law remedy and their alleged injury, even if that means proposing that a court make what amounts to an evolutionary move in the applicable common law doctrine.⁴⁰ The outcome under regulatory takings cases such as *Palazzolo* suggests that, with reliable evidence of significant injury resulting from curtailment of ecosystem services, private nuisance actions, as well as public nuisance actions prosecuted in the affirmative rather than as a defense to regulatory takings claims, ought to be a viable forum for this kind of “evolution-inducing” litigation. Focusing on the relevant qualitative differences between the four scenarios, this section provides the template for designing private and public nuisance claims in settings such as these.

A. Private Nuisance

In its barest essence, a private nuisance is “a nontrespassory invasion of another’s interest in the private use and enjoyment of land.”⁴¹ As every first-year law student quickly learns, this maxim is not particularly useful on its own, but rather opens the door to a complex “reasonableness” inquiry.⁴² Justice Scalia described the test in *Lucas* as an “analysis of, among other things, the degree of harm to public lands and resources, or adjacent private property, posed by the [landowner’s] proposed activities, the social value of the [landowner’s] activities and their suitability to the locality in question, and the relative ease with which the alleged harm can be avoided through measures taken by the [landowner] and the government (or adjacent landowners) alike.”⁴³ The Restatement (Second) of Torts provides a version of this balancing inquiry in the principle that “[a]n intentional invasion of another’s interest in the use and enjoyment of land is unreasonable if . . . the gravity of the harm

⁴⁰ See Paul H. Rubin, *Why Is the Common Law Efficient?*, 6 J. LEG. STUD. 51 (1977) (explaining the reasons why private interests attempt to influence the evolution of common law). People who believe their economic interests have been injured in through circumstances such as these might also seek legislative or administrative relief or pursue litigation under statutory causes of action.

⁴¹ RESTATEMENT (SECOND) OF TORTS § 821D (1979).

⁴² The Restatement divides private nuisances into two categories, intentional and unintentional. Intentional acts that invade another’s interest in the private use and enjoyment of land can be nuisances only if they are unreasonable in so doing, whereas unintentional acts must be negligent, reckless, or abnormally dangerous to be exposed to liability. RESTATEMENT (SECOND) OF TORTS § 822 (1979). Although natural capital might be destroyed through negligent, reckless, or abnormally dangerous behavior, in the text I cover the more common situation in which intent is present as defined, see *supra* notes 32–40, and thus unreasonableness of the acts must be shown.

⁴³ *Lucas*, 505 U.S. at 1030–1031 (citations omitted).

outweighs the utility of the actor's conduct."⁴⁴ Although not all jurisdictions follow it in all respects, and some do not follow it in many respects, in this section I have adopted the Restatement's framework for analyzing the four ecosystem service nuisance scenarios.⁴⁵

1. *Intentional Invasion*

One objection to the proposed ecosystem services nuisance theory of liability is that the defendant has not "invaded" the plaintiff's property by introducing adverse conditions, but rather has simply interfered with benefits flowing from the defendant's property to the plaintiff's property. Indeed, with odors, noise, and dust as the classic fodder of private nuisance doctrine, the black letter element of an "invasion" can easily be thought of as requiring defendant to have caused some physically measurable "bad" phenomenon to "move" from the defendant's parcel to the plaintiff's, such that there is quantifiably "more" of it on the latter (as in, plaintiff's property is smellier, noisier, or dustier).

Even under this narrow conception of invasion, however, many if not most ecosystem service nuisances would satisfy the element. The consequence of interfering with the storm surge mitigation benefits of coastal wetlands, for example, is more flooding inland. And the consequence of interfering with the sediment capture benefits of riparian habitat is more sediment in the river. Whether the defendant stands on the banks of the river and dumps sediment in from a wheelbarrow or causes the same amount of sediment to enter the river by destroying riparian habitat, the effect is the same in all four of the

⁴⁴ RESTATEMENT (SECOND) OF TORTS § 826 (1979). The Restatement also recognizes that "the gravity of the harm, as objectively weighed . . . , may be found so severe that in and of itself it requires compensation, regardless of the weight of the utility of the conduct." RESTATEMENT (SECOND) OF TORTS § 827 cmt. b (1979); see also *id.* §829A (1979). Recognizing that harm from an ecosystem service nuisance might be so severe as to qualify for such treatment, in the text I cover the harder case in which balancing is necessary.

⁴⁵ As stated *supra* note 44, I do so in order to test my thesis against the defendant-centered balancing approach of the Restatement, which allows defendants to resist liability by demonstrating offsetting economic or social utility. As of 1990, only 15 states had explicitly adopted the Restatement's balancing test, though many had formed some form of hybrid between it and prior tests focusing principally or primarily on the level of interference the plaintiff suffered. Indeed, as a compromise the Restatement adopted a provision dispensing with the balancing test in cases of "severe" harm to the plaintiff if only compensation is sought. See RESTATEMENT (SECOND) OF TORTS § 829A (1979). For a thorough history of the law prior to and after the Restatement and how the Restatement arrived at the compromise between the balancing test of section 826 and the escape provision of section 829A, see Jeff L. Lewin, *Boomer and the American Law of Nuisance: Past, Present, and Future*, 54 ALB. L. REV. 189 (1990).

scenarios—something “bad” moves from defendant’s property to plaintiff’s.

In some cases, however, it would be accurate to observe that the defendant is only depriving a benefit to other properties, such as when destruction of forest habitat reduces local pollination services available to an agricultural use of property.⁴⁶ In such cases, the argument would go, the withdrawal of benefits, even though the direct cause of plaintiff’s injury, does not amount to an invasion within the meaning of nuisance doctrine. But the invasion element means nothing of the sort. As the Restatement explains, “private nuisance has reference to the interest invaded and not to the type of conduct that subjects the actor to liability.”⁴⁷ In other words, what matters is that the plaintiff is made worse off. And the plaintiff clearly is demonstrably worse off in the withdrawal of benefits class of cases using the kind of evidence applied in all nuisance cases—a physically and economically measurable phenomenon on *plaintiff’s* property. Indeed, the Restatement treats “physical damage to tangible property” as the bull’s eye of private nuisance, precisely because, unlike physical discomfort or annoyance to the plaintiff, “it can be more readily be observed and measured.”⁴⁸ Thus nowhere in the Restatement is the “invasion” element linked to particular classes of conduct that would exclude withdrawal of ecosystem service benefits from the scope of actionable injuries. Taking the plaintiff’s point of view as the appropriate perspective, therefore, even the withdrawal of ecosystem service benefits should meet the invasion element of private nuisance.

