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**“Permits, Property, and Planning in the 21st Century:  
Habitat as Survival”**

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## ***Permits, Property, and Planning in the 21st Century: Habitat as Survival and Beyond***

Jamison E. Colburn<sup>†</sup>

### I. INTRODUCTION

In our legal tradition there are permits and there is property and they are like oil and water. The norms, institutions, and agents of one seem antagonistic—even antithetical—to the other. Property is reliable, tangible, and intimately bound up with one’s autonomy, one’s severability from society. Excluding others from our assets just *is* what we do to express, secure, and comfort ourselves and the company we keep.<sup>1</sup> Government permissions, by contrast, are fleeting, revocable—they are what we collectively use to express, secure, and comfort *society*. They are the mechanism of choice by which individual plans for assets are filtered and reconciled with collective needs.<sup>2</sup> If we are to get around the impasses we have reached today in protecting nature’s composition and function, however, we must strive to better combine permits and property and leave behind exactly the sort of distinctions we now use in differentiating one from the other. This may seem about as easy as changing the laws of

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<sup>1</sup> Cf. ELIZABETH ANDERSON, *VALUE IN ETHICS AND ECONOMICS* (1993) (elaborating an “expressivist” theory of morality that conceives of owning property as instrumental to one’s action and valuation as a self); J.E. PENNER, *THE IDEA OF PROPERTY IN LAW* (1997) (“The right to property itself is the right that correlates to the duty *in rem* that all others have to *exclude themselves* from the property of others.”); *but cf.* ERIC T. FREYFOGLE, *THE LAND WE SHARE: PRIVATE PROPERTY AND THE COMMON GOOD* 250 (2003) (“The right to exclude is no better grounded, legally or philosophically, than any other landowner right. It too needs to be justified in terms of the common good.”).

<sup>2</sup> Our appellate courts have made clear that permission requirements are generally the norm in land use contexts. *See, e.g.,* *Tahoe Sierra Preservation Council, Inc. v. Tahoe Regional Planning Agency*, 535 U.S. 302 (2002); *City of Monterey v. Del Monte Dunes*, 526 U.S. 687 (1999); *Conniston Corp. v. Village of Hoffman Estates*, 844 F.2d 461 (7th Cir. 1988); *Simon v. Needham*, 42 N.E.2d 516 (Mass. 1942); *see generally Developments in the Law—Zoning*, 91 HARV. L. REV. 1427 (1978). Permits for weapons, explosives, and other dangerous technologies are another pervasive element of our legal culture. *See* CITE.

physics that separate oil and water, but I will argue that it is actually long overdue and perhaps much simpler than we think.

Of course if people were predictable, protecting nature would be easy. The range of human motivations is vast and interconnected, though, and behavior is quite unpredictable.<sup>3</sup> Some people are conscientious neighbors while others are driven by quick profit; etc. Most importantly, though, people hardly ever track one “ideal type” or another—a reality which unwinds even the richest behavioral models. Indeed, the pervasive threat of conscious—even *strategic*—preference adaptation makes our behavioral sciences decidedly under-informative.<sup>4</sup> Thus, the further the federal government has gotten into the enterprise of regulating behavior to protect imperiled species or their habitats, the more this unpredictability has defined its efforts. The more the unpredictability of human behavior has defined national conservation policy, the more the Endangered Species Act’s agents have shifted to an evidence-based approach to their work.<sup>5</sup> Yet this evolution has now reached a threshold—one that conservation advocates and courts alike willfully ignore—summed up in the following question. What is our commitment to biodiversity conservation, *really*?

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<sup>3</sup> See, e.g., YOCHAI BENKLER, *THE WEALTH OF NETWORKS: HOW SOCIAL PRODUCTION TRANSFORMS MARKETS AND FREEDOM* \_\_\_ (2006) (arguing that self- and profit-seeking motives represent only a small fraction of what moves people to cooperate, compete, and produce).

<sup>4</sup> Cf. GERRY MACKIE, *DEMOCRACY DEFENDED* 386-92 (2003) (using a “budget constraint” to show how people with both shared and competing preferences will rationally shift some of their preferences by reducing the options available to the electorate as a whole in order to maximize their satisfaction over time). On “adaptive preference formation” more generally, see JON ELSTER, *SOUR GRAPES: STUDIES IN THE SUBVERSION OF RATIONALITY* (1983).

<sup>5</sup> E.O. Wilson famously hypothesized that humans share a trait which *causes* them, irrespective of justification or reason, to cherish and seek to affiliate with other living things. See E.O. WILSON, *BIOPHILIA: THE HUMAN BOND WITH OTHER SPECIES* (1984).

In this chapter, I propose one answer to that question by examining the Act's treatment of the most serious and pervasive threat to biodiversity today: habitat disruption and loss.<sup>6</sup> This requires, first, a reconsideration of the Act as it has evolved. That leads directly to a prognosis and prescription for the ESA's continued dominance of biodiversity conservation in America. In essence, I argue that the ESA is beginning an uncertain process of "de-territorialization." Its agents are shifting their focus away from protecting particular lands or identifiably imperiled habitats and toward building capacities for conservation in themselves and others. Out of necessity, these agents must strive to assemble a "resilient landscape" from the intermixture of public and private lands we actually have. And the only way they can do *that* is by devoting what little capacity they have to improving the physical and managerial connections between "owned" property and the public domain's different preserve systems. They must learn how to integrate a variety of conservation practices, in short, and none of that is likely as long as conservation remains so spatially and conceptually scattered. Real ESA reform would, therefore, link up the disparate fits and starts that have brought us this far and pull them together into a larger, more intentional whole.

Habitat loss and disruption have been constants on Earth, geologically speaking. They have played formative roles in the processes of evolution and speciation.<sup>7</sup> But their rapid (anthropogenic) acceleration in the past century now sets a stunningly broad

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<sup>6</sup> Perhaps no one has equaled the work of Professor Wilcove in establishing the spectrum of threats to habitat across the globe. See, e.g., DAVID S. WILCOVE, *NO WAY HOME: THE DECLINE OF THE WORLD'S GREAT ANIMAL MIGRATIONS* (2008); Walter Jetz, David S. Wilcove, & Andrew P. Dobson, *Projected Impacts of Climate and Land-Use Change on the Global Diversity of Birds*, 5(6) PLOS BIO. 1211 (2007) (e157); DAVID S. WILCOVE, *THE CONDOR'S SHADOW: THE LOSS AND RECOVERY OF WILDLIFE IN AMERICA* (1999).

<sup>7</sup> See, e.g., E.C. PIELOU, *AFTER THE ICE AGE: THE RETURN OF LIFE TO GLACIATED NORTH AMERICA* (1991).

and deep agenda for the ESA if its textual commitment to conservation is to be taken seriously.<sup>8</sup> And that should force us to do some hard thinking about several basic legal and social institutions—institutions like property, legal permissions, and land use planning—and how they must co-evolve if we are to synthesize the disparate pieces of habitat protection we have into a better conservation system. Habitat is, of course, a concept encompassing a vast range of biological and physical attributes only some of which are understood well enough to pursue intentionally.<sup>9</sup> And in this chapter, I assume that we seek collectively to protect as many of those attributes as we possibly can consistent with other, equally (or more) important priorities. Part II describes the path of the ESA to that end. Part III details the troubles we face when we attempt to pattern human behaviors for the sake of habitat protection. Part IV contrasts permits and property as means to that end and Part V offers several targeted reforms of both as components of a more integrative approach. Finally, Part VI suggests that .

## II. EVOLUTIONARY RADIATION<sup>10</sup>: FROM CATEGORICAL TO COST-DRIVEN IN TWO DECADES

How ought we to interpret a statute that began as one thing and evolved into something very different? Ascribing a coherent intent to the disparate collectives that

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<sup>8</sup> “Habitat” disturbance and degradation are easily the leading causes of biodiversity loss today. *See, e.g.,* David S. Wilcove *et al. Quantifying Threats to Imperiled Species in the United States*, 48 *BIOSCIENCES* 607 (1998). “Habitat,” however, denotes everything comprising an organism’s relationship to its environment. *See* Jamison E. Colburn, *The Indignity of Federal Wildlife Habitat Law*, 57 *ALA. L. REV.* 417, 431-36 (2005).

<sup>9</sup> *See generally* MICHAEL L. MORRISON, *WILDLIFE RESTORATION: TECHNIQUES FOR HABITAT ANALYSIS AND ANIMAL MONITORING* (2002).

<sup>10</sup> “Evolutionary radiation” is the process by which “phenotypic divergence” and the emergence of new species occurs as migration is succeeded by reproductive isolation and eventually trait-based competition sorts the resulting genotypes by fitness for their environments. *See* Dolph Schluter, *Ecological Causes of Speciation*, in *ENDLESS FORMS: SPECIES AND SPECIATION* 114 (Daniel J. Howard & Stewart H. Berlocher eds., 2001).

gave us the Endangered Species Act in its current form—with changes that came in a jagged sequence—is a challenging exercise in synthesis, surely. The Endangered Species Act of 1973 (“ESA”) famously declared that extinction was to be eradicated and that costs should play little-to-no role in that process.<sup>11</sup> After that richly symbolic act, however, things got more complicated. The scale and scope of this objective came into view and, eventually, came to dominate the statute and its administrators. By the 1990s, the ESA had become a convergence of two very different pulses. On the one hand was the original, largely symbolic imperative aimed at halting the loss of biological diversity. On the other hand was a growing skepticism of governance that marked the 1980s and ‘90s, aimed at pitting each public objective against its peers and allocating (scarce) public resources according to their relative popularity and/or urgency.<sup>12</sup> As it happened, cost-conscious governance<sup>13</sup> radiated outward across the regulatory landscape, eventually enveloping laws like the ESA and restructuring them in turn.<sup>14</sup> Significant amendments in 1978, 1979, 1982, and 1988 all combined to remake the ESA’s simple, forceful declaration of principle into a labyrinthine, tentacled framework serving first and foremost to empower a pair of administrative agencies to *govern* the almost limitless domain in which our extinction pandemic is unfolding. This Part describes that convergence.

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<sup>11</sup> “The plain intent of Congress in enacting this statute was to halt and reverse the trend toward species extinction, whatever the cost.” *Tennessee Valley Auth. v. Hill*, 437 U.S. 153, 184 (1978).

<sup>12</sup> RISE OF CBA; PHILOSOPHICAL FOUNDATIONS

<sup>13</sup> *See generally* THOMAS K. MCCRAW, *PROPHETS OF REGULATION* (1984) (tracing the historical shift in regulation toward an “economist’s” paradigm); SIDNEY A. SHAPIRO & ROBERT L. GLICKSMAN, *RISK REGULATION AT RISK: RESTORING A PRAGMATIC APPROACH* 1-13 (2003) (same).

<sup>14</sup> *See, e.g.*, FRANK ACKERMAN & LISA HEINZERLING, *PRICELESS: ON KNOWING THE PRICE OF EVERYTHING AND THE VALUE OF NOTHING* (2004) (critiquing the pervasiveness of cost-benefit analysis in risk regulation generally).

Curiously, over roughly the same period this amalgamation was occurring, biota and biosphere were saturating our collective consciousness.<sup>15</sup> Today, many now realize that humanity is the cause of a “massive die-off”—a geological extinction event being caused by our very existence.<sup>16</sup> And yet, the *only* juncture where the relative costs and benefits of regulatory action remain categorically excluded from consideration in ESA work is the determination of whether a species is at risk of extinction and, therefore, should be listed pursuant to ESA § 4’s risk factors.<sup>17</sup> Moreover, that hard separation was *added* in the 1982 amendments by the same provision that directed the Services, in making their listing decisions, to “tak[e] into account those efforts, if any, being made by any State or foreign nation, or any political subdivision of a State or foreign nation, to protect [the candidate] species.”<sup>18</sup> For virtually every other regulatory action carried out pursuant to the Act, it is either silent on the choice factors the Services may or must weigh<sup>19</sup> or it expressly includes cost, feasibility, practicability, and other like considerations.<sup>20</sup>

The standard narrative is that extinction was viewed in 1973 as a relatively rare, discrete phenomenon—passenger pigeons, dodos, and the like. Existential threats to iconic wildlife like the grizzly or bald eagle catalyzed an outpouring of statutes to deal with these phenomena.<sup>21</sup> As our regulators dug into the problems, though (and as

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<sup>15</sup> See CHARLES KREBS, *THE ECOLOGICAL WORLD VIEW* (2009).

<sup>16</sup> See, e.g. Elizabeth Kolbert, *The Sixth Extinction?*, *THE NEW YORKER* 53 (May 25, 2009). Popularization of the biodiversity crisis began at least as of David Quammen’s (extraordinary) *The Song of the Dodo* in 1996.

