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Lessons from Area-wide, Multi-agency Habitat Conservation Plans in California

by UCI Law Center for Land, Environment, & Natural Resources[1]

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I. Introduction

This Report serves as an exploration, in consultation with the community of affected agencies and interests, of the experience with and future of habitat conservation planning in California and beyond, with a particular focus on the lessons from large-scale, multi-agency Habitat Conservation Plans (HCPs). This Report is a product of research, interviews,[2] and dialogue sessions on February 6 and 7, 2014 (February 2014 dialogue)[3] and December 11, 2014 (December 2014 dialogue),[4] collectively the dialogues, organized by the University of California, Irvine Law Center for Land, Environment, and Natural Resources (CLEANR) and the non-profit Center for Collaboration in Governance (CCG).[5]

In thinking about the future of habitat conservation planning, it is important to appreciate its legacy. Through the Endangered Species Act's (ESA) HCP and California's Natural Community Conservation Planning (NCCP) programs, endangered species conservation has evolved considerably, and a number of lessons can be gleaned from this development. Some have asserted that HCPs have undermined the ESA by compromising species and habitat conservation for economic gain and efficiency.[6] Others have contended

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[2] In addition to multiple dialogue participants, CLEANR interviewed and received comments on this Report from the following: Tom Adams, retired attorney for the City of Brisbane and the Committee to Save San Bruno; Chris Beale, Resources Law Group; Kim Delfino, Defenders of Wildlife; David Hayes, Stanford Law School; Jake Li, Defenders of Wildlife; Shannon Lucas, California Department of Fish and Wildlife (CDFW); Milan Mitrovich, Nature Reserve of Orange County, Elizabeth O'Donoghue, The Nature Conservancy; Tom Reid, TRA Environmental Sciences; Ron Rempel, former program administrator of the San Diego Management and Monitoring Program; Holly Sheradin, CDFW; Cassidee Shinn, CDFW; Dan Tarlock, Illinois Institute of Technology, Chicago-Kent College of Law.

[3] Participants in the February 2014 dialogue included: Trish Adams, U.S. Fish and Wildlife Service (USFWS); Michael Allen, U.C. Riverside; Lisa Belenky, Center for Biological Diversity; Therese Bradford, US Army Corps of Engineers; Alejandro Camacho, U.C. Irvine; Greg Costello, Wildlands Network; Dan Cox, USFWS; Joe Edmiston, Santa Monica Mountain Conservancy; Armand Gonzales, CDFW; Keith Greer, SANDAG; Jordan Henk, Redlands Institute; John Hopkins, California HCP Coalition; Susan Hori, Manatt, Phelps & Phillips, LLP; Randy Jackson, The Planning Center; John Kopchik, East Contra Costa Habitat Conservancy; Charles Landry, Western Riverside Regional Conservation Authority; Lindell Marsh, CCG; Jeff Opdycke, San Diego Zoo Global; Christy Plumer, The Nature Conservancy; Michael Robinson-Dorn, U.C. Irvine; Ed Sauls, The Sauls Company; Melanie Schlotterbeck, Conservation Clarity; Ken Schreiber, Santa Clara Valley Habitat Plan; Dan Silver, Endangered Habitats League; Sean Skaggs, Ebbin Moser + Skaggs, LLP; James Sulentich, Nature Reserve of Orange County; Greg Vail, Selva Partners; Martin Wachs, U.C.L.A.; Paul Weiland, Nossaman LLP; Jill Yung, Paul Hastings.

[4] Participants in the December 2014 dialogue included: Trish Adams, USFWS; David Aladjem, Downey Brand; Alejandro Camacho, U.C. Irvine; Dan Cox, USFWS; Manley Fuller, Florida Wildlife Federation; Jennifer Garrison, CDFW; Alan Glen, Sedgwick LLP; Denny Grossman, Strategic Growth Council; John Hopkins, California HCP Coalition; Brenda Johnson, CDFW; Melissa Kelly, U.C. Irvine; Charles Landry, Western Riverside Regional Conservation Authority; Jaimee Lederman, U.C.L.A., Lindell Marsh, CCG, Steven Mayo, San Joaquin Council of Governments; Monica Parisi, CDFW; Kristen Pawling, Southern California Association of Governments; Gian-Claudia Sciara, U.C. Davis; Elizabeth Taylor, U.C. Irvine; Melissa Thorme, Downey Brand; Martin Wachs, U.C.L.A.; Paul Weiland, Nossaman LLP; Douglas Wheeler, Hogan Lovells.

[5] The February 2014 dialogue and December 2014 dialogue each culminated in summary documents. CLEANR, THE FUTURE OF HABITAT CONSERVATION PLANNING (2014) [hereinafter February Dialogue]; CCG & CLEANR, OUTCOMES OF THE FINANCE STRUCTURE OF HABITAT CONSERVATION PLANNING AND IMPLEMENTATION (2014) [hereinafter December Dialogue].

[6] Craig W. Thomas, *Habitat Conservation Planning*, *in* IV DEEPENING DEMOCRACY: INSTITUTIONAL INNOVATIONS IN EMPOWERED PARTICIPATORY GOVERNANCE 144, 163 n.55 (Archon Fung & Erik Olin Wright, eds. 2003) (noting scientists evaluating HCPs found 85% of the species in their sample were protected by mitigation procedures that addressed the primary threat to the species' continued existence, but also found that proposed mitigation procedures were "significantly lacking" (25%), "inadequate" (13%),

that HCPs have made the ESA workable by avoiding its otherwise inflexible prohibitions and prolonged political and legal conflicts over resource use.[7] Whether deemed a positive or negative development, it is clear that the HCP program has fundamentally changed the ESA and wildlife conservation in the United States.

Area-wide, multi-agency HCPs, many of which have developed in the state of California, have particularly altered the landscape of habitat conservation. These plans introduced the possibility of a more comprehensive, adaptive, and collaborative approach to conservation. In assessing these pioneering arrangements, it is important to consider not only the efficiency of their formation and implementation processes, but also their effectiveness in advancing valuable conservation goals. Such analyses will serve to instruct future area-wide, multi-agency HCP efforts about the potential tradeoffs of particular design alternatives.

Although an exploration of area-wide, multi-agency HCPs to improve their implementation is a sufficient purpose in itself, this Report has broader implications for inter-jurisdictional governance. As some of the first attempts at inter-agency problem solving, area-wide multi-agency HCPs have served as useful prototypes for exploring the challenges and possibilities of inter-jurisdictional coordination. Particularly recently, a wide range of governmental initiatives have been launched that seek to advance landscape-level, ecosystem-based, inter-governmental, and adaptive habitat conservation planning. As other institutions continue to proliferate that seek to reconcile development with ecological conservation, manage change and uncertainty, and plan across scales and jurisdictions, the experience of these innovative plans is invaluable. Of course, the application of these lessons should be considered in light of other challenges, such as climate change, that are likely to reshape and even fundamentally transform habitat conservation in the United States.