⁴⁶ The pollination example might raise objections based on the loosely analogous principle that a landowner is not liable for failure to abate “natural conditions” of land, a classic example of which is the acts of birds, animals, or insects. See RESTATEMENT (SECOND) OF TORTS §§ 840(1) and 840(1) cmt. a (1979). However, the Restatement explains that “the term does not comprehend conditions that would not have arisen but for the effect of human activity,” *id.*, which would be the case in the withdrawal of pollination benefits from actions such as removal of habitat. Although not directly on point with the development of an ecosystem services nuisance claim for interference with pollination, the Minnesota Supreme Court recently held that a negligence cause of action could be brought to seek damages for the economic injuries beekeepers suffered when their bees, while visiting nearby cultivated poplar trees the state and a company were growing for biomass, ingested pesticides and spread the ill effects throughout the hives. The court upheld the lower court’s dismissal of a private nuisance claim because the beekeepers did not own the land on which the hives were maintained. See *Anderson v. State Department of Natural Resources*, 693 N.W.2d 181 (Minn. 2005); see generally Kirsch, *supra* note 4 (discussing *Anderson* in detail); Alexandra B. Klass, *Bees, Trees, Preemption, and Nuisance: A New Path to Resolving Pesticide Land Use Disputes*, 32 *ECOLOGICAL L.Q.* 763, 799–805 (2005) (discussing *Anderson* and other beekeeper cases involving pesticide).

⁴⁷ RESTATEMENT (SECOND) OF TORTS § 822 cmt. b (1979).

⁴⁸ *Id.* § 827 cmt. d.

Having established that ecosystem service nuisances of all varieties can satisfy the invasion element, the plaintiff must also show that defendant intended the invasion. The Restatement describes an act as intentional for these purposes if the actor “acts for the purpose of causing it”⁴⁹ or “knows that it is resulting or is substantially certain to result from his conduct.”⁵⁰ On the assumption that most landowners do not degrade natural capital with the express purpose of injuring other landowners, the question in most ecosystem service nuisance cases will be the defendant’s state of knowledge. On this element, unlike the invasion element, the outcome is likely to vary between the four scenarios.

The Simple Scenario sets up the classic case in which it will be more difficult for the defendant to plead lack of intent. Even with no intent to harm, the defendant likely is in a position plainly to observe the effects on plaintiff’s property of degrading the natural capital, and thus acts with intent within the meaning of the Restatement.⁵¹ And even if the causal effect is not immediately apparent, once it is brought to defendant’s attention, either by notification or by observation, continued degradation of the natural capital would constitute intent within the meaning of the Restatement.⁵²

As the effects of natural capital degradation become more spatially or temporally removed from defendant’s conduct, what the defendant knew would result or be substantially certain to result is likely to be subject to more debate. Here is where the burgeoning ecological and economic knowledge about natural capital and ecosystem services will play an important role in the development of ecosystem service nuisance cases. After events like Hurricane Katrina, for example, it should be reasonable to expect anyone in coastal regions of the Gulf to understand the effects of degraded coastal marshes and dunes on the protection of inland areas from storm surges, and that those effects can be felt at considerable distances from the location of the conduct and not until well after the conduct takes place.⁵³ Similarly,

⁴⁹ *Id.* § 825(a).

⁵⁰ *Id.* § 825(b).

⁵¹ *Id.* § 825 ill. 2.

⁵² *Id.* § 825 ill. 3–4.

⁵³ The historical losses of coastal and freshwater marshes in the Mississippi Delta region, and the consequences thereof for protection from storm surges, are covered comprehensively in a series of articles in a recent publication from the *National Wetlands Newsletter*. See NATIONAL WETLANDS NEWSLETTER, AFTER THE STORM: RESTORING AMERICA’S GULF COAST WETLANDS (2006) [hereinafter AFTER THE STORM]. Coastal “wetland grasses, sedges, and trees reduce the effective water depth and can cause storm waves to touch bottom, or ‘break,’ further offshore, dissipating their energy many miles from sensitive built structures. Wetland soils also absorb wave energy, reduce the depth of flooding, bind soil, and reduce erosion. . . . Inland wetlands reduce flooding by storing and conveying floodwaters. . . . Experts estimate that a 1-

the injuries to forests, crops, and public health that once led the United States Supreme Court, with little hesitation, to find that emissions from copper smelting plants in Tennessee posed a public nuisance in Georgia did not happen adjacent to the plants or immediately upon their commencement of operations.⁵⁴ Hence, it is not as if nuisance law evaporates with time or distance, but rather the plaintiff's burden of proof regarding defendant's state of knowledge simply becomes more demanding. Doubtless, there will be cases fitting the Spatially Complex Scenario and Temporally Complex Scenario in which the plaintiff cannot meet that burden, but likely there will be many in which the plaintiff can. And as knowledge about natural capital and ecosystem services builds and spreads, plaintiffs will more frequently and easily meet the burden.

The same should be true for the Cumulative Impacts Scenario as well, where the question of defendant's knowledge is complicated not by time or distance, but by the dispersed quality of cause and effect. A defendant in this kind of ecosystem service nuisance case might argue that one could not reasonably be expected to have known that an injury such as increased sediment in a lake or river would be exacerbated by such a small loss of riparian habitat as the defendant claims to have caused. But pleading ignorance of cumulative impacts effects in the environment is becoming increasingly difficult except for the severely ignorant. Here, in particular, nuisance doctrine can lean heavily on the amassed knowledge of cumulative environmental impacts derived from statutory programs such as the National Environmental Policy Act (NEPA)⁵⁵ and Endangered Species Act (ESA).⁵⁶ NEPA's requirement that federal agencies consider the cumulative environmental effects of their proposed actions⁵⁷ has

acre wetland can hold up to 1.5 million gallons of water." Jon Kusler, *Wetlands, Hurricanes, and Flood Hazards*, in *AFTER THE STORM*, *supra*, at 34. 34–35.

⁵⁴ See *Georgia v. Tennessee Copper Co.*, 206 U.S. 230 (1907). For background on the *Tennessee Copper* case, see PERCIVAL ET AL., *supra* note 4, at 82–84.

⁵⁵ 42 U.S.C. §§ 4321–4370f (2000).

⁵⁶ 16 U.S.C. §§ 1531–1544 (2000).

⁵⁷ Section 102(2)(C) of NEPA requires federal agencies to “include in every recommendation or report on proposals for legislation and other major federal actions significantly affecting the quality of the human environment, a detailed statement by the responsible official on . . . the environmental impact of the proposed action.” 42 U.S.C. § 4332 (2000). These statements, known as environmental impact statements, must include examination of the proposed action's “cumulative impacts,” defined as the impacts on the environment resulting “from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions. . . . Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.” 40 C.F.R. § 1508.7 (2007).

produced an extensive body of case law on the topic⁵⁸ as well as a refined methodology for doing so.⁵⁹ And the ESA has focused attention on the cumulative effects of habitat loss, which is the leading cause of species decline domestically.⁶⁰ Similarly, knowledge is increasing of the cumulative impacts of piecemeal degradations of natural capital,⁶¹ and public awareness is following in step. The voters of Louisiana, for example, recently overwhelmingly approved amendments to the state constitution earmarking state revenue sources to coastal wetlands restoration and conservation.⁶² One who levels a coastal dune or fills a riparian wetland, therefore, and who witnesses others doing the same up and down the beach or river, will be increasingly hard-pressed to claim lack of knowledge that he or she contributed to the overall effect of reduced protection from storm surges and floods at other locations. The question ought not to be one of intent in those circumstances, but rather one of the substantiality of each person's participation in the action causing the harm.⁶³

⁵⁸ See THE NEPA LITIGATION GUIDE 72-79 (Karin P. Sheldon and Mark Squillace eds.1999).