<sup>17</sup> *Sinden*; Doremus wrong on the text. *Entergy v. Riverkeeper*; *Whitman v. American Trucking*.

<sup>18</sup> See Pub. L. No. 97-304, § 2(b), 96 Stat. 1411, 1411 (1982), codified at 16 U.S.C. § 1533(b).

<sup>19</sup> See *infra* notes \_\_ and accompanying text.

<sup>20</sup> See *infra* notes \_\_ and accompanying text.

<sup>21</sup> See, e.g., PHILIP SHABECOFF, *EARTH RISING: AMERICAN ENVIRONMENTALISM IN THE 21ST CENTURY* 6-7 (2000).

citizen suits dug even further<sup>22</sup>), these framing assumptions crumbled.<sup>23</sup> Just as risk regulation was becoming a quantitative endeavor with real fiscal envelopes,<sup>24</sup> we were learning how enormous our disturbance footprint had grown and would continue growing.<sup>25</sup> Looking back, the record implies that our society is willing to invest the resources needed to protect our iconic wildlife as long as it does not entail reorganizing our basic structures of production, consumption, and governance. Curbing identifiable threats and carrying out extraordinary restorative work species-by-species, place-by-place has demonstrated plenty about our society and culture, to be sure. The more charismatic and evocative a species, this story goes, the more likely it will attract a lot of conservation attention and investment.<sup>26</sup> That past does not prove much at all about our society's possible *future* commitments to biodiversity conservation, though, and the following thematic sketch of the ESA's evolution to date should not be misinterpreted to imply anything of the sort. What it does seek to convey is an evolutionary record of legal development—a record that should not be ignored as we look forward.

Today, the ESA is known for two notorious amendments, each of which seriously complicates an effort to assess the Act's overall commitment to biodiversity: (1) the

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<sup>22</sup> On the central role of citizen suits in environmental and natural resources law, see Barton H. Thompson, Jr., *The Continuing Innovation of Citizen Enforcement*, 2000 U. ILL. L. REV. 185, 185-88, 195-216.

<sup>23</sup> See generally Jamison E. Colburn, *The Indignity of Federal Wildlife Habitat Law*, 57 ALABAMA L. REV. 417 (2005).

<sup>24</sup> See generally

<sup>25</sup> The valuation of lives saved by public health and welfare regulations became a pitched battle around the same time the ESA was being put into action. See, e.g., Richard Zeckhauser, *Procedures for Valuing Lives*, 23 PUB. POL'Y 419 (1975). On the historical development of cost-benefit analysis and its role in regulatory review within the Executive Branch, see John D. Graham, *Saving Lives Through Administrative Law and Economics*, 157 U. PA. L. REV. 395 (2008).

<sup>26</sup> See, e.g., DOUG PEACOCK & ANDREA PEACOCK, *IN THE PRESENCE OF GRIZZLIES: THE ANCIENT BOND BETWEEN MEN AND BEARS* (2009). This is certainly the narrative that motivates most strategies in conservation's nonprofit sector.

1978 creation of the so-called “god squad,”<sup>27</sup> and (2) the 1982 addition of permissions to “take” listed species.<sup>28</sup> The god squad was a cabinet-level committee designed to exempt federal actions otherwise prohibited by ESA § 7<sup>29</sup> whenever, upon petition, it concluded that the risks of losing a species were outweighed by the expected benefits of the (challenged) federal actions.<sup>30</sup> These 1978 amendments followed *Tennessee Valley Authority v. Hill*,<sup>31</sup> a precedent that has preoccupied legal philosophers<sup>32</sup> as much as it has conservation lawyers<sup>33</sup> since its decision. Over the years, though, the “committee” has been convened exactly twice and, in one of the matters, botched its proceedings so thoroughly that it was stayed by federal court order.<sup>34</sup> The actual results of the god-squad, in short, have been decidedly modest.

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<sup>27</sup> See, e.g., Jared des Rosiers, *The Exemption Process Under the Endangered Species Act: How the “God Squad” Works and Why*, 66 NOTRE DAME L. REV. 825 (1991).

<sup>28</sup> It is generally agreed that Congress created incidental take permits in response to a “habitat conservation plan” developed surrounding the development of San Bruno Mountain. See LAWRENCE R. LIESBESMAN & RAFFAEL PETERSON, *ENDANGERED SPECIES DESKBOOK* 46 (1999). An overview of the San Bruno Mountain saga and the 1982 Amendments can be found in *Friends of Endangered Species, Inc. v. Jantzen*, 760 F.2d 976 (9th Cir. 1985); see also MICHAEL J. BEAN & MELANIE ROWLAND, *THE EVOLUTION OF NATIONAL WILDLIFE LAW* 235 (2d ed. 1997).

<sup>29</sup> Section 7 requires all federal agencies to “insure that any action authorized, funded, or carried out by such agency . . . is not likely to jeopardize the continued existence of any [endangered or threatened] species or result in the destruction or adverse modification of [its critical habitat].” 16 U.S.C. § 1535(a)(2).

<sup>30</sup> See ERIC T. FREYFOGLE & DALE D. GOBLE, *WILDLIFE LAW: A PRIMER* 275 (2009).

<sup>31</sup> 437 U.S. 153 (1978) (holding that ESA Section 7 prohibits federal agencies from taking *any* actions jeopardizing the continued existence of threatened or endangered species). The Tellico and Grayrocks dam projects were specifically named and placed on the committee’s agenda in the 1978 amendments. Ultimately, the so-called god-squad rejected the petitions and an insistent Congress was forced to legislate them around the ESA. See CHARLES C. MANN & MARK L. PLUMMER, *NOAH’S CHOICE: THE FUTURE OF ENDANGERED SPECIES* 147-75 (1995).

<sup>32</sup> See, e.g., RONALD DWORKIN, *LAW’S EMPIRE* 20-23, 313-54 (1986); WILLIAM N. ESKRIDGE, JR., *DYNAMIC STATUTORY INTERPRETATION* 218-25 (1994)

<sup>33</sup> See, e.g., Zygmunt J.B. Plater, *In the Wake of the Snail Darter: An Environmental Law Paradigm and Its Consequences*, 19 U. MICH. L. REV. 805, 825-28 (1986); Fischman & Hall-Rivera, *supra* note \_\_ at 63 (“[*TVA v. Hill*] propelled Section 7 to the forefront of ESA programs and made it a flagship environmental responsibility of the federal government.”).

<sup>34</sup> See *Portland Audubon Soc. v. Endangered Species Committee*, 984 F.2d 1534 (9th Cir. 1993).

The other notorious amendment, the 1982 injection of “incidental” take permissions, has been of much greater moment and will be considered below. Often overlooked, however, have been several less conspicuous amendments gradually transforming the Services’ implementation of the Act into a set list of highly constrained actions and procedures driven by agency cost accounting and resource availability as much as anything else.<sup>35</sup> The 1978 amendments, for example, bound listed taxa to a presumption of eventual “recovery” and the development of taxon-specific plans to that end.<sup>36</sup> The 1982 amendments directed the Services to give “priority to those [listed] species most likely to benefit from [recovery] plans, particularly those species that are, or may be, in conflict with construction or other developmental projects or other forms of economic activity.”<sup>37</sup> Finally, the 1988 amendments required FWS to begin compiling and annually reporting to Congress “an accounting on a species by species basis of all reasonably identifiable Federal expenditures made primarily for the conservation of [listed] species” pursuant to the ESA.<sup>38</sup> The increasingly strict procedures and purse strings, in short, formalized Section 4 status changes and Section 7 consultations<sup>39</sup> and made judicial review into a routine facet of the Act.<sup>40</sup>

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<sup>35</sup> The Act’s “best available science” mandate is often spotlighted as a driving force in ESA decisionmaking. Science and scientifically-gathered data are extremely costly and contentious, however. See NATIONAL RESEARCH COUNCIL, SCIENCE AND THE ENDANGERED SPECIES ACT (1995) ().

<sup>36</sup> See Pub. L. No. 95-632 § 11, 92 Stat. 3751, at 3766 (1978), *codified at* 16 U.S.C. § 1533(f).

<sup>37</sup> Pub. L. No. 97-304 § 2, 96 Stat. 1411, at 1415 (1982), *codified at* 16 U.S.C. § 1533(f)(1)(A).

<sup>38</sup> Pub. L. No. 100-478 § 1012, 102 Stat. 2306, at 2314, *codified at* 16 U.S.C. § 1544. The 1988 amendments also further refined recovery planning by requiring that each plan include “a description of such site-specific management actions as may be necessary to achieve the plan’s goal for the conservation and survival of the species” and “objective, measurable criteria which, when met, would result in a determination, in accordance with [ESA § 4] that the species be removed from the list.” *Id.* at § 1002, 102 Stat. at 2307, *codified at* 16 U.S.C. § 1533(f)(2).

<sup>39</sup> Though “consultation” had been required by ESA § 7 since 1973, on the eve of the 1978 amendments, the agencies testified that, in over 4500 consultations that had been conducted, no formal record had ever been compiled and no formal proceedings had ever been carried out. See S.

The key peak in the statute’s developmental arc, however, was the permission now known as “incidental” takings.<sup>41</sup> Modern legislation is said to be replete with delegations of discretionary authority to permit or forbid conduct.<sup>42</sup> Legislation, they say, is now largely “intransitive.”<sup>43</sup> The 1978 amendments are at least weak confirmation of this thesis. At the same time the amendments injected more formality into the consultation process,<sup>44</sup> they empowered the Services to establish and recommend whatever “reasonable and prudent alternatives” (RPAs) they concluded “would avoid jeopardizing” the listed species in the event their Section 7 conclusions were that the subject federal actions might jeopardize the taxa or might “adversely modify” any designated “critical habitat.”<sup>45</sup> These RPA’s have since become the principal path *out* of consultation proceedings involving critically endangered taxa.<sup>46</sup>

The Services have agreed that such RPA’s must be “consistent with the purposes of the

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Rep. 95-874, Legislative History of Pub. L. No. 95-632, Endangered Species Act Amendments of 1978, 124 Cong. Rec. 9453, 9461 (1978) (hereafter “S. Rep. 95-874”).

<sup>40</sup> On the convergence of searching judicial scrutiny and the relative formality of agency proceedings, see Paul Verkuil, *Judicial Review of Informal Rulemaking*, 60 VA. L. REV. 185 (1974); William F. Pedersen, Jr., *Formal Records and Informal Rulemaking*, 85 YALE L.J. 38 (1975); McNollgast, *Structure and Process, Politics and Policy: Administrative Arrangements and the Political Control of Agencies*, 75 VA. L. REV. 431 (1989); .

<sup>41</sup> See Pub. L. No. 97-304, § 6(1)(4)(A), 96 Stat. 1422, 1423 (1982), *codified at* 16 U.S.C. § 1539(a)(1).

<sup>42</sup> See, e.g., CASS R. SUNSTEIN, *AFTER THE RIGHTS REVOLUTION: RECONCEIVING THE REGULATORY STATE* (1990).

<sup>43</sup> See Edward L. Rubin, *Law and Legislation in the Administrative State*, 89 COLUM. L. REV. 369, 380-85 (1989); EDWARD H. RUBIN, *BEYOND CAMELOT: RETHINKING POLITICS AND LAW FOR THE MODERN STATE* 210-21 (2005). Intransitive legislation, instead of setting the rights and duties of A and B, directs C to specify their rights and duties, often on an evolving basis. *Id.*

<sup>44</sup> The 1978 amendments expressly required the presentation of a “written opinion” by the Services and prohibited the action agency and/or any affected parties from making “any irreversible or irretrievable commitment of resources which has the effect of foreclosing the formulation or implementation of any reasonable and prudent alternative measures.” 92 Stat. at 3752-53, *codified at* 16 U.S.C. §§ 1536(b) & (d).

<sup>45</sup> 16 U.S.C. § 1536(b)(4). Congress did not specify what alternatives to jeopardy would ordinarily be “reasonable and prudent.” However, a Senate Report accompanying the amendments concluded that “in many instances good faith consultation . . . can resolve many endangered species conflicts.” S. Rep. 95-874, *supra* note \_\_ at 9462.

<sup>46</sup> See *Pacific Coast Fed’n of Fishermen’s Ass’n v. National Marine Fisheries Serv.*, 265 F.3d 1028 (9th Cir. 2001); *FINISH DOREMUS & TARLOCK*, *supra* note \_\_ at \_\_.

action” and “economically and technically feasible.”<sup>47</sup> They have allocated the burdens of collecting and assembling the requisite information to the consulting agency(s).<sup>48</sup> Yet, while the courts have generally left them free to choose the best RPA(s) and/or incidental take level for the circumstances,<sup>49</sup> consultation as a whole seems to have entrenched the Services in a *reactive posture* because they must rely on others for the information needed to establish the “reasonable” and “prudent” alternative courses of action and move forward.<sup>50</sup> And RPA’s soon became the model by which a variety of “take” forms would be permitted!

