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Note

LEADING BY EXAMPLE: A COMPARISON OF NEW ZEALAND'S AND THE UNITED STATES' INVASIVE SPECIES POLICIES

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Invasive species pose a threat to native ecosystems and to the economy. It is estimated that the United States spends $138 billion annually in agricultural losses, infrastructure damage, and management costs stemming from invasive species. The United States' invasive species management policy is a conglomeration of federal and state statutes that do not coalesce into a comprehensive policy. As a result, the country has many open pathways for introduction and lacks a mechanism to identify those pathways. In contrast, New Zealand is a world-leader in its comprehensive and proactive invasive species policy. Although the United States faces unique challenges with regard to invasive species management, it can learn many lessons from New Zealand's program.

This Note analyzes the United States' and New Zealand's invasive species policies and makes suggestions for improvement in the United States' policy based on this analysis. Ultimately this Note argues that the United States must increase accountability, move to a preventative importation policy for new species entering the country, and integrate its various statutes to create a comprehensive policy across all pathways of invasion.

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I. INTRODUCTION

In our ever-growing global economy, one unintended consequence is the rise of invasive species. When humans break down natural barriers to the movement of species by transporting new species of plants or animals to new ecosystems, the order of those ecosystems is disturbed. Not every non-native organism poses harm to its new environment, but those that do can be overwhelming in their devastation because a new species is suddenly introduced into an environment in which it has no natural predators.[1] As one example, on islands off the coast of Australia, rats, which had stowed away in British ships, killed off forty percent of the indigenous forest bird life in five years.[2]

Invasive species are considered a significant component of global environmental change.[3] In other words: this problem is not going anywhere. New Zealand is made up of two islands, each of which is vulnerable to invasion because of its unique ecosystem.[4] In response, the country has established a biosecurity strategy on the forefront of national invasive species policy. Part II of this Note will discuss the economic and environmental effects of invasive species in the United States and discuss the main pathways of introduction through which these invaders come into the country. Part III will address a few key U.S. regulations that attempt to solve this problem and analyze how successful they have been. Part IV of the Note will analyze trends in state specific laws and regulations attempting to address invasion. Part V will look to New Zealand law, long-touted as being a leader in invasive species regulation, to see what the United States can learn. Part VI will apply the lessons from New Zealand law and propose a more effective legislative direction for the United States

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[1] Todd E. McDowell, Comment, *"Slow-Motion Explosion": The Global Threat of Exotic Species and the International Response to the Problem in the South Pacific*, 9 COLO. J. INT'L ENVTL. L. & POL'Y 187, 190 (1998).

[2] *Id.* at 192.

[3] *Id.* at 187.

[4] See *infra* text accompanying notes 165–75 for a discussion of the ecosystem of New Zealand and its vulnerability to invasive species.

in its attempt to forestall new invasions and to mitigate those that are already underway.

II. EFFECT ON THE UNITED STATES ECONOMY

Invasive species pose a threat to native ecosystems and to the economy. It is estimated that the United States spends $138 billion annually in agricultural losses, infrastructure damage, and management costs stemming from invasive species.[5] Regions particularly susceptible to invasive species are left to bear the majority of these costs. Zebra mussels, major aquatic invaders in the United States which particularly affect the Great Lakes region, are estimated to cause about $270 million in economic damage per year.[6] Dave Strayer of the Cary Institute of Ecosystem Studies in Millbrook, New York, characterized this figure as an "underestimate" of the amount of economic damage actually done by the zebra mussel invasion.[7]

Current legislation addressing the problem of invasive species highlights the extent to which it affects the economies of areas susceptible to invasion and the extent to which the populace of these areas demands solutions. In November 2009, President Obama passed into law a $475 million restoration program "aimed at stopping the deterioration of the [Great] [L]akes because of pollution, mismanagement, invasive species and other issues."[8]

Lake Tahoe, known as the "jewel of the Sierras" is prized for the clarity of its water and the pristine nature of the surrounding area.[9] The clarity of Lake Tahoe has decreased from 100 feet to less than seventy feet[10] as a result of pollution and invasive species, such as the Asian clam.[11] These invaders increase the amount of organic material in the lakes, creating algal blooms that result in decreased lake clarity and may pave the way for more serious invaders, such as zebra mussels.[12]

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[5] Michael Risinit, *Invasives Threaten N.Y.'s Natural Order*, J. NEWS (Westchester Cnty., N.Y.), Sept. 28, 2009, at 1. This number is merely an estimate, although other estimates fall close to that number. Scientists at Cornell determined the expenditures in the United States to be about $137 billion in 2000, which indicates that the number today may be much higher than the *Journal News*'s estimate indicates. Mitsuhiko A. Takahashi, *Are the Kiwis Taking a Leap?—Learning from the Biosecurity Policy of New Zealand*, 24 TEMP. J. SCI. TECH. & ENVTL. L. 461, 462–63 (2005).

[6] Risinit, *supra* note 5.

[7] *Id.*

[8] Ernst-Ulrich Franzen, *Great Lakes: Preserving a Heritage*, MILWAUKEE J. SENTINEL, Nov. 11, 2009, at 12.

[9] *Sen. Feinstein Joins California, Nevada Delegations in Introducing Legislation To Preserve, Protect Lake Tahoe*, U.S. FED. NEWS, Nov. 4, 2009, *available at* 2009 WLNR 21991170 [hereinafter *Sen. Feinstein*] (internal quotation marks omitted).

[10] Op-Ed., *Restoring Lake Tahoe*, LAS VEGAS SUN, Nov. 8, 2009, *available at* http://www.lasvegassun.com/news/2009/nov/08/restoring-lake-tahoe/.

[11] Amy Littlefield, *Tiny Clams Plague Tahoe*, L.A. TIMES, Aug. 19, 2009, at 4.

[12] *Id.*; *Nev., Calif. Hatch Plan To Battle Invasives*, GREENWIRE, Aug. 21, 2009.

Legislation introduced before the 111th Congress proposes an eight-year, $415 million bill, which will cover a host of ecological problems plaguing Lake Tahoe, including $20.5 million for watercraft inspections and removal of existing invasive species.[13] This legislation has stalled in both houses of Congress, and the scope of this serious problem in Lake Tahoe remains unaddressed.[14]

A. *Pathways of Invasion*

Current regulatory and common-law systems in the United States are insufficient to deal with the problems of existing and potential invaders. There are three categories of invasion pathways that any regulation must address. First, there is the intentional introduction of invasive species,[15] such as carp introduced into United States rivers by the United States Fish Commission.[16] The second pathway is the intentional importation of captive invasive species that accidentally escape into the ecosystem,[17] such as reptiles, including boa constrictors and pythons in southern Florida.[18] Finally, the third pathway of invasion concerns species that are unintentionally introduced in connection with the operation and ownership of property, such as the brown tree snake invasion in Guam.[19]

All three of the species listed above are large targets of regional and national control. The national and state governments are willing to go to extreme measures to protect valuable assets from invasion. The common carp was introduced in the 1800s as a food fish, but is now considered a noxious invader that threatens the sport fishing industry.[20] On October 15, 2009, the Senate voted to provide $6 million for continuing efforts to stop the progressive invasion of the Asian carp into the Great Lakes.[21] Electric barriers were erected with state and federal money to electrify the invaders as they passed through possible entry points to new bodies of water.[22] In

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[13] *Sen. Feinstein*, *supra* note 9.

[14] *Lake Tahoe Restoration Act of 2009*, 2010 BILL TRACKING H.R. 4001, S. 2724, 111th Cong. (2009).

[15] Eric Biber, Note, *Exploring Regulatory Options for Controlling the Introduction of Non-Indigenous Species to the United States*, 18 VA. ENVTL. L.J. 375, 383–84 & n.34 (1999).

[16] Daniel P. Larsen, *Combatting the Exotic Species Invasion: The Role of Tort Liability*, 5 DUKE ENVTL. L. & POL'Y F. 21, 34 (1995).

[17] Biber, *supra* note 15, at 384.

[18] Burkhard Bilger, *Swamp Things; Florida's Uninvited Predators*, NEW YORKER, Apr. 20, 2009, at 80.

[19] Biber, *supra* note 15, at 385 & n.48; Larsen, *supra* note 16, at 34–35.

[20] John L. Dentler, Comment, *Noah's Farce: The Regulation and Control of Exotic Fish and Wildlife*, 17 U. PUGET SOUND L. REV. 191, 193 (1993); Michael Hawthorne, *State To Poison Canal To Halt Asian Carp*, CHI. TRIB., Nov. 14, 2009, at C4.

[21] Dennis Conrad, *Bill Marks $6 Million for Asian Carp Effort: Nuisance Fish Threatens Great Lakes*, ST. PAUL PIONEER PRESS (Minn.), Oct. 16, 2009, at B2.

[22] *Id.*; Hawthorne, *supra* note 20; *Asian Carp*, DAVE CAMP: U.S. CONGRESSMAN, http://camp.house.gov/Issues/Issue/?IssueID=9768 (last visited Apr. 13, 2011).

2009, Illinois had to close one of those barriers for repair and, as a back-up method, poisoned the water with the toxin Rotenone to prevent the Asian carp from moving to Lake Michigan.[23]

Reptiles, like boa constrictors, Burmese pythons, and Nile monitor lizards, are pervasive invaders in Florida.[24] Some of these invaders were released into the wild from pet owners who realized that a twenty-foot-long python may have been more than they reckoned for.[25] It is hypothesized that the current high level of invasion is due to the devastating effects of Hurricane Andrew in 1992, which may have dispersed reptiles awaiting sale and held in warehouses like "[f]risbees, flung by the storm."[26] The response to these "reptiles of concern" has been state-based. Florida requires owners of a "reptile of concern" to be licensed,[27] to buy a $100-per-year permit,[28] and to implant the animal with a microchip.[29] The state has also been willing to take more intrusive action. The National Park Service is training beagles to detect reptiles in the wild,[30] and the state is licensing hunters to kill reptiles in the wild.[31]

Brown tree snakes were introduced onto Guam in the 1940s and 1950s as stowaways on boats.[32] They have made many native Guam species locally extinct, such as fruit bats, lizards, and nine out of thirteen native forest bird species.[33] Representative Mazie Hirono (D-HI) passed through the House an earmark of $657,000 to fund the National Wildlife Service's effort to prevent brown tree snakes' movements from Guam to Hawaii and other Pacific Islands.[34]

The extreme measures used in the case of Asian carp in the Great Lakes, reptiles in Florida, and the brown tree snakes of Guam can hopefully be avoided for future invaders through better regulation at the

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[23] Hawthorne, *supra* note 20.

[24] Byron Stout, *Strategies Are Under Way To Control Invasive Reptiles*, NEWS-PRESS (Fort Myers, Fla.), Aug. 9, 2009, at 10A.