⁵⁹ See, e.g., Council on Environmental Quality, Considering Cumulative Effects Under the National Environmental Policy Act, available at <http://www.nepa.gov/nepa/ccenepa/ccenepa.htm>.

⁶⁰ See David S. Wilcove et al., *Quantifying Threats to Imperiled Species in the United States*, 48 BIOSCIENCE 607 (1998) (compiling the documented causes of imperilment for over 1800 domestic species and finding that habitat loss is the single greatest threat in all species groups, followed by spread of invasive species).

⁶¹ Once again the Gulf Coast's wetland marshes provide the example, where 1,900 square miles of coastal wetlands were lost between 1932 and 2000, and 1.1 million acres—and area larger than Rhode Island—since 1900. Jim Bays, *Ecological Engineering and the Restoration of Louisiana's Marshes*, in AFTER THE STORM, *supra* note 53, at 3.

⁶² One measure provides that eligible federal revenues received by the state generated from Outer Continental Shelf oil and gas activity shall be credited to the Coastal Protection and Restoration Fund and used only for purposes of coastal wetlands conservation, coastal restoration, hurricane protection, and infrastructure directly impacted by coastal wetland losses, and the other measure requires twenty percent of the proceeds of tobacco securitization to be deposited in the Coastal Protection and Restoration Fund, with a portion to be used for barrier island stabilization and preservation.

⁶³ RESTATEMENT (SECOND) OF TORTS § 834 cmt. d (1979) (With respect to liability for nuisance, "when a person is only one of several persons participating in carrying on an activity, his participation must be substantial before he can be held liable for the harm resulting from it."). This principle has come up in many cases involving an indivisible personal injury caused by multiple sources of harm such as pollution and dangerous products, each source contributing a small share of the total harm, with states mixed over the burden the plaintiff bears to attach causation liability to individual sources. See Paul Homer, *Indivisible Injury Negligence and Nuisance Cases—Proving Causation Among Multiple-Source Polluters: A State-by-State Survey of the Law for New England, and a Proposal for a New Causation Framework*, 3 PIERCE L. REV. 75 (2004) (surveying the case law of several states). The issue has come up most recently in public nuisance cases brought against paint manufacturers alleging public health injuries from lead paint. See Bruce R. Kelly and Ingo W. Sprie, Jr., *Public Nuisance Cases as the Next Mass Tort: The Lead Paint Experience*, 21 TOXICS L. REP. (BNA) 695 (2006). It is likely that courts in any particular state would treat the multiple-source aspect of the Cumulative Impacts Scenario of ecosystem services nuisances the same as they have in these other types of multiple defendant

2. Interest in Use and Enjoyment of Land

The fact that the plaintiff is worse off and can show defendant so intended points the analysis next to the matter of plaintiff's property interest—*i.e.*, whether it is of the type which, if injured as experienced, gives rise to an actionable claim in nuisance. As far as nuisance doctrine is concerned, however, this is simply a standing requirement, in that “there is liability only to those who have property rights and privileges in respect to the use and enjoyment of the land affected.”⁶⁴ The Restatement, in other words, “does not state the rules applicable in determining when a person's rights and privileges in respect to land constitute property rights and privileges. Those questions are dealt with in the Restatement of Property.”⁶⁵

Hence this element presents no opportunity for arguing that a plaintiff does not have the right to a particular ecosystem service benefit, such as pollination or storm surge mitigation. Nuisance law is not about whether there is a “right” to ecosystem services any more than it is about whether there is a “right” to specific levels of noise, odors, or dust. The loss of ecosystem services, like noise, odors, and dust, is simply the agent of injury to the plaintiff's property interest in use and enjoyment. All that matters is that the plaintiff has a property interest that extends to the specific use and enjoyment of the property, such as farming or conducting a business, that plaintiff contends is being impaired by the defendant's conduct, which for our purposes is interfering with the delivery of a particular ecosystem service benefit.⁶⁶ If plaintiff has such an interest, this element is met, and the

nuisance cases.

⁶⁴ RESTATEMENT (SECOND) OF TORTS § 821E (1979).

⁶⁵ *Id.* § 821E cmt. b.

⁶⁶ As an example, the Restatement explains that “one who has a profit in the minerals in a parcel of land has ‘property rights and privileges’ in the land, but can complain of an interference with the land or its use only if the minerals or his use and enjoyment of them are affected.” *Id.* § 821E cmt. a. The ecosystem services property rights issue discussed in the text finds a loose analogy in the so-called light-air-view cases, in which the question is the extent to which nuisance doctrine can be used to prevent blockage of light, air, or view. *See, e.g.*, *Lee County v. Kiesel*, 705 So.2d 1013 (Fla. Dist. Ct. App. 1998) (explaining Florida's recognition of the right of “riparian view,” preventing blockage of a riparian landowner's view to the river channel). In some circumstances light or air can be seen as analogous to ecosystem services, if not the medium for their delivery. For example, recognizing the value of light to solar power generation, the Wisconsin Supreme Court found that interfering with the flow of light to solar panels could give rise to a nuisance claim given that “[a]ccess to sunlight as an energy source is of significance both to the landowner who invests in solar collectors and to a society which has an interest in developing alternative uses of energy.” *Prah v. Maretti*, 321 N.W.2d 182, 189 (Wis. 1982). But this approach has proven controversial, leading one commentator to observe, consistent with my position with respect to ecosystem services, that

analysis moves on to the gravity of harm/utility of conduct balancing calculus.

3. Gravity of the Harm to Plaintiff

Section 827 of the Restatement identifies five important factors to consider in the “gravity of harm” analysis: (1) extent of harm; (2) character of harm; (3) social value of the use or enjoyment invaded; (4) suitability of the use or enjoyment to the locality; and (5) the burden on the person harmed of avoiding the harm.⁶⁷ These and all other relevant factors are to be weighed objectively, with the gravity of harm being the overall product with “no general rule as to the relative weight of the particular factors in all the ever-varying cases.”⁶⁸

There is nothing about these factors or the weighing of them that puts ecosystem service nuisances in some qualitatively distinct category compared to other nuisances. The injuries associated with loss of ecosystem services can be severe, they are often manifested in physical damage to tangible property, and they can pose risks to residences and socially valuable commercial and agricultural operations that are perfectly suited to their localities.