Accordingly, the sections that follow explore the lessons to be gleaned from area-wide, multi-agency HCPs, focusing on concerns that dialogue participants and interviewees actively involved in habitat conservation planning and the HCP program identified as crucial issues. The Report begins with a brief background on the evolution of habitat conservation planning in the United States and the establishment of area-wide multi-agency HCPs, including the development of the ESA, the HCP program, and the NCCP Program. The Report then delves deeper into several topics that provide significant lessons for future habitat conservation planning: (1) planning for and managing habitat conservation at the appropriate ***scale***; (2) promoting effective ***inter-jurisdictional*** habitat conservation; (3) providing adequate and reliable ***funding*** for habitat acquisition and throughout the planning (and implementation) process; and (4) planning and

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or "extremely poor" (5%) for 43% of the species); *see also*, Karin P. Sheldon, *Habitat Conservation Planning: Addressing the Achilles Heel of the Endangered Species Act*, 6 N.Y.U. ENVTL. L.J. 279, 283–84 (1998).

[7] Thomas, *supra* note 6, at 144; *See also* LAURA C. HOOD, FRAYED SAFETY NETS: CONSERVATION PLANNING UNDER THE ENDANGERED SPECIES ACT vi (1998).

managing for ***change*** and ***uncertainty*** (of particular import in light of the projected effects of ***climate change*** on species migration and habitat loss).

For each of these four topics, the Report includes consideration of past concerns and successes. It also provides a survey of relevant laws, regulatory policies, research and commentary, and publicly available program information. Though the Report includes examples of single-party, small-scale HCPs and other habitat conservation initiatives from across the nation, the focus is primarily on the development and experience of area-wide, multi-agency HCPs in California. The intended outcome is a set of conclusions, recommended innovations, and suggestions for future exploration that may be useful for improving habitat conservation planning and implementation.

II. Development of Area-wide, Multi-agency Habitat Conservation Planning

The ESA's HCP program, and in particular area-wide, multi-agency HCPs, are a relatively recent development that depart from the public reserve approach to species and habitat conservation that dominated the Twentieth Century. Prior to the 1973 federal ESA, federal species and habitat protection occurred almost exclusively on federal lands, often only incidental to the primary purpose of the designated federal land.[8] While "multiple-use" federal lands such as national forests were primarily set aside for exploitive uses, habitat protection for wildlife did occur if land were set aside for that specific, exclusive purpose.[9] Similarly, the designation of National Parks[10] and Wilderness Areas[11] included the reservation of habitat for

[8] *E.g.*, National Forest Service Organic Act, 16 U.S.C. § 475 (2014) (stating its purpose was "to improve and protect the forest within the boundaries, or for the purpose of securing favorable conditions of waterflows, and to furnish a continuous supply of timber for the use and necessities of citizens of the United States"). By 1905, Forest Service Chief Gifford Pinchot had implemented guidelines to ensure multiple roles for Forest Service land, but even such "multiple" roles did not explicitly include species protection. JOHN FEDKIW, U.S. DEPT. OF AGRIC. FOREST SERV., MANAGING MULTIPLE USES ON NATIONAL FORESTS, 1905–1995 (1998), *available at* http://www.foresthistory.org/ASPNET/Publications/multiple_use/chap1.htm. Even later statutes, such as the Multiple-Use and Sustained-Yield Act of 1960, placed different uses of public land on equal footing, but did not specifically prohibit harm to wildlife. 16 U.S.C. §§ 528–531 (2014).

[9] Robert Fischman, *The National Wildlife Refuge System and the Hallmarks of Modern Organic Legislation,* 29 ECOLOGY L.Q. 457, 459 (2002). The first reservation of land for species conservation was the 1869 designation of the Pribilof Islands as a reserve for the protection of fur seals. U.S. FISH & WILDLIFE SERV., *Short History of the Refuge System,* http://www.fws.gov/refuges/history/over/over_hist-a_fs.html (last visited Feb. 13, 2015). This was followed shortly after by the 1872 creation of Yellowstone National Park, created in part to prevent "the wanton destruction" and commercial taking of wildlife and fish. *Id.*

[10] National Park Service Organic Act, 54 U.S.C. § 100101 (2014).

[11] 1964 Wilderness Act, 16 U.S.C. § 1131 (2014); U.S. DEPT. OF THE INTERIOR BUREAU OF LAND MGMT., *Wilderness Areas*, http://www.blm.gov/ca/st/en/prog/wilderness/wa.html (last visited Feb. 3, 2015).

biota.[12] National wildlife refuges were the closest federal lands came to habitat conservation areas, but even they may prioritize uses other than habitat conservation.[13]

A. THE ENDANGERED SPECIES ACT

The ESA[14] was a watershed statute in its assertion of federal wildlife protections on private lands.[15] It was enacted in 1973 with a broad prohibition on the "taking" of any listed endangered species.[16] The ESA identified its primary purposes as the protection of endangered species and the conservation of the ecosystems upon which such species depend.[17] To fulfill these goals, the ESA imposes restrictions on human activity that affect species listed as threatened or endangered. Section 7 prohibits any federal action that would "jeopardize the continued existence" of any listed species or destroy or adversely modify[18] its "critical habitat."[19] Section 9 bars the take of any endangered species by any person, public or private.[20] These initially strict prohibitions, however, did not acknowledge that simply preventing further human development "did little to make endangered species and fragile ecosystems recover once in a steep decline."[21]

B. THE 1982 ESA AMENDMENTS

The ESA was amended in 1982 in order to depart from the strict and broad prohibition on harming any threatened or endangered species. Section 10(a) authorizes the U.S. Fish & Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) (collectively, the Services) to issue incidental take permits (ITPs) that allow protected species or their habitat to be harmed if carried out in conjunction with an approved HCP.[22] In seeking an ITP, the applicant must submit a proposed HCP that specifies:

> (i) the impact which will likely result from such taking; (ii) what steps the applicant will take to minimize and mitigate such impacts, and the funding that will be available to implement such steps; (iii) what alternative actions to such taking the applicant considered and the reasons why

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[12] U.S. DEPT. OF THE INTERIOR NAT'L PARK SERV., *Preserving Biodiversity*, http://www.nature.nps.gov/biology/biodiversity/ (last visited Mar. 13, 2015); U.S. DEPT. OF THE INTERIOR NAT'L PARK SERV., *Wilderness*, http://wilderness.nps.gov/faqnew.cfm (last visited Mar. 13, 2015).
[13] For example, the Migratory Bird Conservation Act now allows hunting in up to 40% of a refuge area established under the Act. Robert L. Fischman, *Predictions and Prescriptions for the Endangered Species Act*, 34 ENVTL. L. 451, 475 (2004).
[14] Endangered Species Act, 16 U.S.C. §§ 1531–1544 (2014).
[15] Holly Doremus, *The Endangered Species Act: Static Law Meets Dynamic World*, 32 WASH. U. J. LAW & POL'Y 175 (2010).
[16] 16 U.S.C. § 1532(19) (defining "take" to include "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct").
[17] *Id.* § 1531(b); *see also Babbitt v. Sweet Home Chapter of Cmtys. for a Greater Or.*, 515 U.S. 687, 699–700 (1995) (acknowledging that the ESA serves to protect vulnerable ecosystems, with listed species functioning as indicators that the underlying ecosystem is faltering).
[18] 16 U.S.C. § 1536(a)(2) (defining action to include any activity "authorized, funded, or carried out by [a Federal] agency").
[19] *Id.* § 1533(b)(2) (requiring the Services to designate critical habitat in areas in which a listed species is found or which might provide additional habitat for the species' recovery).
[20] *Id.* § 1538(a)(1).
[21] Alejandro E. Camacho, *Can Regulation Evolve? Lessons from a Study in Maladaptive Management*, 55 UCLA L. REV. 293, 301 (2007).
[22] 16 U.S.C. §1539(a).

