

INTRODUCTION

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The essays that follow articulate in various ways the proposition that environmental law as we know it must give way to a new regime—ecological law—that will enable Earth and the many species that inhabit it to survive the rapidly increasing deterioration of the natural environment that is the culmination of centuries of human domination.

Beginnings. Environmental law emerged in the late 1960s as a focus of legislative and regulatory activity and academic interest in response to growing public concern for the threat that unchecked growth and development posed to the natural environment of the nation and the world. In the U.S., this phenomenon was manifested in a series of major federal enactments designed to support regulation of both federal and private activity that threatened the environment, along with a variety of state laws that supplemented and extended the federal regime. Many academic institutions established environmental studies programs that focused on both the science and the policy of environmental protection. Law schools in particular brought the scholarship and activism of their faculties and students to bear in assisting—and perhaps more often prodding—governments to identify and rectify specific environmental harms. Vermont’s pioneering Act 250, enacted in 1970, and Vermont Law School’s Environmental Law Center, established in 1978, are early and outstanding examples of both dimensions of the environmental movement.¹

The command and control regulatory regime of environmental law has achieved notable successes on a case-by-case basis since the early 1970s. Yet that success may have lulled the public consciousness into thinking that threats to the environment are under control. Moreover, efforts of the present federal administration to limit the reach of existing regulatory agencies illustrate the political vulnerability threatening the future of that success. Most important, case-by-case success has not halted the continuing degradation of a natural environment beset by global warming, sea level

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1. Act 250 of 1969, 10 VT. STAT. ANN. tit. 10, §§ 6001–6093; *Environmental Law Center*, VT. L. SCH., <https://www.vermontlaw.edu/academics/centers-and-programs/environmental-law-center> (last visited Apr. 14, 2019).

rise, extraction of nonrenewable resources, permissive regulators, and development growth driven by increasing economic and demographic pressures.

The emerging recognition of the limits of environmental law as presently understood and applied has led to a call for a seismic shift in the means for addressing the continuing and increasing threats faced by the natural environment—a shift from environmental to ecological law. The scope and significance of that shift are summed up in these words from the introduction to a collection of articles intended to illustrate the current state of articulation and analysis of the concepts of ecological law:

[E]nvironmental law . . . allows human activities and aspirations to determine whether or not the integrity of ecological systems should be protected. [Ecological law] requires human activities and aspirations to be determined by the need to protect (and increasingly restore), the integrity of ecological systems. Ecological integrity becomes a precondition for human aspirations and a fundamental principle of law.²

The present group of essays includes papers originally presented in a workshop entitled *From Environmental to Ecological Law* at the McGill University Faculty of Law on October 17–18, 2017, sponsored by the Economics for the Anthropocene (E4A) Law and Governance Initiative and the Ecological Law and Governance Association (ELGA). E4A is a graduate study and research program jointly conducted by McGill University, the University of Vermont, and York University (Toronto).³ Vermont Law School, as part of its longstanding relationship with McGill University, has been a partner in the E4A program since the program's inception in 2013.⁴ ELGA is a network of academics, professionals, and organizations committed to tackling the causes, and not just the symptoms, of global environmental degradation, founded in October 2017 in response to the 2016 Oslo Manifesto.⁵

2. Klaus Bosselmann & Prue Taylor, *Introduction* to ECOLOGICAL APPROACHES TO ENVIRONMENTAL LAW xv–xvi (Klaus Bosselmann & Prue Taylor, eds., 2017).

3. See *What is E4A?*, ECON. FOR THE ANTHROPOCENE, <https://e4a-net.org/what-is-e4a/> (last visited Apr. 14, 2019) (providing the rationale and funding support for the E4A partnership).

4. *Partners*, ECON. FOR THE ANTHROPOCENE, <https://e4a-net.org/steering-committee-2/about/partners/> (last visited Apr. 14, 2019). For a summary of the broader Vermont Law School–McGill connection, see HOI L. KONG & L. KINVIN WROTH, *NAFTA AND SUSTAINABLE DEVELOPMENT: HISTORY, EXPERIENCE AND PROSPECTS FOR REFORM* 6 n.20 (2015).