With respect to the question whether the plaintiff can avoid the harm, it is true enough that many ecosystem services can be replaced through technological means, or that the risk associated with their absence can be ameliorated through preventative measures. But earplugs, clothespins, and dust masks can be worn to guard against noise, odors, and dust too. The question isn't whether the plaintiff can avoid the harm at all costs, but whether it is reasonable to expect the

[c]ourts have failed to probe a fundamental concept of nuisance law that underlies the light-air-view cases. How should we define the property interest that the law of nuisance protects? Is it necessary to say that the plaintiff has a specifically defined property interest in light, air, and view, as discrete kinds of “property,” or should we define the protected property interest more broadly as use and enjoyment of the land? If we must define the protected interests narrowly and discretely, then it is probably true that the plaintiff has no protectable interest. But if the interest is defined broadly as “use and enjoyment,” then in many cases a plaintiff can show that blockage has caused a severe loss of use and enjoyment and can, indeed, measure the loss by proof of substantial loss of market value. The plaintiff would not automatically lose, but at that point the analysis would shift to considering the reasonableness of the defendant's activity and balancing the two parties' interests. Thus the light-air-view cases deserve a more searching analysis than they have had.

WILLIAM B. STOEBOCK & DALE A. WHITMAN, *THE LAW OF PROPERTY* §7.2, at 416 (3d ed. 2000).

⁶⁷ RESTATEMENT (SECOND) OF TORTS § 827 (1979).

⁶⁸ *Id.* § 827 cmt. b.

plaintiff to do so.⁶⁹ Nuisance law has not usually expected plaintiffs claiming damage from excessive noise to install sound barriers, or those claiming injury from slaughterhouse odors to filter their air. It would seem strange, therefore, to expect the owner of inland property to construct a seawall when beachfront owners level dunes to make room for condos, or to expect a riverfront property owner to install sediment filtration devices when forestland owners in the watershed clear cut trees to make room for strip malls. In short, like the invasion element, because the gravity of harm element focuses on the plaintiff's perspective, ecosystem service nuisances appear rather plain vanilla as far as nuisance doctrine is concerned.

4. *Utility of Defendant's Conduct*

Of course, as this is a balancing calculus, at some point the defendant's perspective must enter into the picture. Section 828 of the Restatement identifies three factors in the "utility of conduct" side of the analysis: (1) the social value of the primary purpose of the conduct; (2) the suitability of the conduct to the locality; and (3) the impracticability of preventing or avoiding the harm.⁷⁰ Several considerations are likely to complicate the analysis of these factors for ecosystem service nuisances.

First, it is likely that in some cases the conduct alleged to have caused an ecosystem service nuisance will have long been thought of in the community as socially valuable and suitable to the locality. After all, many acres of coastal dunes, wetlands, and forests have given way to development of one kind or another. But if this condition were to foreclose an ecosystem service nuisance claim as a matter of law, the new knowledge principle would be entirely subverted. The point of the new knowledge principle is that we learn the errors of our ways and adjust nuisance law accordingly. Now that we know how economically devastating the loss of natural capital can be locally and regionally, the fact that it was once seen as acceptable ought to play a significantly diminished role on defendants' behalf. As one court observed:

The rules and understandings as to the uses of land that are acceptable or unacceptable have changed over time. The fact

⁶⁹ In its relentless mission to render nuisance doctrine a test of reasonableness, the Restatement explains that this factor "merely embodies the common sense idea that persons living in a society must make a reasonable effort to adjust their uses of land to those of their fellowmen before complaining that they are being unreasonably interfered with in what they are doing." RESTATEMENT (SECOND) OF TORTS § 827 cmt. i (1979).

⁷⁰ *Id.* § 828.

that sewage was once strewn into city streets does not give rise to a permanent reasonable expectation that such behavior can continue indefinitely. . . . Despite the fact that one may have purchased property with the expectation to use it in such a manner that was acceptable before the purchase, there may come a point in time when the original owner's expectations may no longer be reasonable.⁷¹

In some cases, however, defendants might be able to point to approval by federal, state, and local environmental and land use authorities of the alleged degradation of natural capital to bolster the claim of reasonableness of conduct. Nuisance law, for example, has long struggled with the effect of the defendant's use complying with local zoning ordinances, with the general rule being that compliance weighs in favor of defendant on the issue of suitability.⁷² But most environmental and land use statutes neither preempt nuisance law nor directly address how they should be factored into the nuisance analysis; indeed, federal environmental statutes routinely disclaim any preemptive intent.⁷³ Hence, while approval of development in dunes, wetlands, forests, or other ecosystems supplying local or regional ecosystem services should weigh into the analysis in favor of defendants, it ought not be taken as controlling in the balancing test.

The final complication is one inherent in all nuisance contexts, but particularly so in the ecosystem service nuisance cases—*i.e.*, that almost all activities have some positive and negative externalities felt somewhere else by someone else. The Restatement recognizes the “obvious truth that each individual in a community must put up with a certain amount of annoyance, inconvenience, or interference and must take a certain amount of risk in order that all may get on together.”⁷⁴ So it cannot be that all losses of ecosystem services have a remedy in nuisance. Indeed, what I have outlined as an ecosystem service nuisance is intended to fit within the conventional doctrine of private nuisance, not to morph it into a general ecological protection regime. In the absence of a plaintiff whose use and enjoyment of property is

⁷¹ *Machipongo Land and Coal Co., Inc. v. Commonwealth*, 799 A.2d 751, 772–73 (Pa. 2002).

⁷² In general, “[c]ourts widely hold that a zoning ordinance permitting a use does not immunize the use from being held to be a private nuisance. However, the weight given by a court to the existence of an ordinance affects the question of whether the given use constitutes a private nuisance.” JULIAN CONRAD JEURGENSMEYER & THOMAS E. ROBERTS, *LAND USE PLANNING AND CONTROL LAW* § 14.7, at 646 (1998).

⁷³ *See, e.g.*, 33 U.S.C. § 1365(e) (2000) (Clean Water Act provision expressly preserving state common law remedies); 42 U.S.C. § 7604(e) (2000) (Clean Air Act provision expressly preserving state common law remedies).

⁷⁴ RESTATEMENT (SECOND) OF TORTS § 822 cmt. g (1979).

substantially injured as a result of another landowner's degradation of natural capital, no ecosystem service nuisance has been committed. Likewise, the defendant's conduct must fit the doctrine as well. In short, nuisance law must decide which degradations of natural capital, taking into account the value of the defendant's primary purpose and the possibility that government authorities have approved that purpose, are within the scope of nuisance liability.