[25] Bilger, *supra* note 18.

[26] *Id.*

[27] FLA. STAT. ANN. § 379.372 (West 2011).

[28] *Id.* § 379.373.

[29] Stout, *supra* note 24.

[30] *Id.*

[31] Paul Flemming, Op-Ed., *The Battle Escalates as Pythons Flourish*, TALLAHASSEE DEMOCRAT, Oct. 9, 2009, *available at* 2009 WLNR 20016760.

[32] *Threats to Native Wildlife Species: Hearing Before the S. Env't and Pub. Works Subcomm. on Water and Wildlife and the Subcomm. on Oversight*, 111th Cong. (2009) (statement of Gary Frazer, Assistant Dir. for Fisheries and Habitat Conservation, U.S. Fish & Wildlife Serv.), *available at* http://epw.senate.gov/public/index.cfm?FuseAction=Hearings.Testimony&Hearing_ID=38009204-802a-23ad-4d13-f2bfbd089682&Witness_ID=153ee964-0d5e-4deb-9562-fa01035105eb.

[33] *Id.*

[34] Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Appropriations Act of 2010, Pub. L. No. 111-80, 2009 U.S.C.C.A.N. (123 Stat.) 2090, 2097–98 (2009) (to be codified at 7 U.S.C. § 2254); *Rep. Hirono Secures $16.2 Million in Hawaii Funding in Fiscal Year 2010 Agriculture Appropriations Bill*, U.S. FED. NEWS, July 10, 2009, *available at* 2009 WLNR 13142531.

pathways of introduction.

III. UNITED STATES REGULATIONS

A. *The Lacey Act*

The Lacey Act was passed in 1900 and was the "first far-reaching federal wildlife protection law."[35] The Act was the first federal effort to try to stem the tide of introduction and importation of exotic animals.[36]

1. *Dirty List Approach*

As currently amended, the Lacey Act prohibits "species of [animals] . . . or the offspring or eggs of any of [those animals] . . . which the Secretary of the Interior may prescribe by regulation to be injurious to human beings, to the interests of agriculture, horticulture, forestry, or to wildlife."[37] Under regulations written pursuant to the Act, the importation, transportation, and acquisition of all other wildlife with the filing of an import declaration with the District Director of the U.S. Customs Service.[38]

Congressman Lacey was concerned with the demise of native bird species and spoke to the effect this law could have had in combating invasive species:

> [I]f [the Lacey Act] had been in force at the time the mistake was made in the introduction of the English sparrow we should have been spared from the pestilential existence of that "rat of the air," that vermin of the atmosphere. But some gentlemen who thought they knew better than anybody else what the country needed saw fit to import these little pests, and they have done much toward driving the native wild bird life out of the States.[39]

Despite the good intentions Congressman Lacey undoubtedly brought to the Lacey Act, this legislation would not have stopped the English sparrow from invading the northeastern United States. This is because the Lacey Act notoriously uses a "dirty list" approach to managing what species are allowed to enter the country or be moved through interstate commerce.[40] Under the "dirty list" approach, the Secretary of the Interior lists species as injurious only when she discovers that a species is already

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[35] Laura T. Gorjanc, *Combating Harmful Invasive Species Under the Lacey Act: Removing the Dormant Commerce Clause Barrier to State and Federal Cooperation*, 16 FORDHAM ENVTL. L. REV. 111, 115 (2004) (internal quotation marks omitted).

[36] Dentler, *supra* note 20, at 210.

[37] 18 U.S.C. § 42(a)(1) (2006).

[38] 50 C.F.R. § 14.52 (West 2011).

[39] Gorjanc, *supra* note 35, at 115 (alterations in original).

[40] Larsen, *supra* note 16, at 28; Dentler, *supra* note 20, at 210–11.

causing harm to fish, wildlife, or other interests somewhere in the United States.[41] This means that although the English sparrow might have eventually gotten onto the "dirty list," it would have still wreaked its havoc before reaching the attention of the Department of the Interior. In addition, the Lacey Act is not a particularly flexible piece of legislation. In order for new species to be put on the "dirty list," the Department of the Interior must learn through experience that the species presents harm to fish and wildlife or other interests.[42] This can take valuable time in a situation where time is extremely critical to the successful removal of a harmful invasive species.

2. *Effective Only in Stopping Intentional Introductions*

The Lacey Act also makes it unlawful for anyone "to import, export, transport, sell, receive, acquire, or purchase any fish or wildlife or plant taken, possessed, transported, or sold in violation of any law . . . of the United States or in violation of any Indian tribal law."[43] This provision highlights another constraint of the Lacey Act. While the Act is very good at preventing intentional introductions, or introductions where the person did not exercise due care that she was carrying a prohibited species,[44] it cannot appropriately prevent unintentional introductions of species, such as the brown tree snake transported to Guam as a stowaway in ships. It also cannot act to prevent the introduction of captive invasive species that accidentally escape, like a pet boa constrictor in Florida whose cage was not securely closed.[45]

3. *The Dormant Commerce Clause*

The other half of the Lacey Act provisions make it unlawful to "import, export, transport, sell, receive, acquire, or purchase in interstate . . . commerce any fish or wildlife [or plant] taken, possessed, transported, or sold in violation of any law or regulation of any State."[46] This aspect of the Lacey Act creates a federal supplement to help states

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[41] John A. Ruiter, Note, *Combating the Non-Native Species Invasion of the United States*, 2 DRAKE J. AGRIC. L. 259, 265 (1997).

[42] Dentler, *supra* note 20, at 211. The experience required is limited to the experience on the ground in the area to be regulated. For example, "[t]he brown tree snake was added to the list of injurious wildlife after it was introduced to Guam where it became established, rapidly spread, devastated Guam's endemic bird populations, and threatened human health and safety." *Id.* at 211 n.110.

[43] 16 U.S.C. § 3372(a)(1) (2006).

[44] Larsen, *supra* note 16, at 29.

[45] *See* Ruiter, *supra* note 41, at 266 ("The Lacey Act should be more active to encourage importers to be pro-active in preventing 'non-negligent, unintentional introductions of exotic species.'"); *see also Exotic "Pet" Incidents in Florida*, ANIMAL RIGHTS FOUND. OF FLA., http://www.animalrightsflorida.org/incidentslist.html (last visited Apr. 13, 2011) (listing instances of non-native boa constrictor sightings in Florida).

[46] 16 U.S.C. § 3372(a)(2)(A)–(B).

enforce their own laws about wildlife by elevating state law to a federal offense. This has some advantages. As discussed above, some states are much more susceptible to introductions and therefore may be in a unique position to understand vectors of introduction and particularities of the threat those invaders pose.[47]

However, because the Act permits state laws to regulate goods transported in interstate commerce, these laws may potentially overburden interstate commerce and are therefore susceptible to attack under the Dormant Commerce Clause.[48] The Constitution grants Congress the power to "regulate Commerce . . . among the several States."[49] The Constitution does not, however, grant exclusive legislation of commerce issues to Congress.[50] Still, courts will closely scrutinize state law if it directly or indirectly affects interstate commerce. Current Dormant Commerce Clause doctrine states that a state law is invalid if (1) it is facially discriminatory against out-of-state commerce;[51] (2) it is facially neutral, but has an impermissibly protectionist purpose or effect;[52] or (3) it is facially neutral, but has a disproportionately adverse effect on interstate commerce.[53]

The Supreme Court directly addressed a state law concerning invasive species under the Lacey Act in *Maine v. Taylor*.[54] The law in question banned importation of live baitfish into Maine.[55] The Court held that this legislation was facially discriminatory and was therefore subject to strict

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[47] Gorjanc, *supra* note 35, at 122. *But see* Viki Nadol, *Aquatic Invasive Species in the Coastal West: An Analysis of State Regulation Within a Federal Framework*, 29 ENVTL. L. 339, 372 (1999) ("By their very nature, [invasive species] are interjurisdictional and, therefore, pose threats that are national in scope. In addition, state-by-state regulation can produce inconsistent results and conflicts . . . ." (footnote omitted)).

[48] Gorjanc, *supra* note 35, at 124.

[49] U.S. CONST. art. I, § 8, cl. 3.

[50] *See* Cooley v. Bd. of Wardens, 53 U.S. (12 How.) 299, 319 (1851) ("[U]ntil Congress should find it necessary to exert its power, it should be left to the legislation of the States . . . [so long as] it is local and not national . . . .").

[51] *See* Philadelphia v. New Jersey, 437 U.S. 617, 628–29 (1978) (holding that a New Jersey law prohibiting the importation of most solid or liquid waste which originated or was collected outside the territorial limits of the state was facially discriminatory and therefore invalid).

[52] *See* Hunt v. Wash. State Apple Adver. Comm'n, 432 U.S. 333, 350–51 (1977) (holding that North Carolina law unduly burdened Washington State by forcing it to adopt a second system of apple grading that added costs, thus giving North Carolina growers an unfair advantage within the state), *superseded by statute, as stated in* United Food & Commercial Workers Union Local 751 v. Brown Group, Inc., 517 U.S. 544 (1996).

[53] *See* Pike v. Bruce Church, Inc., 397 U.S. 137, 142 (1970) (setting forth a balancing test to determine if there is a disproportionate effect, and stipulating that "[w]here the statute regulates even-handedly to effectuate a legitimate local public interest, and its effects on interstate commerce are only incidental, it will be upheld unless the burden imposed on such commerce is clearly excessive in relation to the putative local benefits").

[54] 477 U.S. 131, 132 (1986).

[55] *Id.*

scrutiny,[56] despite potential enforcement applicability under the Lacey Act.[57] This means that every state law under the Lacey Act must meet the strict scrutiny test. Additionally, once a law is considered facially discriminatory, the burden is on the state to prove that the law does not unduly burden interstate commerce.[58]

Nevertheless, the Court found that, in this case, there was a legitimate state interest in prohibiting importation of the live baitfish.[59] Out-of-state fish may transport parasites that local populations do not carry, and the water used to transport the baitfish may also contain other non-native species that could invade state waters.[60] Furthermore, the Court held that, while there was an "abstract possibility" of developing testing procedures to determine what the threat was of non-native species being transported in the baitfish water, without the assurance as to their effectiveness, those procedures did not constitute a "nondiscriminatory alternativ[e]."[61] Therefore, although state laws under the Lacey Act will be reviewed under strict scrutiny, the Court does consider protection from invasive species to be a legitimate state purpose.[62] Despite this, by putting the burden on the state to show that the law is valid and by applying strict scrutiny, it is unclear whether another court might find prevention of invasive species as robust a purpose as the *Maine* Court and might find another nondiscriminatory alternative that is less effective.