The creation of “incidental take permits” in 1982 arguably provided a robust confirmation of the intransitivity thesis. They empowered the Services to make action-specific determinations of permissible “take” and habitat destruction, thereby creating a vast practice of conduct-supervision by the Services. ESA § 10(a) provides that the Services

may permit, under [terms and conditions they prescribe] (A) any act otherwise prohibited by [ESA § 9] for scientific purposes or to enhance the propagation or survival of the affected species, including, but not limited to, acts necessary for

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<sup>47</sup> 50 C.F.R. § 402.02.

<sup>48</sup> 50 C.F.R. § 402.14(d).

<sup>49</sup> See, e.g., *Southwest Ctr. For Biological Diversity v. U.S. Bureau of Reclam.*, 143 F.3d 515 (9th Cir. 1998) (holding that substitution of one RPA for draft measures not arbitrary where final recommendation was supported by record); *Mausolf v. Babbitt*, 125 F.3d 661 (8th Cir. 1997) (rejecting challenge brought alleging biological opinion did not justify the adoption of stringent incidental take limits).

<sup>50</sup> See, e.g., David J. Hayes, *Integrating ESA Goals Into a Larger Context: The Lessons of Animas-La Plata*, 47 NAT. RES. J. 627, 630 (2001) (“[T]here is no question that the Service must rely primarily on the agency that is proposing the project in question to help identify potential alternatives. The ESA’s Section 7 consultation process puts the FWS in a reactive role. The Service does not shape projects; it responds to projects that have been proposed by other federal agencies.”). Hayes, Bruce Babbitt’s Deputy Secretary of Interior, said that, in his experience, “agencies would rather take a proposed project back to the drawing board than trigger a “jeopardy” opinion from FWS. And many agencies are willing to go the extra mile in agreeing to expensive and difficult-to-implement conditions of going forward, if such ‘reasonable and prudent alternatives’ are needed by the Service to give an ESA green light.” *Id.* at 631.

the establishment and maintenance of experimental populations . . . or (B) any taking otherwise prohibited by [ESA § 9] if such taking is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity.<sup>51</sup>

The operative notions are the *enhancing* of “propagation or survival” of the affected taxa and the notion of an “incidental” taking of listed taxa. While these might sound like real thresholds, the latter focuses on an actor’s *intent*<sup>52</sup> while the former lacks any meaningful standard of proof. Thus, the decisive thresholds (if any) must be spelled out by the Services and this has rendered “intransitive” virtually everything about the Act’s control of habitat disturbance and loss. The evident motivation for the amendments was to allow the Services to reconcile owner/permittee autonomy with recognized conservation needs, a motivation that gripped the federal government throughout the era immediately following the enactment of our major conservation statutes.<sup>53</sup> Not surprisingly, the Services have struggled since 1978 to define acceptable levels of “take” associated with regulated actions. For, when it is a federal action governed by ESA § 7 and some “taking” of the species may occur even under the control of RPA’s, the Services have issued “incidental take statements” (ITS’s) as a kind of “safe harbor” for the actors involved.<sup>54</sup> Consequently, consultations have become like

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<sup>51</sup> Pub. L. No. 97-304, § 6(1)(4)(A), 96 Stat. 1422, 1423 (1982), codified at 16 U.S.C. § 1539(a)(1).

<sup>52</sup> Section 10 may state that the Services may “permit” “any taking otherwise prohibited by [ESA § 9] if such taking is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity.” 16 U.S.C. § 1539(a)(1)(B). But Section 7 still obligates the Services—as it does all federal agencies—to “insure” that any actions it takes, funds, or authorizes, do not “jeopardize the continued existence” of any listed taxa nor “result in the destruction or adverse modification” of designated critical habitat. *Id.* at § 1536(a)(2).

<sup>53</sup> See John D. Echeverria, *Regulating Versus Paying Land Owners to Protect the Environment*, 26 J. LAND, RES. & ENVTL. L. 1, 3-5 (2005).

<sup>54</sup> *Cf.* 16 U.S.C. § 1536(o)(2) (“[A]ny taking that is in compliance with the terms and conditions specified in a written statement provided under [ESA § 7(b)(4)] shall not be considered to be a

litigation<sup>55</sup> with RPA's and ITS's (in the rare event of a positive finding<sup>56</sup>) beginning to seem like the settlement documents that now end public law litigation. Thus, in cases like *Arizona Cattle Growers' Ass'n v. U.S. Fish & Wildlife Serv.*,<sup>57</sup> and *Oregon Natural Resources Council v. Allen*,<sup>58</sup> the Ninth Circuit held that the issuance of ITS safe harbors—where “incidental take” is likely to occur but *only* where it is likely to occur—must be predicated on facts found and evidence gathered.<sup>59</sup> In *Allen*, the court held, citing the legislative history of the 1982 amendments, that an ITS safe harbor ought generally to include a numerical limit of some kind, *i.e.*, how much take is *too* much.<sup>60</sup> When the cap is reached, the *Allen* court held, consultation must be reinitiated.<sup>61</sup> Alas, with final documents being due at the conclusion of an essentially legal proceeding (with their content and the content of any related ITS's dictated by available evidence),<sup>62</sup> consultation has become a litigious (and rather costly) gatekeeping mechanism.<sup>63</sup> The Services and most action agencies now seek to avoid and/or end

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prohibited taking of the species concerned); *see, e.g.*, *Defenders of Wildlife v. Bernal*, 204 F.3d 920, 927 (9th Cir. 2000).

<sup>55</sup> *See, e.g.*, HOLLY DOREMUS & A. DAN TARLOCK, *WATER WAR IN THE KLAMATH BASIN: MACHO LAW, COMBAT BIOLOGY, AND DIRTY POLITICS* (2008).

<sup>56</sup> Overall, the Services have only rarely concluded that covered agency actions will result in “jeopardy” to listed species or “adverse modification” of designated critical habitat. *See* Robert L. Fischman & Jaelith Hall-Rivera, *A Lesson for Conservation from Pollution Control: Cooperative Federalism for Recovery Under the Endangered Species Act*, 27 COLUM. J. ENVTL. L. 45, 62 (2002).

<sup>57</sup> 273 F.3d 1229 (9th Cir. 2001).

<sup>58</sup> 476 F.3d 1031 (9th Cir. 2007).

<sup>59</sup> *See* 273 F.3d at 1242; 476 F.3d at 1036.

<sup>60</sup> 476 F.3d at 1037 (“Congress indicated that it preferred the Incidental Take Statement to contain a numerical limitation on the Federal agency or permittee or licensee.”) (*quoting* H.R. Rep. No. 97-567, at 27 (1982)).

<sup>61</sup> 476 F.3d at 1038.

<sup>62</sup> *See, e.g.*, *Natural Resources Defense Council v. Kempthorne*, 506 F.Supp.2d 322 (E.D.Cal. 2007).

<sup>63</sup> *See, e.g.*, Keith W. Rizzardi, *The Everglades in Jeopardy: A Drama of Water Management and Endangered Species*, 27 FLA. ST. U. L. REV. 349 (2000). The gravity of RPA's is reinforced by the fact that they are so often regarded as a kind of “safe harbor” from subsequent ESA liability. *See, e.g.*, *Pyramid Lake Paiute Tribe of Indians v. U.S. Dep't of the Navy*, 898 F.2d 1410, 1415 (9th Cir. 1990).

consultations however they can.<sup>64</sup> This undoubtedly increases the costs involved, but the worst of it is that consultations are now dominated by strategic behavior.

The statute's notion of "critical habitat" is one of the factors driving this evolution. While they do not alter private rights/obligations per se,<sup>65</sup> critical habitat designations at least *seem* to encumber federal actors with more stringent precautions in designated areas by enjoining them to "insure"<sup>66</sup> they do not destroy or adversely modify the designated habitat. Critical habitat designations have become high profile events. Critical habitat can be designated only when the agencies find it "prudent" and the statute requires them to take affirmative steps to notice designation proposals to the communities and landowners "within or adjacent to such habitat."<sup>67</sup> And what had been a rather accommodating interpretation of "adverse modification"—essentially collapsing it into the subject taxon's "survival"—was invalidated years ago and has not yet been replaced.<sup>68</sup> The Services apparently have no desire to redesign so heavily strategized and contentious a crossroads. Amending what has become, by default, one

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<sup>64</sup> See, e.g., *Center for Biological Diversity v. Rumsfeld*, 198 F. Supp.2d 1139 (D. Ariz. 2002) (invalidating decision by FWS to conclude a "memorandum of agreement" with Department of Defense in lieu of reinitiating consultation to update a stale Biological Opinion and RPAs); .

<sup>65</sup> This is a misconception the Services are battling constantly. See, e.g., U.S. FISH & WILDLIFE SERV.: CRITICAL HABITAT: WHAT IS IT? (2009).

<sup>66</sup> The term "insure" in ESA § 7(a)(2) is one some courts have taken very seriously, going so far as to identify it with visible "process." See, e.g., *Washington Toxics Coalition v. U.S. Dept. of Interior*, 457 F.Supp.2d 1158 (W.D. Wash. 2006); *Sierra Club v. Marsh*, 816 F.2d 1376 (9th Cir. 1987).

<sup>67</sup> See Pub. L. No. 95-632, 92 Stat. at 3764 (Section 11(4), *codified at* 16 U.S.C. § 1533(b)(5). This notice requirement was further enhanced in the 1979 amendments, requiring the Services to publish actual maps of designated critical habitat. See Pub. L. No. 96-159 at § 3, 93 Stat. 1225 *et seq.* (1979), *codified at* 16 U.S.C. §1533((f)(2)(B)(i).

<sup>68</sup> The Services famously argued that "adverse modification"—which they had defined as a "direct or indirect alteration that appreciably diminishes the value of critical habitat for both the survival and recovery of a listed species," 50 C.F.R. § 402.02—only occurred if an action diminished an area's habitat values *both* as to the taxon's "survival" *and* its "recovery." This approach has been invalidated by the Fifth, Tenth, and Ninth Circuits. See *Sierra Club v. U.S. Fish & Wildlife Serv.*, 245 F.3d 434 (5th Cir. 2001); *New Mexico Cattlegrowers c. U.S. Fish & Wildlife Serv.*, 248 F.3d 1277 (10th Cir. 2001); *Gifford Pinchot Task Force v. U.S. Fish & Wildlife Serv.*, 378 F.3d 1059 (9th Cir. 2004).

of the most broadly applicable standards in the ESA would be a time sink, to be sure.<sup>69</sup>

Thus, *any* permission to take actions within designated critical habitats (including the ITP's, CCAA's, etc.) can, at least in theory, trigger a consultation and activate the "jeopardy" and "adverse modification" standards along with it.<sup>70</sup>

The 1982 amendments also empowered the Services to permit "incidental" take where some applicant's "conservation plan" would, "to the maximum extent practicable, minimize and mitigate the impacts of such taking" and where the Service finds that the taking would "not appreciably reduce the likelihood of survival and recovery of the species in the wild."<sup>71</sup> These conservation plans are usually known as *habitat* conservation plans (HCP's) because the approved activities almost always involve some form of habitat disturbance/enhancement.<sup>72</sup> Technically, the HCP is in exchange for an "incidental take permit" (ITP).<sup>73</sup> And, before they may issue an ITP, the Services must find that each statutory criterion is met, including that "adequate funding for the conservation plan and procedures to deal with unforeseen circumstances will be

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<sup>69</sup> This is not necessarily to give quarter on the inaction. But because critical habitat cannot be designated without an affirmative finding of "constituent elements" within the designated geography, 50 C.F.R. § 424.12(b), designations that are not already tightly coupled to a taxon's known habitat needs are a practical impossibility. *See, e.g.,* Cape Hatteras Access Preserv. Alliance v. U.S. Dept. of Interior, 344 F. Supp.2d 108, 122 (D.C. Cir. 2004).

<sup>70</sup> *See, e.g.,* Loggerhead Sea Turtles v. Council of Volusia County, 148 F.3d 1231 (11th Cir. 1998). If the permission is from one of the Services, an "internal" consultation would be held (the language of ESA § 7(a)(2) is without exception).

<sup>71</sup> 16 U.S.C. § 1539(a)(2)(B)(iii) & (iv).

<sup>72</sup> Even in 1995, Justice Scalia thought it "unmistakably clear" that the Endangered Species Act was (still) structured to *avoid* the regulation of real property and property owners. *See* Babbitt v. Sweet Home Ch., 515 U.S. 687, \_\_ (1995) (Scalia, J., dissenting). "The Court's holding that the hunting and killing prohibition incidentally preserves habitat on private lands imposes unfairness to the point of financial ruin—not just upon the rich, but upon the simplest farmer who finds his land conscripted to national zoological use." *Id.* This takes inadequate account of the 1982 amendments, however, and their injection of incidental take permissions and "conservation plans" into the Act. *See* 515 U.S. at 703-08.