Ecological economists have developed the concept of *critical natural capital* (also CNC) to identify ecological resources that provide important ecosystem services and which are least amenable to substitution. Ekins explains, for example, that "for any particular CNC, and resulting environmental function, there is no substitute type of capital, natural or human-made, which would enable the same function to be performed to the same extent, *i.e.*, the CNC is non-substitutable in respect of the function in question."⁷⁵ Surely when we learn that a particular ecological resource fits this definition, the prospect of private nuisance liability, perhaps even in strict liability,⁷⁶ is an appropriate consequence for its destruction regardless of past customs or government approvals. Between this critical threshold and trivial losses of natural capital associated with socially necessary land development suited to its surroundings, nuisance law cannot avoid its balancing function. Somewhere on that range, in some ecosystem service nuisance cases, the balance ought to tip in plaintiff's favor. There is nothing about the fact that natural capital degradation is the cause, or that loss of ecosystem services is the effect, to immunize such injuries from this outcome in the doctrine of private nuisance.

B. Public Nuisance

A public nuisance "is an unreasonable interference with a right common to the general public."⁷⁷ For the most part, the Restatement treats the reasonableness component of that maxim the same as for private nuisance.⁷⁸ As for rights common to the general public, neither must they be rights in land,⁷⁹ nor will rights in land held by

⁷⁵ Paul Ekins, *Identifying Critical Natural Capital: Conclusions About Critical Natural Capital*, 44 *ECOLOGICAL ECON.* 277, 277 (2003); *see also* Paul Ekins et al., *A Framework for the Practical Application of the Concepts of Critical Natural Capital and Strong Sustainability*, 44 *ECOLOGICAL ECON.* 165, 174 (2003); Paul Ekins et al., *Identifying Critical Natural Capital*, 44 *ECOLOGICAL ECON.* 159, 161 (2003).

⁷⁶ The Restatement recognizes that private nuisance can be established in strict liability for abnormally dangerous conditions and activities, pursuant to the rules applicable to such conduct. *RESTATEMENT (SECOND) OF TORTS* § 822 cmt. j (1979).

⁷⁷ *Id.* § 821B.

⁷⁸ *See id.* §§ 821B cmt. b, 826 cmt. a, and 827 cmt. a.

⁷⁹ *Id.* § 821B cmt. h.

numerous landowners necessarily amass into a right common to the general public.⁸⁰ Ecosystem service nuisances seem ready-made for public nuisance under all these conditions. The *Palazzolo* court, for example, had little trouble finding liability for anticipatory nuisance in the public nuisance version of the Simple Scenario, noting no more than that “the 446 acre Winnapaug pond is a shallow, tidal pond used for fishing, boating and shell fishing. . . . The adjacent salt marsh provides, *inter alia*, a valuable filtering system regarding water runoff containing pollutants and nitrogen from adjacent land.”⁸¹ The Cumulative Impacts Scenario would likely also provide appropriate cases for public nuisance treatment, as widespread depletion of natural capital, particularly critical natural capital, could impose significant public-wide economic and health impacts. The land-based impacts of the ecosystem service losses, moreover, could provide the “special injury” a private landowner would need to advance a public nuisance claim.⁸² While the Cumulative Impacts Scenario is likely to present more difficult questions of causation and the substantiality of each individual defendant’s contribution to harm, those are appropriate questions for public nuisance cases, not barriers to bringing the claim.⁸³ In short, as with private nuisance, nothing in the

⁸⁰ *Id.* § 821B cmt. g.

⁸¹ *Palazzolo v. Rhode Island*, No. WM 88-0297, 2005 WL 1645974, at 3 (R.I. Super. Ct. July 5, 2005)

⁸² Under traditional doctrine, for a private party to prosecute a public nuisance action, the person must have “suffered harm of a kind different from that suffered by other members of the public exercising the right common to the general public.” RESTATEMENT (SECOND) OF TORTS § 821C (1979). For a thorough examination of this doctrine, see Denise E. Antolini, *Modernizing Public Nuisance: Solving the Paradox of the Special Injury Rule*, 28 *ECOLOGY L.Q.* 755 (2001).

⁸³ There has been a recent renewed interest in public nuisance claims as a means of redressing injuries alleged to be associated with pollution, the new twist being a focus on global climate change as the agent of injury. For example, the Attorney General of California brought public nuisance litigation claims against automobile manufacturers on the ground that the greenhouse gases emitted by the cars they produce are contributing to a public nuisance in the form climate change. See *People v. General Motors Corp.*, No. C06-05755, 2007 WL 272687 (N.D. Cal. Sept. 17, 2007) (dismissing claims as political questions outside the scope of judicial power). And several states sued a collection of electric power companies to enjoin the defendants’ emissions of carbon dioxide and other “greenhouse gases” alleged to cause global warming. See *Connecticut v. American Elec. Power Co., Inc.*, 406 F. Supp. 2d 265 (S.D.N.Y. 2005) (dismissing claims as political questions outside the scope of judicial power). To the extent such cases include injury to the flow of ecosystem services as a basis of liability, they are extreme examples of the Cumulative Impacts Scenario presenting, among other difficulties, the problem of attributing causation to any of the individual defendants. See *supra* note 57. For background on the climate change public nuisance theory, see Randall S. Abate, *Automobile Emissions and Climate Change Impacts: Employing Public Nuisance Doctrine as Part of a “Global Warming Solution” in California*, 40 *CONN. L. REV.* 591 (2008); Klein, *supra* note 4, at 1220-33; Dan Mensher, Comment, *Common Law on Ice: Using Federal Judge-Made Nuisance Law to Address the Interstate Effects of Greenhouse Gas Emissions*, 37 *ENVTL. L.* 463 (2007).

Restatement or nuisance case law suggests that ecosystem service nuisance claims fall in some special category for which the law erects any sort of special barrier to public nuisance liability.

II. PROS AND CONS OF THE IMPENETRABLE JUNGLE

As noted previously, nuisance doctrine's fall from grace in environmental law started with the shift toward public law solutions to the problems of pollution and ecological degradation. However, although the rationales for deemphasizing nuisance in connection with pollution control have been widely and aggressively stated for decades, the same is not true for the ecological management side of the policy space. For one thing, nuisance never was active in ecological management issues, thus had no exalted place from which to fall. Having never gotten in the game, the operating assumption seems to have been that it never would—that if nuisance wasn't well-equipped to handle the demands of modern pollution control, it wouldn't be for the demands of modern ecological management either.

The ecosystem service nuisance framework I have outlined above, however, is fundamentally different in character from the kind of action the *Boomer* court thought it best to leave to the legislatures and which so many environmental law scholars have suggested nuisance law can't handle. I am not suggesting that nuisance law take on the whole of ecosystem management law or anything like the technology-based, standard setting function of public pollution control law. Rather, what I have in mind looks and feels like a rather conventional nuisance action, the only novel feature being that the plaintiff is linking damage to ecological resources on defendant's property with injury to use and enjoyment of plaintiff's property. Hence, the standard litany of nuisance's deficiencies in the pollution context seems inaptly leveled against the ecosystem services nuisance. A fresh look is warranted.