> such alternatives are not being utilized; and (iv) any such other measures that the Secretary may require as being necessary or appropriate for purposes of the plan.[23]

To grant an ITP, the Services must, after affording opportunity for public comment, find that:

> (i) the taking will be incidental[24]; (ii) the applicant will, to the maximum extent practicable, minimize and mitigate the impacts of such taking; (iii) the applicant will ensure that adequate funding for the plan will be provided; (iv) the taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild; and (v) the measures ["that the Secretary may require as being necessary or appropriate for purposes of the plan"[25]] will be met.[26]

As evident from such open terms as "practicable," "adequate," "appreciably," and "appropriate"—and as reinforced by the Services' interpretive guidelines[27]—the requisite findings thus give those parties involved in the formation of the HCP considerable flexibility to shape it.

Section 10(a)'s provisions were modeled after conservation efforts exhibited on San Bruno Mountain in California.[28] The San Bruno Mountain HCP covered more than 3,000 acres of undeveloped land just south of San Francisco.[29] These private lands fell under the overlapping jurisdiction of one county, three cities, and the state parks agency.[30] The focus was addressing the unique ecosystem of the mountain and its flanking hills, including a variety of endangered and rare butterfly and plant species.[31]

The San Bruno HCP was a major innovation in the governance of land and natural resources.[32] The process was a departure away from the conventional hierarchical and prescriptive model of governance, anticipating greater collaboration among the public agencies and organizations and private sector interests in both the implementation of their separate mandates and authorities and in the development of policy.[33] The HCP agreement provided an alternative to the prior practice of conditioning permits, instead allowing for flexible contractual practices and provisions to be included in the resulting implementation of governance

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[23] *Id.* §1539(a)(2)(A).
[24] An "incidental take" is broadly defined as any taking that "is incidental to, and not the purpose of, carrying out an otherwise lawful activity." *Id.* §1539(a)(1)(B).
[25] *Id.* § 1539(a)(2)(A)(iv).
[26] *Id.* § 1539(a)(2)(B).
[27] The Services' Habitat Conservation Planning Handbook provides that any mitigation mandated in an HCP must be "commensurate with the impacts," and based on a "sound biological rationale." U.S. FISH & WILDLIFE SERV. & NAT'L MARINE FISHERIES SERV., HABITAT CONSERVATION PLANNING HANDBOOK 3-19, 7-3 (1996) [hereinafter HCP HANDBOOK].
[28] H.R. REP. NO. 97-835, at 31 (1982) (Conf. Rep.), *reprinted in* 1982 U.S.C.C.A.N. 2860, 2872; Camacho, *supra* note 21, at 303–04; *see id.* at 1–2; *Friends of Endangered Species v. Jantzen*, 760 F.2d 976, 982–83 (9th Cir. 1985) (upholding the San Bruno HCP, in part, due to Congress' reliance on the plan).
[29] SAN BRUNO MOUNTAIN HABITAT CONSERVATION PLAN STEERING COMM., SAN BRUNO MOUNTAIN AREA HABITAT CONSERVATION PLAN I-1 (1982) [hereinafter SAN BRUNO HCP].
[30] Lindell L. Marsh & Robert D. Thornton, *San Bruno Mountain Habitat Conservation Plan*, *in* MANAGING LAND-USE CONFLICTS 114, 116 (David J. Brower et al. eds., 1987).
[31] SAN BRUNO HCP, *supra* note 29, at S-1.
[32] Telephone Interview with Tom Adams, Retired Att'y for City of Brisbane & Comm. to Save San Bruno Mountain (Dec. 4, 2014).
[33] *Id.*

policies and programs, including assurances regarding mitigation and development.[34] In doing so, unlike the silo-like, command-and-control governance model, it called on the agencies and others to undertake contractual obligations on their part, such as obligations relating to restoration, monitoring, management, and funding.[35] Additionally, the San Bruno HCP promoted the cross-jurisdictional integration of planning for projects and other actions, foreshadowing the development of regional, multi-species HCPs (MSHCPs) that focused on ecosystems, regions, and landscapes. It was a pioneering effort that sought to focus on a system and transcend the many narrow, regulatory boundaries with jurisdiction over the area.[36]

C. CALIFORNIA'S NATURAL COMMUNITY CONSERVATION PLANNING PROGRAM

Even with the 1982 ESA amendments in place, there were growing concerns that the ESA was ineffective in meeting its goals and that listings were taking a toll on the economy.[37] Many were demanding an overhaul of the ESA and some even wanted it repealed.[38] In 1991, with the potential federal listing of the coastal California gnatcatcher and its implications for the rapidly developing coastal sage scrub region of southern California, the state created an extensive habitat conservation planning legislation that paralleled yet expanded on the HCP program.[39] This Natural Community Conservation Planning (NCCP) program was initiated through the NCCP Act of 1991 as a pilot program to test a new approach to conservation in southern California[40] and was expanded statewide by the NCCP Act of 2003.[41] The program is, as the California Department of Fish and Wildlife (CDFW) stated, "an unprecedented effort" that "takes a broad-based ecosystem approach to planning for the protection and perpetuation of biological diversity."[42]

The program currently includes twenty-three active planning areas covering more than 11 million acres.[43] See the Appendix for a map of these twenty-three NCCPs as well as other regional California HCPs. Each NCCP is designed by local agencies, with the assistance of the CDFW.[44] Landowners and local

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[34] Robert Thornton, *Searching for Consensus and Predictability: Habitat Conservation Planning Under the Endangered Species Act*, 21 ENVTL. L. 605, 624–25 (1991).

[35] For example, the Implementation Agreement accompanying the HCP provided for liquidated damages for any disturbance of the conserved habitat. Within weeks following the consummation of the Agreement and approval of the HCP, a contractor of the landowner drilled an exploratory water well within the conserved habitat. For a moment, the entire constituency underlying the HCP effort froze. The liquidated damages were promptly paid and all were satisfied that the Agreement included the appropriate assurances, helping demonstrate that the HCP served as a flexible governance vehicle to provide the necessary assurances. Interview with Lindell Marsh, Dir., Ctr. for Collaboration in Governance (2014).

[36] Telephone Interview with Tom Adams, *supra* note 32.

[37] DANIEL POLLAK, CAL. RESEARCH BUREAU, NATURAL COMMUNITY CONSERVATION PLANNING 5 (2001) (explaining the 1990 listing of the Northern spotted owl had the "potential to take millions of acres of timber out of production and affect thousands of jobs in California and the Pacific Northwest").

[38] E-mail from Dan Tarlock, Professor of Law, Dir., Ill. Inst. of Tech. Chi.-Kent Coll. of Law, Program in Envtl. & Energy Law, to author (Nov. 19, 2014, 09:44 PST).

[39] POLLAK, *supra* note 37, at 3, 11–12.

[40] *Id.* at 32.

[41] Natural Community Conservation Planning Act, CAL. FISH & GAME CODE §§ 2800–2835 (2014).

[42] CAL. DEP'T OF FISH & WILDLIFE, *Natural Community Conservation Planning (NCCP)*, https://www.wildlife.ca.gov/Conservation/Planning/NCCP (last visited Mar. 13, 2015).

