

The Political Consequences of Legal Victories: Ballast Regulation and the Clean Water Act

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Editors' Summary

Federal conservation policy has seen a new development recently: the use of the Clean Water Act (CWA) as a tool for regulating ballast water discharges from ships and, thereby, for preventing biological invasions caused by the discharge of nonindigenous organisms in ballast. Some outcomes of this new method for regulating ballast water discharge are obvious, and superimposing CWA regulatory authority on an already existing system of U.S. ballast law and regulation is likely to change the politics of ballast regulation. What do such changes in regulatory politics spell for the future of regulatory protections against biological invasions caused by discharge of untreated or insufficiently treated ballast water, and for the future of conservation?

On July 23, 2008, the U.S. Court of Appeals for the Ninth Circuit ordered the U.S. Environmental Protection Agency (EPA) to discontinue a long-standing regulatory exemption and start controlling ship discharges of ballast water under the national pollutant discharge elimination system (NPDES) of the Clean Water Act (CWA).¹

Given that ships' ballast water is one of the largest mechanisms for transporting organisms beyond their historic ranges, and so one of the most significant causes of aquatic and marine bioinvasions, and given that bioinvasions are one of the biggest contemporary threats to biodiversity,² this legal development suggests an important environmental victory. What the Ninth Circuit decision effectively does is to subject a critical source of ecological degradation to the regulatory authority of one of the oldest and most widely successful U.S. environmental statutes.

Judicial affirmation of CWA authority over ship discharges of ballast water did not come in the context of a prior regulatory vacuum, however. CWA authority was superimposed over an already existing system of dedicated federal ballast law and regulation—a system that had evolved over 19 years of policy negotiation and interest group contestation, and one which is partially augmented by some state ballast controls aimed at filling the gaps in invasion prevention that have been left by the federal regulatory compromise.³

The Ninth Circuit ruling was, in fact, the culmination of targeted legal entrepreneurship by a coalition of environmental nongovernmental organizations (NGOs), who saw in the CWA an opportunity to achieve what a series of legislative efforts had previously failed to produce: a stricter, more comprehensive, more technologically innovative, and better-enforced statutory system for controlling vessel discharges of ballast and preventing ballast-mediated aquatic invasions. The recent court ruling, in other words, is the result of an NGO endeavor to improve invasion prevention by mustering a well-established and well-functioning statutory instrument, rather than going through the difficult and uncertain process of seeking improvements through further congressional action.

At the same time, a close analysis of issue dynamics suggests that the apparent practical and strategic advantages offered by a CWA approach to managing the invasion risks from ballast may be at least partly offset by the reluctance of EPA, as the key implementing Agency, to get involved in regulating vessel discharges.

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1. 33 U.S.C. §§1251-1387 (2007), ELR STAT. FWPCA §§101-607; *Nw. Env'tl. Advocates v. EPA*, 537 F.3d 1006, 38 ELR 20183 (9th Cir. 2008). The EPA regulatory exemption, which the court declared to be in violation of statutory mandates set by the CWA (33 U.S.C. §1342), is found in 40 C.F.R. §122.3(a) (2009). See also *infra* notes 100-08 and accompanying text.
 2. See *infra* notes 4-17 and accompanying text.
 3. See *infra* notes 22-64 and accompanying text.

In this context, the present Article traces the practical conservation implications of the recent NGO legal victory, examining the extent to which, and the mechanisms through which, introduction of the CWA into the regulatory landscape for ballast is likely to improve on-the-ground invasion prevention. In doing so, however, the Article does not stop at examining the statutory potential of the CWA as a tool for managing invasion risks from ballast; nor does it stop at commenting on the most obvious initial outcomes of ballast regulation under the CWA—namely, the multiply deficient and largely devoid of conservation-value-added NPDES Vessel General Permit (VGP) recently issued by EPA. Rather, the Article goes on to analyze the political and practical consequences of the NGO legal victory, showing why introduction of the CWA is likely to prompt strategic recalculation of priorities among major ballast policy stakeholders (most notably the shipping industry), and examining the practical implications of these changes in the politics of ballast regulation.

The Article argues that the most significant conservation benefit of the NGO legal victory may ultimately be an indirect one—that of opening a possibly unprecedented policy opportunity window for the negotiation of strong and comprehensive federal legislation specifically dedicated to ballast control. In particular, the Article argues that such a policy opportunity window is likely to emerge because ballast regulation under the CWA—regulation that comes in the form of an NPDES VGP—creates potentially major regulatory hassles, threats, and uncertainties for the shipping industry, and it does so regardless of the current VGP failings when it comes to improving preexisting levels of invasion prevention. What the analysis ultimately suggests, in other words, is that the very introduction of CWA-based controls on ballast discharges should give the shipping industry important incentives to seek alternative ways of ballast regulation and to make significant compromises with respect to the scope and stringency of such alternative regulation—as long as the new legal and regulatory regime can promise to set CWA authority aside.

The next section briefly introduces the problem of biological invasions and explains ship ballast water and its role as a major cause of aquatic species invasions in the United States and worldwide. Section II describes the landscape of U.S. ballast regulation as it stood prior to the assertion of CWA authority over vessel discharges of ballast. Specifically, it discusses the key elements of federal and state controls on ballast discharges and highlights the principal shortfalls of these controls when it comes to preventing ballast-mediated aquatic bioinvasions. This section also highlights the strategic value of somewhat disparate state ballast controls, whose proliferation has softened the shipping industry's attitudes toward federal regulation of ballast. Section III examines the

statutory promise of the CWA when it comes to controlling ballast discharges. It is specifically focused on what statutory language and the history of statutory implementation suggest regarding the ability of the CWA to reduce invasion risks from ballast beyond what preceding regulations have already accomplished, and it briefly summarizes the NGO legal campaign designed to capitalize on the CWA promise. Section IV examines the specific provisions of the recently issued NPDES VGP. Section V, in turn, analyzes the practical implications of ballast regulation under the CWA, asking whether there is conservation value-added in the newly instituted NPDES permitting for ballast discharges, and tracing the somewhat unexpected sources of such value. The most important insights of this Article's analysis are concentrated in Section V. The final section then briefly draws together the political and practical (conservation) implications of the NGO legal victory that forced EPA to regulate ballast water under the CWA.

I. Ballast Water and Biological Invasions

A European green crab, an Asian clam, a Japanese shore crab, and a vast number of other non-native species can presently be found in different locations along the U.S. coast. Similar in their exotic, transoceanic origin, and in their potential to disrupt ecosystem dynamics at the place of introduction, many such species have nonetheless come to be regarded as a regular part of the coastal aquatic landscape. Biological invasions, also referred to as alien, invasive, nonindigenous, and non-native species, are defined as any species or other viable biological material that enters an ecosystem beyond its historic range, including any such organism transferred from one country into another.⁴ Accelerating in incidence and rates, biological invasions are a major component of both global and local environmental change, a major threat to coastal biodiversity, and, increasingly, a source of significant economic damage and human health threats. All bioinvasions are caused by the transfer and release of organisms beyond their historic ranges. Ships' ballast is one of the largest and most significant mechanisms for human-

4. See NAT'L RESEARCH COUNCIL, *STEMMING THE TIDE: CONTROLLING INTRODUCTIONS OF NONINDIGENOUS SPECIES BY SHIPS' BALLAST WATER* 11 (1996). Nonindigenous, invasive, exotic, etc., are not ecologically equivalent concepts, and some of them do not have precise ecological definitions and/or are eschewed by ecologists for various reasons, such as avoiding the accidental introduction of normative bias seen to reside in some of the terminology commonly used to describe the phenomenon of nonindigenous species transfer and biological invasions. See, e.g., JAMES T. CARLTON, *PEW OCEANS COMM'N, INTRODUCED SPECIES IN U.S. COASTAL WATERS: ENVIRONMENTAL IMPACTS AND MANAGEMENT PRIORITIES* iii (2001). In the media and much policy literature, the concepts are often used interchangeably, and they will be used in this way for the purposes of the present Article, where the nature and significance of the more nuanced distinctions between various ecological concepts to describe different types of species translocation is beyond the relevant scope of discussion.

mediated species transfer: an estimated 10,000 species are transported around the world daily in the ballast water of commercial shipping.⁵

Ballast water is fresh or ocean water taken on board a vessel from the outside environment to help achieve safe operating conditions during a specific voyage or portion of a voyage. Ballast water is generally placed in a ship to increase the draft, i.e., make a ship sit lower in the water, change the trim, i.e., change the difference between draft forward and draft aft, regulate stability, or maintain stress loads within acceptable limits.⁶ It is an essential component of commercial shipping operations. Any of the frequent ballast uptakes and discharges, however, is also an uptake or discharge of entire assemblages of coastal aquatic organisms.⁷ Since bioinvasions are, by definition, species that enter ecosystems beyond their historic range,⁸ the concern with ballast water stems from its capacity to transfer organisms between ecologically distinct coastal regions that have been historically separated by natural oceanic barriers.⁹

Invasion consequences can include profound and irreversible alterations in ecosystem structure and function, loss of genetic, species, and ecosystem diversity, and damage to the ecological as well as economic productivity of aquatic ecosystems.¹⁰ In addition to their profound, long-ranging and often irreversible ecological consequences, ballast-mediated species introductions, such as the zebra mussel in the U.S. Great Lakes, the North American comb jelly in the Black Sea, and the North Pacific sea star in Australia, have caused millions of dollars in economic damage to the energy, water supply, fisheries, and aquaculture industries.¹¹

The European zebra mussel, *Dreissena polymorpha*, is among the more striking illustrations of the ballast-mediated aquatic invasions problem. Discovered in the Great Lakes in 1988, the mussels have caused expensive problems, block-

ing the pipes that deliver water to cities and factories and cooling water to nuclear and fossil fuel power plants. They have attached in enormous numbers to ship and boat hulls, marine structures, and navigational buoys, and covered entire beaches with sharp shells and rotting flesh. The average cost of damages has been estimated at \$360,000/year for affected cities and industries, and \$825,000/year for nuclear power plants, with maximum reported costs through 1995 of \$600,000 for one shipping company, \$1.5 million for a single factory, \$3.7 million for a water treatment facility, and \$6 million for a power plant. The estimated total costs are \$3.1 billion for the power industry, and \$5 billion overall.¹² These costs are only for mitigation, since extricating the mussel from the affected regions is not possible.

Though the zebra mussel is solidly established as the poster child of aquatic invasions, evoking concern and recognition in many people otherwise unfamiliar with the broader phenomenon, it is neither alone nor unparalleled in the scale and magnitude of its impacts. Similarly serious in terms of current consequences and future implications, for example, is the Asiatic clam, *Potamocorbula amurensis*, introduced in the mid-1980s to the San Francisco Bay and Delta. One year after it was first detected in the Suisun Bay part of the bay/delta, the clam was the most abundant benthic microorganism in Suisun Bay, achieving average densities of 2,000 per square meter. It has since then become the dominant subtidal clam in San Pablo Bay and South Bay,¹³ filtering pretty much the entire water column between once and twice per day—a water column that contains the planktonic basis of the estuarine food web.¹⁴ Research has suggested the resulting disappearance of the summer phytoplankton biomass maximum,¹⁵ as well as the substantial reduction by direct predation, of zooplanktonic copepod populations.¹⁶ In addition, the clams concentrate selenium in their tissues, so that fish and birds that eat them accumulate selenium at levels known in experimental studies to cause reproductive defects.¹⁷

The introduction and spread of nonindigenous aquatic species (NIS), in other words, produce significant and often irreversible alterations in aquatic ecosystems, profoundly affecting aquatic species and communities, and changing ecosystem function.

II. Ballast Discharges Before the Judicial Assertion of CWA Regulatory Authority

Prior to July 2008, when the Ninth Circuit conclusively asserted CWA authority over vessel discharges of ballast water,¹⁸ U.S. ballast regulation consisted of a combination

5. James T. Carlton, *The Scale and Ecological Consequences of Biological Invasions in the World's Oceans*, in *INVASIVE SPECIES AND BIODIVERSITY MANAGEMENT* 195, 207 (Odd Terje Sandlund et al. eds., 1999).