A. Information and the Place-Based Nature of Nuisance

Among the many criticisms of nuisance law in the modern pollution control context, two in particular—that it is small scale and local in nature⁸⁴—stand out as distinct *advantages* in the context of natural capital and ecosystem services. Indeed, nuisance law often can out-perform regulatory law in both respects.

⁸⁴ See *DUKEMINIER ET AL.*, *supra* note 4, at 665 (“nuisance litigation is ill-suited to other than small-scale, incidental, localized, scientifically uncomplicated pollution problems”).

The place-based nature of nuisance law may have prevented it from being the engine of national pollution control policy, but ecosystem services nuisances often will present primarily local contexts.⁸⁵ Unlike pollution control, there is no relevant national ambient goal or technology-based standard for ecosystem services. The Simple Scenario pits landowners in close proximity against one another and requires a close look at how one's actions affected the other's property interests. Granted, the Spatially Complex Scenario might stretch the geography of an ecosystem services nuisance beyond a local context, in which case the plaintiff may also have a stiff burden of proof. But even the Temporally Complex Scenario and Cumulative Impacts Scenario could transpire completely within a close local landscape.

In such cases, local state and federal judges will have much closer proximity to the context than would a potentially distant regulatory agency applying regulatory text. Common law judges work "in light of the very real facts of very real cases," whereas "statutory authorizations of the administrative state are premised perforce on imagined facts."⁸⁶ And "the common law issues orders only to those before the lawmaker. In contrast, statutes are meant to apply to the whole world."⁸⁷ Courts thus rely on "sworn, scientific and focused testimony rather than the generalities and anecdotes present in Congressional hearings."⁸⁸ Indeed, some national environmental statutory programs have been abject failures in terms of sensitivity to local implementation effects on natural capital and ecosystem services.⁸⁹ The common law has its shortcomings, but one is not that it is insensitive to local effects.

Moreover, because it is focused on a particular context, an ecosystem services nuisance case is likely to generate information about natural capital and ecosystem service values that would not normally be produced from regulatory programs, yet which could be generalizable to many other similar settings and added to the storehouse of information. Assuming the plaintiff in a private

⁸⁵ As Hylton observes, "[n]uisance law can be criticized for being too local, in the sense that it does not aspire to create general regulatory rules, such as emission standards. On the other hand, almost all reliable information is probably local." See Hylton, *supra* note 4, at 525.

⁸⁶ David Schoenbrod, *Protecting the Environment in the Spirit of the Common Law*, in COMMON LAW AND THE ENVIRONMENT, *supra* note 2, at 3, 18.

⁸⁷ *Id.*

⁸⁸ Klass, *Common Law and Federalism*, *supra* note 4, at 582.

⁸⁹ See J.B. Ruhl & James Salzman, *The Effects of Wetland Mitigation Banking on People*, 28 NAT'L WETLANDS NEWSL., Mar-Apr 2006, at 1 (showing through an empirical study that wetlands mitigation administered under the Clean Water Act and state law facilitated the migration of wetlands from urban to rural areas with no consideration of the effects on distribution of ecosystem services).

nuisance case has suffered economic injury sufficient to motivate the filing of a nuisance claim, investment in experts and the civil litigation discovery process will unquestionably yield specific and general information about natural capital and ecosystem services values, actions that degrade their delivery, and alternatives that could be adopted in land use to avoid such injuries.⁹⁰ The sovereign prosecuting a public nuisance case also has incentives, both economic and political, to pursue available information with focus. Indeed, ecosystem services nuisance litigation could generate the sort of information about natural capital and ecosystem service values that one would not expect normally to be revealed through the routine work of regulatory agencies,⁹¹ and even less so through the routine work of development, agricultural, and other land use interests. Once revealed through private and public nuisance litigation, however, evidence of the injuries suffered as a result of natural capital degradation may place pressure on government and industry to produce and provide such information more generally and routinely.⁹²

B. The Limits of Litigation in a Complex World

As enthusiastic as I am about the ecosystem services nuisance theory of liability, I recognize that the common law has limits and will meet them frequently with respect to the formulation of a comprehensive policy of natural capital and ecosystem services. The list of complaints about the use of common law in pollution control contexts, for example, includes that it usually operates retrospectively; remedies are less flexible; rules vary across jurisdictions; judges are generalists; the plaintiff bears the burden of proof; and it lacks international scope.⁹³ But most of these are not

⁹⁰ See Hylton, *supra* note 4, at 525 (emphasizing the private incentives to generate information in common law litigation).

⁹¹ The wetlands mitigation program administered under the Clean Water Act, for example, includes no requirement that land developers or government agencies approving their land developments generate any information about the pre- and post-development distribution of ecosystem services associated with the wetland resources that are destroyed or those offered as mitigation. See Ruhl & Salzman, *supra* note 89.

⁹² It is widely believed, for example, that tort litigation initially generated the growing body of information about the risks allegedly associated with breast implants and motivated the Food and Drug Administration and the industry to conduct focused scientific research. See Marcia Angell, *Shattuck Lecture—Evaluating Health Risks of Breast Implants: The Interplay of Medical Science, the Law, and Public Opinion*, 334 *NEW ENG. J. MED.* 1513, 1515 (1996); David A Kessler, *The Basis of the FDA's Decision on Breast Implants*, 326 *NEW ENG. J. MED.* 1713, 1715 (1992); Robert Rabin, *Keynote Paper: Reassessing Regulatory Compliance*, 88 *GEO. L.J.* 2049, 2068–67 (2000).

⁹³ This is a summary of reasons found in ZYGMUNT J.B. PLATER ET AL., *ENVIRONMENTAL LAW AND POLICY: NATURE, LAW, AND SOCIETY*, 283–84 (2004). In general many of these features lead commentators to charge the common law approach with presenting high

strongly operative in the ecosystem services nuisance setting. Most states allow claims to be brought regarding an “anticipatory nuisance.”⁹⁴ Nuisance law traditionally has had both injunctive and damages remedies at its disposal.⁹⁵ It is appropriate that local rules develop for local ecosystem services nuisances, for which national standards are neither necessary nor practicable. Judges have been overseeing nuisance claims for centuries, and ecosystem services nuisances involve distinctly economic considerations with which judges are familiar. And most ecosystem services nuisances are unlikely to have even the remotest connection to international matters.⁹⁶

The burden of proof issue and its related transaction cost effects are, to be sure, sticking points for any kind of nuisance claim. My construction of scenarios beyond the Simple Scenario recognizes this constraint explicitly. As a general matter, however, the information-generating effects of nuisance litigation are in part attributable to this very quality of tort law—*i.e.*, that a plaintiff or group of plaintiffs bringing suit aware of the burden of proof and the cost of litigation is likely to fight vigorously and, in the course of doing so, dig deeper into facts than an agency administering a regulatory program would. Moreover, at this stage of the development of the law and policy of natural capital and ecosystem services, one would be hard pressed to claim that regulatory law, even with its lower burden of proof for initiation of regulation and enforcement, has gotten anywhere based on its purported advantages. Regulatory programs that one might

transactions costs, *see, e.g.*, DANIEL COLE, POLLUTION AND PROPERTY: COMPARING OWNERSHIP INSTITUTIONS FOR ENVIRONMENTAL PROTECTION 100–04 (2002), though this hardly sets it apart from regulatory programs.