<sup>73</sup> *See* 50 C.F.R. § 17.22; Handbook for Habitat Conservation Planning and Incidental Take Permitting Process, available at <http://www.fws.gov/endangered/hcp/hcpbook.html>.

provided.”<sup>74</sup> HCP’s can be better or worse at minimizing risk, though, and an “assurance” that an ITP will not be revoked just because the subject population is dwindling is most assuredly a quite particular allocation of risk.<sup>75</sup> So are ITP’s a means to protect—or a means to disturb and destroy—habitat?

Widely vilified, celebrated, studied, and tweaked with things like “assurances,”<sup>76</sup> this kind of exchange is essentially a cipher if its overall effectiveness is the question. No amount of evidence could be gathered to conclusively prove or disprove the instrumental value of these practices writ large.<sup>77</sup> What this program *has* done is furthered the statute’s transition from a simple, declarative law into a system of intransitive norms governing a vast and expanding array of human behaviors.<sup>78</sup> The substantive standard for the issuance of an ITP is as richly ambivalent toward habitat

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<sup>74</sup> 50 C.F.R. § 17.22(b)((2)(C). The statute requires an affirmative finding by the Services that (1) the taking will be incidental, (2) *the applicant* will, to the maximum extent practicable, minimize and mitigate the impacts of the permitted takings, (3) the taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild, (4) *the applicant* will ensure that adequate funding for the plan will be provided, and that (5) any supplemental measures imposed as conditions on the permit will be met. 16 U.S.C. § 1539(a)(2)(B). These findings are separate and apart from the content of the plan as mandated by ESA § 9(a)(2)(A).

<sup>75</sup> *Cf. Spirit of the Sage Council v. Kempthorne*, 511 F. Supp.2d 31, 43 (D.D.C. 2007) (“[T]he specific statutory provisions in ESA Section 10 demonstrate the Congress did not intend ITPs to have to promote or maintain the recovery of listed species.”).

<sup>76</sup> See *infra* notes \_\_ and accompanying text.

<sup>77</sup> This is underscored by the utter lack of data available to *characterize* HCP’s as an overall practice. See Matthew E. Rahn, *Species Coverage in Multispecies Habitat Conservation Plans: Where’s the Science?*, 56 *BIOSCIENCE* 613 (2006).

<sup>78</sup> “Incidental take” permits (ITPs) and habitat conservation planning under ESA § 10 have gone from being a “dangerous and deceptive political accommodation[,]” see LAURA C. HOOD, *FRAYED SAFETY NETS: CONSERVATION PLANNING UNDER THE ENDANGERED SPECIES ACT* v (1998), to an “experiment,” see Jody Freeman, *The Private Role in Public Governance*, 75 *N.Y.U.L. Rev.* 543, 664 (2000), to a “paradigm,” see David A. Dana, *The New “Contractarian” Paradigm in Environmental Regulation*, 2000 *U. ILL. L. REV.* 35, 38-40, to an example of “collaborative ecosystem governance,” see Bradley C. Karkkainen, *Toward Ecologically Sustainable Democracy?*, in *DEEPENING DEMOCRACY: INSTITUTIONAL INNOVATIONS IN EMPOWERED PARTICIPATORY GOVERNANCE* 208, 223 (Archon Fung & Erik Olin Wright eds. 2003), and finally back down to an “avenue for fragmented, long-term, and inert regulatory decisions that rely on inadequate information and little stakeholder participation.” Alejandro E. Camacho, *Can Regulation Evolve? Lessons From a Study in Maladaptive Management*, 55 *U.C.L.A. L. REV.* 293, 358 (2007).

disturbance as it could be. It boils down to whether the mitigation is “practicable” for the applicant and whether or not their conduct “appreciably” reduces the species’ survival chances.<sup>79</sup> Over the years, this combination of factors in the granting of ITP’s has put the Services in an unenviable position. Several of their conservation plan/ITP findings have now been overturned in court, perhaps because of the conflicted nature of the standard itself.<sup>80</sup> As many have observed, it turns the Services into a kind of ratchet permitting as much—but *only* as much—risk to listed species as they supposedly can bear.<sup>81</sup> And it assumes a precision the Services cannot possibly achieve.

Thus, HCP’s remained rare for years after their introduction.<sup>82</sup> Not until the Clinton Administration introduced a “no surprises policy” (NSP)—the *assurance* that no further mitigations would be due from any “incidental take” permittee for the life of the permit—did ITP’s move in from the periphery of ESA practice.<sup>83</sup> According to the NSP, any material enhancements a conservation plan might require must either be

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<sup>79</sup> 16 U.S.C. § 1539(a)(2)(A)-(B)

<sup>80</sup> *See, e.g.,* Sierra Club v. Babbitt, 15 F.Supp.2d 1274 (S.D. Ala. 1998) (invalidating Service findings as arbitrary and capricious); National Wildlife Federation v. Babbitt, 128 F. Supp.2d 1274 (E.D. Cal. 2000) (invalidating Service findings as arbitrary and capricious); Southwest Ctr. For Biological Diversity v. Bartel, 470 F. Supp.2d 1118 (S.D. Cal. 2006) (invalidating Service findings as arbitrary and capricious).

<sup>81</sup> *See, e.g.,* J.B. Ruhl, *How to Kill Endangered Species, Legally: The Nuts and Bolts of Endangered Species Act “HCP” Permits for Real Estate Development*, 5 ENVTL. LAW. 345 (1999); Steven G. Davison, *The Aftermath of Sweet Home Chapter: Modification of Wildlife Habitat as a Prohibited Taking in Violation of the Endangered Species Act*, 27 WM. & MARY ENVTL. L. & POL’Y REV. 541 (2003).

<sup>82</sup> *Cf.* JOHN COPELAND NAGLE & J.B. RUHL, *THE LAW OF BIODIVERSITY AND ECOSYSTEM MANAGEMENT* (2d ed. 2006) (“Despite the enactment of section 10(a)(1)(B), only three HCPs were adopted between 1982 and 1989.”). It may bear mentioning that it also takes the enforcement—or, at least the plausible *threat* of enforcement—of ESA § 9 to make ITPs an attractive option for landowners and that the 1980s were hardly the high water mark of ESA enforcement.

<sup>83</sup> NSP was the subject of protracted litigation over its procedural and substantive validity. It was eventually completed as a notice-and-comment amendment to the “Permit Revocation Rule,” see 50 C.F.R. §§ 17.22(b), 17.32(b), and upheld against all challenges. *See* Spirit of the Sage Council v. Kempthorne, 511 F. Supp.2d 31 (D.D.C. 2007).

*volunteered* by the permittee or be supplied by the government.<sup>84</sup> Such assurances leave with the public the risks of uncertainty inherent in any such enterprise<sup>85</sup> and a flawed conservation plan means excess risk. And habitat conservation today comes down to a “survival” standard like this in virtually *every* ESA context. The core finding the Services must make in issuing an ITP is that the permittee will not “appreciably” reduce the species’ survival chances.<sup>86</sup> Indeed, even apart from RPA’s and ITP’s, a whole series of take permits—“safe harbor agreements” (SHA’s) and “candidate conservation agreements” (CCA’s)—are now backed by similar “assurances,” aiming to entice would-be conservationists into partnerships for the benefit of at-risk taxa.<sup>87</sup>

FWS has quietly but actively cultivated these SHA’s and CCA’s under ESA § 10(a)(1)(A) by granting assurances like those in the NSP.<sup>88</sup> A SHA can be completed wherever the Service finds that the owner’s proposed plan will generate a “net

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<sup>84</sup> See *Spirit of the Sage Council v. Norton*, 294 F. Supp.2d 67, 77 (D.D.C. 2003) (“The [NSP] required Services approving HCPs to provide landowners with “assurances” that, once an ITP was approved, even if circumstances subsequently changed in such a way as to render the HCP inadequate to conserve listed species, the Services would not impose additional conservation and mitigation requirements . . .”).

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<sup>86</sup> See, e.g., *National Wildlife Federation v. Norton*, 2005 WL 2175874 \*4-5 (E.D. Cal. 2005) (describing this as the key finding in determination to grant ITP). This is of uncertain dimension as a backstop, however, given the reality that any ITP of great enough scope will also trigger a “self” consultation within the issuing Service under ESA § 7 and perhaps trigger NEPA as well. See, e.g., *Environmental Protection Information Center, Inc. v. Pacific Lumber Co.*, 67 F.Supp. 1090 (N.D. Cal. 1999); *National Wildlife Federation v. Babbitt*, 128 F.Supp.2d 1274 (E.D. Cal. 2000). Thus, the federal government’s responsibilities—including the duty to not permit or perpetrate any “adverse modification” of designated critical habitat—will backstop any such “action” and perhaps serve as the true normative standard. FINISH

<sup>87</sup> See 50 C.F.R. §§ 17.22(c)(5), 17.22(d)(5), 17.32(c)(5), 17.32(d)(5).

<sup>88</sup> ESA § 10(a)(1)(A), also added by the 1982 amendments, allows the Services to permit “any act otherwise prohibited by section 9 for scientific purposes *or* to enhance the propagation or survival of the affected species, including, but not limited to, acts necessary for the establishment and maintenance of experimental populations. . . .” 16 U.S.C. 1538(a)(1)(A) (emphasis added). Thus, the Services have authority to permit “scientific” activities *or* other acts that may result in take if they determine those acts will “enhance the propagation or survival” of the taxon. They have, in other words, read this as a broad delegation of authority to create *permits* that allow habitat manipulations at both small and broad scales so long as they find some “net conservation benefit” in the permitted activities. CITE

conservation benefit” for listed taxa.<sup>89</sup> Typically, this involves an owner willing to improve the habitat values for listed taxa who is *not* willing to do so if it means being bound not to alter or disturb that enhanced habitat indefinitely.<sup>90</sup> The assurances permit the owner(s) to return the land to some agreed-upon “baseline” without ESA liability if/when it suits them.<sup>91</sup> A candidate conservation agreement with assurances (CCA) has the same basic structure except that it involves taxa that are at risk but have not yet been listed pursuant to ESA § 4.<sup>92</sup> Each of these mechanisms can be more or less difficult to negotiate depending on their scale and any related ESA “special” rules<sup>93</sup> or NEPA procedures.<sup>94</sup> SHA’s and CCA’s must “enhance” the propagation or survival of listed taxa, a standard entirely divorced from “recovery” of range or abundance but intimately bound up in the nature of the property being governed. Each of them, however, can last for decades,<sup>95</sup> raising still more concerns about the appropriate durability of what may turn out to be profoundly mistaken permissions.

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<sup>89</sup> See 50 C.F.R. § 17.22(d)(\_\_\_).

<sup>90</sup> See Dep’t of Interior, Dep’t of Commerce, Announcement of Final Safe Harbor Policy, 64 Fed. Reg. 32717, 32717 (1999) (“Although property owners recognize the benefits of proactive habitat conservation activities to help listed species, some are still concerned that additional land, water, and/or natural resource use restrictions may result if listed species colonize their property or increase in numbers or distribution due to their conservation efforts.”). The take definition and ESA § 9 is thought to present this prospect: with enhancements, a listed taxa might come to occupy an area and then be a bar to subsequent alterations of that area as habitat. *Id.*

<sup>91</sup> See 64 Fed. Reg. at 32718; 50 C.F.R. §§ 17.22(c)(2)(ii), (c)(5).

<sup>92</sup> See Dep’t of Interior, Dep’t of Commerce, Announcement of Final Policy for Candidate Conservation Agreements With Assurances, 64 Fed. Reg. 32726 (1999)

<sup>93</sup> “Threatened” species often have “protective regulations” specifically tailored to their needs, abundance, etc., pursuant to ESA § 4(d).

<sup>94</sup> See Patrick Ryan *et al.*, *ESA Compliance Options: Section 10 and Other Tools*, in *ENDANGERED SPECIES ACT: LAW, POLICY, AND PERSPECTIVES* at 295 (Donald C. Baur & Wm. Robert Irvin eds., 2002)

<sup>95</sup> ITP’s may be issued, consistent with the regulations, for \_\_\_. SHA’s can last \_\_\_”. And CCA’s \_\_\_”.