6. See NAT'L RESEARCH COUNCIL, *supra* note 4, at 11, 17-18; See also CARLTON, *supra* note 4, at 9.

7. See CARLTON, *supra* note 4, at 9; James T. Carlton, *Global Change and Biological Invasions in the Oceans*, in *INVASIVE SPECIES IN A CHANGING WORLD* 31 (Harold A. Mooney & Richard J. Hobbs eds., 2000), at 36, 37.

8. NAT'L RESEARCH COUNCIL, *supra* note 4, at 11, 13.

9. Carlton 2000, *supra* note 7 at 36-37; see also Carlton 2001 *supra* note 4 at 9, 11.

10. See, e.g., *BIOLOGICAL INVASIONS: A GLOBAL PERSPECTIVE* (James A. Drake et al. eds., 1989); *BIOLOGICAL INVASIONS: ECONOMIC AND ENVIRONMENTAL COSTS OF ALIEN PLANT, ANIMAL, AND MICROBE SPECIES* (David Pimentel ed., 2002); *THE ECONOMICS OF BIOLOGICAL INVASIONS* (Charles Perrings et al. eds., 2000); *INVASIVE SPECIES AND BIODIVERSITY MANAGEMENT*, *supra* note 5; *INVASIVE SPECIES IN A CHANGING WORLD*, *supra* note 7; *SCIENTIFIC COMM. ON PROBLEMS OF THE ENV'T, INVASIVE ALIEN SPECIES: A NEW SYNTHESIS* (Harold A. Mooney et al. eds., 2005).

11. See, e.g., ANDREW N. COHEN, *SHIPS' BALLAST WATER AND THE INTRODUCTION OF EXOTIC ORGANISMS INTO THE SAN FRANCISCO ESTUARY: CURRENT STATUS OF THE PROBLEM AND OPTIONS FOR MANAGEMENT* (1998); D. Jeff Ross et al., *Assessing the Ecological Impacts of an Introduced Seastar: The Importance of Multiple Methods*, 5 *BIOLOGICAL INVASIONS* 3 (2003); Tamara A. Shiganova, *Invasion of the Black Sea by the Ctenophore Mnemiopsis leidyi and Recent Changes in Pelagic Community Structure*, 7 *FISHERIES OCEANOGRAPHY* 305 (1998); Mikhail E. Vinogradov et al., *Consumption of Zooplankton by the Comb Jelly Mnemiopsis leidyi and Pelagic Fishes in the Black Sea*, 35 *OCEANOLOGY* 523 (1996); Eric Reeves, *An IJC White Paper on Policies for the Prevention of Invasion of the Great Lakes by Exotic Organisms* (1999).

12. See COHEN, *supra* note 11; Reeves, *supra* note 11.

13. Andrew Cohen & James T. Carlton, *Nonindigenous Aquatic Species in a United States Estuary: A Case Study of the Biological Invasions of the San Francisco Bay and Delta* (1995).

14. Andrew Cohen, *Invasions in the Sea*, 22 *PARK SCI.* 37 (2004).

15. See Cohen & Carlton, *supra* note 13.

16. William J. Kimmerer et al., *Predation by an Introduced Clam as the Likely Cause of Substantial Declines in Zooplankton in San Francisco Bay*, 113 *MARINE ECOLOGY PROGRESS SERIES* 81 (1994).

17. See Cohen, *supra* note 14.

18. *Nw Envtl. Advocates v. EPA*, 537 F.3d 1006, 38 ELR 20183 (9th Cir. 2008).

of federal and state controls created largely through ballast-specific legislation at each level of government.

Although in many ways notable as a policy achievement in the face of political adversity, problem complexity, and relative problem obscurity, this existing regulatory system still fell short of providing strong and comprehensive prevention against ballast-mediated aquatic invasions. The conservation deficiencies of the old system are indeed what prompted environmental NGOs to initiate a CWA-based strategy for reforming ballast policy and regulation.

At least some of the major gaps that characterized regulatory handling of invasion prevention in January 1999 (the time when a coalition of environmental NGOs formally launched their CWA strategy for improving ballast policy) were subsequently addressed through a strengthening of federal ballast controls. Others have been partly remedied by gradually emerging state regulations. Still, the policy system in place at the time of the Ninth Circuit ruling left ample room for conservation gains through further regulatory intervention.

Much hope has thus been placed in the ability of the CWA to produce such gains. This is because the National Invasive Species Act (NISA)¹⁹ of 1996, the key federal statute of the old ballast regime, does not provide sufficient regulatory authority to underwrite all of the needed regulatory intervention, and the numerous attempts to amend NISA have so far been unsuccessful. At the same time, the gradually augmenting number of state ballast laws and regulations can provide only partial and geographically limited compensation for lapses in federal regulatory protections.

The rest of this section discusses the U.S. system for controlling invasion risks from ballast as it stood prior to introduction of CWA regulatory authority, highlighting the nature and conservation significance of the system's regulatory shortfalls—the shortfalls that the CWA is hoped capable of overcoming.

A. Federal Ballast Regulation Before the Introduction of CWA Regulatory Authority

Until the Ninth Circuit decision in *Northwest Environmental Advocates v. EPA*²⁰ prompted EPA regulation of ship ballast discharges under the NPDES provisions of the CWA,²¹ federal protections against ballast-mediated marine invasions were found in a set of U.S. Coast Guard regulations²² enacted under the statutory mandate of NISA 1996.²³ The corner-

stone provision of these Coast Guard regulations is a requirement that all vessels equipped with ballast tanks and coming from international voyages replace any foreign coastal ballast²⁴ with water from the open ocean prior to discharging such ballast into waters of the United States.²⁵ The ecological rationale behind this requirement is that major differences in physical, chemical, and biological conditions prevent the survival of coastal organisms in open-ocean environments and the survival of open-ocean organisms in coastal environments, thereby making it safe (from an invasion standpoint) to discharge open-ocean ballast in coastal environments and vice versa, and making open-ocean ballast water exchange (BWE) a de facto treatment technique.²⁶

So, what is wrong with this regulatory system? Given what is known about the nature and dynamics of aquatic invasions, its provisions are simply not comprehensive enough to address the full range of invasion risks from ballast, or strong enough to ensure reduction in the probability, rate, and incidence of ballast-mediated aquatic invasions.

With respect to the scope of their coverage, federal ballast controls under NISA have two major shortfalls. First, they have not covered the ballast discharges of vessels on domestic coastal voyages.²⁷ Under the NISA regime,²⁸ then, a vessel going from Baltimore to Savannah, or from Norfolk to New York, is not required to manage its ballast water prior to discharge, although ecological understanding suggests two distinct types of invasion risks posed by such coastal ballast transfers: on the one hand, there is the risk of transporting a nonindigenous species already established in one coastal location to other regions along the coast, where this nonindigenous species gets subsequently established; and on the other hand, the invasion risk from transporting a species that is native to one U.S. coastal location into a new U.S. coastal area that is beyond the species ecological range.²⁹ In other

19. Pub. L. No. 104-332, 110 Stat. 4073 (codified at 16 U.S.C. §§4701-4751).

20. 537 F.3d 1006, 38 ELR 20183 (9th Cir. 2008).

21. 33 U.S.C. §1342 (2007).

22. 33 C.F.R. §§151.1500-.2065 (2009).

23. See *supra* note 19. The statute, although ambitiously named, deals almost exclusively with addressing the issue of biological invasions from ballast; it does not directly regulate other vectors and mechanisms for unintended or intentional introduction of nonindigenous species to waters of the United States—such as aquaculture, the aquarium, live seafood and bait trades, or even hull fouling on commercial and recreational vessels; nor does it address questions of mitigation or eradication of already introduced nonindigenous species. NISA 1996 is itself an amended version of an earlier statute, the Nonindigenous Aquatic Nuisance Prevention and Control Act (NANPCA) of 1990, Pub. L.

No. 101-646, 104 Stat. 4761 (codified as amended within scattered sections of 16 U.S.C.).

24. Defined as ballast taken less than 200 miles from any shore (other than the U.S. shore). 33 C.F.R. §151.2035(b).

25. The regulations specifically require that ballast exchange be performed in areas more than 200 nautical miles from any shore. 33 C.F.R. §§151.1510, .2035(b) (1). The acceptable ways to perform open-ocean exchange are specified as emptying as close to 100% of the original coastal ballast as possible and replacing it with open-ocean ballast; or pumping in open-ocean water while continuously overflowing the ballast tanks until three volumes of water have been exchanged. 33 C.F.R. §151.2025(b)(1)-(2). As will be discussed later in the section, the regulations give vessels the option of using Coast Guard-approved alternatives to BWE, but the Coast Guard has yet to approve any such alternatives—and/or finalize a standard for approval—although the agency is finally approaching this point after close to a decade of deliberation on the issue. See 74 Fed. Reg. 44632 (Aug. 28, 2009).

26. See JAMES T. CARLTON ET AL., THE ROLE OF SHIPPING IN THE INTRODUCTION OF NONINDIGENOUS AQUATIC ORGANISMS TO THE COASTAL WATERS OF THE UNITED STATES (OTHER THAN THE GREAT LAKES) AND AN ANALYSIS OF CONTROL OPTIONS (1995); COHEN, *supra* note 11.

27. This is with the exception of some broad and generally unenforceable provisions that apply to all vessels equipped with ballast tanks that operate on U.S. waters and which ask vessels to perform precautionary practices such as avoiding ballast uptakes in areas near sewage outfalls, and in areas with known infestations of harmful organisms and pathogens. See 33 C.F.R. §151.2035(b).

28. 33 C.F.R. §§151.1500-.2065.

29. See James T. Carlton, *Pattern, Process, and Prediction in Marine Invasion Ecology*, 78 BIOLOGICAL CONSERVATION 97 (1996); D.M. Lavoie et al., *The Potential for Intracoastal Transfer of Non-Indigenous Species in the Ballast Water of Ships*, 48 ESTUARINE COASTAL & SHELF SCI. 551 (1999); Mark S. Minton et al.,

words, since political and ecological boundaries rarely, if ever, overlap with each other, structuring quarantine and invasion prevention measures along political boundaries—as the old U.S. ballast regime underpinned by NISA 1996 largely does—is necessarily bound to leave a considerable portion of invasion risks outside the reach of regulatory controls.³⁰

A second critical shortfall of regulatory coverage under NISA comes from a particular aspect of statutory implementation. Specifically, the Coast Guard implementation of NISA has produced a de facto exemption for U.S.-bound vessels that declare “no ballast on board” (NOBOB) status, but which can still carry anywhere from several to several hundred tons of species-rich residual ballast.³¹ Such vessels are classified as NOBOB because the water level inside their ballast tanks is below the fittings through which ballast comes in and out, precluding further emptying of the tanks. Residual ballast in NOBOB vessels, however, ballast that is particularly abundant in nonindigenous species, gets mixed with new ballast taken in during U.S. port operations. This mixture is subsequently discharged in U.S. coastal waters, with NOBOB vessels thereby presenting the same kinds of invasion risks as other ballast discharges.³²

This is starkly illustrated by the experience of the Great Lakes, where NOBOB vessels constitute up to 90% of incoming transoceanic traffic,³³ and where such vessels are increasingly pinpointed as the cause of new invasions,³⁴ which continue to occur 15 years after the first set of ballast regulations³⁵ started mandating open-ocean exchange for lake-bound vessels coming from foreign voyages.

Not until 2005—many years after the invasion threat from NOBOBs had been highlighted by ecologists,³⁶ and only after a petition in which Great Lakes states challenged the Coast Guard’s de-facto exemption of NOBOBs as a vio-

lation of NISA³⁷ and used the Administrative Procedure Act (APA)³⁸ to call for Agency regulation—did the Coast Guard establish a set of recommended best management practices for NOBOB vessels going into the Great Lakes.³⁹ NOBOB vessels operating and discharging in the remainder of U.S. waters, however, were still left outside the scope of these voluntary guidelines.

As for the substance of federal ballast controls, BWE—the stipulated means of ballast management—is critically deficient as a tool for invasion prevention, if also the only tool readily available for use at the time federal ballast legislation was first negotiated,⁴⁰ and even still. Specifically, the effectiveness of BWE ranges between 50% and 99% removal of the original organisms contained in ballast.⁴¹ Continued reliance on BWE as a ballast treatment technique, therefore, inevitably means continued acceptance of a significant residual risk of invasions, particularly in a context where the original densities of ballast-borne organisms vary widely from voyage to voyage. Further, in a context where regulatory strictness has been identified as the most important regulatory variable when it comes to spurring technological innovation,⁴² NISA has two separate features that combine to prevent it from stimulating innovation in ballast treatment technology.