⁹⁴ The Restatement explains that “[a]n injunction may be obtained in a proper case against a threatened private nuisance.” RESTATEMENT (SECOND) OF TORTS § 822 cmt. d (1979). *See, e.g., Palazzolo*, 2005 WL 1645974, 5 (R.I. Sup. Ct. July 5, 2005) (recognizing anticipatory nuisance as justification for rejecting a regulatory takings claim); *see generally* George P. Smith, II, *Re-validating the Doctrine of Anticipatory Nuisance*, 29 VT. L. REV. 687 (2005).

⁹⁵ RESTATEMENT (SECOND) OF TORTS §§ 929–30, 941 cmt. c (1979).

⁹⁶ I agree that when an ecosystem services nuisance claim does involve political questions touching foreign policy, courts are likely not to treat the claim as a simple nuisance case. For example, several states recently sued a collection of electric power companies to enjoin the defendants’ emissions of carbon dioxide and other “greenhouse gases” alleged to cause global warming. *See Connecticut v. American Elec. Power Co., Inc.*, 406 F. Supp. 2d 265 (S.D.N.Y. 2005). The states argued that “the natural processes that remove carbon dioxide from the atmosphere are now unable to keep pace with the level of carbon dioxide emissions,” and that the power companies therefore are “liable for contributing to a public nuisance, global warming.” *Id.* at 268, 270. Reminiscent of the *Boomer* opinion, however, the court dismissed the lawsuit on the ground that “resolution of the issues presented here requires identification and balancing of economic, environmental, foreign policy, and national security interests” which are “consigned to the political branches, not the Judiciary.” *Id.* at 274.

expect to be showcases of attention to natural capital and ecosystem services have been found gravely wanting.⁹⁷

III. ASSESSING ALTERNATIVES

In the previous sections I have made the case that an ecosystem services nuisance theory of liability is consistent with conventional nuisance doctrine and offers to advance the law of natural capital and ecosystem services in ways that seem particularly suited to common law solutions. But are there better alternatives? Could regulatory law do a better job without the common law at its side, or could the common law do a better job without nuisance doctrine as its engine? I believe the answer is no in both cases.

A. Relying Exclusively on Regulatory Law

Having co-authored a law school casebook titled *The Law and Policy of Biodiversity and Ecosystem Management*, I am the last person to suggest that regulatory law take a backseat to nuisance law with respect to natural capital and ecosystem services. But two important considerations lead me also to reject any notion that regulatory law is adequate alone, that it will obtain no benefit from the development of the ecosystem services nuisance cause of action outlined above.

The first is the positive effect common law litigation can have on the legitimacy of regulatory responses. The information function the common law plays at the local scale adds up over time and space as courts in one jurisdiction and across many jurisdictions shape conceptions of liability and remedy. The *Palazzolo* court, for example, moved swiftly from its finding that Palazzolo's development would reduce a "marsh area which actually filters and cleans runoff"⁹⁸ to its ruling that "clear and convincing evidence demonstrates that Palazzolo's development would constitute a public nuisance."⁹⁹ This judicial endorsement of the ecosystem services nuisance theory of liability, if replicated in other Rhode Island courts and in other jurisdictions, can help build a normative foundation upon which public legislation can stand. Even critics of the utility of nuisance law in modern pollution control contexts concede that nuisance law did this for the regulatory law of pollution control.¹⁰⁰

⁹⁷ See Debra Donahue, *Federal Rangeland Policy: Perverting Law and Jeopardizing Ecosystem Services*, 21 J. LAND USE & ENVTL. L. 299 (2007).

⁹⁸ *Palazzolo*, 2005 WL 1645974, 5 (R.I. Sup. Ct. July 5, 2005).

⁹⁹ *Id.* at 5.

¹⁰⁰ See, e.g., PERCIVAL ET AL., *supra* note 4, at 85 (although "the common law has proved

There is no reason to believe it could not do the same for purposes of the law of natural capital and ecosystem services.

The second and perhaps more important benefit nuisance law can deliver to regulatory law in this field is one so obvious and powerful it ought to silence any contrarians: if nuisance law does not accommodate and grow the ecosystem service nuisance, regulatory law will forever lock horns with regulatory takings law over the effect of public regulation of natural capital on private property rights. As the *Palazzolo* case illustrates, nuisance law provides an effective safe harbor for regulation from the regulatory takings snarl, and can do so with impacts far beyond the scope of the parties involved in any single case. *Palazzolo* settled a dispute between one landowner and the state, but its doctrinal precedent effect is potentially sweeping—no doubt many other salt marshes in Rhode Island “actually filter[] and clean[] runoff,” making it more difficult after the decision to argue that regulation protecting that ecosystem service value can be a taking of property. Without that kind of new knowledge based evolutionary move in the common law to clear the path, evolution of regulatory law will face the relentless drag of regulatory takings law.¹⁰¹

I have little doubt that when ecosystem service nuisance doctrine lays down a foundation of legitimacy and clears out the regulatory takings fog, public law will dominate in the management of natural capital and ecosystem service values. But I also have little doubt that public law will have a much easier time developing, and will develop much further, with the aid of the common law. Hence, I subscribe to Professor Joe Sax’s view, which he expressed at the dawn of the legislative movement in environmental law, that

[u]se of the courts to evolve a common-law approach to environmental problems adds to the arsenal of the public

to be a crude mechanism at best for controlling the onslaught of modern-day pollution . . . [c]ommon law principles . . . have had an important impact on many current regulatory programs”); PLATER ET AL., *supra* note 93, at 283 (“common law environmental litigation. . . continues to play a very important role in the structure of modern environmental protection law”). See also Albert Lin, *The Unifying Role of Harm in Environmental Law*, 2006 WIS. L. REV. 897, 903 (2006) (“the origins of environmental law can be traced to tort law, particularly to law of nuisance”).

¹⁰¹ This theme is what motivated Blumm and Ritchie in their survey of background principles of property law that can be used, as is or as evolved, to deflect regulatory takings claims. See Blumm & Ritchie, *supra* note 25. See also Eric Biber, *A House with a View*, 109 YALE L.J. 849 (2000) (suggesting that Florida’s recognition of a right of riparian view, allowing a riparian landowner to prevent another from blocking the view to the river channel, could be used to prevent regulatory takings claims challenging regulations preserving scenic views of river ecosystems).

interest a significant weapon: the ability to meet problems as they are identified and to formulate a solution appropriate to the occasion—flexible, innovative, and responsive. To open the way for common-law litigation is not to displace the legislative function in setting standards or defining in precise fashion environmental rights and wrongs. Problems recognized and information elicited through litigation will promote and complement continued and essential legislative action.¹⁰²

For the most part, the environmental law of pollution control ignored Sax's vision. I am suggesting that we avoid making the same omission in the environmental law of natural capital and ecosystem services.