The Lacey Act is an important piece of legislation in the prevention of invasive species. Its shortcomings, however, leave large gaps in the effort to prevent invasion.

B. *Executive Order No. 13,112*

President Carter issued an executive order in 1977 that directly addressed the need to stop the introduction of non-native species.[63] This order was generally considered to be a failure and remained largely unimplemented.[64] The order defined "exotic species" to mean plants and

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[56] *See id.* at 140 ("[T]he statute must serve a legitimate local purpose, and the purpose must be one that cannot be served as well by available nondiscriminatory means.").

[57] *See id.* at 139 (refusing to lessen the intensity of the scrutiny under the Lacey Act when there was no clear congressional intent under the Act to do so).

[58] *Id.* at 138.

[59] *Id.* at 151.

[60] *Id.* at 141.

[61] *Id.* at 147 (alteration in original) (internal quotation marks omitted).

[62] *See id.* at 148 ("[T]he constitutional principles underlying the commerce clause cannot be read as requiring the State of Maine to sit idly by and wait until potentially irreversible environmental damage has occurred . . . ." (alteration in original) (internal quotation marks omitted)).

[63] Exec. Order No. 11,987, 3 C.F.R. 116–17 (1977) (superceded by Exec. Order No. 13,112, 3 C.F.R. 159 (1999)).

[64] *E.g.*, Robert B. McKinstry, Jr. et al., *Legal Tools that Provide Direct Protection for Elements of Biodiversity*, 16 WIDENER L. REV. 909, 928–29 (2007); Marc. L. Miller, *The Paradox of U.S. Alien Species Law*, *in* HARMFUL INVASIVE SPECIES: LEGAL RESPONSES 125, 146 (Marc L. Miller & Robert

animals "not naturally occurring, either presently or historically, in any ecosystem of the United States."[65] This definition was too broad. It characterized exotic species as only those that were outside of the United States, rather than acknowledging that invasion could occur between ecoregions within the United States. Additionally, the order, which was only a page long, did not include an implementation scheme. This left agencies rudderless as to how to proceed.[66]

President Clinton issued Executive Order 13,112 in 1999, partially in response to the ineffectiveness of Carter's executive order.[67] Clinton's order replaced Carter's and did much to create a more effective policy. The stated purpose of the order was to prevent "the introduction of invasive species and provide for their control and to minimize the economic, ecological, and human health impacts that invasive species cause."[68] The order defined invasive species scientifically, as "with respect to a particular ecosystem, any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem."[69]

Most important, Clinton's executive order established the National Invasive Species Council, comprised of cabinet officers with significant responsibilities related to invasive species.[70] The council was required to issue a National Invasive Species Management Plan within eighteen months of the formation of the council.[71] The final draft of the plan was issued behind schedule on January 18, 2001[72] and was "replete with specific goals for the council and for specific federal agencies, often with target dates attached."[73]

Despite the fact that these goals are highly laudable, most of them have yet to be accomplished.[74] A report issued by the U.S. General Accounting Office in 2002 stated that while the management plan

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N. Fabian eds., 2004); Matthew Shannon, *From Zebra Mussels to Coqui Frogs: Public Nuisance Liability as a Method To Combat the Introduction of Invasive Species*, 32 ENVIRONS: ENVTL. L. & POL'Y J. 37, 48 (2008).

[65] Exec. Order No. 11,987, 3 C.F.R. 116 (1977) (internal quotation marks omitted).

[66] *See* Miller, *supra* note 64, at 147 (describing the shortcomings of Executive Order No. 11,987).

[67] Exec. Order No. 13,112, 3 C.F.R. 159 (1999).

[68] *Id.*

[69] *Id.*

[70] *Id.* at 161.

[71] *Id.* at 162.

[72] *See* NAT'L INVASIVE SPECIES COUNCIL, MEETING THE INVASIVE SPECIES CHALLENGE 44 (2001), *available at* http://www.invasivespeciesinfo.gov/docs/council/mpfinal.pdf (listing targets for the cataloguing of control techniques for aquatic and terrestrial invasive species as well as targets for creating a plan to strengthen research on these issues).

[73] Miller, *supra* note 64, at 150.

[74] *Id.* at 151. Miller also points out that the Management Plan was published two days before President Bush took office and that a "shift to an administration where the council included Secretary of the Interior Gail Norton as a co-chair and Secretary of Defense Donald Rumsfeld and Secretary of State Colin Powell . . . made any progress on this plan unlikely." *Id.* at 150–51.

> calls for actions that are likely to help control invasive species, it lacks a clear long-term outcome and quantifiable performance criteria against which to evaluate the overall success of the plan. . . . Specifically, the council departments have completed less than [twenty] percent of the planned actions that were called for by September 2002, although they have begun work on others.[75]

The report cited several reasons for the program's lack of success, including "delays in establishing implementation teams that will be responsible for carrying out the planned actions, the low priority given to implementation by the council, and the lack of funding and shortage of staff responsible for doing the work."[76]

Despite the small amount of progress made to date through Executive Order 13,112, it was a step in the direction of a more comprehensive environmental policy. Creating an agency that is comprised of high-ranking cabinet officials at least theoretically creates interactions between disparate departments that are all dealing with the invasive species problem and that may come up with integrated solutions. Additionally, the Management Plan does a good job of setting deadlines and responsibilities.

The lack of success of the order may simply be its "hyperactive, overstructured, action-item nature."[77] But, essentially, the order suffers from being a "low priority" for federal agencies.[78] Increased accountability to specific individuals (instead of to a committee of people), increased funding, and increased public awareness would likely make the order more successful.[79]

C. *Nonindigenous Aquatic Nuisance Prevention and Control Act and the National Invasive Species Act*

The Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 (NANPCA)[80] was created to control unintentional introductions of invasive species, primarily through ballast water.[81] In its original

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[75] U.S. GEN. ACCOUNTING OFFICE, GAO-03-1, INVASIVE SPECIES: CLEARER FOCUS AND GREATER COMMITMENT NEEDED TO EFFECTIVELY MANAGE THE PROBLEM 27 (2002), *available at* http://www.gao.gov/new.items/d031.pdf.

[76] *Id.*

[77] Miller, *supra* note 64, at 151.

[78] Shannon, *supra* note 64, at 48.

[79] *See* Miller, *supra* note 64, at 152 (asserting that "[i]f Congress is serious about invasive species . . . it will . . . place clearer responsibility on the president and specific cabinet agencies, require far more specific reports, and commit more substantial funds to the area").

[80] 16 U.S.C. §§ 4701–51 (2006).

[81] Ships take on and discharge ballast water to compensate for a ship's weight change with the loading and unloading of cargo. Amy Taylor Sevigny, Recent Development, Nw. Envtl. Advocates v. U.S. Envtl. Prot. Agency, 14 U. BALT. J. ENVTL. L. 213, 213 (2007). "More than 21 billion gallons of ballast water are discharged into the United State's [sic] waterways each year. As a result of dumping

incarnation, NANPCA focused on preventing further spread of invasive species in the Great Lakes region and the Hudson Valley watershed through ballast water.[82] Ships are required to minimize aquatic invasive species introduction by exchanging their ballast water away from ports.[83] Violations of these regulations can result in a civil penalty of up to $25,000 per day or criminal prosecution.[84]

Additionally, the statute creates an Aquatic Nuisance Species Task Force which must "develop and implement a program for waters of the United States to prevent introduction and dispersal of aquatic nuisance species; to monitor, control and study such species; and to disseminate related information."[85] The statute directs the Task Force to constantly monitor for new invasive species and new pathways of unintentional introduction.[86] Furthermore, "the Task Force or any other affected agency or entity may recommend that the Task Force initiate a control effort."[87] If the Task Force determines that control of an aquatic invasive is warranted,[88] then the Task Force will promulgate a new control regulation for that vector of invasive species.[89] Because this statute is so complicated, it is vital that continued research be done on the success of its implementation, including such factors as what kind of resources it uses and how often the high statutory burdens are in fact met.

NANPCA was reauthorized and amended by the National Invasive Species Act of 1996 (NISA).[90] The jurisdiction of the Act was increased by the implementation of a national program which ships may elect to

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this ballast water . . . 'more than 10,000 marine species each day hitch rides around the globe in the ballast water of cargo ships.'" *Id.* (footnote omitted). Ballast water is thought to be responsible for the spread of many noxious invasive species, including the zebra mussel, which is a thumbnail sized organism from the Ukraine that spreads rapidly and causes millions of dollars worth of damage to infrastructure by clogging pipes and attaching to boats. Daniel A. Applegate, Note, *The New Cold War: The Battle To Prevent Eurasian Invaders from Destroying the Great Lakes*, 57 CASE W. RES. L. REV. 391, 392–93 (2007).

[82] Shannon, *supra* note 64, at 44.

[83] 16 U.S.C. § 4711(b)(2)(B).

[84] *Id.* § 4711(g)(1)–(2).

[85] *Id.* § 4722(a).

[86] *Id.* § 4722(d).

[87] *Id.* § 4722(e)(2).

[88] In order to determine if control is warranted, the Task Force must analyze the following five factors: (1) the need for control (including the projected consequences of no control and less than full control); (2) the technical and biological feasibility and cost-effectiveness of alternative control strategies; (3) whether the benefits of control, including costs avoided, exceed the costs of the program; (4) the risk of harm to non-target organisms and ecosystems, public health, and welfare; and (5) other considerations the Task Force determines appropriate. *Id.*

[89] To promulgate the regulation, the Task Force must publish notice of its proposed program and solicit comments in the Federal Register, in major newspapers in the region affected, and in principal trade publications of the industries affected. It can promulgate the rule within 180 days of notice, after consultation with affected governmental and other appropriate entities, and after taking into consideration other comments received. *Id.* § 4722(e)(3).

[90] Pub. L. No. 104-332, 110 Stat. 4073 (1996) (codified as amended in scattered sections of 16 U.S.C.).

participate in and which restricts the release of ballast water within any port of the United States.[91] Furthermore, the scope of the Act was increased to include funding for research of aquatic invasive species in and near the Chesapeake Bay, Gulf of Mexico, Pacific Coast, Atlantic Coast, and San Francisco Bay.[92] The Act further called for a one-time demonstration of current ballast-water technologies[93] "identified as promising" by the National Research Council Marine Board of the National Academy of Sciences,[94] which was intended to highlight innovations in ballast-water management technologies.[95]

Both NANPCA and its amending legislation, NISA, reflect an important shift to regulation of unintentional introductions. This legislation focuses very narrowly on the unintentional introduction of aquatic invaders by ballast water release, a critical vector through which many non-native aquatic species infiltrate new waterways.[96] Additionally, the creation of a Task Force responsible for reviewing and monitoring the success of the program is a necessary component of a successful invasive species strategy.[97]

The Act, however, is still weak in its present form. First and foremost, this program is focused on one pathway of introduction and one geographic region, despite the NISA amendments. The voluntary nature of the ballast water restrictions outside of the Great Lakes region greatly reduces the efficacy of the regulation.[98] In his comments to the President about the bill that was to become NISA, Senator John Glenn expressed his desire for this voluntary program to transition into mandatory regulation for ports outside of the Great Lakes region.[99] Despite this intention, to date, no such mandatory regulation exists. There are other vectors for transfer of aquatic invasive species within the United States and across international borders which this legislation does not attempt to address.