A nationwide Freedom of Information Act request in mid-2009 yielded over 60 SHA's and over 30 CCAA's,<sup>96</sup> most of which had been done since these "assurances" were being provided.<sup>97</sup> Averaging these deals would be pointless: each is firmly entrenched in its own unique context. But as these mechanisms spread and as more and more privately owned land is encumbered (minimally but significantly) with what amounts to a regulatory *easement*,<sup>98</sup> the persistence of resident wildlife is becoming a function of bilateral relationships between owners and government—a government that is increasingly cost-conscious and strategic. Given the ESA's pronounced ambivalence toward habitat regulation, this growing intransitivity of its habitat protections is perhaps not surprising. But it is most definitely the central trope of conservation as a field of regulation today. Part III argues that achieving intended *results* in this environment is becoming a matter of information triage.

### III. RESULTS-BASED REGULATION: INFORMATION TRIAGE AND OWNER AUTONOMY

Risk regulation today is defined by the defaults from which regulatory actions depart together with the information bottlenecks that regulators must navigate before taking action.<sup>99</sup> The majority of risk regulation in the U.S. today is carried out by administrative agencies that are distributed both horizontally and vertically and

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<sup>96</sup> The exact counts (65 SHA's and 34 CCAA's) are imprecise as several of each were in development as I was collecting documents from the various field offices.

<sup>97</sup> A decade ago, the principal question surrounding these mechanisms was whether the Services could forego listing a species because it was being managed in a CCA or an SHA. *See, e.g.,* Francesca Ortiz, *Candidate Conservation Agreements as a Devolutionary Response to Extinction*, 33 GA. L. REV. 413 (1998).

<sup>98</sup> Others have drawn the connection between ESA habitat permits and conservation easements. *See, e.g.,* Jessica Owley Lippmann, *Exacted Conservation Easements: The Hard Case of Endangered Species Protection*, 19 J. ENVTL. L. & LIT. 293 (2004). I explore the analogy below in Part \_\_\_\_.

<sup>99</sup> NATIONAL RESEARCH COUNCIL, SCIENCE AND DECISIONS: ADVANCING RISK ASSESSMENT (2009).

governed by the principles of administrative law. And if we as a culture worship the virtue of self-interest and the profit motive, our administrative law celebrates the virtues of (1) accountability, (2) participation, and (3) means/ends rationality that can be demonstrated from record evidence.<sup>100</sup> Consequently, regulators in the United States generally bear substantial burdens of proof when they act.

Of course, the trouble with this evidence-based approach when it comes to human behavior is the irreducibly cryptic nature of the evidence. The claim is often heard, for example, that the very structure of the ESA encourages the behaviors it is meant to control. An interval between the identification of a taxon at risk and the activation of the Act's protections, it is said, jointly produce a sharp incentive for owners to destroy or degrade their land's habitat values for named species because of the profits that they might forego if they fail to carry out their (degrading) conduct in time.<sup>101</sup> "Environmental regulations that limit a private landowner's ability to use her land due to its ecological value discourage the maintenance (let alone creation or enhancement) of environmental amenities."<sup>102</sup> ESA § 9 and the meticulous withholding of RPAs, ITPs, *etc.* both impinge on landowners' autonomy and, knowing this, landowners have an incentive to behave strategically.<sup>103</sup> Lueck and Michael even put

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<sup>100</sup> See, e.g., KEITH WERHAN, *PRINCIPLES OF ADMINISTRATIVE LAW* v (2008) ("The aspiration of administrative law is nothing less than to control the exercise of governmental power within the rule of law. Administrative law . . . superimposes a legal framework on an incorrigibly political process.").

<sup>101</sup> See, e.g., Dean Lueck & Jeffrey A. Michael, *Preemptive Habitat Destruction Under the Endangered Species Act* 46 J.L. & ECON. 27, 29 & nn.6-7 (2003) (collecting references).

<sup>102</sup> Jonathan H. Adler, *Money or Nothing: The Adverse Environmental Consequences of Uncompensated Land Use Controls*, 49 B.C. L. REV. 301, 315 (2008).

<sup>103</sup> See, e.g., Barton H. Thompson, Jr., *The Endangered Species Act: A Case Study in Takings & Incentives*, 49 STAN. L. REV. 305 (1996); Adler, *supra* note \_\_ at 319-29; TERRY L. ANDERSON & DONALD R. LEAL, *FREE MARKET ENVIRONMENTALISM* 72 (2d ed. 2001); Daowei Zhang, *Endangered Species and Timber Harvesting: The Case of Red-Cockaded Woodpeckers*, 42 ECON. INQUIRY 150 (2004).

quantitative force behind the anecdotes and theoretical speculation. In 2003, they published a study of foregone and “preemptive” timber harvesting in connection with the designation of critical habitat for red cockaded woodpeckers (a listed species).<sup>104</sup> By time-slicing forest plot data taken from the U.S. Forest Service’s Forest Inventory and Analysis (FIA) database, Lueck and Michael sought to prove that landowners threatened by woodpecker colonization of their timber tended to cut that timber “prematurely.”<sup>105</sup> The trouble with their calculations, apart from how little we know about this behavior as a harm to overall biodiversity or to the RCW in particular,<sup>106</sup> is the vast array of simplifying assumptions they had to adopt in order to derive anything *quantitative* at all. From what constitutes a “forested” acre,<sup>107</sup> to what habitat “values” red cockaded woodpeckers require,<sup>108</sup> to the dispersal threats woodpecker colonies supposedly represented to landowners,<sup>109</sup> to how “onerous” habitat regulations are actually

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<sup>104</sup> Lueck & Michael, *supra* note \_\_.

<sup>105</sup> Lueck & Michael, *supra* note \_\_ at 51-53.

<sup>106</sup> The costs could be to the landowner, of course. But, “[i]n the case of the [RCW], the cost of premature commercial timber harvest may not be large. . . . [P]reemptive harvest is not likely to diminish the net present value of the timber by much.” Lueck & Michael, *supra* note \_\_ at 52. Moreover, as Lueck and Michael admitted, “[m]any landowners . . . use longer rotations [than their study had to assume] because of their multiple use objectives.” *Id.* Costs to the RCW, however, are still only partly understood.

<sup>107</sup> Privately owned pine forest on North Carolina’s southern coastal plain (the only area studied) ranged from “high” to “low” woodpecker densities. *See id.* at 56. But none of the data Lueck and Michael collected specified the “stem density” of the acres at issue—a variable that seasoned foresters know to be highly salient to habitat analyses, especially for birds. *See, e.g.,* T. Bently Wigley *et al., Habitat Attributes and Reproduction of Red-Cockaded Woodpeckers in Intensively Managed Forests*, 27 WILDLIFE SOC. BULL. 801, 806-07 (1999) (reporting studies that link understory conditions to prey biomass and, thus, to red cockaded woodpecker population health).

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<sup>109</sup> Drake and Jones suggest, in survey data collected in North Carolina at roughly the same time Lueck and Michael were at work, that forestland owners’ plans for their land—particularly, a shift toward loblolly pine, and away from long-leaf pine species—had less to do with the presence or absence of RCW than with the relative profitability of loblolly pine. *See* David Drake & Edwin J. Jones, *Current and Future Red-Cockaded Woodpecker Habitat Availability on Non-Industrial Private Forestland in North Carolina*, 31 WILDLIFE SOC. BULL. 661, 665-66 (2003).

perceived to be,<sup>110</sup> to the gross spatial imprecision of FIA data,<sup>111</sup> Lueck and Michael were forced to embark on a veritable odyssey of *data-minded over-simplification*. While the intuition is plainly reasonable that incentives to act strategically often arise from the imperfect scaling and/or scoping of legal rules,<sup>112</sup> the quantitative evidence Lueck and Michael were able to marshal to support the intuition was weak at best. As a justification for the CCAA's, ITP's, and/or SHA's that "pay" for habitat conservation on owned lands,<sup>113</sup> then, this one is at best incomplete.

More generally, though, creating prospective rules virtually *entails* such inaccuracies of scale and/or scope if for no other reason than that natural languages are naturally imprecise.<sup>114</sup> People constantly adjust their expectations and reorient their actions over time in view of others' behaviors and (likely) intentions, especially as to what we might call legislative over- and under-inclusion.<sup>115</sup> So when the real-world flaws of legal processes are factored in, the probability that ends and means will be

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<sup>110</sup> Lueck and Michael, like some others, likely over-estimate the importance of "critical habitat designation" to the regulated community. If it did respond as uniformly as they suggest, we should probably expect to see more downward trending than upward trending from those species that have had a critical habitat designation—when just the opposite appears to be true. See Martin F.J. Taylor *et al.*, *The Effectiveness of the Endangered Species Act: A Quantitative Analysis*, 55 *BIOSCIENCE* 360, 361-63 (2005). Moreover, the variation in motivations toward habitat conservation, even among profit-seekers, is obvious. See H. Cardskadden & D.J. Lober, *Environmental Stakeholder Management as Business Strategy: The Case of the Corporate Wildlife Habitat Enhancement Programme*, 52 *J. ENVTL. MNGMNT.* 183, 186-87 (1998) (describing the rise of the Wildlife Habitat Council, an industry-led nonprofit that sets best practices and benchmarks for private land stewardship).

<sup>111</sup> See Hong S. He *et al.*, *Integration of GIS Data and Classified Satellite Imagery For Regional Forest Assessment*, 8 *ECOL. APPS.* 1072, 1073 (1998) (noting the limitations of FIA data because they are based on 1-acre sampling plots, executed at a density of 1-2 plots per 10 km<sup>2</sup>).

<sup>112</sup> See generally RICHARD A. POSNER, *ECONOMIC ANALYSIS OF LAW* (7th ed. 2007).

<sup>113</sup> John Echeverria has likened the rise of instruments like HCP's and CCAA's to payments for conservation. See Echeverria, *supra* note \_\_ at 4-5.

<sup>114</sup> See generally FREDERICK SCHAUER, *PLAYING BY THE RULES* (1992).

<sup>115</sup> See MACKIE, *supra* note \_\_ at 42 ("Sustained public deliberation over a series of contested issues involves a complex wealth of meanings that feeds intuitions about the intentions of others. The sum of evidence from all sources permits one to form judgments about what other people want and know, judgments that are fallable but reliable enough for human affairs.")

mismatched in laws that are enacted and applied mounts to a virtual certainty—and lawmakers know it. But this no more justifies the generalization that all regulation is ill-conceived than it does the flight from “reality” in the very scientific practices that might actually help us re-engineer our legal rights, privileges, and immunities more effectively.<sup>116</sup> It underscores the potential that behavior-predicting tools would have for regulators—but where are those tools? They almost never undergird the steps we take implicitly assuming we have such predictive powers.

Take the spread of “assurances” and other representations to would-be conservationist-owners by the Services. *Trust* in the owners being permitted and granted these assurances is the only conclusive reason to accept the risks we run in allowing them their autonomy where habitat destruction and loss are concerned. But *who should* the Services trust? We resolve such questions without any hard metrics—intuitively, tacitly, and too often defectively. It is certainly not a matter for which the typical “agency” has expertise, at least not in any traditional sense.<sup>117</sup> Will the Services *develop* such expertise the more they engage in this kind of ad hoc governance? Judging by how they are structured, there is little reason to assume so. And, of course, the real legal test of these permits will only come when some private enforcer finally

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<sup>116</sup> See generally IAN SHAPIRO, *THE FLIGHT FROM REALITY IN THE HUMAN SCIENCES* (2005) (describing the tendencies toward “method-driven” instead of “problem-driven” research in economics, sociology, political science, and other “human” sciences).

<sup>117</sup> One categorical assumption is probably as faulty as the next. See, e.g., U.S. Fish & Wildlife Serv., Safe Harbor Agreements and Candidate Conservation Agreements With Assurances; Revisions to the Regulations, 69 Fed. Reg. 24084, 24088 (2004) (rejecting a commenter’s accusation that permit applicants are all seeking to “game” the process by stating that “[a]pplicants enter in SHAs and CCAAs in good faith”).

gets a valid “case” of ESA § 9 liability before a court and the defendant claims their permit as a shield.<sup>118</sup>

In short, these instruments’ factual complexities are being compounded by their normative ambiguities. They are making an already fragmented and fast-changing landscape even more so. Piecemeal efforts of the sort—however virtuous on their own merits—almost always increase the risk of “gridlock” down the road.<sup>119</sup> Of course, information triage is now part and parcel of risk regulation. And the rise of ecosystem services—the pricing of externalities that normally cannot be priced<sup>120</sup>—shows how intensely we are pursuing regulatory mechanisms that actually cope with the seemingly ineliminable uncertainty and enormity of conservation today. Locating habitat “regulation” of this kind across our intermixed landscapes, however, was taken as a step toward more a “results-based” conservation practice. Yet, the bilateralism of owner-to-government conservation is spreading according to no organizing principles other than resident wildlife’s “survival” and the protection of owner autonomy. Part IV argues that this is only further obstructing the paths toward a synthesis of our disparate conservation fits and starts into a truly results-based practice.