[43] *Id.*

[44] *Id.*

governments voluntarily enroll in the program under an agreement to protect critical habitat areas and monitor the ecosystems within them.[45] NCCPs are designed to conserve natural communities at the ecosystem level by focusing on their long-term stability while accommodating compatible land use.[46] Under CDFW's interpretation, the conservation standard under the NCCP Act[47] is higher than that required to approve an HCP permit.[48] Thus, the NCCP Act requires actions that contribute to the *recovery* of the species[49] as opposed to the HCP standard, which only requires minimization and mitigation of the impacts of incidental take "to the maximum extent practicable" and that the authorized actions "not appreciably reduce the likelihood of the survival and recovery of the species."[50] Currently the acreage included in NCCP and regional HCP plan areas in California comprises more than 25% of the total land and water area in the state.[51]

D. THE EVOLUTION OF THE HCP PROGRAM

From the HCP program's inception, there have been differing views of the function and effects of HCPs. To many, the HCP program has been viewed as a "habitat development agreement"—a way for developers to obtain a permit to take species that were in danger of extinction without adequate conservation.[52] Certainly, Section 10(a) only requires habitat conservation in the context of an incidental take that expressly allows the harming of an endangered species. Alternatively, many landowners and developers viewed the HCP program as a way for environmental interests to block development and thereby "take" their land.[53] Still others saw the HCP program as a way to mediate the growing conflict between wildlife conservation and development, with some sense that it would take the wind out of the sails of growing efforts to defang the ESA.[54] The legislative history for the Section 10(a) amendment makes it clear HCPs were

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[45] *Id.*

[46] *Id*. Telephone Interview with John Hopkins, Dir., Cal. Habitat Conservation Planning Coalition (Nov. 3, 2014).

[47] CAL. FISH & GAME CODE § 2820(b)(9) (2014) (requiring "implementation of mitigation and conservation measures on a plan basis . . . roughly proportional in time and extent to the impact on habitat or covered species authorized under the plan").

[48] POLLAK, *supra* note 37, at 33 (stating CDFW interprets "conservation" as used in the NCCP law as having the meaning defined in the Fish & Game Code Section 2061: "to use . . . all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to this chapter are no longer necessary."); *e.g.*, e-mail from John Hopkins, Dir., Cal. Habitat Conservation Planning Coalition, to author (Feb. 5, 2015; 2:49 PST) (stating that the Solano HCP was an NCCP for a while during plan preparation, but the plan applicants downgraded to an HCP once they realized that meeting the NCCP standard for the Swainson's hawk would require conservation of a huge and politically and economically infeasible acreage of cropland).

[49] POLLAK, *supra* note 37, at 33; John M. Gaffin, *Can We Conserve California's Threatened Fisheries through Natural Community Conservation Planning?*, 27 ENVTL. L. 791, 800 (1997).

[50] 16 U.S.C. § 1539(a)(2)(B)(ii), (iv) (2014). A number of critics have challenged this HCP approval standard for not requiring that a plan create a net benefit to the species. Telephone Interview with Jake Li, Dir. of Endangered Species Conservation, Defenders of Wildlife (Dec. 22, 2014); Jennifer Jester, *Habitat Conservation Plans Under Section 10 of the Endangered Species Act*, 26 B.C. ENVTL. AFF. L. REV. 131, 149–50, 182 (1998).

[51] CAL. DEP'T OF FISH & WILDLIFE, *supra* note 42; *see* Appendix.

[52] Graham M. Lyons, *Habitat Conservation Plans: Restoring the Promise of Conservation*, 23 ENVIRONS ENVTL. L. & POL'Y J. 83, 105 (1999) ("Instead of a planning process consisting of diverse interests, HCPs are simply two-party agreements between the applicant and the Services."). Citizens often could not enforce a plan, if there was any enforcement language included at all, and the Services often had no remedy other than revocation of the ITP. *Id.* at 102–03.

[53] *See* Craig Anthony Arnold, *Conserving Habitats and Building Habitats: The Emerging Impact of the ESA on Land Use Development*, 10 STANFORD ENVTL. L.J. 1 (1991). *But see* Rufus C. Young, Jr., *2010 Update: How the Federal Endangered Species Act Affects Land Use*, SS001 ALI-ABA 495, 504 (stating that as of 2010, "there are no reported cases holding that the application of the ESA constituted a 'taking' entitling the land owner to compensation").

[54] *See* Oliver A. Houck, *On the Law of Biodiversity and Ecosystem Management*, 81 MINN. L. REV. 869, 959 (1997).

intended to rely on "creative partnerships between the public and private sectors and among governmental agencies" in developing broader, flexible ways for managing species and their relation to their surrounding ecosystems.[55] The HCP program was thus an "earl[y] experiment[] . . . [in] transforming administrative law from its traditionally static and inflexible command-and-control regulatory model into a negotiated process that better addresses public goals through both collaborative and adaptive decisionmaking."[56]

The number of HCPs has multiplied over the past three decades. Less than 15% are area-wide HCPs,[57] though area-wide HCPs make up virtually all of the acreage subject to HCPs.[58] Despite the legislative history accompanying the Section 10(a) amendment references to the multi-party San Bruno HCP, Section 10(a) does not include any specific provisions that require HCPs or ITPs to be either collaborative or adaptive. As a result, two broad types of HCPs generally have emerged as the program has matured: those more akin to conventional, smaller project-specific permits; and those that are more regional, multi-permittee, managing multiple species, and often more collaborative.[59]

In the first decade following the approval of the San Bruno HCP, only fourteen HCPs were adopted, with most in California and most focused on individual development projects or project areas. However, ESA implementation in the ensuing decade was defined by its increased focus on HCPs. The HCP was an increasingly attractive option in light of growing concerns in developing areas about the ESA's otherwise strict prohibitions and Congressional threats to repeal the ESA. Moreover, the USFWS's development of draft HCP guidelines in 1990 provided significant guidance on possible uses of HCPs.

During the Clinton Administration (1992–2000), approximately 300 HCPs were approved.[60] Many attribute this surge in HCPs to the adoption of the No Surprises policy[61] in 1994 and the assurances for landowners that came with it, as discussed in Section VI.B *infra*.[62] Most of the HCPs were adopted in areas experiencing substantial development pressure and where biodiversity was the most threatened, such as California (which had adopted its own habitat conservation planning regime, the NCCP program[63]), Florida, and Texas. Some of these HCPs covered vast areas of land, involved many local and state jurisdictions, and focused on multiple-species conservation and ecosystems. However, many others were project-specific HCPs with limited conservation value. At the close of the Clinton Administration, about one year after the No

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[55] H.R. REP. NO. 97-835 (1982) (Conf. Rep.), *reprinted in* 1982 U.S.C.C.A.N. 2860.
[56] Camacho, *supra* note 21, at 295.
[57] SHIRA A. BERGSTEIN & APRIL MO, UNIV. OF CAL. TRANSP. CTR., THE ROLE OF HABITAT CONSERVATION PLANS IN FACILITATING TRANSPORTATION INFRASTRUCTURE 18 (2012) (stating that as of 2011, 99 out of 670 HCPs were area-wide HCPs).
[58] *See* DAVID CALLIHAN ET AL., MGMT. SYS. INT'L, AN INDEPENDENT EVALUATION OF THE U.S. FISH & WILDLIFE SERVICE'S HABITAT CONSERVATION PLAN PROGRAM 12–13 (2009) (finding 99.3% of all acres covered by HCPs were covered by only 9% of the total number of HCPs).
[59] *See id.*
[60] David A. Dana, *Reforming Section 10 and the Habitat Conservation Plan Program*, *in* REBUILDING THE ARK 32, 34–35 (Jonathan H. Adler ed., 2011); Camacho, *supra* note 21, at 293.
[61] 50 C.F.R. §§ 17.22(b)(5), 17.32(b)(5), 222.307(g) (2014).
[62] *E.g.*, HOOD, *supra* note 7, at 5; George F. Wilhere, *Adaptive Management in Habitat Conservation Plans*, 16 CONSERVATION BIOLOGY 20, 24 (2002).
[63] CAL. DEP'T OF FISH & WILDLIFE, *supra* note 42.