First, NISA provides a sweeping safety exemption: without stipulating for further remedial measures, it exempts from the core management requirement of open-ocean ballast exchange any vessel that has found it unsafe to perform such exchange.⁴³ As the only readily available technique for ballast treatment, open-ocean exchange does indeed present some legitimate safety concerns.⁴⁴ Yet, as the example of ballast regulation in the Great Lakes demonstrates, there are ways of providing for vessel safety other than offering a safety exemption so broad as to create a safety-premised regulatory loophole.⁴⁵ By virtue of NISA’s safety exemption

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30. There is some evidence that this is about to change in the future, with the Coast Guard’s August 28, 2009 proposal of new ballast regulations intended to cover coastal ballast. See 74 Fed. Reg. 44632 (Aug. 28, 2009).

31. Petition of the states of New York, Wisconsin, Minnesota, Ohio, Illinois, the Commonwealth of Pennsylvania, the Michigan Department of Environmental Quality, and Great Lakes United to require the amendment of regulations and regulatory practices governing ballast water management for control of nonindigenous aquatic nuisance species in the Great Lakes (July 14, 2004) (on file with author).

32. See THOMAS JOHNGEN ET AL., ASSESSMENT OF TRANSOCEANIC NOBOB VESSELS AND LOW-SALINITY BALLAST WATER AS VECTORS FOR NON-INDIGENOUS SPECIES INTRODUCTIONS TO THE GREAT LAKES (2005); Lisa A. Drake et al., *Domestic and International Arrivals of NOBOB (No Ballast on Board) Vessels to Lower Chesapeake Bay*, 50 MARINE POLLUTION BULL. 560 (2005); Kristen T. Holeck et al., *Bridging Troubled Waters: Biological Invasions, Transoceanic Shipping, and the Laurentian Great Lakes*, 54 BIOSCIENCE 919 (2004); Hugh J. MacIsaac et al., *Modeling Ships’ Ballast Water as Invasion Threats to the Great Lakes*, 59 CANADIAN J. FISHERIES & AQUATIC SCI. 1245 (2002).

33. See MacIsaac et al., *supra* note 32.

34. See Robert I. Coullati et al., *Spatial and Temporal Analysis of Transoceanic Shipping Vectors to the Great Lakes, in INVASIVE SPECIES: VECTORS AND MANAGEMENT STRATEGIES 227* (Gregory M. Ruiz & James T. Carlton eds., 2003); Igor A. Grigorovich et al., *Ballast-Mediated Animal Introductions in the Laurentian Great Lakes: Retrospective and Prospective Analysis*, 60 CANADIAN J. FISHERIES AQUATIC SCI. 740 (2003).

35. Enacted in May 1993 by the Coast Guard under the statutory mandates of NANPCA 1990. See Ballast Water Management for Vessels Entering the Great Lakes, 58 Fed. Reg. 18330 (Apr. 8, 1993).

36. See CARLTON ET AL., *supra* note 26.

37. See *supra* note 31.

38. See 5 U.S.C. §553(e) (2007).

39. Ballast Water Management for Vessels Entering the Great Lakes That Declare No Ballast Onboard, 70 Fed. Reg. 51831 (Aug. 31, 2005).

40. See CARLTON ET AL., *supra* note 26; NAT’L RESEARCH COUNCIL, *supra* note 4.

41. NICOLE DOBROSKI ET AL., CAL. STATE LANDS COMM’N, 2009 ASSESSMENT OF THE EFFICACY, AVAILABILITY, AND ENVIRONMENTAL IMPACTS OF BALLAST WATER TREATMENT SYSTEMS FOR USE IN CALIFORNIA WATERS (2009), available at http://www.slc.ca.gov/Spec_Pub/MFD/Ballast_Water/Documents/2009CS LC TechReportFinal.pdf; MacIsaac et al., *supra* note 32. See also Standards for Living Organisms in Ships’ Ballast Water Discharged in U.S. Waters, 74 Fed. Reg. 44632 (Aug. 28, 2009).

42. Vicki Norberg-Bohm & Mark Rossi, *The Power of Incrementalism: Environmental Regulation and Technological Change in Pulp and Paper Bleaching in the U.S.*, 10 TECH. ANALYSIS & STRATEGIC MGMT. 225 (1998); Nicholas A. Ashford & George R. Heaton Jr., *Regulation and Technological Innovation in the Chemical Industry*, LAW & CONTEMP. PROBS., Summer 1983, at 109.

43. 16 U.S.C. §4711(g)(4) (2007); 33 C.F.R. §151.2030(a), (b)(2) (2009).

44. See NAT’L RESEARCH COUNCIL, *supra* note 4; John B. Woodward et al., *Ship Operational and Safety Aspects of Ballast Water Exchange at Sea*, 31 MARINE TECH. 315 (1992).

45. Not included in NISA’s sweeping safety exemption, vessels going into the Great Lakes can be required to perform remedial ballast management measures if they had found it unsafe to conduct open-ocean ballast exchange while en route to the Great Lakes. 33 C.F.R. §151.1514. By retaining the possibility for remedial management requirements, the Great Lakes regulations—which originate in NISA’s predecessor, NANPCA 1990 (a statute that covered ballast discharges on the Great Lakes only)—create a de-facto deterrent against abuse of the safety exemption since remedial treatment, such as exchange in an approved near-coastal location or full retention of untreated ballast, could spell

alone, the federal regulatory regime it underpins is unable to reach a level of stringency that is likely to prompt technological innovation as a compliance strategy. That is, with a safety exemption so broad, it becomes hard to foresee any circumstances where compliance with regulatory requirements becomes difficult or impossible under existing technology.

A second feature that amplifies the statute's chilling effect on innovation in ballast treatment technology is the fact that NISA provides no specific mechanism or timeline for phasing out BWE in favor of superior alternative treatments. Namely, NISA requires open-ocean BWE for all vessels in the regulated subset, and it allows for the use of ballast management alternatives, provided that such alternatives have the advance approval of the U.S. Coast Guard.⁴⁶ But while it authorizes the Coast Guard to examine and approve proposed alternatives, it, crucially, does not mandate the Agency to do so; or give it any specific guidelines for how to go about the approval process, beyond the broad admonition that any approved alternatives should be at least as effective as open-ocean exchange⁴⁷ (whose effectiveness has proven notoriously variable and difficult to pin down).⁴⁸ Consequently, more than seven years after it started working on the development of such standards,⁴⁹ and after numerous stakeholder discussions, NEPA and ESA consistency exercises, and many other pre-rulemaking activities, the Coast Guard has just announced its proposed standards for living organism discharges from ballast, that is, its benchmark for ballast treatment technology approval.⁵⁰

In sum, the federal regulatory regime underpinned by NISA has failed to cover some critical sources of invasion risk from ballast—most prominently, those associated with discharges from coastal shipping, and those coming with the discharges of NOBOB vessels. By virtue of being insufficiently stringent, it also fails to provide any stimulus for what is much needed technological innovation in ballast treatment, and may even be creating de facto obstacles to such innovation.

All of these shortfalls are significant from a conservation perspective. Yet, it did, in fact, take considerable time and a lot of effort to even get the federal system of ballast controls to this place, the place where it was at the time of the Ninth Circuit's 2008 ruling in *Northwest Environmental Advocates*.⁵¹

Federal ballast policy had indeed evolved from no ballast controls of any kind throughout the 1980s (the ballast-mediated invasions issue was not even on the political or policy agenda) to a piece of legislation, the NANPCA of 1990, that only required management of foreign ballast dis-

charged into the Great Lakes,⁵² to a set of voluntary national guidelines calling for open-ocean exchange of foreign ballast discharged in any other U.S. waters,⁵³ to the admittedly deficient, but still broader than ever before, regulatory system described above.

A lot of this evolution of federal ballast law and regulation happened in spite of shipping industry opposition, with the shipping industry, which has always held regulatory uniformity as a key operational concern, beginning to soften its resistance to mandatory and strict federal controls on ballast only when states started compensating for the lack of federal protections by enacting their own.

B. State Regulation of Ballast

A number of coastal states have tried to compensate for the shortfalls in federal protections by enacting their own ballast regulations: regulations that call for the management of coastal ballast, impose direct requirements for the use of ballast treatment technologies on all ballast discharged in state waters (treatment technologies that are expected to perform better than the long-time default of open-ocean BWE), and/or impose strict discharge limits that are effectively technology-forcing in nature. States, in other words, have enacted regulations that generally involve various degrees of extension and ratcheting up of federal ballast controls.

Notable among these are the ballast controls of the three West Coast states, whose development has been led by California,⁵⁴ as well as the discharge restrictions imposed by Michigan, the first state to require the use of specific ballast treatment technologies as a condition for permitting ballast discharge in state waters.⁵⁵

All of the West Coast states, for example, require ballast management for vessels on domestic coastal voyages,⁵⁶ except vessels operating within a small or geographically contained aquatic area and/or within a unified bioregion.⁵⁷ California

costly, and therefore unwelcome, delays and/or disruptions of normal vessel and cargo operations.

46. 16 U.S.C. §4711(c); 33 C.F.R. §151.2035.

47. 16 U.S.C. §4711(c); 33 C.F.R. §151.2035.

48. See *supra* note 41.

49. Since the March 4, 2002 Advanced Notice of Proposed Rulemaking. See Standards for Living Organisms in Ship's Ballast Water Discharged in U.S. Waters, 67 Fed. Reg. 9632 (Mar. 4, 2002).

50. Standards for Living Organisms in Ships' Ballast Water Discharged in U.S. Waters, 74 Fed. Reg. 44632 (Aug. 28, 2009). These standards come after the introduction of CWA regulations for ballast discharges, but once promulgated, they will likely be incorporated into the CWA permitting for ballast discharges.

51. 537 F.3d 1006, 38 ELR 20183 (9th Cir. 2008).

52. Pub. L. No. 101-646, 104 Stat. 4761 (codified as amended within scattered sections of 16 U.S.C.) (1990). The legislation was the direct consequence of a single dramatic event—the ballast-caused invasion of the Eurasian zebra mussel in the North American Great Lakes in 1988. See *supra* note 12 and accompanying text. As originally introduced, NANPCA 1990 called for all vessels coming into U.S. waters from foreign voyages to treat their ballast prior to discharging into U.S. waters, using the available technique of open-ocean ballast exchange. The legislation that passed, on the other hand, was remarkably narrower: it introduced ballast controls for vessels coming into the Great Lakes only, and mandated research on the extent and source of the problem in the remainder of U.S. waters.

53. These voluntary guidelines were written into NISA 1996, and except for the mandatory open-ocean exchange prior to discharge in the Great Lakes, they were the only protections in place in 1999, at the launch of the NGO CWA strategy.

54. See OR. REV. STAT. §§783.620-.640 (2009); WASH. REV. CODE §§77.120.005 to 77.120.900 (2009); CAL. PUB. RES. CODE §§71200-71210.5 (2009); CAL. CODE REGS. tit. 2, §§2280-84, 2291-96 (2009); OR. ADMIN. R. 340-143-0001 to -0020 (2009); WASH. ADMIN. CODE 220-77-090 to -095 (2009).

55. See MICH. COMP. LAWS §§324.3101-.3112 (2009); Mich. Dep't of Envtl. Quality, Permit No. MIG140000 (Oct. 11, 2006) [hereinafter Michigan Permit], available at http://www.michigan.gov/documents/deq/wb-ndpes-generalpermit-MIG140000_247256_7.pdf.