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<sup>118</sup> This issue has narrowly avoided adjudication several times. *See, e.g.*, *Northwest Resource Information Ctr. v. National marine Fisheries Serv.*, 56 F.3d 1060, 1060-70 (9th Cir. 1995) (dismissing claim as moot because ESA § 10(a)(1)(A) being challenged permit had expired). One permit ostensibly granted under ESA § 10(a)(1)(A) has been invalidated, but it was an obvious sham. *See Humane Society v. Kempthorne*, 481 F. Supp. 2d 53 (D.D.C. 2006) (invalidating “enhancement of survival” permit granted to state to engage in “depredation control” killing of wolves).

<sup>119</sup> *See, e.g.*, Julia D. Mahoney, *Perpetual Restrictions on Land and the Problem of the Future*, 88 VA. L. REV. 739, 785 (2002); *cf.* MICHAEL HELLER, *THE GRIDLOCK ECONOMY 2* (2008) (“Sometimes we create too many separate owners of a single resource. Each one can block the others’ use. If cooperation fails, nobody can use the resource. . . . That’s gridlock.”).

<sup>120</sup> The general impracticability of accurately pricing “ecosystem services” has long been a given. *See, e.g.*, Edward G. Farnsworth *et al.* *The Value of Natural Ecosystems: An Economic and Ecological Framework*, 8 ENV’T'L CONSERV. 275 (1981).

#### IV. PERMITS INTO PROPERTY?

“Because human beings are fated to live mostly on the surface of the earth,” the conventional wisdom holds, “the pattern of entitlements to use land is a central issue in social organization.”<sup>121</sup> And property—especially “real” property—is normally thought of as standardized into relatively stable bundles of rights “off the rack” that change hands “as is.”<sup>122</sup> Property rights are said to be “*in rem*,” *i.e.*, they run with an asset and bind all subsequent claimants on that asset, regardless of their specific relationship(s) to the right holder(s).<sup>123</sup> Government permissions, by supposed contrast, are bilateral, imbricated in contextual—often multi-factored—conditionals,<sup>124</sup> and, most of all, are non-transferrable.<sup>125</sup> Finally, as Jerry Mashaw once argued, government permissions are shaped in good part by “bureaucratic imperatives”:

The quality of justice provided . . . depends primarily on how good the management system is at dealing with the set of conflicting demands that define

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<sup>121</sup> Robert C. Ellickson, *Property in Land*, 102 YALE L.J. 1315, 1317 (1993).

<sup>122</sup> See, e.g., Michael A. Heller, *The Boundaries of Private Property*, 108 YALE L.J. 1163, 1176-82 (1999); Thomas W. Merrill & Henry A. Smith, *Optimal Standardization in the Law of Property: The Numerus Clausus Principle*, 110 YALE L.J. 1 (2000); Thomas W. Merrill & Henry A. Smith, *The Property/Contract Interface*, 101 COLUM. L. REV. 773 (2001) (hereafter Merrill & Smith, *Property/Contract*); Henry Hansmann & Reiner Kraakman, *Property, Contract, and Verification: the Numerus Clausus Problem and the Divisibility of Rights*, 31 J. LEGAL STUD. S373 (2002); Adam Mossoff, *What is Property? Putting the Pieces Back Together*, 45 ARIZ. L. REV. 371, 439 (2003) (“The fundamental possessory rights that define the essence of property . . . [are] the rights to acquire, use and dispose of one’s possessions.”)

<sup>123</sup> See Wesley Newcomb Hohfeld, *Fundamental Legal Conceptions as Applied in Judicial Reasoning*, 26 YALE L.J. 710 (1917). Merrill and Smith have lately revived Hohfeld’s insight with a vengeance. See, e.g., Merrill & Smith, *Property/Contract*, supra note \_\_; THOMAS W. MERRILL & HENRY A. SMITH, *PROPERTY: PRINCIPLES AND POLICIES* (2006).

<sup>124</sup> Cf. Ellickson, supra note \_\_ at 1352 (“Commentators as diverse as Thomas Jefferson, Walter Lippmann, Milton Friedman, and Charles Reich have private property as a primary, indeed often as *the* primary, foundation for individual freedom.”); FINISH

<sup>125</sup> Government permissions are, in this respect, similar to “contract” rights as opposed to property rights. Cf. Merrill & Smith, *Property/Contract*, supra note \_\_ at 776 (“[C]ontract rights are in personam; in that is, they bind only the parties to the contract. The contracting parties are in the best position to evaluate the costs and benefits of adopting novel legal terms to govern their relationship . . .”).

rational, fair, and efficient adjudication. It must translate vague and conflicting statutory goals into administrable rules, without losing the true and sometimes subtle thrust of the program. It must attempt to ensure that decisions are consistent and that development is adequate, without impairing the discretion necessary [for] individualization. It must simplify and objectify the data relevant to adjudication in order to direct action and to monitor outputs, but without so distorting perception that decisionmaking is in fact divorced from a reality that is also complex and subjective.<sup>126</sup>

The Services' bureaucratic imperatives, as suggested already, are many-fold, perhaps leaving little room for standardization or the other hallmarks of property.<sup>127</sup> And even with the advent of the NSP and other "assurances," these devices are still *revocable*<sup>128</sup> and only "run with the land" as the Services permit.<sup>129</sup> And yet, to listen to the Services, the ESA's regulation of habitat is a framework in crisis. Congress cannot (will not) appropriate money fast enough to keep up with all the taxa that could or should be listed and managed as imperiled. In this light, the partnerships ITP's, ITS's, safe harbors, and CCAA's represent are just good old-fashioned leveraging.<sup>130</sup>

But the risks these tools introduce are clearly asymmetrical: they can generate harmful externalities, both at present and in the future, and they are potentially serious notice and comprehension problems in the making, given their complexity.<sup>131</sup> Treating these government permissions *as* property, thus, would be exceedingly complicated. It has only been in the context of due process adjudication that government permissions

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<sup>126</sup> See JERRY L. MASHAW, *BUREAUCRATIC JUSTICE* 172 (1983).

<sup>127</sup> In amendments to the CCAA and SHA policies in 2004, FWS relaxed the requirement that any one of these instruments actually produce a "conservation benefit." The amendment

<sup>128</sup> See 50 C.F.R. §§ 13.28, 17.22(b)(7), 17.22(c)(7), 17.22(d)(7).

<sup>129</sup> See 50 C.F.R. §§ 13.28, 17.22(b)(), 17.22(c)(), 17.22(d)()... FINISH

<sup>130</sup> See, e.g., Paige A. Najvar, *Stepping Up Recovery for the Houston Toad*, 35 *ENDANGERED SPEC. BULL.* 34, 35 (Spring 2009).

<sup>131</sup> On the tendency of non-standard "servitudes" to create these three sorts of problems, see Molly Shaffer Van Houweling, *The New Servitudes*, 96 *GEO. L.J.* 885 (2009). Important counterpoints are offered in Glen O. Robinson, *Personal Property Servitudes*, 71 *U. CHI. L. REV.* 1449 (2004).

have been associated with property,<sup>132</sup> and then only for limited purposes.<sup>133</sup> Of course, administrative agencies routinely *create* property<sup>134</sup> and, even shy of the “property” threshold, government assurances often endorse private expectations in a way the Constitution can be involved to protect.<sup>135</sup> Contractual obligations, for example, encumber government just as readily as do various “property” liabilities.<sup>136</sup> Even supposing that the ESA habitat permits reviewed in Parts I and II are regarded as mere contracts, then, the legal liabilities the government would face for breaching them are still significant enough to give any administrator pause.<sup>137</sup> But this instinctual distrust of lumping property and permits together ought not to inhibit us from exploring why or how permissions and property are similar.

Property rights in our legal system are, in a sense, bi-modal: they secure privileges, powers, and immunities as against other agents within a legal jurisdiction while simultaneously doing so (separately, if at all) against the agents of that legal

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<sup>132</sup> Individual permissions that bear the “hallmarks of property” are those “grounded in law, which cannot be removed except ‘for cause.’” *Logan v. Zimmerman Brush Co.* 455 U.S. 422, 430 (1982). To be ‘grounded in law,’ the claim of entitlement “must be derived from [1] statute or [2] legal rule or [3] through a mutually explicit understanding.” *Leis v. Flynt*, 439 U.S. 438, 442 (1979). For laws (or the less formal “understandings”) to give rise to the “legitimate claims” that trigger due process protections, they must contain “language creating substantive predicates [i.e., standards] to govern official decision-making.” *Kentucky Dept. of Corrections v. Thompson*, 490 U.S. 454, 462 (1989). Such substantive predicates may leave the administrative official “significant discretion” as long as they meaningfully limit that discretion. *Board of Pardons v. Allen*, 482 U.S. 369, 375 (1987). However, the Court has also suggested that any law underlying these claims of entitlement—if it is to give rise to “property” rights triggering due process protections—must contain “explicitly mandatory language” such as “specific directives to the decisionmaker that if the . . . substantive predicates are present, a particular outcome must follow.” *Kentucky Dept. of Corrections*, 490 U.S. at 463.

<sup>133</sup> See Thomas W. Merrill, *The Landscape of Constitutional Property*, 86 VA. L. REV. 885, 916-42 (2000).

<sup>134</sup> Patents are but one example. Fishing quotas are another. See, e.g., *Alliance Against IFQs v. Brown*, 84 F.3d 343 (9th Cir. 1996).

<sup>135</sup> See, e.g., *Mobil Oil Exploration and Producing Southeast, Inc. v. United States*, 530 U.S. 604 (2000); *United States v. Winstar Corp.*, 518 U.S. 839 (1996).

<sup>136</sup> See, e.g., *Meadow Green-Wildcat Corp. v. Hathaway*, 936 F.2d 601 (1st Cir. 1991).

<sup>137</sup> See *Mobile Oil Exploration*, 530 U.S. at \_\_\_ (Stevens, J., dissenting).

jurisdiction. Yet, ownership works its magic in large part by securing to owners a certain *sovereignty*: standard, easily-recognized forms of dominion that order behaviors without the need for constant recourse to fine print.<sup>138</sup> Thus, not surprisingly, property’s bimodality—its nature as right *in rem* and as right against government—invariably chills discussions of making government permissions more “like” property. Modelling ESA habitat permissions after property, however, might actually empower the Services to protect more habitat more effectively over the long term and at broader scales, largely because doing so could (1) simplify the mechanics of creating, adjusting, and reordering these managerial permissions; (2) enhance market and non-market actors’ capacities to comprehend, compare, and benchmark their own (often disparate) conservation programs; and (3) better standardize the risks being shifted by tools like CCAA’s, SHA’s and ITP’s. All that said, one kind of legal right should not be confused for another. Nothing that follows suggests otherwise. My argument is that the ESA’s evolution—toward an intransitive normative system empowering two smallish bureaucratic agencies to govern a vast, expanding array of human conduct—gives us a view of how property and permissions actually interact in real time. Clearly, owner autonomy exerts powerful influences on systems like the ESA. But just as clearly, permissions are an increasingly pervasive stricture on owner autonomy, leaving the two to contour exactly the same human behavioral domains. Part V argues that this view

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<sup>138</sup> On the supposed “magic” worked by standardized bundles of rights to assets and markets that make participants better off, in part, through the free exchange of those bundles, see Merrill & Smith, *supra* note \_\_ at 35-42; Henry E. Smith, *Property and Property Rules*, 79 N.Y.U.L. REV. 719 (2004). The choices to be made between more tailored bilateral arrangements and more standardized arrangements were famously foregrounded by Calabresi and Melamed. See Guido Calabresi & Douglas Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 HARV. L. REV. 1089 (1972).

should persuade those shaping the Act's future to treat human systems as being every bit as variable and adaptive as natural systems and to start laying the infrastructure that will enable the agents of, and the agents within, our legal jurisdictions to pool their information, cognitive capacities, and regulatory innovations in ways that empower those agents to solve their own problems of scarcity and depletion.

#### V. THE INTERMIXED LANDSCAPE: HABITAT PROTECTION SCALED UP

Given our diversity of owners and sovereigns, the core challenge we face in the looming crisis of habitat loss and disturbance is enabling (and prompting) broader-scale cooperation. Yet the permissions that the Services have been generating are, in a nutshell, too small, too customized, too dense, and too bound up with the highly imperfect information that happens to be available at their origination. If they were modeled to function more like property, they would be more standardized, legally sturdy, recordable and searchable, and probably more *marketable*. This Part makes the case that such adjustments are both possible and long overdue.