Additionally, a safety exemption in the statute gives the master of a vessel discretion to forego ballast water exchange "if the master decides that the exchange would threaten the safety or stability of the vessel, its crew, or its passengers because of adverse weather, vessel architectural

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[91] 16 U.S.C. § 4711(c).

[92] *Id.* § 4712(e).

[93] *Id.* § 4714(b)(1).

[94] *Id.* § 4714(b)(4).

[95] *See* 142 CONG REC. 27,324 (1996) (statement of Sen. Glenn) (acknowledging that "[o]ver time new technologies and practices may replace ballast exchange as safer and more effective means of prevention").

[96] *E.g.*, Applegate, *supra* note 81, at 392–93.

[97] *See* Miller, *supra* note 64, at 149 (discussing how the creation of the Invasive Species Management Council was a necessary component to the potential success of Executive Order 13,112).

[98] Nadol, *supra* note 47, at 358–59.

[99] 142 CONG REC. 27,324 (1996) (statement of Sen. Glenn). At present, the literature is unclear as to how often ships use this program.

design, equipment failure, or any other extraordinary conditions."[100] Particularly surprising here is equating "vessel architectural design" with an "extraordinary circumstance[]."[101] Equipment failure or adverse weather conditions are unexpected occurrences—vessel architectural design is a known quantity. Perhaps if the United States mandated that all vessels entering the Great Lakes must be able to perform a ballast water exchange, then more vessels in use today would have that capability. This would increase the ability of countries with less political and economic power to make similar regulations.

Recognizing this flaw, Senator Glenn noted that, "[w]hile the safety exemption clearly could still be exploited by those who simply do not want to undertake an exchange, ship masters have highly responsible positions and we would expect them to act responsibly with respect to these guidelines."[102] This level of trust may be misplaced in light of the large amount of intra and international traffic which moves through U.S. ports on a daily basis. Ship masters trying to save a little time on busy routes may have no idea of the amount of devastation that can be wreaked by not complying with ballast water exchange regulations. Reliance on their responsibility will mean nothing if they are unaware of the importance of these regulations.

The Great Lakes Collaboration Implementation Act was a bill proposed by the House of Representatives in the 111th Congress and could have solved many of the deficiencies of NANPCA as amended by NISA.[103] It would have required certain vessels operating on the waters of the United States to have an aquatic invasive species management plan[104] and, with a few exceptions, required all ships to comply with ballast water management regulations if they are on the waters of the United States.[105]

Additionally, the proposed legislation would have expanded NANPCA's regulatory ambit beyond ballast water. By two years after passage of the Act, and every three years thereafter, the Task Force would have to identify pathways that pose the highest risk for introduction of invasive species nationally and regionally.[106] The bill also sets out a screening process for planned importation of aquatic organisms to "prevent

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[100] Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 § 1101(k)(1), 16 U.S.C. § 4711(k)(1) (2006).

[101] *See* David P. Eldridge, Comment, *Leviathan Lurks: Might the National Invasive Species Act of 1996 Actually Authorize Invasion by Proscribed Species?*, 6 S.C. ENVTL. L.J. 47, 57 (1997) (internal quotation marks omitted) (noting that the architectural design of a vessel is not extraordinary if ballast exchange is not beneficial to the vessel).

[102] 142 CONG. REC. 27,325 (1996) (statement of Sen. Glenn).

[103] Great Lakes Collaboration Implementation Act, H.R. 500, 111th Cong. (2009).

[104] *Id.* § 101(a). The Secretary would need to determine to which vessels this regulation would apply. *Id.*

[105] *Id.* Exempted from this regulation would be vessels operating in the "exclusive economic zone" or vessels within enclosed aquatic ecosystems. *Id.*

[106] *Id.* § 106.

the introduction or establishment of aquatic invasive species in waters of the United States and contiguous waters of Canada and Mexico."[107] Unfortunately, this bill did not pass,[108] and to date no other legislation has been proposed to fill the void left by NANPCA and its amending legislation NISA.

IV. STATE PROGRAMS

The United States is a large landmass comprised of a variety of ecosystems with a variety of pathways vulnerable to invasive species. State regulation is therefore a vital part of any invasive species management in the United States. This is particularly true in light of the gaps in federal laws and policies dealing with the problem. However, because states are left to control invasive species without guidance from the federal government, there is a wide disparity in the degree and effectiveness of state regulation.

The Environmental Law Institute ("ELI") performed a fifty-state analysis of invasive species laws and regulations in 2002.[109] The ELI looked at several areas of states' invasive species laws and regulations to determine their effectiveness. These areas included: (1) the statutory definition of "invasive species"; (2) prevention mechanisms, such as identifying future threats, detection mechanisms to identify new invaders, import, introduction, and release requirements, and quarantine powers; (3) control and management authority, emergency powers, and restoration of areas following invasion; and (4) coordination of disparate programs through a centralized invasive species council and the implementation of a management plan.[110] The following analysis will discuss state regulations and laws according to that rubric to assess the general strengths and weaknesses of state invasive species programs. This analysis will also highlight current trends in state invasive species regulation since the 2002 study.

A. *Definition*

Most states' definitions of invasive species did not include a wide variety of species and focused on the impact of the species on agriculture, rather than its impact on natural areas and public health.[111] The definition

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[107] *Id.* § 107.

[108] *Great Lakes Collaboration Implementation Act*, 2009 BILL TRACKING H.R. 500, 111th Cong. (2009).

[109] ENVTL. LAW INST., HALTING THE INVASION: STATE TOOLS FOR INVASIVE SPECIES MANAGEMENT 7–8 (2002) [hereinafter ENVTL. LAW INST., HALTING THE INVASION], *available at* http://www.elistore.org/reports_view.asp?file=/Data/products/d12-06.pdf.

[110] *Id.* at 8–12.

[111] *Id.* at 27–28.

is of vital importance, because only species that can be classified as "invasive" will be regulated. New Hampshire is one state that has adopted a comprehensive definition of invasive species, defining it as "an alien species whose introduction causes or is likely to cause economic or environmental harm or harm to human health."[112]

Once a definition of "invasive species" is in place, a state can create a list that designates certain species that fall under that definition. Most states rely on the dirty list approach when creating their lists, where all species are permitted entry unless they are formally listed.[113] This places the burden of determining whether a species will be harmful on the regulator. In contrast, a "clean list" approach only allows introduction of species that are listed, which puts the burden on the party wishing to bring in the nonnative organism to show that it will not pose an economic or environmental threat.[114] The highest use of the clean list approach in state regulation is for aquatic life, with twenty-one states using a clean list for imports[115] and seven using a clean list for releases.[116]

In a review of eleven states' invasive species laws since 2002,[117] California[118] and Oregon[119] have added comprehensive definitions of invasive species. California's definitions only apply to a prospective planning program based exclusively on federal funding and ballast water treatment, respectively.[120] Additionally, eight of the eleven states remained reliant on the dirty list approach, with two exceptions.[121] Oregon moved to a clean list approach for aquatics and wildlife,[122] and Florida moved to a tiered approach that has a default rule against possession except for "safe" listed species, but with enhanced penalties for certain high-risk species.[123]

In general, there has not been much progress towards creating a better,

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[112] N.H. REV. STAT. ANN. § 430:52 (LexisNexis 2002).

[113] ENVTL. LAW INST., HALTING THE INVASION, *supra* note 109, at 30.

[114] *Id.* at 29.

[115] Those states are: California, Hawaii, Illinois, Maryland, Massachusetts, Michigan, Minnesota, Montana, Nebraska, Nevada, New Hampshire, New Mexico, North Carolina, North Dakota, Ohio, Oklahoma, Pennsylvania, South Carolina, Tennessee, Utah, and Virginia. *Id.* at 30–31 n.124.

[116] Those states are: Hawaii, Illinois, Minnesota, Montana, New Hampshire, North Carolina, and Tennessee. *Id.* at 31 n.126.

[117] The ELI updated its fifty-state survey in 2002 with an eleven-state update in 2010. The eleven states are: California, Colorado, Florida, Louisiana, Maine, Maryland, New Jersey, New Mexico, Oregon, Rhode Island, and Tennessee. ENVTL. LAW INST., STATUS AND TRENDS IN STATE INVASIVE SPECIES POLICY: 2002–2009, at 6, 9 (2010) [hereinafter ENVTL. LAW INST., STATUS AND TRENDS], *available at* http://elistore.org/reports_popup.asp?did=11399&file=/Data/products/d20_02.pdf. The study does not explain or clarify why these eleven states were chosen for the update, other than stating that their programs were "representative." *Id.* at 9.

[118] *See* CAL. PUB. RES. CODE § 71200(j) (Deering 2010) (defining the term "[n]onindigenous species" (internal quotation marks omitted)).

[119] OR. REV. STAT. § 570.755(1) (2009).

[120] ENVTL. LAW INST., STATUS AND TRENDS, *supra* note 117, at 27.

[121] Maryland already had a white list approach for aquatic invasive species in place. *Id.* at 36–37.

[122] OR. ADMIN. R. 635-056-0140(1) (2011).

[123] ENVTL. LAW INST., STATUS AND TRENDS, *supra* note 117, at 14.

more comprehensive definition of invasive species since 2002 in the re-surveyed states. Additionally, most states—like the federal government—remain reliant on the dirty list approach. Both of these shortcomings leave those states more vulnerable to invasion.

B. *Prevention*

Preventing the introduction and establishment of invasive species within their borders is the most practical and cost-effective strategy that states can adopt.[124] These tools work to prevent the introduction, transportation, and spread of invasive species into and within the state. There are three main tools necessary to a successful prevention program. First, the regulatory agency must have the ability to identify and mitigate future threats. Second, it must have the ability to detect invasive species as they begin to infiltrate the state. Third, it must have requirements for importing, introducing, and releasing nonnative species into the state. Each of these techniques will be discussed in detail below.