56. OR. REV. STAT. §783.630; WASH. REV. CODE §77.120.020; CAL. CODE REGS. tit. 2, §2284.

57. OR. REV. STAT. §783.630(c), (e); WASH. REV. CODE §77.120.030 (8); CAL. CODE REGS. tit. 2, §2280. For example, vessels traveling from one port on the

is currently the state with the most protective ballast regulations.⁵⁸ It limits the organism content of ballast discharges to a level that is much lower—about 1,000 times lower for most organism types—than the discharge levels stipulated in the yet-to-enter-into-force International Convention for the Control and Management of Ships' Ballast Water and Sediments,⁵⁹ and it sets a long-term regulatory objective of zero detectable living organisms.⁶⁰ Importantly, California's current discharge limits are distinctly stricter than what can be attained using the default ballast management technique of open-ocean exchange, and they do appear to have produced some technology-forcing effect, with a number of companies in the water treatment industry demonstrating interest in the potentially sizeable California market for ballast treatment technology and working to meet the California standards.⁶¹ In evaluating the practical feasibility of compliance with the discharge standards it has imposed, the California State Lands Commission (the regulatory agency in charge under California ballast law) has recently determined that at least two technologies, recently developed by two different companies, are capable of meeting its current ballast discharge standards, and that several more are close and/or potentially capable of performing to standard, with some further testing and evaluation still needed.⁶²

Oregon and Washington do not currently impose technology-forcing discharge standards, and the rest of the states fall on a continuum between no ballast regulation at all⁶³ and the high regulatory benchmark set by California.⁶⁴

Existing state regulations, however, even when fairly strict and comprehensive, such as those on the West Coast, still cover only a fraction of all U.S. waters, leaving the rest exposed to unmanaged invasion risks from ballast, residual exposure that is even more significant given the transboundary element of the aquatic invasions problem. That is, even

the strictest ballast controls in, say, Massachusetts, cannot guarantee a high level of protection if deficient management practices by vessels calling on Connecticut and Rhode Island continue to bring to Connecticut waters new nonindigenous species, which can then easily spread to Massachusetts waters through simple range expansion.

Further, strict state regulations such as those of California will create only a partial remedy in the realm of technology-forcing, since the demand-pull created by California's strict discharge standards is much more limited than the demand-pull technology developers would face were a nationwide market to be guaranteed through strict federal regulation.

By comparison, then, applying the already existing, fairly far-reaching, and clearly relevant mandates of the CWA seems quite attractive as an approach to producing regulatory and practical change in the handling of invasion risks from ballast. The regulatory and conservation promise of this alternative route did not escape the attention of NGOs, who designed a creative legal strategy in an attempt to fulfill it.

In preparation for discussing the CWA as a regulatory tool for ballast discharges, however, it is critically important to emphasize the following: The various ways in which they fall short of providing comprehensive invasion prevention notwithstanding, state-level ballast regulations have brought some important policy gains. Most critically, in pursuing their own regulatory initiatives, states appear to have generated not only incremental improvements in regional protections, but also a strategic appreciation for federal ballast law and regulation on the part of the shipping industry. With states starting to compensate for the slow and halting development of the federal ballast control regime, industry has suddenly stopped looking at a choice of federal regulation versus no regulation at all, and started facing the highly undesirable possibility of disparate and therefore much more difficult to deal with state controls in addition to the federal regulations under NISA.

Whereas it is possible that the shipping industry will simply try to fight state ballast initiatives on constitutional grounds, going to court to assert federal preemption of state vessel regulations, the success of such challenges seems uncertain at best.

For one, NISA of 1996 has an explicit savings clause that allows for state regulation of ballast.⁶⁵ And while the relevant case law does bring a spectrum of federal preemption when it comes to state regulation of vessels (and waterways), even the broadest case for federal preemption of state vessel controls, as constructed in *United States v. Locke*⁶⁶ and *Ray v. Atlantic Richfield Co.*⁶⁷ is not all-encompassing. Most existing state

San Francisco Bay and Delta to another are not required by California law and regulations to treat their ballast prior to discharge; nor are vessels discharging ballast originating solely from West Coast waters between 40-50° North required by Oregon regulations to manage such ballast prior to discharge in Oregon waters. See *supra* note 54.

58. CAL. PUB. RES. CODE §71200-71210.5; CAL. CODE REGS. tit. 2, §§2280-84, 2291-96.

59. The Convention was negotiated under the auspices of the International Maritime Organization (IMO); it was signed in February 2004, but has yet entered into force. The Convention will enter into force 12 months after ratification by 30 countries representing 35% of the world's commercial shipping tonnage. As of February 28, 2009, it has been ratified by 18 countries representing 15.36% of world tonnage. See International Maritime Organization, Proposed International Convention for the Control and Management of Ships' Ballast Water and Sediments, available at http://www.imo.org/conventions/mainframe.asp?topic_id=867.

60. See DOBROSKI ET AL., *supra* note 41, at 11. The zero-discharge standard is currently set to enter into force in 2020, with technological feasibility reviews intended along the way.

61. Telephone Conversation with Nicole Dobroski, Cal. State Lands Comm'n (Nov. 25, 2008).

62. See DOBROSKI ET AL., *supra* note 41.

63. The U.S. Gulf Coast states, for example, fall in this category.

64. Michigan, on the other hand, essentially makes the use of one of four state-approved ballast treatment technologies a condition for discharging ballast in state waters. See MICH. COMP. LAWS §§324.3101-.3112 (2009); Michigan Permit, *supra* note 55; Stephanie Showalter & Terra Bowling, *Michigan's New Ballast Water Regime: Navigating the Treacherous Waters of States' Rights, Federal Preemption, and International Commerce* (Sea Grant Law Ctr. White Paper, Oct. 2006), available at <http://www.seagrant.umn.edu/downloads/ballast.pdf>.

65. 16 U.S.C. §4725 (2007). See also 16 U.S.C. §4724(a)(2)(C) (dealing with the development of state aquatic nuisance species plans). It explicitly permits states to "identify any authority that the State . . . does not have at the time of the development of the plan that may be necessary for the State . . . to protect public health, property, and the environment from harm by aquatic nuisance species," a provision that, as pointed out by a federal judge in *Fednav Ltd. v. Chester*, 505 F. Supp. 2d 381, 37 ELR 20219 (E.D. Mich. 2007), would make little sense if the states did not retain some authority to address the problems caused by aquatic nuisance species.

66. 529 U.S. 89, 30 ELR 20438 (2000).

67. 435 U.S. 151, 8 ELR 20255 (1978).

ballast controls should therefore be expected to pass the preemption benchmarks created by *Ray* and *Locke*.⁶⁸

Indeed, and tellingly, in spite of their growing number and stringency, and in spite of the fact that they are consistently disliked by the shipping industry, the state ballast laws and regulations that have emerged prior to introducing CWA controls over ballast have hardly faced industry legal challenge. And even the industry's challenge against Michigan regulations, which require the use of specific ballast treatment technologies⁶⁹ and can therefore be seen as a stronger invitation of federal preemption,⁷⁰ has been emphatically rejected by the courts, who found little statutory or constitutional ground for federal preemption of state ballast laws,⁷¹ even as they considered all the relevant precedent.⁷²

In other words, when it comes to resisting the proliferation of state-level ballast controls, the shipping industry has not been successful in summoning federal preemption to its advantage. It is, then, the vexing nature of varying state ballast regulations, regulations born of the deficiencies in federal ballast controls, that is pushing the shipping industry to recalculate the regulatory benefits of the kind of strict and comprehensive federal ballast regime it had spent most of the 1990s working to forestall.

As the next section will show, the introduction of the CWA into the regulatory landscape only heightens the threat of disparate (and potentially difficult to comply with) state regulations, while allowing even fewer legal recourses against such state regulations. The introduction of the CWA into the

regulatory landscape for ballast thereby adds to the shipping industry's incentives for pursuing a federal statutory alternative that is strong enough to forestall the proliferation of remedial state regulations.

III. The CWA and Ballast Control: The Statutory Promise

This section highlights the main reasons for the CWA's attractiveness as a tool for managing the invasion risks from ballast, and outlines the gist of NGOs' legal campaign to affirm, or rather reaffirm, the CWA as a regulatory authority over ballast discharges.

A. Preventing Ballast-Mediated Aquatic Invasions: The Nature of the CWA's Statutory Promise

Regulation of ballast under the NPDES program of the CWA⁷³ offers a clear promise for extending the reach of invasion prevention through extending regulatory coverage to any and all vessel discharges of ballast (and not just those from international voyage vessels, which have been the main focus of the old regulatory regime); and it has the ability to increase the strength of such prevention by imposing restrictions on the species content of ballast discharges, and thus ratcheting up the requirements for ballast treatment.

That is, by virtue of its statutory objectives and mandates, the CWA is clearly positioned to cover previously unregulated sources of invasion risk at the same time as it tightens management requirements across all sources.

The stated statutory goals of the CWA are "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters," and to secure water quality that sustains fish and wildlife and makes all water-based recreation safe (the well-known "fishable/swimmable" goal).⁷⁴

To that end, the Act explicitly focuses on controlling pollutant discharges as an action, rather than merely dealing with pollution as an outcome. It prohibits the discharge of any pollutants into waters of the United States unless such discharges are explicitly sanctioned by, and controlled through, a permit.⁷⁵ Applicable to all point sources, a statutory category in which vessels squarely belong, this prohibition operates under a broad definition of pollutant—a definition that clearly includes biological material and, thereby, nonindigenous species in ballast.⁷⁶

68. In *United States v. Locke*, 529 U.S. 89, the Supreme Court invoked both field and conflict preemption (as defined in *English v. Gen. Elec. Co.*, 496 U.S. 72, 78-79 (1990)) to strike down state regulations on the staffing and operation of oil tankers in Puget Sound—regulations that Washington had imposed in addition to federal tanker requirements specified through the Ports and Waterways Safety Act, 33 U.S.C. §§1221-1236 (2007), and the Oil Pollution Act, 33 U.S.C. §§2701-2761, ELR STAT. OPA §§1001-7001. In doing so, the Supreme Court followed closely its reasoning in *Ray*, 435 U.S. 151, which also found in favor of federal preemption over a similar set of Washington State tanker regulations. Existing precedent, as anchored in *Ray* and *Locke*, essentially suggests that federal preemption should be expected over any state regulations that touch on the design, construction, alteration, repair, maintenance, operation, equipping, personnel qualification, and manning of vessels. Yet, *Ray* and *Locke* leave room for state vessel and waterway regulations, with the court in *Ray*, for example, explicitly deferring to prior cases that establish the responsibility of vessels to conform to reasonable, nondiscriminatory conservation and environmental protection measures imposed by a state. Further, *Chevron, U.S.A., Inc. v. Hammond*, 726 F.2d 483, 14 ELR 20305 (9th Cir. 1984) affirms the validity of an Alaska statute prohibiting oily ballast discharge into state territorial waters and rejects Chevron's allegation of federal preemption; the *Chevron* decision rests on the court's finding that regulations in the Alaska statute do not conflict with those of the Coast Guard regulations, and that both sets of regulations can therefore be simultaneously applied in Alaska territorial waters.

69. See MICH. COMP. LAWS §§324.3112, .3120; Michigan Permit, *supra* note 55.
70. Because it is state regulatory intervention that potentially touches on the design, construction, alteration, repair, maintenance, operation, equipping, personnel qualification, and manning—i.e., touches on areas that the *Locke* court has found to be the exclusive province of federal regulation. See *supra* notes 66 and 68.

71. *Fednav Ltd. v. Chester*, 505 F. Supp. 2d 381, 37 ELR 20219 (E.D. Mich. 2007), *aff'd*, *Fednav, Ltd. v. Chester*, 547 F.3d 607 (6th Cir. 2008).

72. See *supra* note 68. See also *Gibson v. Am. Bankers Ins. Co.*, 289 F.3d 943, 949 (6th Cir. 2002), regarding the grounds for conflict preemption, which the Michigan district court found clearly absent in *Fednav* and *Maine v. Taylor*, 477 U.S. 131, 151 (1986), which was used as the basis for the U.S. Court of Appeals for the Sixth Circuit's finding that the Michigan statute presents no violation of the Commerce Clause.

73. 33 U.S.C. §1342 (2007).

74. 33 U.S.C. §1251(a).

75. 33 U.S.C. §1311(a).