Surprises policy was codified, the Services published a five-point policy as an addendum to the HCP Handbook with the intent that the policy clarify existing regulations and the No Surprises policy.[64]

The HCP program was given relatively less attention from 2000 to 2008 under the Bush Administration. Nonetheless, by the end of 2007, approximately 200 additional HCPs had been approved.[65] However, there were fewer proposals for larger, more ambitious HCPs.[66] Though the numbers of HCPs have declined, the Obama Administration has broadened consideration of habitat conservation, including working on efforts to promote conservation in connection with other objectives, such as renewable energy,[67] and to address conservation at a landscape level.[68] This broadened focus of conservation efforts raises the question as to the role of HCPs in this broader spectrum of conservation programs, as discussed in Section III.B.1 *infra*. As of January 2015, at least 696 total HCPs, with 822 ITPs, have been approved.[69]

III. Managing the Scale, Scope, and Duration of Planning

Area-wide HCPs have developed, in significant part, as efforts to broaden and deepen the analysis and scope of action of the habitat conservation planning process. Early in the development of the program, it was understood that for HCPs to lead to effective habitat conservation, plans needed to expand their scope from a single-species focus to a more comprehensive multi-species focus. At the same time, many recognized significant benefits from planning at a broader geographic scale, and over a longer duration. However, expansion of the geographic, ecological, and temporal scales substantially increases the complexity of planning. Particularly given the resource constraints of government authorities, these trends create the risk of HCPs becoming so deep and broad as to make the initial plan formation process very challenging and even more difficult to implement.

As detailed herein, for area-wide, multi-agency HCPs there is a tension between the breadth of multi-species, ecosystem conservation and the depth required to adequately provide for the habitat needs of all

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[64] Notice of Availability of a Final Addendum to the Handbook for Habitat Conservation Planning and Incidental Take Permitting Process, 65 Fed. Reg. 35,242 (June 1, 2000) [hereinafter HCP Handbook Addendum].
[65] Dana, *supra* note 60, at 4; Camacho, *supra* note 21, at 308.
[66] Dana, *supra* note 60, at 4.
[67] For example, the proposed Desert Renewable Energy Conservation Plan (DRECP) will provide for the locating of renewable energy facilities in lands with relatively low conservation value and the concurrent conservation of lands of high conservation value. DESERT RENEWABLE ENERGY CONSERVATION PLAN, http://www.drecp.org (last visited Mar. 13, 2015).
[68] *See, e.g.,* U.S. DEPT. OF THE INTERIOR, *America's Great Outdoors Initiative*, http://www.doi.gov//americasgreatoutdoors/index.cfm (last visited Feb. 13, 2015); Secretarial Order No. 3330, *Improving Mitigation Policies and Practices of the Department of the Interior* (Dept. of the Interior, Oct. 31, 2013), *available at* http://www.doi.gov/news/loader.cfm?csModule=security/getfile&pageid=380602.
[69] U.S. FISH & WILDLIFE SERV., *Conservation Plans and Agreements Database*, http://ecos.fws.gov/conserv_plans/PlanReportSelect?region=9&type=HCP (click on "Regional (Summary) Report") (last visited Feb. 10, 2015) [hereinafter Database]. These numbers are estimates due to the fact that the information in the USFWS database is self-reported and thus does not reflect every HCP or ITP approved. Telephone Interview with Jake Li, *supra* note 50.

species. Area-wide, multi-agency HCPs have grappled with the difficulties of deepening the scope, broadening the scale, and lengthening the duration of habitat conservation planning. Many plans have attempted to find a middle ground between an HCP that is narrow and deep at one extreme and an HCP that is broad and shallow at the other. Despite these efforts, there has been very little review of what has and has not proved successful. At thirty-two years old, area-wide, multi-agency HCPs and their evolution over the past three decades provide valuable lessons for improving HCPs moving forward. The HCP program, with its various successes and limitations, also serves as a model to be built upon by the more recent landscape-level planning initiatives discussed below.

A. LESSONS FROM BROADENING SCOPE

1. Advantages of a Multi-Species Approach

Many of the HCPs that developed shortly after the enactment of Section 10(a) were single-species focused,[70] despite the fact that the legislative history of Section 10(a) references the multi-species San Bruno HCP, detailed in Section II.B *supra*.[71] This one-species limitation was reflected in the 1990 Western Riverside County HCP (WRHCP) for the Stephens' kangaroo rat.[72] It covered over 500,000 acres within the jurisdiction of a single agency, the Riverside County Habitat Conservation Agency.[73] The WRHCP was developed at a time when there was a growing consensus that the ESA's single-species focus was ineffective.[74] The single-species approach was criticized for its neglect of ecosystems that depend on the interactions of a variety of species, not only listed species, and for leading to species' survival in "only very small, fragmented populations."[75]

Increasing urbanization added to the pressure to change the ESA's single-species focus, with developers and agencies eager to create large MSHCPs in an attempt to protect development projects from future listings of additional species.[76] Particularly in southern California, with population tripling between 1950 and 1990, urban sprawl was taking a toll on the coastal California gnatcatcher and its habitat.[77] Listing of the gnatcatcher under the ESA appeared imminent, and consequently, the California NCCP program, introduced in Section II.C *supra*, was initiated.[78] The NCCP program was created in an attempt to prevent the listing of

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[70] *See* ECON. & PLANNING SYS., INC., ECONOMIC EFFECTS OF REGIONAL HABITAT CONSERVATION PLANS 1, 2 (2014); Thornton, *supra* note 34, at 627–43.
[71] H.R. REP. NO. 97-835, at 31 (1982) (Conf. Rep.), *reprinted in* 1982 U.S.C.C.A.N. 2860, 2872; *see also* HCP HANDBOOK, *supra* note 27, at 1-2; Camacho, *supra* note 21, at 303–04.
[72] RIVERSIDE CNTY. HABITAT CONSERVATION AGENCY, *Stephens' Kangaroo Rat*, http://www.skrplan.org/skr.html#002 (last visited Jan. 20, 2015).
[73] *Id.*
[74] *See* POLLAK, *supra* note 37, at 7.
[75] *Id.* at 8–9.
[76] John Buse, *Can a Multi-Species Habitat Conservation Plan Save San Diego's Vernal Pool Species?* 6 GOLDEN GATE U. ENVTL. L.J. 53, 67 (2012).
[77] POLLAK, *supra* note 37, at 5.
[78] Kevin Cassidy, Endangered *Species' Slippery Slope Back to the States: Existing Regulatory Mechanisms and Ongoing Conservation Efforts Under the Endangered Species Act*, 32 ENVTL. L. 175, 214, 216 (2002); *see also id.* at 6.

the gnatcatcher,[79] and was intended to respond to the criticisms of the HCP program by adding flexibility and an explicit multi-species focus.[80] By setting aside land before it became so fragmented by development that listing would be required,[81] the NCCP program hoped to "provide[] for the regional or area-wide protection of plants, animals, and their habitats . . . focusing on the long-term stability of wildlife and plant communities."[82] In the years that followed, the Orange County Central and Coastal Subregion MSHCP,[83] the San Diego MSCP,[84] and the Western Riverside MSHCP,[85] among others, were approved, and the idea of MSHCPs was established.