5. See Ecological Law and Governance Association, *Oslo Manifesto for Ecological Law & Governance* (June 21, 2016) [hereinafter *Oslo Manifesto*], <https://www.elga.world/wp-content/uploads/2018/02/Oslo-Manifesto-final.pdf>.

E4A is an active participant in the development of ecological law through its Law and Governance Research Initiative, the premise of which is that “[t]he Anthropocene imposes a pressing need to reframe law and governance so as above all to advance toward a mutually enhancing human-Earth relationship, with rigorous reliance on contemporary science and traditional knowledge systems.”⁶ E4A’s goal can be achieved in part by assessing the current legal system with its property-based definition of the human-Earth relationship and by creating “new substantive concepts and institutional frameworks that embody a more hopeful vision of the human-Earth relationship demanded for life’s flourishing in the Anthropocene.”⁷

The October 2017 workshop had three themes that considered these issues: (1) the shortcomings of environmental law—the need to move from environmental to ecological law; (2) the promises and specifics of ecological law—a deep dive into the meaning of ecological law; and (3) how do we get there?—the challenge of the transition from environmental to ecological law. An international group of twenty-four lawyers and academics participated in six panels covering those themes and in a final discussion intended to provide a basis for ongoing discussions on bringing ecological law into practice on such land use issues as urban agriculture, mining, wilderness, and infrastructure.⁸ The essays that follow address those themes in a variety of ways.

Geoffrey Garver, who holds a J.D. *cum laude* from Michigan Law School, and an LL.M. and Ph.D. from McGill University, is both

6. See *Research Groups: Law and Governance Research Group*, ECON. FOR THE ANTHROPOCENE, <https://e4a-net.org/wp-content/uploads/2018/06/LG.pdf> (last visited Apr. 14, 2019). *Anthropocene* has become a common, though not officially recognized, term to describe the current geological epoch in which human activity has had a significant impact on the Earth’s natural environment. Opinions as to its beginning date range from the beginning of successful agriculture 8,000 years ago to the 19th century beginnings of the industrial revolution to the first atomic bomb test in 1945. See, e.g., Colin N. Waters et al., *Can Nuclear Weapons Fallout Mark the Beginning of the Anthropocene Epoch?*, 71 BULL. OF ATOMIC SCIENTISTS 46, 49 (2015) (debating between the “Trinity Test” 1945 detonation and subsequent thermonuclear weapons tests as the “global signal that marks the beginning of the Anthropocene”); Will Steffen, Paul J. Crutzen & John R. McNeill, *The Anthropocene: Are Humans Now Overwhelming the Great Forces of Nature?*, 36 AMBIO 614, 616 (2007) (calling the Industrial Era “Stage 1 of the Anthropocene”); *This is the Dawning of the Age of the Anthropocene*, UCSB: GEOGRAPHY, <https://geog.ucsb.edu/this-is-the-dawning-of-the-age-of-the-anthropocene/> (last visited Apr. 14, 2019) (“[S]ome geologists argue that the Anthropocene epoch literally began 8,000 years ago when ancient farmers cleared forests to grow crops . . .”). For additional discussion on the dating of the Anthropocene, see *Anthropocene*, WIKIPEDIA, <https://en.wikipedia.org/wiki/Anthropocene> (last visited Apr. 14, 2019) (providing further resources and references).

7. LAW AND GOVERNANCE FOR THE ANTHROPOCENE: A RESEARCH PROJECT OF THE ECONOMICS FOR THE ANTHROPOCENE (E4A) PARTNERSHIP 2 (Sept. 26, 2016) (on file with author).

8. *From Environmental to Ecological Law (E4A-ELGA Workshop, Oct. 2017)*, YOUTUBE, https://www.youtube.com/playlist?list=PLf37F7xx0zo_kpDDH16p1m1BP2J5Gk2U (last updated Jan. 17, 2018).

Coordinator of the E4A Law and Governance Research Initiative and a member of ELGA's Steering Committee. He is also an Adjunct Professor at McGill and Concordia Universities, has worked for the North American Commission for Environmental Cooperation (NACEC), the U.S. Department of Justice and Environmental Protection Agency, and was a law clerk for the late Conrad Cyr, U.S. District Judge for the District of Maine.