In my view, reshaping habitat permissions to look and operate more like “property” would enable greater coordination across more space and time and could, therefore, also enable the public to better protect itself against externalities like habitat loss. Like the proverbial “patent thicket,” habitat permissions that are idiosyncratic, costly to generate, and hard to transfer can actually create more behavioral frictions

than innovations.<sup>139</sup> Retooling them to function more like—and be recognizable as—*relatively* standardized bundles of “rights” and “duties,” thus, could yield both public and private benefits. As our opportunities to scale up arise from the modest beginnings in any particular protected area<sup>140</sup> or conservation deal,<sup>141</sup> it is self-evident that standardized versions of habitat maintenance could be more easily bundled, collapsed into larger combines, and/or compared with one another for their relative efficiencies. Standardized terminology, measuring units, measurable outcomes, and temporal increments would all aid in that transition.<sup>142</sup> As things stand today, our individual start-ups can be more or less specific to their own circumstances and, thus, more or less bendable in the hands of subsequent users.

What is less self-evident is the effect that better transparency and wider disclosure of these mechanisms could have at the margins—the ameliorative effects our public “stock of wisdom” broadly communicated could have on the *next* iterative step toward an immense overall goal. In my view, the possibilities are impressive, but the argument must rest on three key premises. First, *most* imperiled species today depend on active landscape management to either mitigate threats from agents (or events) beyond their current range(s) or to restore habitat conditions and allow their dispersal.

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<sup>139</sup> See Tim Wu, *Intellectual Property, Innovation, and Decentralized Decisions*, 92 VA. L. REV. 123, 131-41 (2006).

<sup>140</sup> As I have argued elsewhere, public lands law has been gradually evolving toward the maintenance of various systems of protected areas, each with its own loosely defined set of priorities and zoning practices. See Jamison E. Colburn, *Habitat and Humanity: Public Lands Law in the Age of Ecology*, 39 ARIZ. ST. L.J. 145 (2007).

<sup>141</sup> Throughout the 1980s and ‘90s, conservation ownerships expanded rapidly, especially as conservation easements entered the mainstream of state property law and financing mechanisms grew in sophistication. See *generally* RICHARD BREWER, *CONSERVANCY: THE LAND TRUST MOVEMENT IN AMERICA* (2003); James N. Levitt, *Financial Innovation for Conservation: An American Tradition, in FROM WALDEN TO WALL STREET: FRONTIERS OF CONSERVATION FINANCE 1* (James N. Levitt ed., 2005).

<sup>142</sup> See, e.g., MORRISON, *supra* note \_ at 44-66.

This includes everything from habitat restoration meant to increase the effective range of imperiled taxa to the control of invasive species introduced or released within the taxon's current range and an immense variety of biophysical manipulations in between. And, of course, the behavior, location, and needs of many species vary throughout the year, often substantially.<sup>143</sup> Thus, measuring overall habitat functionality can be extremely complex and is often both spatially and temporally vague by necessity. SHA's, for example, are designed to produce exactly the kind of advantageous manipulations that many species need, but they are done at spatial and temporal scales that ignore most of the variability involved.

Second, listed species represent but a fraction of nature's composition and functionality that are now in jeopardy.<sup>144</sup> In some sense, this is a testament to nature's immensity. But it is also a useful reminder of the character of our legal system and the principal dilemma it presents for conservation: law is inevitably expressed jurisdictionally and is, therefore, *innately bounded*—it is innately a matter of *boundaries*. And, while land use (and, thus, habitat disturbance) has traditionally been a matter of geographically diminutive localities, its challenges were paradoxically compounded as federal jurisdiction was legislated into existence.<sup>145</sup> For, without the

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<sup>143</sup> MORRISON, *supra* note \_\_ at 49.

<sup>144</sup> See, e.g., Martha J. Groom *et al.*, *Meeting Conservation Challenges in the Twenty-First Century*, in PRINCIPLES OF CONSERVATION BIOLOGY 661, 671 (Martha J. Groom *et al.* eds., 2006) (reviewing forecasts and scenario planning from Millennium Ecosystem Assessment and concluding that >20% of global biodiversity will probably be lost by 2050). And to be clear, this is a *human* predicament: we need venture no further into ethics than immediate self-interest to view this condition as a grave and growing threat. See, e.g., Sandra Diaz *et al.*, *Biodiversity Loss Threatens Human Well-Being*, 4(8) PLOS BIO. 1300 (2006) (e277) (reviewing the probabilities of “cascading” effects from species loss and ecosystemic collapses).

<sup>145</sup> See, e.g., Jamison E. Colburn, *Localism's Ecology: Protecting and Restoring Habitat in the Suburban Nation*, 33 ECOLOGY L.Q. 945 (2006).

resources needed to *execute* on our legislation’s promise, it inevitably comes down to what the federal government has to *spend* as it displaces local jurisdiction by regulation. And that has meant, thus far at least, tragic underinvestment in biological diversity.

Finally, as I have argued elsewhere, the principal barriers to better conservation are almost all cognitive and informational. The key insight in conservation circles over the last three decades has been the necessity of acting without knowing. On most decisions, usable information is imperfect, dispersed, and in need of costly and time-consuming improvement. For example, whole life-cycle analysis of a product or service is needed before we decide which mode of consumption is more “environmentally friendly.” Yet it is exactly that rich a form of analysis where information and cognitive costs outstrip our capacities.<sup>146</sup> Thus, as new research suggests that many of our habitat degradations are temporary and reversible,<sup>147</sup> even where near-term outcomes are relatively sure, we still have reason to bracket what we know and make provisions for a more uncertain future. Resigning oneself to the inevitability of imperfect information, of course, resolves nothing about the appropriate levels of certainty, probability, and ignorance. But with these premises in mind, it should become clear why the Services’ habitat permissions must better adapt to an environment of multimodal communication, exchange, and permissions.

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<sup>146</sup> See WILLIAM McDONOUGH & MICHAEL BRAUNGART, *CRADLE TO CRADLE: REMAKING THE WAY WE MAKE THINGS* 165-86 (2002) (proposing a series of rules of thumb for the design and purchase of goods that orient people to life cycle analysis and encourage them to pool their informational and cognitive capacities).

<sup>147</sup> See, e.g., Holly P. Jones & Oswald J. Schmitz, *Rapid Recovery of Damaged Ecosystems*, 4(5) PLoS ONE 1 (2009) (e5653).

Like most regulatory problems, habitat loss is replete with its externalities and concurrent jurisdiction,<sup>148</sup> its assets controlled by managers (not owners),<sup>149</sup> and its own collection of flawed past efforts that constrain future options. What it lacks is an architecture that self-consciously promotes integration by iteration over time. While social meaning may be constructed in society through undirected communicative action, building effective conservation networks entails just the sort of infrastructural investment and collective action that will not arise spontaneously.<sup>150</sup> Besides the tools needed to pool and share information,<sup>151</sup> this means a broad and deep commitment to “learning from difference.”<sup>152</sup> Making information broadly available in order to reap the rewards of more sophisticated aggregation is not without risk.<sup>153</sup> But it would almost certainly improve the chances that more “information cocoons” are breached,<sup>154</sup> that more rewards for cooperating and sharing experiences materialize, and that whatever

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<sup>148</sup> See Robert B. Ahdieh, *Dialectical Regulation*, 38 CONN. L. REV. 863 (2006).

<sup>149</sup> A compact exploration of the range of managerial forms and its departure from “ownership-as-control” is Eugene F. Fama & Michael C. Jensen, *Separation of Ownership and Control*, 26 J.L. & ECON. 301 (1983).

<sup>150</sup> Cf. ANDREW F. BENNETT, LINKAGES IN THE LANDSCAPE: THE ROLE OF CORRIDORS AND CONNECTIVITY IN WILDLIFE CONSERVATION (2d ed. 2003) (describing the need to use the patchwork of protected areas and conduct restrictions to assemble networks of interconnected habitats and habitat elements); JONATHAN S. ADAMS, THE FUTURE OF THE WILD: RADICAL CONSERVATION FOR A CROWDED WORLD (2006) (same).

<sup>151</sup> Collection, integration, and delivery of information about ESA habitat permissions, conservation easements, protected public lands, and other habitat mechanisms is analogous both to real property conveyance registration in the digital age, see, e.g., Dale A. Whitman, *Digital Recording of Real Estate Conveyances*, 32 J. MARSHALL L. REV. 227 (1999), and to more affirmative (and familiar) public information campaigns. See Janet A. Weiss, *Public Information*, in THE TOOLS OF GOVERNMENT: A GUIDE TO THE NEW GOVERNANCE 217 (Lester M. Salamon ed., 2002).

<sup>152</sup> The emergence of “framework” goals and the freedom to advance toward them by any available means—in exchange for a commitment to report evenly one’s set-backs and advances—has been critical to the European Union’s exploitation of its decentralized structure. See Charles F. Sabel & Jonathan Zeitlin, *Learning from Difference: The New Architecture of Experimentalist Governance in the EU*, 14 EUR. L.J. 271 (2008).

<sup>153</sup> See, e.g., Daniel J. Solove, *Access and Aggregation: Public Records, Privacy and the Constitution*, 86 MINN. L. REV. 1137 (2002).

<sup>154</sup> An “information cocoon” is the result of cognitive errors that allow us to hear only what we choose to, i.e., only what “comforts and pleases us.” CASS R. SUNSTEIN, INFOTOPIA: HOW MANY MINDS PRODUCE KNOWLEDGE 9 (2006).

(correlated) biases have affected this generation of habitat mechanisms are not simply repeated in the coming generations.<sup>155</sup> Of course, this may require some deliberate moves by regulators and/or courts discouraging (or at least confining) the opportunistic behavior that so often rewards the secrecy and nondisclosure that surrounds deals like our ESA habitat permissions.<sup>156</sup> What incentive(s) do the regulators have to tack in this direction? Network effects<sup>157</sup> are a powerful reminder that ‘to the standardizer goes the power to set the standard.’<sup>158</sup>

Bear in mind, though, that most conservation practitioners already know the first law of ecology: everything is connected to everything else. Focusing on particular jurisdictions and places, or particular conservation “baselines” and resident wildlife

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<sup>155</sup> Legislative processes are arguably better at combatting these failures of rationality than adjudicative processes. *See, e.g.*, ADRIAN VERMEULE, LAW AND THE LIMITS OF REASON 90-96 (2009); Frederick Schauer, *Do Cases Make Bad Law?*, 73 U. CHI. L. REV. 883 (2006). Legislative processes that have checks built-in against the cascading of biases, built-in for the maintenance of minimum average competences, and that manage the aggregation of expert opinion, however, are very clearly superior to their unimproved cousins. *See* VERMEULE, *supra*, at 25-55; Adrian Vermeule, *The Parliament of the Experts*, 58 DUKE L.J. 2231, 2245 (2009).

<sup>156</sup> If greater transparency simply augments the risks of being attacked, few agents will opt for it. Moreover, transparency tends not to have immediate deliberative benefits where people disagree about how to measure improvement. *See* ARCHON FUNG ET AL., FULL DISCLOSURE: THE PERILS AND PROMISE OF TRANSPARENCY 173-76 (2007). However, “targeted transparency” that emphasizes both the need for continuous improvement and the constraints of available information can help disclosers benefit from their actions, especially where collaboration among a whole system’s participants results. *Id.* at 162-69.

<sup>157</sup> A “network effect,” for example, is at work in the pervasiveness of English, globally. A language is more valuable to learn if many other people already speak it. “In general, therefore, the larger the network, the more powerful the standard underlying it will be—and the more pressure non-users will feel to adopt that standard.” DAVID SINGH GREWAL, NETWORK POWER: THE SOCIAL DYNAMICS OF GLOBALIZATION 10 (2008).

<sup>158</sup> “Standards” of this kind can be important mediating influences. “Mediating standards are ones that cannot be avoided if users wish to engage in certain activities: they form a part of that very activity itself.” GREWAL, *supra* note \_\_ at 22. Thus, an owner with a conservation easement—itsself a costly and often difficult deal to assemble—that was CCAA or SHA compliant as designed would find it much cheaper to net the benefits of an ESA permission if/when that permission became instrumentally useful to it.

populations,<sup>159</sup> is probably not so much a matter of ignorance anymore as of cognition. We need “action areas,” specific parcels of property, discrete timeframes and other finite locations for the simple reason that we cannot cognitively process the more realistic expressions of habitat and biological diversity which entail understanding total systems and distinguishing their perturbations from their overthrow. Thus, if there is a clear upside to “globalization,” it is its tendency to free people from the “tyranny of the local.”<sup>160</sup> But, even supposing unprecedented computational and coordinative breakthroughs that make globally-scaled cognition practicable, we will still face the normative static generated as broadly-scaled collective actions conflict with our more democratic traditions and their roots in localized jurisdiction. In truth, no one—least of all the Services—has yet devised an architecture that would enable us to become, and then to remain, panoptically aware of our landscapes and of our economy while at the same time functioning as (highly situated) citizens, consumers, laborers, neighbors, etc.