1. *Identifying and Mitigating Future Threats*

The first tool in prevention is identifying and mitigating future threats. By becoming aware of which species are likely to become invasive, states can develop strategies to counteract the specific threat and to mitigate known invasive pathways. Despite the power of this tool, very few states authorize the use of it.[125] In 2002, no state authorized identification of future threats for wildlife or insects.[126] Only three states authorized identification of future threats for aquatic life,[127] and only eight did so for plant species.[128] Since 2002, there has been no change in this pattern.[129]

Florida had a model example of a program to identify and mitigate future threats. It authorized a Pest Exclusion Advisory Committee to identify high-risk areas for pest introduction as well as non-native plants and pests in foreign countries that might pose a future risk to the state.[130] This program was repealed in 2005, thereby cutting off Florida's ability to identify threats before they entered the state.[131]

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[124] ENVTL. LAW INST., HALTING THE INVASION, *supra* note 109, at 33; NAT'L INVASIVE SPECIES COUNCIL, *supra* note 72, at 29.

[125] ENVTL. LAW INST., HALTING THE INVASION, *supra* note 109, at 33.

[126] *Id.*

[127] Florida, Washington, and Wisconsin. *Id.*

[128] Colorado, Florida, Hawaii, Illinois, Montana, Oregon, Virginia, and Washington. *Id.* at 33 & n.141.

[129] ENVTL. LAW INST., STATUS AND TRENDS, *supra* note 117, at 17.

[130] FLA. STAT. ANN. § 570.35 (West 2003).

[131] *Id.* Although this provision was repealed, Florida does proactively use scientific experts at the Institute of Food and Agricultural Sciences at the University of Florida to determine whether an introduced plant will negatively impact native communities. FLA. ADMIN. CODE ANN. r. 5B-57.010(1) (2011).

The failure of most states to implement a tool like the one Florida at one time employed means that states will largely be acting in a reactionary manner to established invasive species within the state, rather than identifying potential future threats and ways to proactively deal with them.

2. *Detection*

The second critical tool for states in the prevention of invasion is the ability to detect invasive species as they begin to invade the state. To be effective, the regulating agency must have the authority to (1) conduct surveys of private and public land to determine if a species is present in the state; (2) map locations of invasive species within the state to determine if they are spreading; and (3) investigate and inspect reported instances of invasive species.[132]

This tool is most commonly employed for detection of invasive plant species[133] and invasive plant pests and diseases.[134] California has a model detection regulation. The commissioner of agriculture is authorized to conduct surveys and investigations on any premises (public or private) to prevent the introduction of harmful insects, animal pests, plant diseases, and noxious weeds.[135] The commissioner must map the extent and location of any infestations,[136] and if she receives information of a pest not generally found in California, she must investigate its existence and any premises liable to become infested.[137]

3. *Import/Introduction/Release Requirements*

States need to have requirements controlling the importation, introduction, and release of non-native species within their borders because this is a basic control mechanism which allows states to regulate what is permitted within their borders and into the environment. Many states

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[132] ENVTL. LAW INST., HALTING THE INVASION, *supra* note 109, at 36.

[133] Nine states (Arkansas, California, Delaware, Iowa, Kansas, Maryland, Montana, Nevada, and West Virginia) authorize surveying for invasive plants. *Id.* at 37 & n.148. Three states (California, Montana, and Utah) authorize mapping of invasive species locations. *Id.* at 37. Finally, thirty-eight states (Alabama, Alaska, Arizona, California, Colorado, Connecticut, Delaware, Florida, Georgia, Hawaii, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Maryland, Massachusetts, Minnesota, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Mexico, North Carolina, North Dakota, Oregon, South Carolina, South Dakota, Tennessee, Texas, Utah, Virginia, Washington, West Virginia, Wisconsin, and Wyoming) authorize the investigation and inspection component of the detection tool. *Id.* at 37 & n.149.

[134] The only three states that do not authorize the inspection and investigation component of the detection tool are Connecticut, Idaho, and Utah. *Id.* at 37 & n.152.

[135] *Id.* at 39; *see also* CAL. FOOD & AGRIC. CODE § 7272(e) (West 2001) ("The secretary and weed management areas shall consider the use of the California Conservation Corp and local conservation corps to assist in implementing weed management plans pursuant to this article.").

[136] *See* ENVTL. LAW INST., STATUS AND TRENDS, *supra* note 117, at 27 (discussing the prevention and control and management aspects of California's regulatory guidelines).

[137] ENVTL. LAW INST., HALTING THE INVASION, *supra* note 109, at 39; *see also* CAL. FOOD & AGRIC. CODE §§ 5252–53 (explaining the commissioner's responsibilities for the eradication and control of a discovered pest).

require transporters to obtain permits, but the process of obtaining a permit varies widely across states. Some states require a science-based process to evaluate all introductions and releases of invasive species for potential risks. On the less restrictive end of the spectrum, some states simply consider the possible effect of the release on the public health.[138]

Across taxa, states tend to rely upon their dirty or clean list approach to determine what species can be imported, introduced, or released, rather than relying upon permitting.[139] For example, in the regulation of wildlife, thirty-four states use their dirty or clean list to determine what species are invasive.[140] Of those, only ten states also have a permit requirement to introduce wildlife,[141] twenty-three have a permit requirement to release wildlife,[142] and twelve have a permit requirement to import wildlife.[143] States that do not have a permitting requirement have no authority to regulate nonnative unlisted species brought into the state. This severely limits knowledge of what nonnative unlisted species are within their borders.

Ideally, a state would (1) have permitting requirements in addition to restricting entry for all black list species; (2) employ current scientific information about a given species to guide its listing requirements and its permitting decisions; and (3) only issue permits if the species is not a threat to the environment or humans or would not adversely impact state industry.[144] This would ensure that permitting is considered separately from the creation of the list, which is often not updated regularly and is therefore not always the most reliable document on current invasive threats.[145]

In general, since the 2002 study, states have not made many changes to strengthen their prevention mechanisms.[146] States remain mostly

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[138] ENVTL. LAW INST., HALTING THE INVASION, *supra* note 109, at 39.

[139] *Id.*

[140] Alabama, Arizona, California, Colorado, Connecticut, Georgia, Hawaii, Idaho, Illinois, Kansas, Kentucky, Louisiana, Maryland, Massachusetts, Minnesota, Mississippi, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Dakota, Oregon, Pennsylvania, Rhode Island, South Carolina, Tennessee, Utah, Virginia, Washington, and Wyoming. *Id.* at 39 & n.158.

[141] Alaska, Connecticut, Florida, Hawaii, Idaho, Iowa, Minnesota, North Dakota, South Carolina, and Wisconsin. *Id.* at 39 & n.159.

[142] Arizona, Illinois, Iowa, Kansas, Louisiana, Maryland, Michigan, Minnesota, Mississippi, Montana, Nebraska, New Jersey, New Mexico, New York, North Carolina, North Dakota, Oklahoma, Oregon, South Carolina, Tennessee, Utah, Virginia, and Wyoming. *Id.* at 39 & n.160.

[143] California, Delaware, Georgia, Indiana, Kansas, Maine, Massachusetts, Rhode Island, South Dakota, Tennessee, West Virginia, and Wyoming. *Id.* at 39 & n.161.

[144] *Id.* at 42.

[145] *See id.* (citing Minnesota's import, introduction, and release requirements in discussing what a comprehensive policy should contain).

[146] *See* ENVTL. LAW INST., STATUS AND TRENDS, *supra* note 117, at 9 (noting that most new invasive species laws and regulations since 2002 were reactions to the discovery of invasive species that received significant attention, and that such changes generally arrived too late to prevent the foreseeable harm that those species caused).

reactionary to threats, only devoting resources to invasive species that have entered the state and caused problems.[147] States have limited resources and obviously need to react quickly when an invader starts wreaking havoc. In the long run, however, it is much more cost-effective to install more restrictive prevention mechanisms than to be forced into a large-scale control and management effort once the problems have begun.[148]

C. *Control and Management*

If the prevention tool has not been successful and an invasive species is introduced into a state, the control and management of that species becomes a crucial component to regulating invasive species. Ideally, a state would (1) give authority to its regulatory agency to control and manage invasive species on public and private lands; (2) require that landowners notify the appropriate authority if an invasive species is on their property or if an invasive species has escaped; and (3) establish a statewide program to control and manage any such species.[149]

Minnesota comes close to this ideal model.[150] It authorizes the state agency to seize any wildlife that lacks a permit or license.[151] It requires a landowner to control and eradicate invasive plants, plant pests and diseases, and insects, while allowing the state to do the same, should the landowner not comply.[152] Additionally, anyone responsible for the introduction of an invasive species is required to notify the state authority and to attempt recapture of any such escaped organisms.[153]

In general, states do a good job of creating this general control and management authority. As of 2002, in the statutes and regulations that address wildlife, only eleven states lacked some type of general control and management authority,[154] and only nine states did not have some form of

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[147] *See id.* at 11 ("[T]he vast majority of the significant amendments—particularly at the legislative level—were created in response to the discovery of a well-publicized, "charismatic" invader. . . . While species-specific legal authorities are important, they can be characterized as a missed opportunity unless they are developed in tandem with legal authorities that offer more general, prospective regulatory tools to prevent future introductions.").

[148] *See* ENVTL. LAW INST., HALTING THE INVASION, *supra* note 109, at 33 ("Preventing the introduction and establishment of invasives is the most proactive and cost-effective strategy that states can adopt in the long run.").

[149] *Id.* at 66.

[150] *Id.*

[151] MINN. STAT. ANN. § 84D.08(a) (West 2011); ENVTL. LAW INST., HALTING THE INVASION, *supra* note 109, at 66.

[152] MINN. STAT. ANN. § 18G.03(1)(a)–(b) (West 2011); ENVTL. LAW INST., HALTING THE INVASION, *supra* note 109, at 66.

[153] MINN. STAT. § 84D.08(a); ENVTL. LAW INST., HALTING THE INVASION, *supra* note 109, at 66.

[154] Alaska, Arkansas, Florida, Illinois, Indiana, Missouri, Nebraska, New Mexico, North Carolina, Oklahoma, and West Virginia. ENVTL. LAW INST., HALTING THE INVASION, *supra* note 109, at 63 & n.275.

general control and management authority over invasive plant life.[155] This general provision, however, does not necessarily mean that state authorities are provided with the power to enter private lands or that landowners are required to report to those authorities.[156]

Another tool that is necessary for the effective control and management of invasive species is the ability to use emergency powers to address sudden outbreaks of an invasive species that can quickly lead to widespread damage. "Components of emergency powers may include the ability to dispose of species, bypass notice periods for entering private land, and dispense special funds to deal with emergency situations."[157] Despite the importance of this power, few states utilize it for wildlife,[158] aquatic life,[159] or plant life.[160] Although states' approaches to invasive species is mainly reactionary, the regulatory agencies are not given the power to respond swiftly and with force to an emerging threat, which simply delays the response time and allows invasive species more time to become entrenched in their new habitat.