Dr. Garver's work is a fitting introduction to the remainder of the essays.⁹ Initially, building on Thomas Berry's concept of a mutually enhancing human-Earth relationship in which "law is an extension of ecology,"¹⁰ he develops a broad definition of ecological law and its components, contrasting them in tabular form with the scope and reach of contemporary environmental law, which supports remote private ownership of land and other resources and is historically engrained in the common law of property. Noting the over-general scope of contemporary rights of nature theory, he concludes that, to obtain the status of law, those rights and other general concepts must be defined as they have evolved in intentional human acts of ecological, eco-cultural, and reciprocal (i.e., between ecology and culture) restoration in specific ecosystems. These factors appear in examples of successful sustainable use of common pooled resources, epitomized in the concept of the commons.

Having previously identified remote private ownership as the chief obstacle to a transition to a regime of ecological law, Dr. Garver then describes in detail its elements that have led to significant ecological disruptions of agricultural land through the rise of global trade and investment supported by liberalizing international trade agreements such as the North American Free Trade Agreement (NAFTA)¹¹ and others implemented through the World Trade Organization (WTO).¹² He concludes that ecological law, though still largely conceptual, is an emerging response to the increasing understanding that the potential for economic growth is finite. Locally based rules that would impose ecological limits on growth would be extended to global principles tailored

9. Geoffrey Garver, *Confronting Remote Ownership Problems with Ecological Law*, 43 VT. L. REV. 425, 425-54 (2019).

10. *Id.* at 429 (quoting THOMAS BERRY, *THE GREAT WORK: OUR WAY INTO THE FUTURE* 84 (1999)).

11. North American Free Trade Agreement, U.S.-Can.-Mex., Dec. 17, 1992, 32 I.L.M. 289 (1993).

12. *See, e.g.*, Agreement on Trade-Related Aspects of Intellectual Property Rights art. 16, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1C, 1869 U.N.T.S. 299, https://www.wto.org/english/docs_e/legal_e/04-wto_e.htm (establishing guidelines for intellectual property rights, including those to medicines).

to the different needs and requirements of widely varying complexity and scale. Yet the entrenched economic, cultural, and social orders based on our historic growth-insistent model require significant changes in the globally diverse power structures and political systems that sustain them. The ideas to create and sustain a structure for those changes are only now being formulated in developments like the 2016 Oslo Manifesto.¹³

Heather McLeod-Kilmurray, LL.B. University of Western Ontario, LL.M. University of Cambridge, S.J.D. University of Toronto, is an Associate Professor on the University of Ottawa Faculty of Law—Common Law Section. Her research interests include environmental law, environmental ethics, and ecofeminism.

Professor McLeod-Kilmurray's Essay analyzes the application of ecological law to food animals in the global industrial food system, initially from the perspective of Professor Klaus Bosselmann's three-part concept of ecological justice as including intragenerational, intergenerational, and interspecies justice.¹⁴ She then sets forth the ten features of ecological law identified by Dr. Garver¹⁵ and applies them in her analysis. After discussing the arguments supporting maintenance of the global industrial food system, she argues that ecological law must include interspecies justice, citing Bosselman, Garver, and other authorities, and then she explores the question of whether interspecies justice demands veganism. She concludes that the answer depends on resolving questions raised by the complex balance between interspecies justice and intragenerational and intergenerational justice in specific instances of animal products consumption within varying contexts of place, culture, and ethical concerns.

She then applies Dr. Garver's ten features in a detailed assessment of the question in the context of industrial production of food animals. She concludes that the features that primarily address ecological justice issues raise a serious question as to the origin of the food animal production system, as well as its justice. She emphasizes that the remaining features call for recognition of ecological principles in all areas of a legal order that is applicable and enforceable both globally and locally and is adaptable to

13. *Oslo Manifesto*, *supra* note 5.