76. The relevant statutory definitions can be found in 33 U.S.C. §1362. A detailed discussion of why the CWA applies to regulating the discharges of ships' ballast is beyond the scope of the current Article. Such discussion, including analysis of relevant statutory provisions and case precedent, can be found both in the recent court decisions, *Nw. Envtl. Advocates v. EPA*, 2006 U.S. Dist. LEXIS 69476, 36 ELR 20194 (N.D. Cal. Sept. 18, 2006), and *Nw. Envtl. Advocates v. EPA*, 537 F.3d 1006, 38 ELR 20183 (9th Cir. 2008), and in previous analytical work on the issue. See Andrew N. Cohen & Brent Foster, *The Regulation of Biological Pollution: Preventing Exotic Species Invasions From Ballast Water Discharged Into California Coastal Waters*, 30 GOLDEN GATE U. L. REV. 787, 790-92, 799-801 (2000); Brent C. Foster, *Pollutants Without Half-Lives: The Role of Federal Environmental Laws in Controlling Ballast Water Discharges of*

Further, nothing in the statutory language and/or history of agency implementation of the of the NPDES program provides any grounds or mechanisms for making regulatory distinctions between ballast discharges from vessels on domestic versus international voyages, or between discharges from vessels that originally entered U.S. waters as NOBOBs and any other vessel discharging into waters of the United States. As long as a vessel's ballast has the potential to carry nonindigenous species, the statute requires that: (a) its discharge be explicitly authorized by a permit, regardless of the nature of the vessel's route or operations; and (b) that the discharge complies with all the conditions imposed in the permit.

The permits, known as NPDES⁷⁷ permits, are issued either directly by EPA or by states, if they have been delegated NPDES permitting authority by EPA.⁷⁸ Regardless of the issuing authority, the statute requires that each NPDES permit impose two types of substantive restrictions: technology-based effluent limitations, and, if these are not enough to ensure attainment of state water quality standards, water quality-based effluent limitations as well.⁷⁹

Technology-based effluent limitations specify maximum amounts or concentrations of pollutants that a permit holder is allowed to discharge; these limitations are based on the capacity of available technology to eliminate pollutants from various types of industrial effluent.⁸⁰ For nonconventional pollutants—a category of pollutant in which nonindigenous species squarely belong—discharge limitations are to be based on the performance of the best available treatment technology (BAT),⁸¹ with EPA determining what qualifies as BAT for each category of industrial discharger, e.g., steam-electric power plants, iron and steel manufacturing facilities, etc.⁸²

Historically, EPA has enjoyed discretion in defining the practical meaning of BAT, i.e., in determining what technologies should be considered available to a category of regulated industrial dischargers and so used as the benchmark for effluent limits for such dischargers.⁸³ Such discretion has specifically extended to decisions about whether or not technology used only on an experimental or pilot scale can be considered as available within the statutory meaning of BAT.⁸⁴ That is, it has extended to precisely the types of decisions that EPA is faced with in the case of NPDES permitting for ballast, where none of the top performing ballast

treatment technologies (such as those identified by the California State Lands Commission as meeting and/or approaching California's strict discharge standards) have progressed beyond experimental and/or pilot use yet, if that.⁸⁵

Yet, courts have so far differed in their opinions on whether experimental and pilot-scale technologies, a technology-development phase that essentially corresponds to the current status of all ballast treatment technologies, can be used as the basis for setting BAT standards.⁸⁶

Regardless of the ability and/or inclination of EPA to use emerging ballast treatment technologies as the BAT benchmark, however, technology-based effluent limits in general are a mechanism for technology diffusion (and a very important and successful one, at that), but not a means of technology-forcing.

The real technology-forcing potential of the CWA, however, may come from water quality-based effluent limitations, which NPDES permits are required to impose if technology-based limits cannot by themselves guarantee the attainment of state water quality standards and the protection of existing and designated and/or aspired uses of state waters.⁸⁷

Specifically, §303 of the CWA requires states to adopt water quality standards for all navigable waters in their jurisdiction.⁸⁸ These standards are to meet federally established thresholds and are subject to EPA approval,⁸⁹ but they can be stricter than the federally established minimum.⁹⁰ State water quality standards include designations of beneficial uses for each water body: uses such as support of fish and wildlife habitat, primary and secondary contact recreation, etc., that are consistent with the goals of the CWA,⁹¹ as well as numerical or narrative criteria for the attainment of these uses.⁹² State water quality standards are also explicitly required to implement the federal antidegradation policy,⁹³ one of whose principal mandates is that “existing instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.”⁹⁴

What, then, do state water quality standards and the federal antidegradation policy that is incorporated in them spell for the NPDES regulation of ballast discharges?

85. See DOBROSKI ET AL., *supra* note 41.

86. Courts have sometimes ruled in favor, and sometimes against, the setting of BAT standards on the basis of such experimental/pilot-scale technologies. See, e.g., McCubbin, *supra* note 83, at 8 n.23 (discussing *Tanners' Council, Inc. v. Train*, 540 F.2d 1188, 1195, 6 ELR 20379 (4th Cir. 1976), where the U.S. Court of Appeals for the Fourth Circuit found that EPA may set standards based on “technologies that have not been applied” yet, and comparing this to *Am. Petroleum Inst. v. EPA*, 540 F.2d 1023, 1038, 6 ELR 20748 (10th Cir. 1976), where the U.S. Court of Appeals for the Tenth Circuit found that EPA cannot set industrywide technology-based standards based on data from one pilot plant).

87. 33 U.S.C. §1312(a).

88. 33 U.S.C. §1313.

89. 33 U.S.C. §1313; 40 C.F.R. §131.5 (2009).

90. 33 U.S.C. §1370; 40 C.F.R. §131.4.

91. 40 C.F.R. §§131.2, 131.10.

92. E.g., numerical or narrative criteria for the maximum amounts or concentrations of various pollutants that can be sustained in a water body while still maintaining the designated beneficial uses of that water body. See 40 C.F.R. §131.11.

93. 40 C.F.R. §131.12(a).

94. 40 C.F.R. §131.12(a)(1). Existing uses are defined as those actually attained in a water body on or after November 28, 1975. See 40 C.F.R. §131.3(e).

Exotic Species, 30 ENVTL. L. 99 (2000); Sandra B. Zellmer, *The Virtues of “Command and Control” Regulation: Barring Exotic Species From Aquatic Ecosystems*, 2000 U. ILL. L. REV. 1233 (2000). See also Petition From Pac. Envtl. Advocacy Ctr., to Carol Browner, U.S. Envtl. Prot. Agency, Petition for Repeal of 40 C.F.R. §122.3(a) (Jan. 13, 1999), available at http://www.epa.gov/owow/invasive_species/petition1.html.

77. National Pollutant Discharge Elimination System (NPDES), 33 U.S.C. §1342.

78. 33 U.S.C. §1342(b)-(e).

79. 33 U.S.C. §§1311, 1312(a), 1342.

80. 33 U.S.C. §1314(b).

81. 33 U.S.C. §1311(b)(2)(A), (F).

82. 33 U.S.C. §1311(b)(2)(A); 40 C.F.R. §§405-471 (2009).

83. See Patricia Ross McCubbin, *The Risk in Technology-Based Standards*, 16 DUKE ENVTL. L. & POL'Y F. 1 (2005).

84. See *id.* at 8 n.23. See also Zellmer, *supra* note 76.

The harms that can be inflicted by nonindigenous species to various water uses, existing and aspired, are beyond well-established in both the ecological and policy literature. They span the spectrum from habitat modification and predation, displacement, and outcompeting native species to degradation of water quality, contamination and/or poisoning of fish and shellfish, and impediments to navigation.⁹⁵

At the same time, ecological knowledge is unable to offer any reliable and exhaustive predictions about which of the many species constantly transported in, and released with, ballast will invade where, and to what effect. Also, and perhaps most critically for the present discussion, our understanding of the dose-response relationships in the invasion process is manifestly indeterminate. That is, beyond suggesting that higher frequency of exposure and higher propagule pressures are associated with higher probability and higher incidence of new invasions, ecological knowledge is currently unable to give us specifics about threshold numbers and/or concentrations below which NIS releases from ballast are safe and/or unlikely to result in invasion.⁹⁶ In other words, from the perspective of protecting existing water uses, we do not know what numbers and concentrations of nonindigenous species are safe to discharge. So, what would water quality-based effluent limitations for NIS in ballast look like where the objective of such limitations is to ensure the protection of designated uses and fulfill antidegradation mandates? Current ecological knowledge presents a compelling argument for a zero-discharge limit as the only reliable guarantee against NIS-driven deterioration in water quality and existing water uses. A zero-discharge limit, if imposed, will, in turn, have a significant technology-forcing effect, since none of the existing technologies can guarantee the complete elimination of ballast-borne organisms prior to discharge.

In other words, given that even the best emerging technologies do not yet have the capacity to eliminate the full taxonomic spectrum of ballast-borne organisms,⁹⁷ technology-based effluent limits alone should be unable to protect designated water uses and/or ensure against degradation. This should create the need for writing water quality-based effluent limits into the NPDES permits for ballast. These limits, should they be set high enough, can become the force behind technological innovation in ballast treatment.

Indeed, zero-discharge limits for NIS in ballast, although not yet implemented, have already been contemplated by

some states as an approach to managing a specific category of waters, namely, waters listed as impaired under §303(d) of the CWA, and thereby subject to statutory requirements for restoration of water quality capable of sustaining designated uses.⁹⁸

B. The NGO Move to Fulfill the CWA's Regulatory Promise

The combination of statutory language, congressional intent, and case law leaves little doubt that ballast discharges from vessels fall under the CWA provisions that ban point sources from discharging any pollutants into waters of the United States unless such discharges are specifically authorized and controlled through a permit.⁹⁹ The reason that ballast discharges have, until recently, not been regulated through NPDES permits under the CWA is a long-standing EPA rule that exempts ballast and other discharges incidental to the normal operation of vessels from the permitting requirements that would otherwise apply.¹⁰⁰

It is this rule that NGOs have successfully challenged in court, arguing that the exemption is clearly inconsistent with, and therefore a violation of, the most fundamental mandates of the CWA, and weathering a full appeals process to win a conclusive legal victory.¹⁰¹

In the early 1970s, when the EPA regulatory exemption for ships' ballast was originally made, the ecological threats posed by nonindigenous species discharged in such ballast were unsuspected by anyone but a few ecologists who were just beginning to investigate the issue. By the late 1980s, however, when the risks and consequences of ballast-mediated species transfer became well-known, the statute of limitations for legal challenges to the EPA rule could be argued to have expired.¹⁰² And by the time it became apparent that the existing federal system of ballast-specific law and regulation was not offering adequate prevention and NGOs decided to get involved, which was in the late 1990s, it was potentially too late to challenge EPA's original regulatory exemption.

The environmental NGOs interested in strengthening the U.S. system of ballast control and invasion prevention, however, designed a strategy to go around this: without necessarily expecting a favorable response, they petitioned EPA to

95. CARLTON, *supra* note 4; COHEN, *supra* note 11; Walter R. Courtenay, *Biological Pollution Through Fish Introductions*, in *BIOLOGICAL POLLUTION: THE CONTROL AND IMPACT OF INVASIVE EXOTIC SPECIES* 35 (Bill N. McKnight ed., 1993); Jeffrey A. Crooks, *Characterizing Ecosystem-Level Consequences of Biological Invasions: The Role of Ecosystem Engineers*, 97 *OIKOS* 153 (2002); Mark E. Jakubauskas et al., *Mapping and Monitoring Invasive Aquatic Plant Obstructions in Navigable Waterways Using Satellite Multispectral Imagery*, in *INTERNATIONAL ARCHIVES OF PHOTOGRAMMETRY AND REMOTE SENSING* 9 (Stan Morfain & Amy Budge eds., 2002).

96. See Gregory M. Ruiz & James T. Carlton, *Invasion Vectors: A Conceptual Framework for Management*, in *INVASIVE SPECIES: VECTORS AND MANAGEMENT STRATEGIES*, *supra* note 34, at 459, 464-65, 467-72.

97. Technologies are emerging that can eliminate the larger of the small organisms—that is, organisms that are larger than 50µm in size, but not the smaller of the small, which fall below the 50µm size. See 74 Fed. Reg. 44632, 44632-35 (Aug. 28, 2009); DOBROSKI ET AL., *supra* note 41.

98. 33 U.S.C. §1313(d) (2007). States like California have considered, but not yet put into place, total maximum daily loads (TMDLs) of zero NIS for discharges to §303(d) waters that are impaired by invasive species. See ENVTL. LAW INST., *THE ROLE OF AQUATIC INVASIVE SPECIES IN STATE LISTING OF IMPAIRED WATERS AND THE TMDL PROGRAM: SEVEN CASE STUDIES* (2008), available at http://www.elistore.org/Data/products/d18__14.pdf.