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<sup>159</sup> Unfortunately, none of the ESA permissions currently requires a detailed enough “baseline” assessment—let alone the broad dissemination of such assessments—that would confirm or deny the presence/absence of targeted taxa, relative abundance(s), the “constituent elements” of required habitat, etc. *See, e.g.*, 50 C.F.R. §§ 17.22(b)(1)(ii) (requiring that the ITP application include “common and scientific names of the species sought to be covered by the permit, as well as the number, age, and sex of such species, if known”). SHA’s and CCAA’s, in fact (the whole utility of which turns on the integrity of the baseline conditions), need not spell any of this out. *See* 50 C.F.R. §§ 17.22(c)(1)(iii) (requiring SHA application comply with SHA “Policy”); U.S. Fish & Wildlife Serv., Notice of Final Safe Harbor Policy, 64 Fed. Reg. 32717, 32723 (1999) (SHA permit applications must include a “full description” of baseline conditions wherein “[t]o the extent determinable, the parties to the Agreement . . . identify and agree on the degree to which the enrolled property is inhabited, permanently or seasonably, by the covered species” but allowing substantial departures where “appropriate”); 50 C.F.R. §§ 17.22(d)(1)(iii) (requiring CCAA application comply with CCAA “Policy”); U.S. Fish & Wildlife Serv., Notice of Final Candidate Conservation Agreement with Assurances Policy, 64 Fed. Reg. 32726, 32734 (1999) (CCAA permit applications must include “population levels (if available or determinable) . . . and/or the existing characteristics of the property owners’s lands or waters included in the Agreement. Finally, whatever *monitoring* data are being collected as a result of these deals, they are not being shared publicly.

<sup>160</sup> *Cf.* URSULA K. HEISE, *SENSE OF PLACE AND SENSE OF PLANET: THE ENVIRONMENTAL IMAGINATION OF THE GLOBAL* (2008) (arguing that the most constructive portrayals of globalization have been those that have shown the possibilities in cosmopolitan consciousness rather than territorial or cultural conquests).

But we *can* allocate present efforts as we build and then use tools like the ESA habitat permissions *as if* a richer, more complex whole is possible. The Internet, open-source software, Wikipedia, Creative Commons, and other digital collaborations have proven as much.<sup>161</sup> The trajectory of these projects often departs substantially from what their progenitors imagined—but, then, that describes the ESA itself.<sup>162</sup> Like all cognitively gargantuan enterprises, habitat conservation will only succeed because the many minds working on it find new ways to inter-operate, produce and share knowledge, and employ it collectively as they constitute and direct their common agency.<sup>163</sup> Whether out of optimism or desperation, thus, the Services must seek to facilitate the emergence of new modes of deliberation involving conservation’s disparate agents—agents that are, themselves, temporally and spatially indeterminate. And, to be sure, a certain measure of standardization and modularity could go a long way in enabling exactly the kind of aggregation and synthesis (some of which seems at first blush randomly generous and/or altruistic<sup>164</sup>) that would be so instrumental to a broader-scale form of land management.

Transitioning ITP’s, SHA’s, or CCAA’s into property-like instruments, however, will likely open them up to *more* external scrutiny and, thus, perhaps more filtering by other interested parties. This is where the principals must act—prompting their agents

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<sup>161</sup> See, e.g., SUNSTEIN, INFOTOPIA, supra note \_\_; CASS R. SUNSTEIN, A CONSTITUTION OF MANY MINDS (2009).

<sup>162</sup> See Parts I, II, and III, above.

<sup>163</sup> Cf. SUNSTEIN, INFOTOPIA, supra note \_\_ at 217 (“Notwithstanding persistent disagreements, new technologies are making it stunningly simple for each of us to obtain dispersed information—and to harness that information, and dispersed creativity as well, for the developments of the development of . . . [knowledge].”).

<sup>164</sup> See BENKLER, supra note \_\_ at 465-67 (dubbing the kind of unpaid labor that clickworkers, wikipedians, and seti@home participants contribute “social production” and contrasting it with those modes of production directed by profit motives or hierarchy).

to accept that scrutiny—and affirmatively urge our transition away from a “transactional” focus on individual land use permissions and toward a more integrative managerial focus that makes better use of the deliberation that produces them.<sup>165</sup> The central problem to be solved if these permits are to serve such ends is the faster and freer production and dissemination of information—information about ecological composition and function, system resilience, about the profitable uses of those systems, and about their (complex) interactions in real time.<sup>166</sup> But if our behavioral sciences have at least complicated the picture enough to reveal our collective (often correlated) biases and other departures from rationality, they have thus far failed to generate anything like a complete picture.<sup>167</sup> Available information about real human motivations and desires will color choices to engage with some as “partners” and not others, certainly. But *property* is so common, notwithstanding all the commentary to the contrary, precisely because of its informational advantages in a diverse and fast-

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<sup>165</sup> Deep amendment without repeal in 1978 and 1982 left the Act’s interpreters in perhaps the hardest of all interpretive quandaries: interpreting disparate ends that collided and produced a single means. Short of more legislative guidance—which will be extraordinarily hard to generate in our system—the political leaders of the Services need to start reworking the internal structure of these agencies to better adapt to the information environments in which they actually operate.

Streamlining and standardizing permissions is only one step to that end. I have elsewhere argued that reforming the Section 4 and 7 programs is both necessary and feasible. See Jamison E. Colburn, *Qualitative, Quantitative, and Integrative Conservation*, 29 WASH. U. J.L. & POL’Y (forthcoming 2009).

<sup>166</sup> Thus, for example, the Malpai Borderlands Group (MBG), a collective of about 100 families that own and manage over a million acres of desert scrub and tobosa grasslands in southwestern New Mexico and southeastern Arizona, established an innovative partnership that not only pools range resources among its owner-participants and pools its problem-solving capacities, but also manages needed permissions for the conservation/use activities within its territory. See ADAMS, *supra* note \_\_ at 116-30. Most recently, MBG took the work it had put into a SHA for the Chiricahua leopard frog and parlayed it into a multi-species HCP, as well. See <http://www.malpaiborderlandsgroup.org/endg.asp?Page=1>.

<sup>167</sup> Cf. Lior J. Strahilevitz, *Wealth Without Markets?*, 114 YALE L.J. 1462 (2007) (book review of BENKLER, *supra* note \_\_) (arguing that profit and rational self-interest can motivate behaviors in non-standard ways and produce what resembles altruism).

changing environment.<sup>168</sup> Property comes in a limited number of standardized bundles of rights; its transactability as such enhances our formation of expectations surrounding tangible assets. However tangible property may feel, however, it is undeniably entrenched in deeper, ecosystemic relationships that make it valuable. Revealing the most efficient ways to reconcile owner autonomy with the public's power to protect itself is work that will inevitably conserve the resources conservation itself needs to progress in a world of increasingly diverse owners and sovereigns.

## VI. CONCLUSIONS

Landscape-scale planning requires at least a rough understanding of the desired future conditions we seek. Unfortunately, the ESA offers no such understanding. And the ESA's model of habitat conservation is obviously a legislative work-in-progress. It is worth recalling, therefore, that the ESA itself was an *amendment* of legislation enacted in 1966<sup>169</sup> and 1969.<sup>170</sup> It was also legislation that enjoined the Executive to convene an international convention for the protection of endangered species—a gathering that was eventually held in 1973 and produced what we know as the Convention on the Trade in Endangered Species (CITES). Over the years, we have struggled to give more definition to our desired future conditions, and have usually settled on landscape

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<sup>168</sup> "Protection of a large and indefinite class of uses by delineating a thing and giving the owner a right to exclude others from the thing is a strategy well suited to situations in which it is not economical to decide first-order questions of uses on a use-by-use basis. Instead, the right to exclude from a thing . . . is the result of a second-order delegation to the owner to choose among any uses, known or unknown, of the thing." Henry E. Smith, *Property and Property Rules*, 79 N.Y.U.L. REV. 1719, 1754 (2004).

<sup>169</sup> The Endangered Species Preservation Act of 1966, Pub. L. No. 89-669, 80 Stat. 926 (1966).

<sup>170</sup> The Endangered Species Conservation Act of 1969, Pub. L. No. 91-135, 83 Stat. 275 (1969).

*resilience*—the capacity of our lands to absorb change without being fundamentally altered. The more we have worked out what this will entail, the more our basic systems of production, consumption, and governance have forced us to innovate hybrid institutions like private property subject to governance permissions. As these processes have scaled up, it has become evident that *global* resilience is now in question.

All of this surfaces the unsettling—but no less real—possibility that global capitalism as we know it is sliding into a prolonged and potentially transformative crisis. Even apart from its sustainability (which is questionable), the widespread cultural polarization we have witnessed for two decades, coupled with disruptive over-production and under-consumption in a growing list of markets,<sup>171</sup> all combine to outline a serious threat to the sort of capitalism championed by the West and at the heart of its faith in owner-autonomy. What lay beyond is (hopefully) not so much “less” capitalism—for Hayek was surely right that markets have an unparalleled capacity to sort and aggregate vast amounts of dispersed information—as, rather, an improved form of capitalism. If, as many “natural capitalists” have argued,<sup>172</sup> we are stuck at the end of capitalism’s second great era<sup>173</sup> (an era in which government supposedly

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<sup>171</sup> Ian Bremmer argues that this is fueling the return of “state capitalism,” a form of capitalism in which governments own and control major elements of the productive economy. *See, e.g.*, Ian Bremmer, *The Return of State Capitalism*, 50(3) SURVIVAL 55 (2008). Transboundary markets’ shortcomings are being popularized among much wider audiences lately, to be sure. On food, see PAUL ROBERTS, *THE END OF FOOD* (2008). On oil, see PETER TERTZAKIAN, *A THOUSAND BARRELS A SECOND* (2007). On suburban home sites in the western United States, see MARC REISNER, *CADILLAC DESERT: THE AMERICAN WEST AND ITS DISAPPEARING WATER* (1986); FINISH.

<sup>172</sup> *See, e.g.*, BILL MCKIBBEN, *DEEP ECONOMY: THE WEALTH OF COMMUNITIES AND THE DURABLE FUTURE* (2007); PETER BARNES, *CAPITALISM 3.0: A GUIDE TO RECLAIMING THE COMMONS* (2006); WILLIAM McDONOUGH & MICHAEL BRAUNGART, *CRADLE TO CRADLE: REMAKING THE WAY WE MAKE THINGS* (2002); PAUL HAWKEN ET AL., *NATURAL CAPITALISM: CREATING THE NEXT INDUSTRIAL REVOLUTION* (1999).

<sup>173</sup> *See also* KARL POLANYI, *THE GREAT TRANSFORMATION* (Beacon 2001) (1944) (arguing that the rise of market capitalism in European societies was punctuated by two state actions: the forcible institution of competitive markets and then the mitigation of their destructive effects).

regulated economic activity but actually joined with it to form a single, hybrid entity<sup>174</sup>), what comes next will demand far more creativity. It will require us to reimagine our concepts of commons, property, and governance as distinct—though not necessarily conflicting—topologies that each operate on a single *informational* landscape.<sup>175</sup> Instead of being inhibited (or morally confounded) by “endowment effects,” for example, we will have to anticipate and utilize them.<sup>176</sup> Instead of using the past as some fictionally static baseline, we will have to integrate its variability and jurisdictionality into a workable notion of general property rights.<sup>177</sup> All of this will require us to view “property” and “permits” as tokens of a type: legal rules that can and should be used to force the kinds of continuous improvement processes that take maximum advantage of available information and cognitive capacities.

Looking back over the ESA’s evolution, one highly resilient trope is all too evident: the political *fear* of prohibiting conduct and/or property uses that owners prefer, or at least that owners *allegedly* prefer. When fears of the sort prematurely terminate our experiments in deliberative problem-solving, our evolutionary possibilities have been at their lowest ebb. The rapid loss of biodiversity in the coming century will hopefully spur us (or our successors) to force the issues a little more persistently.

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<sup>174</sup> See, e.g., CHARLES E. LINDBLOM, *POLITICS AND MARKETS* (1977).

<sup>175</sup> “Topology,” a branch of mathematics, is the study of qualitative properties of given objects that remain invariant under different kinds of change. See JAMES MUNKRES, *TOPOLOGY* 3 (2d ed. 1999).

<sup>176</sup> There is reason to believe that only certain kinds of property rules serve as the psychological triggers that lead people to demand more to part with an asset than they would spend to acquire it. See Jeffrey J. Rachlinski & Forest Jourden, *Remedies and the Psychology of Ownership*, 51 *VAND. L. REV.* 1541, 1559-66 (1998).

<sup>177</sup> See Jamison E. Colburn, *Splitting the Atom of Property: Rights Experimentalism As Obligation to Future Generations*, 78 *GEO. WASH. L. REV.* (forthcoming 2009).