B. Forging a Specialized Common Law Cause of Action

One might argue that in defending the common law's role in the conservation of natural capital and ecosystem service values, I haven't gone far enough. Why stop at an *ecosystem services nuisance* action—why not develop the theory of an ecosystem services action in general, one not tied to nuisance but rather tied directly to natural capital and ecosystem services? Or, why not expand the reach of nuisance law to encompass protection of ecological qualities regardless of the impact of landowner actions on the flow of ecosystem services?

The most forceful articulation of this view, summarizing and synthesizing the similar theories of other environmental law scholars, appears in a recent law student comment on the "broadening" of nuisance law in the "age of ecology."¹⁰³ The author points to a variety of maxims environmental law scholars have posited that could be used to justify this evolution of nuisance doctrine. Professor Jerry Anderson, for example, has suggested that property owners hold their land "subject to an implied condition that [it] be used in the public interest."¹⁰⁴ And Professor Robert J. Goldstein has proposed that courts recognize "green wood" in the proverbial bundle of sticks that

¹⁰² JOSEPH L. SAX, *DEFENDING THE ENVIRONMENT: A STRATEGY FOR CITIZEN ACTION* 248 (1970).

¹⁰³ See David S. Wilgus, *The Nature of Nuisance: Judicial Environmental Ethics and Landowner Stewardship in the Age of Ecology*, 33 MCGEORGE L. REV. 99 (2001).

¹⁰⁴ Jerry L. Anderson, *Takings and Expectations: Toward a "Broader Vision" of Property Rights*, 37 U. KAN. L. REV. 529, 551 (1989).

defines property rights.¹⁰⁵ Using such abstractions, he outlines a “broadened nuisance theory” under which

[c]ourts can promote the stewardship paradigm through rigorous application of broadened nuisance principles and through a rebirth of traditional notions of the dual role of property. Specifically, when determining harm within the nuisance context, courts must be guided by principles of ecology with a sensitivity and emphasis upon the externalities foisted upon the biological and social community in which the landowner’s activity has its effects. These externalities would be the basis for how courts could judge the reasonableness of an activity or the harm resulting from the ecological nuisance. Aware of society’s current emphasis on the environment, courts should explicitly remind landowners of the dual nature of property—that landowners hold their property subject to the greater public good—thereby implicitly directing landowner efforts and expectations toward property away from destructive, negative externality-causing behavior, and in the direction of stewardship.¹⁰⁶

This formulation of nuisance, while attending to “externality-causing behavior,” goes well beyond my ecosystem services nuisance theory of liability in its extension to “externalities foisted upon the biological . . . community.” As I have yet to see a clear articulation of how, precisely, the common law would operationalize such a cause of action,¹⁰⁷ my short answer for now is that the very conceptions of natural capital and ecosystem services are fundamentally instrumentalist, which is why they fit so well into conventional nuisance doctrine. The question whether to craft a special cause of action, therefore, seems to me to be more a question about whether to remain instrumentalist or not. If the answer is yes, then it strikes me that nuisance law is best suited to serving as the home for the cause of action. If the answer is no, that we should unshackle the cause of

¹⁰⁵ Robert J. Goldstein, *Green Wood in the Bundle of Sticks: Fitting Environmental Ethics and Ecology into Real Property Law*, 25 B.C. ENVTL. AFF. L. REV. 347, 386–87 (1998).

¹⁰⁶ Wilgus, *supra* note 103, at 125–26.

¹⁰⁷ Canadian environmental law professor Bruce Parly has proposed a detailed “Ecological Sustainability Act” model statute prohibiting actions that cause “permanent ecosystem change.” See Bruce Parly, *In Search of the Holy Grail of Environmental Law: A Rule to Solve the Problem*, 1 MCGILL INT’L J. OF SUSTAINABLE DEV. AND POL’Y 29 (2005). Although incorporating ecosystem services as partial justification for his model statute, *see id.* at 51, and providing a private cause of action for damages, *see id.* at 55, Parly, like Wilgus, goes well beyond by covering actions that alter an ecosystem’s “diversity, stability, or resilience” without regard to impact on the flow of ecosystem services. *See id.* at 54.

action from the instrumentalist qualities of natural capital and ecosystem services, then the question really is about whether to provide common law remedies for injuries to moral, ethical, and scientific values, in this case related to our ecological surroundings.¹⁰⁸ While nuisance law is no stranger to “moral” nuisances that involve little or no environmental or sensory impacts,¹⁰⁹ this would be a monumental change in direction for a body of law that heretofore has been decidedly non-ecological, if not downright anti-ecological. Rather, I propose changing nuisance law’s focus by tempting its instrumentalist core with the economics of natural capital and ecosystem services.

CONCLUSION

Perhaps the gravest mistake we could make with respect to natural capital and ecosystem services is to think that anything about them is static. They are the products of dynamic ecosystem functions. They are affected by constantly shifting land uses. Our knowledge of them widens and deepens. The *law* of natural capital and ecosystem services, one thus must expect, will change. I recognize that statutory change on this front is necessary and long overdue. And statutes are likely where nonutilitarian values—the ethics of ecology—will be better represented. But the common law doctrine of nuisance is particularly well-suited to change based on the instrumentalist qualities of natural capital and ecosystem services, easily integrating them into its profoundly instrumentalist core. In this sense, I have proposed using natural capital and ecosystem services not as an assault on nuisance doctrine, but as a tribute—they are my Trojan horse for bringing about change in the common law based on new knowledge.

¹⁰⁸ The question of what constitutes actionable or regulable “harm” is persistent and pervasive in environmental law. Albert Lin’s recent survey of the topic provides a thoughtful typology and analysis of the kinds of harms that have presented the most challenges in this respect: fear and emotional injury, subcellular damage and risk of harm, uncertainty and emerging technologies, and harm to the environment. *See* Lin, *supra* note 24, at 945–83. The harm to the environment category raises the issue I discuss in the text. Lin argues that the difficulty in addressing this category stems from the tension between liberalism’s instrumentalist focus on harms to humans-centered values and environmentalism’s deontological focus on harms to the intrinsic values of nature. *See id.* at 977–83. He concludes, and I agree, that “until society grapples with the question of what interests matter and how to account for differing values, struggles will continue over environmental law at the boundaries of the harm principle.” *Id.* at 983. Lin only very briefly mentions harm to ecosystem services, using it as an example of an liberalism’s focus on harms to the environmental that affect instrumental values, *see id.* at 979 n.464, perhaps because he also does not see it as a difficult issue.

¹⁰⁹ *See* John Nagle, *Moral Nuisances*, 50 EMORY L.J. 265 (2001).