14. Heather McLeod-Kilmurray, *Does the Rule of Ecological Law Demand Veganism?: Ecological Law, Interspecies Justice, and the Global Food System*, 43 VT. L. REV. 455, 456 n.5 (citing Klaus Bosselmann, *Ecological Justice and Law*, in ENVIRONMENTAL LAW FOR SUSTAINABILITY: A READER (Benjamin J. Richardson & Stepan Wood, eds., 2006)). See Bosselmann & Taylor, *supra* note 2, at xv (providing the three-part concept of ecological justice).

15. McLeod-Kilmurray, *supra* note 14, at 457–58 (citing Geoffrey Garver, *The Rule of Ecological Law: The Legal Complement to Degrowth Economics*, 5 SUSTAINABILITY 316 (2013), reprinted in Bosselmann & Taylor, *supra* note 2, at 953). The features are set forth in slightly different tabular form in Garver, *supra* note 9, at 428–31.

both changing circumstances and the needs of particular places and peoples, including those where meat production and consumption is both necessary and sustainable. In conclusion, Professor McLeod-Kilmurray briefly identifies other ways of mitigating the ecological harms of the industrial production of food animals that ecological law might provide, including rights for food animals and duties for humans dealing with them, regulation and education to support such measures, and empowerment of local endeavors.

Stéphanie Roy, LL.B. Université Laval, LL.M. McGill University, practiced insurance law and civil responsibility as a member of the Québec Bar, and is a doctoral candidate in administrative and environmental law at Université Laval.

Ms. Roy's Essay considers the concept of trusteeship as a basis for framing a transition from environmental to ecological law.¹⁶ She summarizes the duties of a fiduciary that her theory would impose on government—loyalty, personal performance, investment of trust assets, impartiality, accounting, and providing information. She notes the origin of the idea of a public trusteeship for the environment in Professor Joseph Sax's ground-breaking article on the public trust.¹⁷ After cataloguing the inadequacies of the public trust doctrine as an instrument of environmental protection, she describes at length recent work that built upon it: Professor Mary C. Wood's call for the imposition of fiduciary obligations for the environment on the government and Professor Bosselmann's proposal for a World Environmental Organization to serve as a global trustee for the environment—both sustained by citizen realization of the need for a more ecologically centered regime of environmental law and governance.¹⁸

Recognizing that these proposals would facilitate the shift from environmental to ecological law but are not immediately realizable, Ms. Roy notes a number of other shorter term benefits from more gradual changes in the context of trusteeship as an overarching framework: One that embraces state duties and responsibilities and a public ethical duty toward the environment, the integration of other legal disciplines and science as

16. Stéphanie Roy, *Fiduciary Duties Under the Trusteeship Theory: The Contribution of Canadian Case Law in Judicial Review of Environmental Matters*, 43 VT. L. REV. 485–516 (2019).

17. See generally Joseph I. Sax, *The Public Trust Doctrine in Natural Resources Law: Effective Judicial Intervention*, 68 MICH. L. REV. 473 (1970) (reframing the debate regarding the public trust doctrine).

18. Roy, *supra* note 16, at 486–91 (first citing Mary Christina Wood, *NATURE'S TRUST: ENVIRONMENTAL LAW FOR A NEW ECOLOGICAL AGE* 17 (2013); then citing KLAUS BOSSELMANN, *EARTH GOVERNANCE TRUSTEESHIP OF THE GLOBAL COMMONS* 116 (2015)).

suggested by Dr. Garver,¹⁹ the recognition of rights to nature, and a stronger rule of law.

Ms. Roy then analyzes selected Canadian environmental case law to provide examples of the practical content of the executive's fiduciary duties, identified by Professor Wood, imposed by realizing these benefits. The few Canadian cases recognizing the general concept of government as trustee for the environment did not embody the public trust doctrine, much less a developed idea of governmental trusteeship, but Ms. Roy finds duties of accountability, public interest, and loyalty similar to those of a trustee in doctrines of Canadian administrative and constitutional law. She reviews two Supreme Court and two provincial court of appeal environmental decisions that invoke and apply various aspects of the duty of loyalty required of provincial and local governments to sustain decisions protective of the environment. Ms. Roy concludes that, although a broader reconsideration of property rights will be necessary to fully realize state environmental trusteeship as an instrument in the transition to a regime of ecological law, the cases reviewed show that existing legal concepts provide a basis for the continuing development of the trusteeship theory.