99. See *supra* note 76, for references to several excellent sources of extensive legal discussion regarding the applicability of the CWA to vessel discharges of ballast.

100. 40 C.F.R. §122.3(a) (2009).

101. See *Nw. Envtl. Advocates v. EPA*, 537 F.3d 1006, 38 ELR 20183 (9th Cir. 2008); *Nw. Envtl. Advocates v. EPA*, 2006 U.S. Dist. LEXIS 69476, 36 ELR 20194 (N.D. Cal. Sept. 18, 2006); *Nw. Envtl. Advocates v. EPA*, 2005 U.S. Dist. LEXIS 5373, 35 ELR 20075 (N.D. Cal. Mar. 30, 2005).

102. *But see Nw. Envtl. Advocates*, 2006 U.S. Dist. LEXIS 69476, where the court's opinion brought up *Wind River Mining Corp. v. United States*, 946 F.2d 710 (9th Cir. 1991), and its holding that a challenge to an agency regulation on the grounds that the regulation exceeded the agency's statutory authority could be brought more than six years after the regulation was promulgated.

repeal the 1973 rule that created the ballast discharge regulatory exemption.¹⁰³ The petition pointed to the extensive and highly consequential biological pollution associated with vessel discharges of ballast and presented a thorough and compelling legal argument that exempting ballast discharges from NPDES controls violates clear and fundamental CWA mandates. When EPA disagreed with petitioning NGOs and refused to repeal the 40 C.F.R. §122.3(a) ballast discharge exemption, NGOs made the Agency's refusal a target of their legal action,¹⁰⁴ thereby getting around the potential statute of limitations obstacle to challenging EPA's original regulation.

This NGO strategy has ultimately proven successful in attaining the desired results: lower courts have found EPA's regulatory exemption for ballast (and other discharges incidental to the normal operation of a vessel) to be in clear violation of the CWA, strongly rejecting EPA's claims of congressional acquiescence with the Agency's regulatory exemption, ordering EPA to repeal the contested regulation¹⁰⁵ and subsequently issuing a permanent injunction that made 40 C.F.R. §122.3(a) invalid as of September 30, 2008.¹⁰⁶

EPA appealed these California district court decisions, but the Ninth Circuit has affirmed the lower court's injunction,¹⁰⁷ leaving EPA without further recourse but to develop a NPDES permitting scheme for ballast, and for all the other discharges it had previously exempted.¹⁰⁸

C. CWA Regulation From a Shipping Industry Perspective

From the perspective of the shipping industry, this development, especially the water quality-based effluent limits that CWA regulation of ballast can usher, creates an almost endless potential for precisely the type of regulatory fragmentation that the industry most dreads. Not only are discharge standards to be significantly determined by the states, who have a major role in implementing the statute, but the statute specifically requires water quality-based standards to be individualized by water body, meaning that discharge requirements may vary from one water body to another, and even from one part of a water body to another.

That is, the CWA requirements for setting water quality-based effluent limitations mean that regulation under the CWA can translate into major fragmentation of discharge regulations; and with the further designations of impaired waters and total maximum daily loads (TMDLs), the discharge restrictions for a vessel could practically vary from mile to mile. Clearly not something the shipping industry would

readily welcome, this has been a big reason for the ongoing industry aversion to ballast regulation under the CWA.¹⁰⁹

IV. Ballast Regulation Under the CWA: The Reality of Current Implementation

On December 19, 2008, EPA issued a final NPDES VGP regulating ships' ballast discharges.¹¹⁰ The permit entered into force in February, 2009. What this means for industry is that to be able to discharge ballast legally in the course of its operations, any vessel longer than 79 feet needs to obtain coverage under the VGP,¹¹¹ and ensure that all its future discharges are compliant with the terms of the permit.

So, what does this recently issued VGP actually add to the management of invasion risks from ballast, then? If we are looking at the VGP in direct, substantive terms, the short answer, upon which the rest of this section will elaborate, is "not much."

At the same time, the rest of this Article will also argue that although the current VGP does not contain many provisions that tangibly improve on the preexisting federal and state ballast controls, it is poised to produce such improvements indirectly. Specifically, the very introduction of ballast regulation under the CWA creates an important policy opportunity window for renegotiating and ratcheting up the NISA-based federal controls on ballast, a window which could not have opened without the regulatory risks and threats that ballast regulation under the CWA creates for the shipping industry. These threats are rooted in the fragmentation of regulatory control likely to ensue under the CWA regulatory framework.

A. The VGP Controls on Ballast Discharges

The main ballast management and discharge conditions imposed by EPA in the recently issued NPDES VGP include the following:

- requirements for open-ocean BWE to be performed by vessels coming into the United States from international voyages: if a U.S.-bound vessel has taken on ballast in the coastal waters of any country other than the U.S., and this vessel wants to discharge ballast as part

103. Petition From Pac. Envtl. Advocacy Ctr., *supra* note 76.

104. *Nw. Envtl. Advocates*, 2005 U.S. Dist. LEXIS 5373.

105. *Id.*

106. *Nw. Envtl. Advocates*, 2006 U.S. Dist. LEXIS 69476. The two-year deadline was given by the court in recognition of the complexity of EPA's task in developing regulations for all previously exempted vessel discharges.

107. *Nw. Envtl. Advocates*, 537 F.3d 1006.

108. The deadline for EPA regulation of vessel discharges under NPDES was subsequently extended by another three months, until December 19, 2008. *Nw. Envtl. Advocates v. EPA*, 2008 U.S. Dist. LEXIS 66738 (N.D. Cal. Aug. 31, 2008).

109. Shipping industry associations, organized as the Shipping Industry Ballast Water Coalition, for example, intervened on behalf of EPA when it was taken to court for its refusal to regulate ballast under the CWA. See *Nw. Envtl. Advocates*, 537 F.3d 1006; *Nw. Envtl. Advocates*, 2006 U.S. Dist. LEXIS 69476. See also R.G. Edmonson, *Carriers Urge Consistent Ballast Regulation*, J. COM. ONLINE, Sept. 17, 2008, <http://www.joc.com/node/406142> (last visited Dec. 19, 2009).

110. Final National Pollutant Discharge Elimination System (NPDES) General Permit for Discharges Incidental to the Normal Operation of a Vessel, 73 Fed. Reg. 79473, 79473-81 (Dec. 29, 2008); U.S. Environmental Protection Agency, Vessel General Permit for Discharges Incidental to the Normal Operation of Vessels (VGP) (Feb. 5, 2009 Version) [hereinafter NPDES VGP], available at http://www.epa.gov/npdes/pubs/vessel_vgp_permit.pdf. In addition to regulating ballast, the permit also regulates 26 other discharge streams that were previously exempted under 40 C.F.R. §122.3(a).

111. In order to obtain coverage under the VGP, a vessel submits a Notice of Intent (NOI) to EPA, a standard procedure in administering NPDES general permits. See NPDES VGP, *supra* note 110, §1.5.

of its U.S. port operations, the vessel is required to first replace foreign coastal ballast with open-ocean water in the course of its U.S.-bound voyage¹¹²

- a ban on the discharge into U.S. waters of sediments from cleaning of ballast tanks¹¹³
- requirements that all vessels coming into the United States with a declared NOBOB status perform open-ocean salt water flushing of their nearly empty tanks (before they can use such technically NOBOB tanks as part of U.S. ballasting operations which involve discharges into waters of the United States)¹¹⁴
- requirements for vessels operating on coastal voyages along the U.S. West Coast (but not for any other coastal voyage vessels) to perform ballast management through exchange in waters at least 50 miles offshore and/or a salt water flushing of NOBOB tanks 50 miles offshore prior to discharging to a new coastal location¹¹⁵

In other words, the NPDES VGP, which begins by restating the requirement that all discharges of ballast water must comply with the already existing Coast Guard regulations promulgated under NISA of 1996,¹¹⁶ adds very little to the federal and state regulations already in place at the time of EPA involvement. In exercising its CWA regulatory authority, EPA has largely limited itself to restating the regulatory status quo, as established by the combination of federal and state ballast controls that preceded the introduction of the CWA as a regulatory authority over ballast.

Particularly notable within the context of CWA regulation of ballast is the fact that the NPDES VGP has only imposed best management practices (BMPs), the established default BMPs of open-ocean BWE and salt water flushing, rather than imposing any specific, substantive, technology-based limits on the nonindigenous species content of ballast discharges. EPA has, in other words, gone for the existing default management option, an option well-known for its invasion-prevention shortfalls. The rationale the Agency has given for sticking with open-ocean ballast exchange is that although ballast treatment technologies are “rapidly developing,” such technologies “are not currently available within the meaning of BAT under the CWA.”¹¹⁷

As discussed in previous sections, ballast treatment technologies with performance superior to that of the BWE default

have indeed only recently emerged as tangible embodiments of more abstract engineering concepts, and such technologies have yet to become widely commercially available. Especially with EPA facing increasing Office of Management and Budget’s Office of Information and Regulatory Policy (OMB/OIRA) pressures to convert technology-based standard-setting into standard-setting based on cost-benefit calculations, it should not be particularly surprising that the Agency seems reluctant to exercise its discretion in a way that produces more, rather than less, expansive regulatory results.¹¹⁸

Given the history of Agency discretion in defining the meaning of BAT,¹¹⁹ EPA’s decision to go with BMPs until further advances in the development and commercialization of ballast treatment technologies can therefore be seen as permissible under existing statutory mandates, even as permissible is very different from justified, considering the twin realities of accelerating technological progress and increasing urgency of invasion risk management.

Not so clearly within the realm of permissible agency discretion, however, is EPA’s total omission of water quality-based effluent limits. As discussed in the previous section, many state-designated water uses can be easily annihilated by even a single invasion, while even the best currently known ballast treatment technologies¹²⁰ could still allow for some continued invasions in waters exposed to ballast discharges. This situation clearly suggests the need for additional water quality-based discharge restrictions.

Further, a growing number of water bodies and/or segments across the country are being found impaired by NIS,¹²¹ a situation that calls for the development of special restrictions on discharges.

Still, the EPA VGP is anything but forthcoming with such restrictions. It makes but a nod in that direction by stipulating a water quality-based reopener, which notifies permittees that

EPA may require you to obtain an individual permit in accordance with Part 1.8 of this permit for cause. *This may happen, for example, if there is evidence that the discharges authorized by this permit cause, have the reasonable potential to cause or contribute to an excursion above any applicable water quality standard.* Similarly, EPA may modify this permit to include different limitations and/or requirements for cause.¹²²

As suggested by prominent scholars of the CWA, however, such reopeners are patently inadequate to meet the statutory requirements of the CWA, where “the entire structure of the NPDES permit program is based on the premise that all point sources must meet technology-based requirements and additional, more stringent water quality standards-based

112. NPDES VGP, *supra* note 110, §§2.2.3.5, 2.2.3.11. Essentially the same as the 2004 ballast regulations passed by the Coast Guard under NISA of 1996 (*see* 33 C.F.R. §§151.1510, .2035(b), .2030), the EPA conditions in the NPDES VGP call for the required open-ocean ballast exchange to be performed in waters beyond the U.S. EEZ and more than 200 miles from any shore; that is, in order for a vessel to be in compliance of the VGP requirements—and their Coast Guard predecessors—any ballast taken within 200 miles of a foreign shore needs to be exchanged with open-ocean ballast prior to discharge into waters of the United States.

113. NPDES VGP, *supra* note 110, §2.2.3.3. This is also identical to an already existing Coast Guard regulation promulgated under NISA of 1996. *See* 33 C.F.R. §151.1510(b).

114. NPDES VGP, *supra* note 110, §2.2.3.7.

115. *Id.* §§2.2.3.6, 2.2.3.8.

116. 33 C.F.R. §151.

117. 73 Fed. Reg. 79473, 79478-79 (Dec. 29, 2008).

118. *See* Lisa Henzerling, *Statutory Interpretation in the Era of OIRA*, 33 FORDHAM URB. L.J. 1097 (2006).

119. *See* McCubbin, *supra* note 83.

120. If they were selected by EPA as the benchmark for technology-based effluent limitations, which they are currently not.

121. *See* ENVTL. LAW INST., *supra* note 98.