Today, the Services do not require, but strongly endorse a multi-species approach to HCPs, with the objective of conserving biological communities at the ecosystem scale, stating that it can, for example, "maximize flexibility . . . in developing mitigation programs . . . provide the permittee with long-term planning assurances and increase the number of species for which such assurances can be given" and "reduce the regulatory burden of ESA compliance for all affected participants."[86] A multi-species approach "both increases certainty for the permittee in case of future listings and increases the 'biological value' of the plans by providing for 'ecosystem planning' and early consideration of the needs of unlisted species."[87] Concentrating efforts on the conservation of multiple species necessitates a habitat or ecosystem-based approach, which many claim better facilitates the protection of biodiversity.[88] The NCCP program is a well-regarded, habitat-based approach that groups species according to the habitat communities they require.[89] The NCCP program promotes a focus on overall ecological health and the idea that adequate protection for each species can be gained through protection of each habitat type, as opposed to focusing conservation efforts on preventing future harm to a single constituent species.[90] Thus, the eleven subregional plans that make up the NCCP pilot program's planning area were designed around a type of habitat, coastal sage scrub, instead of around the location of specific incidental take activities or a single species.[91] With this habitat-

[79] HOOD, *supra* note 7, at 10; Cassidy, *supra* note 78 (stating nevertheless, the gnatcatcher was listed as "threatened" and a rule was adopted under Section 4(d) of the ESA that allowed the take of species if an adequate portion of its habitat could be conserved); 16 U.S.C. §1533(d) (2014).
[80] POLLAK, *supra* note 37, at 11.
[81] Cassidy, *supra* note 78, at 214; Buse, *supra* note 76; Thornton, *supra* note 34, at 641.
[82] CAL. DEP'T OF FISH & WILDLIFE, *supra* note 42.
[83] CNTY. OF ORANGE ENVTL. MGMT. AGENCY, CENTRAL AND COASTAL SUBREGION NATURAL COMMUNITY CONSERVATION PLAN / HABITAT CONSERVATION PLAN (1996), *available at* http://www.naturereserveoc.org/NCCP%20Parts%20I%20&%20II%20-%20Plan.pdf.
[84] MULTIPLE SPECIES CONSERVATION PROGRAM (1998), *available at* http://www.sandiegocounty.gov/content/dam/sdc/dplu/mscp/docs/SCMSCP/FinalMSCPProgramPlan.pdf.
[85] WESTERN RIVERSIDE MULTIPLE SPECIES HABITAT CONSERVATION PLAN (2003), *available at* http://www.wrc-rca.org/Permit_Docs/mshcp_vol1.html [hereinafter WESTERN RIVERSIDE MSHCP].
[86] HCP HANDBOOK, *supra* note 27, at 1-14 to 1-15.
[87] Matthew E. Rahn et al., *Species Coverage in Multispecies Habitat Conservation Plans: Where's the Science?* 56 BIOSCIENCE 613, 613–14 (2006) (referencing the HCP Handbook).
[88] J. Alan Clark & Erik Harvey, *Assessing Multi-Species Recovery Plans Under the Endangered Species Act*, 12 ECOLOGICAL APPLICATIONS 655, 655 (2002).
[89] PETER KAREIVA ET AL., USING SCIENCE IN HABITAT CONSERVATION PLANS 36 (1999).
[90] *See id.*
[91] DANIEL POLLAK, CAL. RESEARCH BUREAU, THE FUTURE OF HABITAT CONSERVATION? 3–4 (2001), *available at* http://cdm16254.contentdm.oclc.org/cdm/ref/collection/p178601ccp2/id/2166.

based focus, the plans could potentially protect a broader range of species that might otherwise be overlooked in a conventional HCP[92] by avoiding habitat fragmentation and allowing for the interactions of a wide variety of plant and animal species, not just those that are listed.[93]

2. Challenges of a Multi-species Approach

While a multi-species approach has its advantages, it also carries risks related to the increased complexity, uncertainties, and costs of managing more species.[94] Adding more species potentially raises the number of components to monitor and manage, and can increase planning and implementation costs.[95] A number of commenters have stated that multi-species plans can be more expensive and time-consuming to prepare and administer than single-species plans.[96] If resources for planning and implementation are not increased, a multi-species approach raises the risks that come from distributing planning resources more thinly.[97] The increased complexity of the multi-species approach places an increased burden on ensuring extensive and accurate scientific data and analyses, which serve as the basis for the plan.[98]

Of course, the multi-species approach may be worth the additional implementation costs if the plan is more effective at ecological conservation. However, multi-species plans that rely on generalized management of habitat types, rather than species-specific conservation actions, have been criticized in the scientific literature for being less effective than single-species plans.[99] Yet this limited analysis of effectiveness does not consider that single-species HCPs do not attempt to manage any other species. As such, these studies do not factor in the benefits to the other ecosystem components that a multi-species focus may offer over single-species HCPs.[100] Nonetheless, these studies do demonstrate that there often is a tradeoff between expanding the number of ecological components managed in an HCP and the costs or effectiveness of plan implementation. Though there may be significant advantages of a multi-species approach, the experience of area-wide, multi-agency HCPs suggests that those benefits may only be realized

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[92] HCP HANDBOOK, *supra* note 27, at 3-37.
[93] *See* POLLAK, *supra* note 37, at 8.
[94] CALLIHAN ET AL., *supra* note 58, at 9, 17–18; Rahn et al., *supra* note 87, at 614; *see also* Buse, *supra* note 76, at 62.
[95] CALLIHAN ET AL., *supra* note 58, at 17 (finding USFWS staff in California strongly supported limiting the number of species covered to reduce complexity and development time and costs); *see* Christian Langpap & Joe Kerkvliet, *Endangered Species Conservation on Private Land: Assessing the Effectiveness of Habitat Conservation Plans*, 64 J. ENVTL. ECON. & MGMT. 1, 14 (2012).
[96] *Id.*; Telephone Interview with Thomas Reid, Principal, TRA Envtl. Sciences (Dec. 7, 2014).
[97] Langpap & Kerkvliet, *supra* note 95, at 14.
[98] While both the five-point policy, HCP Handbook Addendum, *supra* note 64, at 35,243, and the NCCP Act, CAL. FISH & GAME CODE § 2820(a)(6) (2014), stipulate use of the best scientific information available, many commenters assert that this does not always occur in practice, *e.g.*, HOOD, *supra* note 7, at 7, 13–17; KAREIVA ET AL., *supra* note 89; Rahn et al., *supra* note 87; Laura H. Watchman et al., *Science and Uncertainty in Habitat Conservation Planning*, 89 AM. SCIENTIST 351 (2001); Wilhere, *supra* note 62.
[99] Rahn et al., *supra* note 87 at 618 (citing P. Dee Boersma et al., *How Good Are Endangered Species Recovery Plans?*, 51 BIOSCIENCE 643 (2001) and Martin F. J. Taylor et al., *The Effectiveness of the Endangered Species Act: A Quantitative Analysis*, 55 BIOSCIENCE 360 (2005)) (finding both listed and unlisted species covered by MSHCPs were generally less likely to show improving trends in status than those listed species covered by single-species HCPs).
[100] *See supra* notes 92 and 93 and accompanying text.