Carla Sbert, L.E.D. Instituto Tecnológico Autónomo de México (ITAM), LL.M. Harvard Law School, is a doctoral candidate at the University of Ottawa Faculty of Law and has worked in diverse settings with a focus on sustainable development and environmental law and policy.

Ms. Sbert's Essay²⁰ sets forth a "lens of ecological law" with three principles: *ecocentrism*, that the interconnectedness and value of all beings is recognized; *ecological primacy*, that human activity is limited by the need to maintain or restore the ecological integrity of ecosystems; and *ecological justice*, that embodies Professor Bosselmann's three-part concept of intragenerational, intergenerational, and interspecies justice.²¹ In two case studies, after a careful summary of the demographic, political, and legal context, she uses the "lens" to analyze and critique the ecological law components of El Salvador's pioneering legislation banning all metal mining and Ontario's legal regime to govern proposed mineral extraction in its ecologically intact "Ring of Fire"²² region. El Salvador's Law

19. Garver, *The Rule of Ecological Law*, *supra* note 15.

20. Carla Sbert, *El Salvador's Mining Ban and Mining in Ontario's Ring of Fire from the Lens of Ecological Law*, 43 VT. L. REV. 517-47 (2019).

21. Bosselmann & Taylor, *supra* note 2, at xv.

22. With apologies to Johnny Cash. *Ring of Fire Lights up Northern Ontario's Mining Industry*, ONTARIO BUS. REP. (Aug. 10, 2013), <https://web.archive.org/web/20130810073739/http://www.mri.gov.on.ca/obr/?p=1529>.

Prohibiting Metal Mining,²³ though containing no element of ecocentrism, partially satisfies the tests of ecological primacy and ecological justice. Ms. Sbert considers it “an important step” toward a regime of ecological law but politically vulnerable in the absence of a foundation in ecocentrism.²⁴ After reviewing the complex framework of Ontario’s mining, land use, and environmental statutes, and its conflict with ecocentric indigeneous legal tradition and claims, she argues that, as interpreted and applied by the province, it is not ecocentric. Opportunities for ecological primacy are weakened by provisions that allow the province to override or amend local land use plans or protected areas in which mining is prohibited and by obstacles to post-mining restoration. Ecological justice is weakened by the barriers to community participation, the protection of existing mining claims, and the failure to limit mining to materials that are essential to satisfy human needs, rather than corporate economic interests. Ms. Sbert concludes that the basic ecological law questions remain concerning the framework of a needs-based extraction regime and its specific terms—questions that can only be resolved in the context of a more general shift to an ecological paradigm.

Courtney R. Hammond Wagner, a graduate of Dartmouth College, is a Ph.D. candidate in Natural Resources at the University of Vermont’s Rubenstein School of Environment and Natural Resources, where she is a Graduate Fellow at the Gund Institute for the Environment’s Economics for the Anthropocene Program. Her research focuses on decision making and policy governing water quality.

Ms. Hammond Wagner’s Essay addresses riparian rights generally and in Vermont, and the need to restructure the doctrine with a basis in an environmental ethic.²⁵ After an initial description of changes in the global hydrologic cycle attributable both directly to human activity and to climate change, she postulates the need in the Anthropocene for legislation that will curtail environmental degradation, restore deteriorated ecosystems, and address increased climate-change-induced effects on water quality. She then provides a general historical survey of U.S. water law focused on the evolution in the eastern states from the “reasonable use” principle of common-law riparian rights doctrine to statutory riparian regulation

23. Decreto No. 639, art. 1, Abril 4, 2017, DIARIO OFICIAL [D.O.], at 6 (El Sal.), <https://imprentanacional.gob.sv/archivo-digital-del-diario-oficial/>.