122. NPDES VGP, *supra* note 110, §1.9.2 (emphasis added).

limitations in those cases where technology-based limitations are inadequate.¹²³

The CWA, in other words, is explicitly not a “discharge first, ask questions later”¹²⁴ kind of statute, yet this is precisely the approach that this VGP and other general permits effectively take when they forego the setting of water quality-based standards in favor of water quality reopeners like the one above.

As a result, it is hardly surprising that the VGP has already been challenged in court, with the challenge led by some of the same NGOs who spearheaded the original legal strategy for bringing CWA controls to bear on the management of ballast discharges.¹²⁵

Given some of the obvious ways in which the VGP is at odds with basic CWA mandates, this new challenge could offer some promise for further advancement of ballast controls and invasion prevention via the powerful regulatory tools offered by the CWA.

For the purposes of the current analysis, however, it is important to note that the just-outlined VGP shortfalls are by far not unique to the ballast context and this particular NPDES general permit. They are, in fact, quite typical of general permitting as an approach to administering the NPDES program,¹²⁶ since the administrative expediency of regulating large numbers of sources under a single general permit is fundamentally in tension with statutory mandates for location-specific discharge limitations that are based on explicitly location-specific designations of water uses and water quality standards.

At the same time, general permits were introduced by EPA (and with the courts’ urging) specifically for the purpose of addressing the type of numerous and thereby challenging to regulate point source that is represented by vessels, the type of point source EPA has historically attempted to exempt, until ordered otherwise by the courts.¹²⁷ Perhaps most important for the current discussion, general permits have been used

extensively, and they have remained largely unchallenged since their original introduction in the late 1970s.¹²⁸

In a pattern resembling the dynamics of the pre-CWA ballast regime, partial redemption for an otherwise multiply lacking EPA VGP once again comes in the form of state regulatory intervention enabled, in this case, by §401 of the CWA.¹²⁹

Section 401 is a crucial link between state water quality standards and federal permit requirements.¹³⁰ It requires that any applicant who needs a federal license or permit for an activity that may result in a discharge to navigable waters obtain certification from the state where the discharge will occur¹³¹; the state certification is to attest that the activity will not violate state water quality standards and that the state approves of the issuance of the permit. In other words, §401 requires that any federally permitted activity that may result in a discharge to navigable waters be certified as consistent with state water quality standards before it can legally proceed, and it gives states the power to impose additional requirements as part of their certification, should they need to do so in order to ensure compliance with state water quality standards and/or “any other appropriate requirements of state law.”¹³²

The conditions that states attach to their approval of federal permits—in this case, to the EPA VGP—become part of the permit, and compliance with additional state requirements is an indelible part of permit compliance.

Sixteen coastal states have used their §401 powers, imposing further restrictions on any ballast discharged in their waters.¹³³ These state-added discharge requirements and limitations range from fairly simple ones, such as Connecticut’s call that all vessels that already have ballast treatment technology onboard use it to treat their ballast prior to discharging into state waters,¹³⁴ to those of California, which has made compliance with its existing, and quintessentially technology-forcing, ballast regulations a requirement for vessels covered under the NPDES VGP.¹³⁵

In between are several other types of ballast treatment requirements and ballast discharge standards, with five certifying states (Illinois, Indiana, Minnesota, Ohio, and Pennsylvania) imposing discharge standards equivalent to the (not very strong) IMO standards,¹³⁶ while four other certifying states (California, Michigan, New York, and Pennsylvania)

123. Jeffrey M. Gaba, *Generally Illegal: NPDES General Permits Under the Clean Water Act*, 31 HARV. ENVTL. L. REV. 409, 437 (2007) (emphasis omitted).

124. *Id.* at 438.

125. John Flesher, *Groups Sue EPA Over Ship Discharge Permit*, S.F. CHRON., Jan. 12, 2009, available at <http://www.sfgate.com/cgi-bin/article.cgi?f=/n/a/2009/01/12/financial/f162554S04.DTL>; Press Release, Northwest Environmental Advocates, *Environmental Organizations Sue Agency Over Ship Discharges and Invasive Species* (Jan. 12, 2009), available at http://www.northwestenvironmentaladvocates.org/news_releases/EPA%20Permit%20Challenge%20Press.pdf.

126. See Gaba, *supra* note 123.

127. Indeed, EPA first tried the type of CWA regulatory exemption that it used on ships’ ballast and other discharges incidental to the normal operation of vessels when dealing with discharges from storm sewers, relatively small animal confinement facilities, silvicultural activities, and irrigation return flow from smaller farms. 40 C.F.R. §125.4 (1975). EPA justified the exemption of storm sewers from NPDES permitting requirements by claiming that it would be administratively infeasible for the Agency, given its limited resources, to issue permits to such large numbers of permit applicants. See Gaba, *supra* note 123. This Agency action was successfully challenged in *NRDC v. Train*, 396 F. Supp. 1393, 5 ELR 20401 (D.D.C. 1975), with the court’s finding that a number of options, other than blatantly violating CWA mandates, were available to EPA in coping with its significant administrative burden, and explicitly suggesting the use of some kind of general permit. See *NRDC v. Costle*, 568 F.2d 1369, 8 ELR 20028 (D.C. Cir. 1977); *Train*, 396 F. Supp. 1393.

128. General Permit Program, 42 Fed. Reg. 6846, 6846 (Feb. 4, 1977). See also Gaba, *supra* note 123.

129. 33 U.S.C. §1341 (2007).

130. See Randolph L. Hill, *State Water Quality Certification of Federal NPDES Permits*, 9 TUL. ENVTL. L.J. 1 (1995).

131. 33 U.S.C. §1341(a).

132. 33 U.S.C. §1341(d).

133. NPDES VGP, *supra* note 110, §6.

134. *Id.* §6.3.

135. *Id.* §6.2.

136. *Id.* §§6.9, 6.10, 6.16, 6.23, 6.24. The standards imposed by these states are the same as the standards stipulated by the International Convention for the Control and Management of Ships’ Ballast Water and Sediments. See *supra* note 59.

impose standards stricter than the IMO standards, but different from each other.¹³⁷

The Massachusetts, New York, Minnesota, and Pennsylvania certification conditions also include requirements for ballast exchange by vessels on near-coastal voyages¹³⁸; these are similar to the coastal ballast requirements imposed by California, Oregon, and Washington under the “old regime.”¹³⁹

It is also important to note Oregon and Washington as states that have explicitly waived their right to §401 certification, but not because they thought the VGP does such a great job of establishing protections. Indeed, both states already have in place ballast regulations stricter than those in the VGP, and Oregon’s waiver is explicitly founded in the state’s view that the VGP is so fundamentally flawed as to be beyond fixing through a mere imposition of a few additional conditions.¹⁴⁰ In fact, in addition to expressing Oregon’s skepticism regarding the adequacy of the discharge requirements imposed by the VGP, and Oregon’s intention to issue its own NPDES permit (in coordination with the other West Coast states), the Oregon Department of Environmental Quality raises further objections to EPA’s approach in issuing the VGP—objections that could become the basis for future legal challenges against the VGP, and which include the assertion that EPA does not have the authority to issue a NPDES permit for discharges in a state such as Oregon that has received §402 approval to operate its own NPDES program.¹⁴¹

In sum, a number of states have added to the EPA-imposed ballast controls in the VGP through their §401 certification conditions, many of which essentially reiterate state ballast regulations established as part of the pre-CWA ballast regime. Others, such as Oregon, are likely to issue their own NPDES permits, using their authorities as delegated states under §402(b).¹⁴² As already discussed above, however, state regulations cannot fully compensate for the larger deficiencies of the federal permit, even if they do help somewhat in the strengthening of local and regional protections.

But does all this mean that the whole exercise of bringing the CWA to bear on ship discharges of ballast was essentially useless from a practical, conservation perspective?

The rest of this Article argues this not to be the case, suggesting that the numerous and apparent shortfalls of the current VGP notwithstanding, its promulgation creates critical and, in fact, unprecedented opportunities for strengthening the protections against ballast-mediated aquatic invasions across the United States.

V. The Conservation Value of the NPDES VGP?

In spite of the many current weaknesses of the VGP, the permit may still turn out to be an instrumental driver for a U.S.-wide strengthening in regulatory controls on ballast.

The rest of this section outlines the mechanisms through which such a process is likely to occur, suggesting that the NGO-instigated judicial reintroduction of the CWA into the regulatory landscape for ballast has opened two distinct paths for advancing regulatory reform to improve invasion prevention.

A. Incremental Improvements Attained Through the Courts

The first of these paths is the more obvious one: a direct path of incremental improvement through further legal action aimed at making EPA fulfill the conservation promise of the CWA. Such legal action has been already initiated by NGOs, who specifically challenge the current VGP for violating key statutory mandates of the CWA.¹⁴³

While carrying potential conservation promise, this path also carries significant risks for both sides of the regulatory struggle over ballast.

For NGO and coastal state proponents of stronger, more protective ballast regulation, the risks come from the lack of favorable precedent. That is, by their very nature, all general permits share many of the principal deficiencies of the VGP. Yet, the tensions between fundamental statutory mandates on the one hand, and the very nature of general permitting as a genre of CWA administration on the other, have yet to be seriously challenged in court.¹⁴⁴ It is therefore entirely possible that this approach fails to yield the significant regulatory changes needed to strengthen practical, on-the-ground protections against ballast-mediated aquatic invasions.

At the same time, it is quite likely that the plaintiff NGOs and attorneys general will get at least some favorable rulings, leading to some VGP changes and additions—changes and additions that may not be sufficient to significantly improve prevention against ballast-mediated aquatic invasions, but which can nonetheless make the regulatory burdens and the practicalities of compliance more onerous for the shipping industry. This is the risk that the shipping industry faces in the context of this first possible scenario.

The specifics of the risks to shipping are fleshed out by a broader look at the nature of general permits and the way EPA has historically tried to reconcile the tension between the broad umbrella of general permitting and the statutory requirements for geographically specific discharge limitations. Such a look strongly suggests that, should the courts side with the NGO plaintiffs, some of the remedies EPA is most likely to reach for are remedies that may further complicate operational and compliance logistics for the shipping

137. See NPDES VGP, *supra* note 110, §§6.2, 6.15, 6.22, 6.24. Pennsylvania appears in several of the above lists, because the §401 certification conditions it has added to the EPA VGP in fact require that vessels constructed prior to January 1, 2012, meet IMO discharge standards by 2016, while also requiring that vessels constructed after January 1, 2012, must meet standards that are approximately 1,000 times stricter, i.e., meet standards equivalent to the current California standards.

138. See *id.* §§6.2, 6.15, 6.22, 6.24.

139. See *id.* §§2.2.3.6, 2.2.3.8.

140. See Letter from Neil Mullane, Adm’r, Water Quality Div., Or. Dep’t of Envtl. Quality, to Mike Gearheard, Dir., Office of Water & Watersheds, U.S. Envtl. Prot. Agency (Dec. 17, 2008), available at http://www.klgates.com/FCWSite/ballast_water/Legislation/States/Oregon.pdf.

141. *Id.*

142. 33 U.S.C. §1342(b) (2007).

143. See Flesher, *supra* note 125.

144. See Gaba, *supra* note 123.

industry and/or expose industry members to new regulatory risks and uncertainties.

One way, for example, in which EPA has tried to honor the statutory requirements for water quality-based effluent limits on regulated discharges while using NPDES general permits has been through excluding discharges to impaired waters¹⁴⁵ from coverage under the general permit, and requiring sources that discharge to such waters to get individual permits instead.¹⁴⁶ When incorporated in a NPDES general permit, such a measure imposes on the permit seekers the potentially nontrivial responsibility of determining whether or not they are, in the course of their voyages, discharging to impaired waters.¹⁴⁷ What it can also mean in the context of NPDES permitting for ships' ballast discharges is that a potentially large number of vessels may find themselves having to undergo the much more onerous and lengthy process of obtaining individual permits before they can continue to conduct normal port operations,¹⁴⁸ especially since many ballast discharges occur at or near ports, and a number of the waters currently listed as NIS-impaired are in areas of shipping operations in the vicinity of commercial ports.