D. *Current Trends*

Current trends in invasive species management have moved towards the implementation of interagency councils and management plans.[161] Invasive species laws and regulations are generally codified within the taxa they are meant to control, which can make statewide management difficult due to a lack of communication across taxa.[162] Interagency invasive species agencies can overcome this systemic difficulty by coordinating funding and coming up with an overall scheme for management, rather than going about regulation piecemeal. Unfortunately, not all states have created this agency through legislative fiat,[163] and, as a result, the future of the agency is not assured. Despite these issues, however, the creation of

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[155] Alaska, Connecticut, Georgia, Maine, Mississippi, New Hampshire, New Jersey, North Carolina, and Rhode Island. *Id.* at 64 & n.287.

[156] *See id.* at 64 (describing the approaches taken by various states regarding which entity is responsible for the control and management of invasive species on public and private lands).

[157] *Id.* at 67.

[158] Ten states (Arizona, Connecticut, Delaware, Georgia, Hawaii, Maryland, Montana, South Dakota, Tennessee, and Utah) authorize some form of emergency powers for wildlife. *Id.* at 67 & n.310.

[159] Thirteen states (Arizona, Colorado, Connecticut, Florida, Hawaii, Kentucky, Maine, Minnesota, Montana, New Hampshire, Tennessee, Utah, and Washington) authorize some form of emergency powers for aquatic life. *Id.* at 67 & n.312.

[160] Nine states (Arizona, Colorado, Hawaii, Indiana, Montana, New York, Oregon, South Carolina, and South Dakota) authorize some form of emergency powers for plant life. *Id.* at 67 & n.314.

[161] ENVTL. LAW INST., STATUS AND TRENDS, *supra* note 117, at 9.

[162] *Id.*

[163] Maryland, for instance, has no authorization for its comprehensive invasive species council. *Id.* at 10.

these councils and plans will undoubtedly help state invasive species programs, so long as they are appropriately funded.[164]

V. NEW ZEALAND'S APPROACH

New Zealand separated from the ancient continent of Gondwanaland 80 million years ago and has remained in geographic isolation ever since.[165] This prolonged isolation explains New Zealand's unique ecosystem—it has no native mammals save two bat species and in the absence of these animals, bird and insect species lost their ability to fly in order to fill the typical mammal niche on the forest floor.[166] As a result, New Zealand has an ecosystem evolved without pressures from mammal species and has flora and fauna unlike any other place in the world.[167]

Invasive plants and animals came to New Zealand with the first human colonizers—the Maori.[168] European settlers came with even more non-native organisms, both intentionally and unintentionally. The effect on the delicate ecosystem has been devastating. Flightless birds and insects that specifically adapted to life without mammalian predators or competitors are out-competed on the forest floor by mice and rats and are killed by stoats and feral cats.[169] Indigenous plant-life is also put at risk from grazing invasive species like goats, rabbits, and deer.[170] Brushtail possum are a particular problem for forest ecosystems.[171] These animals climb and eat the leaves off native tree species.[172] In a particular section of the Hihitahi Forest Sanctuary, more than ninety percent of standing trees are now dead due to possum activity.[173]

Plant invaders are also a formidable problem for New Zealand. Almost one-half of all vascular plants in New Zealand are introduced, which indicates the enormity of invasion that has occurred in the plant world.[174] Most of these plants were intentionally brought to New Zealand

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[164] *Id.* at 9.

[165] JOHN DAWSON & ROB LUCAS, NATURE GUIDE TO THE NEW ZEALAND FOREST 10–11 (2000).

[166] *Id.* at 11.

[167] *See* TERENCE LINDSEY & ROD MORRIS, FIELD GUIDE TO NEW ZEALAND WILDLIFE 10 (2000) ("The degree and extent of New Zealand's isolation is such that much of its fauna and flora is 'skewed' with respect to the rest of the world."). The constitution of species in New Zealand is different from that in the rest of the world. Six percent of all flowering plants are annuals in New Zealand, compared with thirteen percent in the rest of the world. Further, New Zealand has fewer butterfly, bee, and wasp species than the global average. *Id.*

[168] *Id.* at 16.

[169] *Id.* at 16–17.

[170] *Id.* at 17.

[171] *Id.*

[172] *See id.* (describing the devastation that the brushtail possum has wreaked on New Zealand's Hihitahi Forest Sanctuary).

[173] *Id.*

[174] Mark Christensen, *Invasive Species Legislation and Administration: New Zealand*, *in* HARMFUL INVASIVE SPECIES, *supra* note 64, at 23, 27. About 2,100 plant species were listed as "invasive" by the New Zealand Department of Conservation in 1998. *Id.* There are another 19,000

for ornamental, agricultural, or horticultural purposes; only eleven percent were introduced accidentally.[175]

A. *Biosecurity Strategy*

In light of this level of ecosystem decay and the threat of more to come, the New Zealand government has taken extreme action to create a strong integrated response to invasive species already established in the country, as well as to species which are unknown to the native New Zealand ecosystem.[176] To accomplish this goal, New Zealand has created a biosecurity strategy[177] that operates on three fronts to deal with the problem of invasive species.[178] The first front is prevention and exclusion of pests and unwanted organisms from entering the country in the first place.[179] The second front is surveillance and response to detect pests and unwanted organisms present in the country as quickly as possible, including "deployment of a rapid and effective incursion response that maximi[z]es the likelihood of eradication."[180] The last front is pest management of invasive species already established within the country.[181]

In order to make this strategy successful, the government seeks to increase accountability of agencies by giving them clearly defined roles and expectations.[182] It also seeks to integrate the agencies' responses to problems that affect regional governments, industry groups, and non-governmental organizations.[183] This will increase the efficacy of the biosecurity programs by ensuring that all stakeholders will be a part of the management strategy for invasive species. The government also wants to have clear risk assessments and priorities dispersed among all entities taking action against the problem to create a coordinated effort across all management areas.[184] Finally, in order to ensure that actions taken for biosecurity are successful, key performance indicators are given by the government to measure how the strategies are proceeding in meeting the

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non-native plant species in New Zealand in use as ornamental, agricultural, or horticultural species, which may still become invasive. *Id.*

[175] *Id.*

[176] Takahashi, *supra* note 5, at 466.

[177] "Biosecurity" is never defined in legislation, but it is defined in a New Zealand strategy document as "the exclusion, eradication or effective management of risks posed by pests and diseases to the economy, environment and human health." BIOSECURITY COUNCIL, TIAKINA AOTEAROA PROTECT NEW ZEALAND: THE BIOSECURITY STRATEGY FOR NEW ZEALAND 5 (2003), *available at* http://www.biosecurity.govt.nz/files/biosec/sys/strategy/biosecurity-strategy.pdf.

[178] *See id.* at 10 (listing goals for the different activities in biosecurity).

[179] *Id.*

[180] *Id.*

[181] *Id.*

[182] *Id.* at 13.

[183] *Id.*

[184] *Id.*

overarching goals for the economy, environment, and public health.[185]

1. *Administration of the Biosecurity Strategy*

The biosecurity strategy is implemented through the Biosecurity Act of 1993.[186] The Biosecurity Act lays out the organization of administration, giving power on the national level to the Minister of Biosecurity[187] and to regional councils[188] to put the strategy into action.

The Minister of Biosecurity is responsible for coordinating the implementation of the Act, recording and coordinating reports of suspected new organisms, and managing appropriate responses to such reports.[189] The Minister of Biosecurity does not have its own staff, but instead relies on the Ministry of Agriculture and Forestry ("MAF"), the Department of Conservation ("DOC"), the Ministry of Health, and the Ministry of Fisheries to implement national-level biosecurity programs.[190] MAF is the lead agency responsible for "pre-border and border activities, surveillance, incursion responses and eradication, and the grey zone of transition to pest management."[191] MAF is held accountable for the efficient and effective delivery of all biosecurity programs.[192]

The Minister of Biosecurity is directly advised by the Biosecurity Council (the "Council"). The Council's key objectives are to (1) provide independent advice to the Minister of Biosecurity; (2) evaluate the management of the system to be satisfied that the mechanisms work; and (3) ensure that stakeholders have a voice in the system's governance.[193] The Council has an independent chair and is made up of chief executives of: MAF; DOC; the Ministry of Health; the Ministry of Fisheries; the Ministry of Science, Research, and Technology; Te Puni Kokiri (the Ministry of Maori Development); the Ministry for the Environment; the Environmental Risk Management Authority; primary production industry; regional councils; and environmental organizations.[194] The creation of non-governmental seats on the Council increases stakeholder participation in the process of creating and evaluating the biosecurity programs. The presence of the regional councils on the Council allows for on the ground feedback from different parts of the country as to problem areas and successful strategies.

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[185] *Id.*

[186] Biosecurity Act 1993 (N.Z.), *available at* http://www.legislation.govt.nz/act/public/1993/0095/latest/DLM314623.html?search=qs_act_biosecurity_resel&p=1&sr=1.

[187] *Id.* § 8.

[188] *Id.* § 13.

[189] *Id.* § 8.

[190] Takahashi, *supra* note 5, at 467.

[191] BIOSECURITY COUNCIL, *supra* note 177, at 17.

[192] *Id.* at 18.

[193] *Id.* at 21.

[194] Christensen, *supra* note 174, at 30.

This administrative framework is in place to enact the Biosecurity Act and the Hazardous Substances and New Organisms Act of 1996 ("HSNO"),[195] the main legislation encompassing the response to invasive species. The Biosecurity Act is the most encompassing legislation, dealing with four main categories of biosecurity issues: (1) control of passage of goods across the border;[196] (2) establishing post-entry quarantine;[197] (3) monitoring and surveillance of pests and unwanted organisms in New Zealand;[198] and (4) overseeing eradication and control of established or introduced invasive species.[199] The HSNO is designed to control the intentional introduction of new organisms into New Zealand.[200] Working in tandem, the legislation limits both the damage from established invasive species and the release of new invasive species.

B. *Biosecurity Act of 1993*

1. *Importation*

Border control of risk goods is a vital aspect of the Biosecurity Act. "Risk goods" is defined as any organism or substance that is suspected to cause harm to natural or physical resources or human health or interfere with the diagnosis, management, or treatment of pests or unwanted organisms within the country.[201] Any organism must also comply with the HSNO provisions for new organisms.[202]

Most risk goods which enter the country need an Import Health Standard ("IHS") which analyzes many factors such as the effects of the product on the people, environment, and economy of New Zealand and the likelihood that it may bring organisms into the country.[203] There is generic risk analysis for broad groups of animals and animal products, which helps to speed up the process. Still, it is a time-consuming process to propagate an IHS, requiring internal consultation, peer review, and full public

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[195] Hazardous Substances and New Organisms Act 1996 (N.Z.), *available at* http://www.legislation.govt.nz/act/public/1996/0030/latest/DLM381222.html?search=ts_act_hazardous+substances+and+new+organisms+act_resel&p=1&sr=1.