24. Sbert, *supra* note 20, at 528.

25. Courtney R. Hammond Wagner, *U.S. Fresh Water Law & Governance in the Anthropocene: A Critique of the Riparian Rights Legal Framework as a Basis for Water Governance in Vermont*, 43 VT. L. REV. 549–74 (2019).

systems providing for state permits to be granted for “reasonable use.”²⁶ Turning to Vermont, Ms. Hammond Wagner notes the role of an early 19th-century Vermont Supreme Court case in establishing economic value as a component of reasonable use.²⁷ She then describes the State’s current statutory water rights policy as one that seeks to balance ecological and economic needs in the interest of maintaining and improving water quality.²⁸ Yet despite this statutory scheme and federal and interstate antipollution efforts, she finds that the problem of phosphorous and other pollution in Lake Champlain continues unabated. The regulators, abetted by the Legislature, continue to interpret and apply the policy of reasonable use to favor economic development in case-by-case implementation of the permitting process.

Ms. Hammond Wagner proposes a two-pronged solution to this problem. First is the development of an “environmental ethic,” based on Aldo Leopold’s concept of a “land ethic,”²⁹ which would give protection of ecological boundaries priority over economic values and provide a basis for legal sanctions against activity that runs counter to the three legislative goals previously laid out. The second prong, echoing an idea expressed by Professor Peter Brown and Dr. Garver,³⁰ would restore the duty of the water user to protect other riparian landowners and extend that duty to all life forms on Earth affected by the hydrologic cycle. With these steps, the current legal framework will serve to protect water quality in the age of the Anthropocene.

The Future Lies Ahead. The essays presented here illustrate both the current state, and the potential, of ecological law by examining a variety of ways in which the shift from environmental to ecological law may be characterized and accelerated. Geoffrey Garver emphasizes that the key components of ecological law as limits on growth-oriented behavior, such as remote ownership of land and other resources, must evolve over time from locally oriented rules, while overcoming broader social, economic, and political obstacles. Heather McLeod-Kilmurray, applies Professor Bosselman’s concept of ecological justice and Dr. Garver’s ten features of ecological law to an analysis of the industrial food animal system, also concluding that the change to an ecological basis will have to occur over

26. *Id.* at 556–58.

27. *Martin v. Bigelow*, 2 Aik. 184 (Vt. 1827); *see also* *Johns v. Stevens*, 3 Vt. 308, 315–16 (1830) (establishing Vermont as a riparian state).

28. VT. STAT. ANN. tit. 10, §§ 1001, 1022, 1023, 1250, 1263–1265, 1267–1268, 7701.

29. ALDO LEOPOLD, *A SAND COUNTY ALMANAC* 239 (Oxford Univ. Press 1966).

30. PETER BROWN & GEOFFREY GARVER, *RIGHT RELATIONSHIP: BUILDING A WHOLE EARTH ECONOMY* 6 (2009).

time. Stéphanie Roy sees principles of trusteeship as recognized in Canadian case law as potential forerunners in the evolution of a regime of ecological law. Carla Sbert develops a “lens of ecological law” based on Professor Bosselmann’s concept of ecological justice to measure the degree to which mining law regimes are consistent with ecological law. Courtney Hammond Wagner focuses on the failures of current water quality regulation in a specific context and calls for development of an environmental ethic that will give ecological interests priority over economic values in the current legal system and extend the duty of the riparian land user to all life forms.

Publication of these essays by the *Vermont Law Review* will assist lawyers in developing an early awareness of the issues and a process for the transition to the new regime of ecological law—not only in environmental law, but in areas such as tort, contract, property, criminal, and corporate law, along with the law that defines constitutional and institutional structure.

The lawyers will be in the trenches, at the planning tables, and in the legal academy for that transition. In the trenches, they can analyze and critique current law and apply, interpret, challenge, and revise it on an ongoing basis in light of society’s evolving ecological values. At the planning table, they can take responsibility for articulating the new ideas and designing and drafting the new structures that the ecological future demands. In the law schools, they can help to create a new generation of lawyers to carry them out. In the immortal words of Mort Sahl, “the future lies ahead.”³¹

31. MORT SAHL, THE FUTURE LIES AHEAD (UMG Recordings 2017) (1958), <https://www.pandora.com/artist/description/mort-sahl/the-future-lies-ahead/ALt9mnmw6h2ZV>.