A second way for EPA to take advantage of the expediency of general permitting without straining the limits of its statutory mandates, and one that it has used in the past, is to include in the general permit a broad requirement that sources covered under the permit comply with all relevant water quality standards.¹⁴⁹ Such a general requirement, if included in the VGP, can be particularly tricky for the shipping industry, since it creates an enforceable requirement for all vessels covered under the permit, asking them to do something that is not exactly easy and straightforward to do, and putting them at risk of violating permit conditions, i.e., hard for a discharger to determine what it means in their individual case to be in compliance with water quality standards, and all the burden, and liability, in case of failure, is on the discharger.¹⁵⁰

All of these possible remedies, remedies that an NGO and/or coastal state legal victory may well bring about, spell out further regulatory fragmentation,¹⁵¹ and none of them bode well for the shipping industry, which is quintessentially transboundary in its operations, and which has always worked toward securing greater regulatory uniformity. At the

same time, they may still be insufficient to bring about major conservation gains.¹⁵²

Should the current legal challenges against the VGP fail to produce many substantive changes in ballast controls (such as, for example, the imposition of strong technology-based effluent limitations based on the ballast treatment capabilities of the best-performing new/emerging technologies), further proliferation of state discharge controls, in the form of stand-alone state ballast regulations, state-level NPDES permits issued by states with powers to implement NPDES permitting under the CWA,¹⁵³ and/or further §401 certification conditions added to future versions of the VGP, are even more likely. Even coastal states that were not originally inclined to impose regulations stricter than the federal ones are likely to be pushed in that direction by NGO legal action, newly reinvigorated by the example of the Northwest Environmental Advocates' victory over EPA. This scenario is perfectly illustrated by recent developments in Minnesota, where an NGO, the Minnesota Center for Environmental Advocacy, successfully sued the Minnesota Pollution Control Agency for violating state water quality laws by failing to control hazardous ballast discharges (which contain, among other things, nonindigenous species such as the destructive fish disease agent viral hemorrhagic septicemia),¹⁵⁴ getting the Agency to issue a ballast discharge general permit.¹⁵⁵

Further, whereas any patchwork of differing state ballast regulations is undesirable from a shipping industry perspective, such a patchwork should be especially threatening when it comes in the form of controls specified under the states' strong CWA prerogatives over water quality protection. This is the case because the shipping industry can expect to have less of a legal recourse against state water quality-based requirements even if they were to become so cumbersome as to begin interfering with normal shipping operations.¹⁵⁶

145. For example, §303(d) waters subject to additional TMDL limitations. See 33 U.S.C. §1313(d).

146. See Gaba, *supra* note 123, at 436. See also Final NPDES General Permit for Reject Water From Reverse Osmosis Units, 67 Fed. Reg. 77258 (Dec. 17, 2002); Final Reissuance of NPDES General Permit for Construction Dewatering Activity Discharges in the States of Massachusetts and New Hampshire, 67 Fed. Reg. 59503 (Sept. 23, 2002); Final NPDES General Permits for Water Treatment Facility Discharges in the States of Massachusetts and New Hampshire, 65 Fed. Reg. 69000 (Nov. 15, 2000).

147. Gaba, *supra* note 123, at 436.

148. Especially if the trend of increasing state attention to the need for §303(d) listing of waters impaired by nonindigenous species continues. See ENVTL. LAW INST., *supra* note 98.

149. Gaba, *supra* note 123, at 440.

150. *Id.*

151. By virtue of creating the potential for further regional particularization of ballast discharge limits and ballast management needs and requirements.

152. For example, the water quality-based standards and/or TMDLs for discharges of nonindigenous species will have to be set high enough for an individual permitting program to actually reduce invasion risks and the future incidence of invasions. Yet, regardless of where they are set, i.e., whether they are set high or low, getting permitted under a system of somewhat varying requirements and managing compliance will be time-consuming and burdensome for vessel operators.

153. Such as the permit Oregon has already stated it will be issuing. See *supra* note 140 and accompanying text.

154. State ex rel. Minn. Ctr. for Envtl. Advocacy v. Minn. Pollution Control Agency, No. 62-CV-07-2224 (Ramsey County Dist. Ct. Apr. 21, 2008).

155. Minn. Pollution Control Agency, Industrial Div., State Disposal System Permit MNG300000: Ballast Water Discharge General Permit (Sept. 24, 2008), available at <http://www.pca.state.mn.us/publications/ballast-finalpermit-092408.pdf>. Once the Minnesota Pollution Control Agency issued the permit, the Minnesota Center for Environmental Advocacy challenged it as inadequate, finding the terms of the permit too lax and the implementation time line too slow. The Center for Environmental Advocacy lost that challenge, however. See In re Request for Issuance of SDS General Permit MNG300000, 769 N.W. 2d 312 (Minn. Ct. App. 2009).

156. Less of a legal recourse than they might have against stand-alone, ballast-specific state laws and regulations. See *supra* notes 64-70 and accompanying text. On the limited industry recourse against individual and potentially disparate state water quality-based requirements, see ROBIN KUNDIS CRAIG, THE CLEAN WATER ACT AND THE CONSTITUTION 39-54 (Envtl. L. Inst. 2004). Indeed, the shipping industry is already beginning to bump against the limits of its capacity to challenge additional state ballast controls, imposed as part of the NPDES VGP in the form of §401 state certification requirements. See, e.g., Press Release, N.Y. Office of the Attorney Gen., Attorney General Cuomo Announces Environmental Victory for Great Lakes and Other New York Water-

Specifically, the CWA goal of water quality improvement, a goal whose advancement is critically dependent on state regulatory action, is so fundamental to the statute and the fulfillment of its purpose that concerns over enabling state protective actions have generally superseded other concerns, such as the possible need for, or applicability of, federal preemption.¹⁵⁷ Courts have generally deferred to state water quality prerogatives under the CWA,¹⁵⁸ with federal preemption remaining largely limited to the express preemption stipulated in §312¹⁵⁹ (with even §312, which preempts states from imposing their own requirements on marine sanitation devices still giving states significant control over water quality by allowing them to ban discharges of sewage from vessels altogether).¹⁶⁰

Indeed, §1.11 of the NPDES VGP permit explicitly states:

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the Permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable state law or regulation under authority preserved by section 510 of the Clean Water Act.¹⁶¹

Both sides in the regulatory skirmish over ballast, in other words, have some incentives to consider alternatives to this process of incremental regulatory ratcheting via the courts. But the shipping industry in particular has a powerful incentive to do whatever it takes to avoid the cumbersome regulatory fragmentation likely to occur if ballast continues to be regulated under the CWA. That is, the nature and structure of the CWA is such that the VGP, regardless of its fairly lax ballast management and discharge requirements, still creates serious regulatory uncertainties and operational threats for the shipping industry. The very fact of ballast regulation under the CWA, in other words—even if, at present, the regulation is substantively not very strong—provides critical incentives for the shipping industry to seek to negotiate alternatives.

Further, this push for political renegotiation arises at a time when the water treatment technology industry is emerging as an important new stakeholder whose interests are furthered by comprehensive national regulations stricter than the immediately available default ballast management techniques, such as open-ocean ballast exchange, are able to meet.¹⁶²

B. Fundamental Change Through NISA Extension and/or New Ballast-Specific Federal Legislation

The shipping industry's best chance for getting out of the regulatory predicaments it faces when ballast discharges are controlled under the CWA may therefore be negotiating a new regulatory compromise: a compromise in which industry agrees to much stricter and significantly expanded federal controls on ballast in exchange for greater uniformity of regulation.

In particular, the shipping industry could pursue its regulatory priorities of reducing uncertainty and increasing uniformity by working to negotiate a piece of dedicated federal ballast legislation, something like an amended and expanded NISA, which expressly preempts state ballast controls and sets aside the CWA authority over ballast, but does so in exchange for strict technology-forcing and promptly implemented federal controls on the management and discharge of ships' ballast.

Indeed, given the hard-won, if ultimately partial regulatory victories that NGO and coastal state proponents of stronger invasion prevention will have to trade off in this scenario, nothing less than a very strict set of comprehensively applied, technology-forcing federal standards for ballast discharges should be able to secure political acceptance of the express federal preemption that can pull the shipping industry out of its evolving regulatory predicament. Specifically, neither coastal states (many of whose legislators have been actively pushing for stronger congressional action on ballast for the past decade) nor NGOs, who have now become important advocates for the issue, should be willing to trade the accomplishments—incremental and geographically limited, but accomplishments nonetheless—that have been achieved through state regulation; nor would they give up the significant if still manifestly untapped conservation potential of the CWA for anything less than a strong and reliable, strict and comprehensive federal scheme of regulatory control over ballast discharges. In fact, the CWA will be especially hard for NGOs to give up, because of its powerful citizen suit provisions,¹⁶³ which have enabled NGOs to proactively advance the statute's conservation objectives for decades.

At the same time, if a new piece of dedicated federal ballast legislation was strong enough to guarantee prompt improvements in ballast treatment, and so prompt reductions in invasion risks from ballast, on a national scale, then at least the majority of coastal states will have reason to support it.¹⁶⁴

Indeed, in order for such a policy alternative, an alternative that gives industry the desired regulatory uniformity at the expense of both state regulatory rights and CWA authority, to even have a fair shot in Congress, the ballast discharge restrictions imposed by the new legislation may have to be

ways Regarding Invasive Species (May 29, 2009), available at http://www.oag.state.ny.us/media_center/2009/may/may29a_09.html. See also Tom Bukham, *Shippers Challenge to DEC Rejected*, BUFFALO NEWS, May 30, 2009, at D5.

157. See CRAIG, *supra* note 156, at 39-54.

158. See *id.* See also *Chevron, U.S.A., Inc. v. Hammond*, 726 F.2d 483, 489, 491, 14 ELR 20305 (9th Cir. 1984).

159. 33 U.S.C. §1322(f)(1) (2007).

160. 33 U.S.C. §1322(f)(3). See also CRAIG, *supra* note 156, at 47-50, 54.

161. Section 510 (33 U.S.C. §1370) being the section that preserves state jurisdiction over state waters and explicitly reserves state authority to impose discharge standards and pollution controls stricter than (and consistent with) those provided for in the Act.

162. See, e.g., R.G. Edmonson, *Ballast Water Bottleneck*, J. COM. ONLINE, Sept. 8, 2008, <http://www.joc.com/node/405917>.

163. 33 U.S.C. §1365. See also Edmonson, *supra* note 109.

164. Especially since many coastal states (such as Minnesota, for example) would rather see uniform federal regulations, because they do not particularly want to deal with addressing the invasion risks from ballast, yet in the absence of federal regulation, they are finding themselves forced to do so—forced by NGO lawsuits, practical exigencies, and/or constituent pressures.

at least as strict as those imposed by the state with the most protective regulations, which is currently California.¹⁶⁵

The introduction of the CWA as a regulatory tool for ballast, an introduction that resulted from the success of NGOs in deploying a CWA legal strategy, is, in other words, creating a new balance in the politics of ballast regulation, a balance that may well precipitate the diffusion of California's strict ballast management and discharge standards nationwide.

VII. Conclusion

As it currently stands, ballast regulation under the CWA adds little direct conservation value over and above what was already provided through the preexisting federal and state ballast control measures that CWA regulation was hoped to upgrade.

Yet, in spite of the many failings of the recently issued NPDES VGP, the very presence of a newly reaffirmed CWA authority over ship discharges of ballast has critical potential for pushing U.S. ballast policy forward and upward. It can do so either directly, if the NGO legal challenge against the VGP's deficiencies is broadly successful in ratcheting up permit conditions such as technology—and water-quality-based limits—or, most promisingly, it can do so indirectly, by virtue of having reshaped the regulatory landscape faced by the shipping industry, so as to make the introduction of a new strict and comprehensive federal ballast law the industry's preferred alternative, turning the industry from a long-term opponent of such law to one of its core proponents.

Interestingly, then, the strategic introduction of the CWA, which was intended to improve ballast controls and invasion prevention without going through the difficult and uncertain process of legislative action in favor of statutory reform, may, in the end, make its strongest conservation mark precisely by helping precipitate such reform.

165. Especially given that California's Sen. Barbara Boxer (D-Cal.), who has a strong conservation record and chairs the influential Committee on Environment and Public Works, a committee through which any proposed ballast bill will have to go, has already demonstrated her inclination to veto any legislation that threatens to compromise California's strict ballast controls and/or erode the state's considerable progress in improving the protection of its waters against ballast-mediated aquatic invasions. *See, e.g.*, Associated Press, *Invasive Species Bill Stuck in Congress*, Aug. 4, 2008; Edmonson, *supra* note 162.