[196] Biosecurity Act 1993, § 25 (N.Z.).

[197] *Id.* § 41.

[198] *Id.* § 42.

[199] *Id.* § 54.

[200] *See* Hazardous Substances and New Organisms Act § 4 ("The purpose of this Act is to protect the environment, and the health and safety of people and communities, by preventing or managing the adverse effects of hazardous substances and new organisms.") "New organism" as defined by the HSNO is, among other things, a species that was not present in New Zealand as of July 29, 1998; a genetically modified organism not approved for release; a species of any organisms that has containment approval, conditional release approval, or approval for release with controls; or an organism that has been eradicated from New Zealand. *Id.* § 2A(1). This Note will not attempt to address legislation pertaining to regulation of genetically modified organisms.

[201] Biosecurity Act § 2(1).

[202] *Id.* § 28A(1), (3).

[203] *Id.* § 22(1), (5).

consultation with direct notification to all people and entities that might be affected by the proposed IHS.[204]

2. *Management and Eradication of Invasive Species*

Pest management strategies ("PMS") are the main way pests are eradicated and controlled in New Zealand.[205] Anyone can submit a proposal for a national PMS, such as the implementation of a PMS for American Foulbrood, which infects honey bees and was initiated by bee keepers looking to protect their hives.[206] Once submitted, the proposal document may be notified by the Minister of Biosecurity[207] seeking comment from potentially affected parties. If the Minister finds there is opposition to a significant element of the proposal, he must give the proposal to the Board of Inquiry for review.[208] The Board of Inquiry then prepares a recommendation for the Minister, which he must consider before making his decision regarding the proposed PMS.[209] This process is time-consuming and rarely utilized.[210] Instead, most pest management is done through regional PMS.

The Biosecurity Act gives authority to regional councils to monitor and survey pests and unwanted organisms as well as implement regional PMS and small-scale management programs.[211] Regional councils have primary responsibility for the eradication and management of invasive species in New Zealand and are administered by publicly elected members.[212] The process of creating regional PMS is similar to the national level, but is done with a regional council serving as the manager of the application. Anyone can write a regional PMS proposal of which

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[204] Christensen, *supra* note 174, at 37.

[205] *Id.* at 38.

[206] *Id.* at 39.

[207] The Minister must consider factors such as (1) whether the benefits of the strategy would outweigh the costs, including the consequences of inaction or alternate action; (2) whether the net benefits of national intervention outweigh the benefits of regional intervention; (3) whether the organism would cause "serious adverse and unintended effect" to the economy, environmental health, or human health and wellbeing of New Zealanders; and (4) that this strategy will not conflict with international obligations. Biosecurity Act 1993, § 57(1) (N.Z.).

[208] *Id.* § 63(1).

[209] *Id.* § 69(1).

[210] *See* Christensen, *supra* note 174, at 39 ("Central government has been slow to develop national PMS. [As of 2004], only two had been finalized . . . .").

[211] Biosecurity Act § 13(1)(a)–(e). Small-scale management programs can be undertaken if the regional council believes that (1) the unwanted organism could cause "serious adverse and unintended effects unless early action . . . is taken"; (2) the organism can be eradicated within three years of undertaking the control measures; (3) the undertaking is likely to cost less than a larger scale action; (4) the undertaking is unlikely to cost significant monetary loss to any person (except persons who contributed to the unwanted organism's presence or spread by failing to follow the Biosecurity Act or any other pest management strategy; and (5) the regional council gives notice of the intention to create this management program. *Id.* § 100(1).

[212] Christensen, *supra* note 174, at 28–29.

the regional council may notify the public.[213] This mode of PMS is much more often used then the national PMS and imposes pest control obligations on landowners.[214]

The importance of the regional council members is reflected in the appointment of regional councils to the Council. By creating an identical mechanism for different regional councils across New Zealand to enact pest-management strategies, the national government has taken a large step towards standardizing local responses to invasive species.

C. *Hazardous Safety and New Organism Act of 1996*

The HSNO is a regulatory framework for the intentional introduction of new organisms into New Zealand.[215] A "new organism" is defined by the HSNO as an organism that was not present in New Zealand at the time the HSNO was enacted (July 1998); an organism which has been given containment approval, conditional release approval, or release approval with controls; a genetically modified species; or an organism from a species which has been previously eradicated from New Zealand.[216]

Any new organism seeking entry into New Zealand must be approved by the Environmental Risk Management Authority ("ERMA"). ERMA is a quasi-judicial, decision-making body made up of six to eight members and appointed by the Minister of the Environment.[217] Currently, ERMA is made up of eight members, five of whom have a scientific background including entomology, microbiology, human health, and wildlife management.[218]

In order to bring a new organism into New Zealand, ERMA must carry out a risk assessment at the expense of the applicant. Organisms which were thought to have been present before July 1998 are kept on registers maintained by Biosecurity New Zealand and accessible online.[219] If it is not clear whether the organism is a new organism, a "'determination' application form" must be submitted to ERMA.[220] Any new organism

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[213] The regional council may notify after considering (1) whether the benefits of the strategy would outweigh the costs, including the consequences of inaction or alternate action; (2) whether the benefit of regional intervention exceeds the benefit of individual intervention; and (3) whether the organism would cause "serious adverse and unintended effect" to the economy, environmental health, or human health and wellbeing of the region in question. Biosecurity Act § 72(1).

[214] *See* Christensen, *supra* note 174, at 39 ("In contrast to national PMS, regional PMS have been developed for most of New Zealand's regions and impose pest control obligations on landowners.").

[215] *Id.* at 33.

[216] Hazardous Substances and New Organisms Act 1996, § 2A(1) (N.Z.).

[217] *Id.* §§ 15–16.

[218] *The Authority*, ERMA, http://www.ermanz.govt.nz/about/authority.html (last visited Apr. 13, 2011).

[219] *Check What Organisms Are Already Legally Present in New Zealand*, ERMA, http://www.ermanz.govt.nz/no/aboutno/check.html (last visited Apr. 13, 2011) [hereinafter *Check What Organisms*] (click "Plants Biosecurity Index" or follow links to "Biosecurity New Zealand").

[220] *Id.*

must be approved by ERMA for import or release in the field. In considering approval, ERMA must take into account factors such as the sustainability of native and valued introduced flora and fauna, the intrinsic value of ecosystems, public health, the relationship of the Maori with their ancestral lands, the economic benefits and costs of using a particular new organism, and New Zealand's international obligations.[221] It also cannot grant applications for new organisms that may displace native species, deteriorate natural habitats, or pose significant adverse effects on human or environmental health.[222] In other words, ERMA can only grant approval if it feels that the positive effects of the organism outweigh the adverse effects. ERMA's decision is discretionary, and applicants have no general right to appeal ERMA's decision, except regarding questions of law, which may be appealed to the High Court.[223]

New Zealand implements a "clean list" approach here, by refusing automatic entry to any organism not present in New Zealand before the enactment of HSNO. Biosecurity New Zealand also maintains a "dirty list" of organisms not allowed into the country.[224] This dirty list, however, is merely a list of absolutely forbidden organisms; any importer of organisms must still show that they are importing an organism present in New Zealand before 1998, or they must apply for entry through ERMA.

D. *Biosecurity Strategy and Science*

Central to New Zealand's biosecurity strategy is a commitment to utilize science in dealing with invasive species. In 2007, the Minister of Biosecurity promulgated "A Biosecurity Science Strategy for New Zealand," which set forth a twenty-five-year plan to "develop clear advice on priority research needs and the uptake of research into the future."[225] The goal of the document was to create guidance for what research to undertake and to ensure that research was not being duplicated or used ineffectively.[226]

This strategy sets forth many objectives in its action plan, including increasing the effectiveness of communications between scientists and end-users of the information,[227] focusing research on issues of prevention, rather than mitigation,[228] and focusing research on areas of high priority.[229]

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[221] Hazardous Substances and New Organisms Act § 6.

[222] *Id.* § 36.

[223] *Id.* § 126(1).

[224] There are currently thirty-seven types of organisms forbidden from entry under the HSNO Schedule 2. *Id.* (Second Schedule).

[225] MAF BIOSECURITY NEW ZEALAND, A BIOSECURITY SCIENCE STRATEGY FOR NEW ZEALAND—MAHERE RAUTAKI PUTAIAO WHAKAMARU i (2007), *available at* http://www.biosecurity.govt.nz/files/biosec/sys/strategy/2007-biosecurity-science-strategy.pdf.

[226] *Id.*

[227] *Id.* at 39.

[228] *Id.* at 42.

In all, the proposal sets out twenty-two goals for increasing the effectiveness of scientific research in New Zealand and lays out the timetable for when all of these goals should be fulfilled.[230] By doing so, New Zealand has attempted to address what it sees as weaknesses in its scientific research by setting forth clear guidelines and attainment dates.

The literature on the New Zealand policy is missing an analysis of how the policy works as enacted. Although this is a broad-reaching and comprehensive program, insufficient funding or staffing would eviscerate the power of the statutes. Learning how this policy is implemented on the ground is the final piece in understanding how effective the New Zealand program actually is.

V. LESSONS TO LEARN: WHAT THE UNITED STATES SHOULD BE DOING

Before discussing what the United States can learn from the New Zealand biosecurity strategy, it is important to point out the obvious—there are significant differences between New Zealand and the United States which prevent the policy of one from being easily adopted by the other. The size of the two countries, the relative volume of items coming into both countries, and issues of federalism, like the Dormant Commerce Clause, must be taken into account when analyzing the policies of the two countries side by side. Despite these factors, however, there are many basic principles in New Zealand's policy that can be applied to improving the way the United States manages invasive species within the country and at its borders.

A. *Clean List Versus Dirty List Approach for Intentional Introductions*

New Zealand uses a clean list[231] of organisms already present in the country and a dirty list[232] of organisms that cannot be allowed into the country. This is extremely beneficial because it does not simply assume that organisms that are not on the dirty list are allowed into the country. There is a rigorous application procedure for allowing a new organism (which is not on the clean list) into the country.[233] ERMA must feel that the organism is likely to have a greater benefit to the country than negative effect in order for it to be allowed past the border.[234]

The United States only uses a dirty list approach under the Lacey

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[229] *Id.* at 43.

[230] *See id.* at 46–59 (listing the abovementioned goals and timetables).

[231] *Check What Organisms*, *supra* note 219.

[232] Hazardous Substances and New Organisms Act 1996, Second Schedule (N.Z.).

[233] See *supra* text accompanying notes 216–24 for a discussion of the application process for a new organism into New Zealand.

[234] *See supra* text accompanying note 223.

Act.[235] The flaw in using a dirty list approach alone is that organisms not present on the list are then automatically allowed into the country, without a thought to potential invasiveness. In New Zealand, the applicant must pay for ERMA's consideration of its application, so the country does not have to be responsible for the administrative costs.[236] That said, it seems improbable that the United States could maintain a list of all species of organisms living within its borders as New Zealand does. This does not mean, however, that a clean list approach is impossible to maintain in the United States. Some level of risk assessment for organisms being let inside our borders is a positive step forward and can lead to the creation of a more comprehensive clean list.

The U.S. House of Representatives has introduced a bill that would create an approach very similar to what is done in New Zealand. The Nonnative Wildlife Invasion Prevention Act, introduced on January 26, 2009, proposed a risk assessment process "to prevent the introduction into, and establishment in, the United States of nonnative wildlife species that will cause or are likely to cause economic or environmental harm or harm to other animal species' health or human health."[237]

The bill gives a list of factors to consider in determining whether to allow an organism into the country. This includes the identity of the organism, native range of the species, whether the species has established or caused harm to the environment in ecosystems that are similar to those in the United States, and the likelihood that the organism would cause harm in the United States.[238] This would establish a "clean list" of species allowed into the country and a "dirty list" of organisms barred from it.[239] If the organism passes the risk assessment made by the Secretary of the Interior, then the organism will be allowed into the country. This is exactly the kind of legislation needed in the United States, which utilizes a very similar framework to the one in the HSNO.

States also need to learn from the success of New Zealand's clean list approach. Most states are reactionary in their treatment of invasive species. They utilize a dirty list approach that only identifies species that have already caused problems within the state.[240] They do not have programs for wide-scale preventative measures, such as identifying

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[235] See *supra* text accompanying notes 37–42 for a discussion of the dirty list approach under the Lacey Act.

[236] Hazardous Substances and New Organisms Act § 21.

[237] Nonnative Wildlife Invasion Prevention Act, H.R. 669, 111th Cong. § 2 (2009).

[238] *Id.* § 3.

[239] *See* 155 CONG. REC. E135, E142 (daily ed. Jan. 26, 2009) (statement of Rep. Madeleine Z. Bordallo) (explaining that the bill would allow for the creation of a "green list" of species that could be imported into the United States and a "black list" of species barred from entering the country (internal quotation marks omitted)).

[240] ENVTL. LAW INST., STATUS AND TRENDS, *supra* note 117, at 7.

possible threats and addressing pathways of invasion.[241] States need to move toward use of a clean list approach in managing invasive species in order to become more proactive against future threats.

B. *Centralization of Accountability*

One of the major flaws in the United States' invasive species policy is its fragmented nature. There is separate legislation for aquatic invaders,[242] plant invaders,[243] and border control.[244] All of that separate legislation might be workable, but there lacks strong centralization in implementation of these provisions and accountability for ensuring their success. Executive Order 13,112 does place accountability in the National Invasive Species Council, however, no individual is held accountable for the success of the invasive species policies.[245] New Zealand's policy places ultimate responsibility for the effective implementation of its biosecurity strategy on the Minister for Biosecurity.[246] This ensures that one person's entire job is focused on the success of invasive species management. Moving accountability from the National Invasive Species Council as a whole to one lead member of the Council would increase the efficacy of Executive Order 13,112 by placing one person's job on the line should the policy not be effectively implemented.

Furthermore, the United States would benefit from having one organization overseeing all invasive species management. All biosecurity in New Zealand is ultimately managed by MAF.[247] Other departments may run specific programs per their expertise—such as programs for aquatic invasive species run by the Ministry of Fisheries—but, ultimately, MAF is responsible for all active biosecurity programs in New Zealand. This is not the case in the United States. The National Invasive Species Council runs its own programs, but is not ultimately responsible for coordinating aquatic invasive species programs per NANPCA.[248]

States are moving toward a reliance on invasive species councils, although these councils are often taxa-specific agencies dealing only with aquatic invaders, for example.[249] It would be most effective if there was a federal council that interacted with it and created policy with comprehensive invasive species on the state level so that they could

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[241] *Id.* at 11.

[242] Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990, 16 U.S.C. §§ 4701–14 (2006).

[243] Plant Protection Act, 7 U.S.C. §§ 7701–86 (2006).

[244] Lacey Act, 18 U.S.C. § 42(a)(1) (2006).

[245] Exec. Order. No. 13,112, 3 C.F.R. 159–62 (1999).

[246] Biosecurity Act 1993, § 8 (N.Z.).

[247] BIOSECURITY COUNCIL, *supra* note 177, at 17.

[248] The administration of NANPCA is left to the Aquatic Nuisance Species Task Force, an unrelated body. 16 U.S.C. § 4722(a) (2006).

[249] ENVTL. LAW INST., STATUS AND TRENDS, *supra* note 117, at 11.

communicate successes and areas of weakness with each other.

C. *Commitment to Science*

New Zealand is aware that scientific research of vectors of introduction and methods of eradication is vital to a successful invasive species management and control program.[250] ERMA and the Council have members with science backgrounds to administrate in light of their scientific knowledge. Furthermore, the Biosecurity Science Strategy put forth by MAF lays out goals and achievement dates for improvements in increasing communication between scientists and end-users and for making sure that the correct priorities are used in determining what research to fund.[251]

The National Invasive Species Council is made up of several cabinet members.[252] Although these are high-level officials, some of whom have a scientific background, the focus of the members of the National Invasive Species Council is neither specifically on science nor exclusively on the issue before them. The National Invasive Species Council should either have members who come solely with a science-based perspective or create another council that only considers scientific factors.

The United States does have a funding program for invasive species research, however, it is split between different agencies, all offering money for different research, with no guiding document to organize it all.[253] The creation of a strategy like the Biosecurity Science Strategy from New Zealand would allow for a well-thought-out approach to research on these issues, rather than the more ad hoc approach to research that the United States currently has.

D. *Appreciation of Regional Management Efforts*

Currently, the United States has not set forth any procedures for standardizing how states approach invasive species management.[254] Under the Biosecurity Act in New Zealand, regional councils do most of the invasive species management and eradication, but they have a nationally

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[250] MAF BIOSECURITY NEW ZEALAND, *supra* note 225, at i, iii.

[251] *Id.* at 45–59.

[252] The National Invasive Species Council is made up of the following U.S. agencies and departments: the Department of Agriculture; the Department of the Interior; the Department of Commerce; the Department of Defense; the Environmental Protection Agency; the Department of Transportation; the Department of State; the Department of Homeland Security; the Agency for International Development; the Office of the U.S. Trade Representative; the National Aeronautics and Space Administration; the Department of Treasury; and the Department of Health and Human Services. *NISC Member Departments and Agencies*, NAT'L INVASIVE SPECIES COUNCIL, http://www.invasivespecies.gov/index_department_agencies.html (last visited Apr. 13, 2011).

[253] *Research*, NAT'L INVASIVE SPECIES COUNCIL, http://www.invasivespecies.gov/global/research/research_index.html (last visited Apr. 13, 2011).

[254] But see *supra* text accompanying notes 37–42 for a discussion of the Lacey Act.

mandated process to which they must conform when promulgating a PMS.[255] Individual states in the United States have a variety of invasive species plans which range from highly effective to barely present. Developing a framework through which states must create invasive species programs will give homogeneity to the assessment factors that must be considered.

New Zealand has also incorporated regional council members into the Council to weigh in on nationwide policy decisions.[256] The majority of PMS occur on the regional level; allowing regional council members to have a seat on the Council gives the people who know what it is like on the ground a direct voice in decision-making. There is no such similar device in the United States' invasive species management system. Although states do a great amount of the invasive species management, their only representation is from members of Congress who may not have invasive species at the forefront of their agenda. It is vital to allow states to have an active voice on the national level to discuss problems and solutions.

V. CONCLUSION

The United States' framework for invasive species prevention and management is currently a hodge-podge of federal legislation. There is neither an overarching guiding agency nor guiding principles allowing it to function as a cohesive whole. The gaps left in preventing introductions make management and eradication efforts much costlier for taxpayers and costlier for the environment. States are therefore left with a large responsibility for creating adequate programs. Without federal guidance and with limited federal funding, states often do not create an invasive species management program that effectively fills the gaps.

New Zealand, by contrast, has a comprehensive biosecurity policy that is overseen by its own Minister and puts ultimate responsibility on one ministry.[257] The United States would be greatly served by moving to a model that coalesces oversight of its invasive species programs under the purview of one agency. This would let one agency see the big picture of everything that is going on in the country on a national level. Additionally, by putting responsibility on one person and one agency, accountability would also fall on that person and agency to follow up on techniques that are not working well and to fix them.

New Zealand also uses a "dirty list" for organisms trying to enter the country, together with a "clean list," which prevents new species from

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[255] Biosecurity Act 1993, § 13 (N.Z.).
[256] Christensen, *supra* note 174, at 30.
[257] Biosecurity Act § 8.

entering the country without a risk assessment.[258] Although mistakes can still be made, it is a more cautious approach than simply letting in all organisms not marked on the dirty list and only realizing afterwards that they are pervasive invaders. Currently, through the Lacey Act, the United States exclusively utilizes the dirty list approach.[259] The Nonnative Wildlife Invasion Prevention Act, currently a bill brought by the House of Representatives, would begin using clean and dirty list approaches, which would be a giant step forward in invasive species prevention.[260]

Finally, giving a voice to state-level invasive species administrators on the national level through inclusion on the National Invasive Species Council would allow states to have a dialogue with each other and the federal government as to problem areas and successes. New Zealand gives such voice to regional councils on its Council, and has enjoyed great success through empowerment of local government in this way.[261]

The United States has a long way to go in its invasive species program. Hopefully, it can learn from other countries, like New Zealand, that, because of their unique ecosystems, have had to quickly come up with effective techniques for managing the invasive species problem. Bills like the Nonnative Wildlife Invasion Prevention Act are a good step toward the kind of invasive species legislation that is so necessary for the country. With a little more work, the United States can move to a comprehensive and effective invasive species policy.

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[258] Hazardous Substances and New Organisms Act 1996, Second Schedule (N.Z.); *Check What Organisms*, *supra* note 219.

[259] *See supra* text accompanying notes 37–42.

[260] Nonnative Wildlife Invasion Prevention Act, H.R. 669, 111th Cong. §§ 4–5 (2009).

[261] *See* Christensen, *supra* note 174, at 30 ("The coordination of strategic advice on policy matters by the Biosecurity Council is recognized as a significant strength of the biosecurity system. It fosters good working relationships among the four government departments with biosecurity functions, and the regional councils.").