if they are accompanied with funding, monitoring, and research commensurate to the plan's increased complexity.[101]

B. LESSONS FROM WIDENING SCALE

1. The Advantages of Larger-scale HCPs

There are no limitations placed on the size of an HCP.[102] The Services' Handbook only recommends that "HCP boundaries should encompass all areas within the applicant's project, land use area, or jurisdiction within which any permit or planned activities likely to result in incidental take are expected to occur" and that "applicants should be encouraged to consider as large and comprehensive a plan area as is feasible and consistent with their land or natural resource use authorities."[103] However, the trend among area-wide, multi-agency HCPs and throughout conservation management has been to broaden the horizon for planning. Since the enactment of the ESA, and increasingly with the shift toward MSHCPs and their expanded scope, there has been a steadily growing conviction that the conservation of multiple species and ecological resources more generally requires larger-scale approaches[104] that go beyond traditional project-by-project mitigation for impacts resulting from development.[105] Project-by-project mitigation typically takes the form of a "'mitigation hierarchy:' avoid, minimize, restore, or offset," but its project-by-project application is limited in flexibility and ultimately can result in underestimating cumulative development impacts,[106] extending permitting timelines, and creating confusion with other agencies' mitigation requirements.[107]

Habitat fragmentation often resulted from or was exacerbated by early HCPs that were single-species, single-project focused and provided only piecemeal protection.[108] For example, the 1986 Coachella Valley HCP[109] that was created to protect the fringe-toed lizard was criticized for the relatively small portion

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[101] Participants in the February 2014 dialogues also pointed out the incongruence between a multi-species, ecosystem approach and the species-specific mandates under the ESA. Because ITPs are tied to a particular species (see 50 C.F.R. § 17.22(d)(1) (2014)) rather than the ecosystem as a whole, there are potential tradeoffs for other ecological resources that come with focusing planning on multiple species on a large, ecosystem scale.

[102] HCP HANDBOOK, *supra* note 27, at 3-11.

[103] *Id.*

[104] Jerry Franklin, *Preserving Biodiversity: Species, Ecosystems, or Landscapes?* 3 ECOLOGICAL APPLICATIONS 202 (1993); *see* MATTHEW MCKINNEY, ET AL., LARGE LANDSCAPE CONSERVATION: A STRATEGIC FRAMEWORK FOR POLICY AND ACTION 5 (2010), *available at* http://www.lincolninst.edu/pubs/dl/1808_1037_Large Landscape Conservation final.pdf.

[105] DAVID J. HAYES, STANFORD LAW SCH. POLICY LAB 395, COMMENTS AND RECOMMENDATIONS FOR THE STEERING COMMITTEE ON THE FEDERAL INFRASTRUCTURE PERMITTING AND REVIEW PROCESS IMPROVEMENT, AND THE PRESIDENT'S CHIEF PERFORMANCE OFFICER, DIRECTOR OF OIRA, AND CHAIR OF THE COUNCIL ON ENVIRONMENTAL QUALITY 6 (2013); Joseph Kiesecker et al., *Development by Design: Blending Landscape-level Planning with the Mitigation Hierarchy*, 8 FRONTIERS ECOLOGY ENV'T 261, 261 (2010); POLLAK, *supra* note 37, at 8.

[106] Kiesecker et al., *supra* note 105.

[107] HAYES, *supra* note 105.

[108] *See* HOOD *supra* note 7, at 7, 9; POLLAK, supra note 37, at 7–8.

[109] This Fringe-Toed Lizard HCP was subsumed by the Coachella Valley MSHCP in 2005. U.S. FISH & WILDLIFE SERV., CARLSBAD FISH & WILDLIFE OFFICE, COACHELLA VALLEY FRINGE-TOED LIZARD 5-YEAR REVIEW 9 (2010).

of native habitat it protected,[110] and its failure to protect the sand source areas and transport corridors.[111] The HCP has also been criticized for excluding other important habitat, including designated critical habitat.[112]

The experience of area-wide, multi-agency HCPs is that larger-scale, ecosystem planning enables participants to avoid a piecemeal approach to conservation, better address cumulative impact concerns, and avoid habitat fragmentation.[113] Larger-scale conservation approaches at the regional or landscape level are arguably better suited for addressing conservation challenges that inevitably transcend "the legal and geographic reach of existing jurisdictions and institutions."[114] Assessing mitigation and planning together on a larger scale accounts for cumulative impacts of regional development projects, provides regional context to best determine whether mitigation or offsets can be applied, and allows for an optimal choice of offsets to address threatened ecosystems or species.[115] A larger geographic scale can more accurately factor in landscape connectivity and corridors to facilitate species' movement between preserve areas.[116] Broadening the geographic scale reduces the risk that unoccupied, yet vital land will be overlooked. Habitat unoccupied at the time the plan is designed may still need to be included in order to ensure it remains in an occupiable state should the species need to colonize the area in the future.[117]

Area-wide, multi-agency HCPs must address conservation issues on a scale large enough to accurately assess trends and relationships within the preserve area. In fact, some contend larger-scale approaches are "the *only* way to conserve the overwhelming mass—the millions of species—of existing biodiversity."[118] For example, organisms such as invertebrates, fungi, and bacteria perform critical ecosystem functions that may not be readily apparent, and such organisms are likely only to be conserved as the scale is broadened to conserve entire ecosystems.[119] Additionally, although area-wide, multi-agency HCPs may be more complex and costly initially, a broader scale may provide a better opportunity for streamlining later management decisions in the long term.

There is a recent trend toward even larger landscape-level conservation planning both in and out of the HCP program.[120] Landscape-level conservation, generally, comprises combining the mitigation hierarchy

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[110] Timothy Beatley, *Balancing Urban Development and Endangered Species: The Coachella Valley Habitat Conservation Plan*, 16 ENVTL. MGMT. 1, 12, 16 (1992) (stating that out of 17,000 acres, occupiable lizard habitat only comprised 7,800 acres, which represented a mere 10% of the occupiable habitat that existed at the time the HCP was prepared).
[111] Telephone Interview with John Hopkins, *supra* note 46.
[112] Beatley, supra note 110, at 16.
[113] HAYES, *supra* note 105, at 13; HOOD, *supra* note 7, at 9, 11.
[114] MCKINNEY, ET AL., *supra* note 104, at 2.
[115] Kiesecker et al., *supra* note 105, at 262.
[116] Beatley, supra note 110, at 16.
[117] *Id.* at 14, 16.
[118] Franklin, *supra* note 104, at 202.
[119] *Id.*
[120] *See, e.g.*, MCKINNEY, ET AL., *supra* note 104. As recently as August 2013, Secretary of the Interior Sally Jewell reiterated the need for landscape-level solutions to planning for the future. Secretary Jewell highlighted the DRECP as an example of landscape-level planning. U.S. DEPARTMENT OF THE INTERIOR, *Secretary Jewell Underscores Importance of Landscape-Level Approach, Mitigation in Meeting President's Renewable Energy Goals on Public Lands*,

typical in the project-by-project approach with conservation planning.[121] It involves multi-jurisdictional, multi-purpose, multi-stakeholder efforts to address conservation challenges.[122] Outside the HCP program, the federal government and many state governments have undertaken a variety of measures to promote landscape-scale habitat conservation. Three notable federal initiatives include:

- *USFWS' Strategic Habitat Conservation (SHC).* The USFWS endorsed SHC in 2006 as its fundamental conservation approach for the twenty-first century in response to the unprecedented scale and complexity of challenges facing natural resources. The USFWS characterizes SHC as a new landscape-scale scientific method that also seeks to foster collaborative relationships in the conservation delivery process.[123]
- *Landscape Conservation Cooperatives (LCCs)*. In 2009, DOI Secretarial Order 3289 called on Interior bureaus and agencies to develop a network of twenty-two collaborative LCCs, which each form a regional network of land, water, wildlife, and cultural resource managers, scientists, and interested public and private organizations seeking to share scientific information and promote inter-jurisdictional conservation planning.[124] However, there is at best limited integration of individual HCPs and the HCP program itself into this burgeoning inter-jurisdictional landscape-level planning effort.
- *Secretarial Order No. 3330 and the DOI's Energy and Climate Change Task Force Strategy (April, 2014)*. In October 2013, Secretary of Interior Sally Jewell issued Order No. 3330, which establishes the mandate for the Department of the Interior's Energy and Climate Change Task Force to put landscape-level planning and mitigation measures at the forefront of future large-scale infrastructure development projects.[125] In response, the Task Force issued an April 2014 Strategy report[126] that contains ten guiding principles for landscape-level planning.

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http://www.doi.gov/news/pressreleases/secretary-jewell-underscores-importance-of-landscape-level-approach-mitigation-in-meeting-presidents-renewable-energy-goals-on-public-lands.cfm (last visited Nov. 6, 2014).

[121] Kiesecker et al., *supra* note 105, at 262

[122] *Id.*

[123] US FISH & WILDLIFE SERV., *National Conservation Training Center*, http://training.fws.gov/courses/roadmaps/shc/ (last visited Nov. 4, 2014). Like so many other efforts at landscape-level conservation planning, however, the effect of SHC remains at best uncertain. In the 2008 update to the SHC program handbook, the USFWS noted that agency fragmentation, programmatic inertia, and a lack of resources were the primary obstacles to continuing to shift to landscape-level conservation through the SHC framework. U.S. FISH & WILDLIFE SERV., STRATEGIC HABITAT CONSERVATION HANDBOOK (2008), *available at* http://www.fws.gov/landscape-conservation/pdf/SHCHandbook.pdf.

[124] Secretarial Order No. 3289, *Addressing the Impacts of Climate Change on America's Water, Land, and Other Natural and Cultural Resources* (Dept. of the Interior, Mar. 11, 2009), *available at* http://www.doi.gov/whatwedo/climate/cop15/upload/SecOrder3289.pdf.

[125] Secretarial Order No. 3330, *supra* note 68.

[126] JOEL P. CLEMENT ET AL., A STRATEGY FOR IMPROVING THE MITIGATION POLICIES AND PRACTICES OF THE DEPARTMENT OF INTERIOR: A REPORT TO THE SECRETARY OF INTERIOR FROM THE ENERGY AND CLIMATE CHANGE TASK FORCE (2014), *available at* http://www.doi.gov/news/upload/Mitigation-Report-to-the-Secretary_FINAL_04_08_14.pdf (last visited Feb. 13, 2015) [hereinafter "DOI Mitigation Strategy"].

The proposed Desert Renewable Energy Conservation Plan (DRECP), discussed in Section III.B.2 *infra*, and the Great Plains Wind Energy HCP (Great Plains HCP) reflect the magnitude of scale that the landscape-level approach represents. As illustrated in the map in the Appendix, the proposed DRECP's 22.5 million acres would be larger than all of southern California's existing HCPs *combined*.[127] The proposed Great Plains HCP, meanwhile, covers approximately 268 million acres in the central United States.[128] Its goal is to address the potential impacts of wind energy development on listed species such as the whooping crane, interior least tern, piping clover, and lesser prairie-chicken.[129] The vast size of the plan is intended to allow for the "identification of the most strategic areas for development and mitigation efforts, instead of a project-by project approach that does not incorporate a strategic view of landscape level impacts and planning."[130]

2. The Challenges of Breadth

As beneficial as a broad plan can be, as identified by dialogue participants, the experience of area-wide, multi-agency HCPs is that a larger scale is not without cost. First, the broader the plan is—whether geographically or in terms of resource concern—the more jurisdictional boundaries that are crossed, and the more private, local, state, and federal agencies that have an interest in and/or authority over the outcome. At a minimum, this likely increases the initial cost of plan formation and implementation, and/or likely dilutes the quality of the plan's analysis.

Perhaps more importantly, this increased breadth also amplifies the difficulty of reconciling a broader set of important but often competing resource goals, and thus raises the likelihood that the plan is less effective at achieving its management goals. For example, the Bay Delta Conservation Plan (BDCP) is an area-wide, multi-agency HCP that addresses conservation for the Sacramento-San Joaquin Rivers Delta on an ecosystem-scale.[131] The BDCP's goal is to "restore and protect ecosystem health, water supply, and water quality within a stable regulatory framework."[132] The BDCP is a joint HCP/NCCP that is intended to support permit issuance for the California Department of Water Resources, the Bureau of Reclamation, and six State Water Project and Central Valley Project water contractors.[133] The BDCP has been identified as representative of the tradeoffs that must be addressed when plans take on large-scale conservation efforts.[134] There is the risk of "harming local interests to benefit larger conservation goals," the tradeoff between broadly distributed conservation benefits and concentrated economic costs, and the difficulty of representing diverse local concerns where, in the case of the BDCP, five counties each have specific needs.[135] Though of course

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[127] The DRECP planning area overlaps with other proposed HCP plans, including the West Mojave HCP, the Lower Colorado River MSCP, the Town of Apple Valley Multi-Species NCCP/HCP, and the Imperial Irrigation District NCCP/HCP.
[128] GREAT PLAINS WIND ENERGY HABITAT CONSERVATION PLAN, http://www.greatplainswindhcp.org/ (last visited Feb. 13, 2015).
[129] *Id.* (stating the Wind Energy Whooping Crane Action Group, a group of fifteen wind energy companies, is developing the Great Plains HCP along with Region 2 and 6 of the USFWS and nine state wildlife agencies).
[130] GREAT PLAINS WIND ENERGY HABITAT CONSERVATION PLAN, *The Importance of the Great Plains Wind HCP*, *supra* note 128.
[131] BAY DELTA CONSERVATION PLAN, http://baydeltaconservationplan.com/Home.aspx (last visited Nov. 7, 2014).
[132] CAL. DEPT. OF WATER RES., PUBLIC DRAFT BAY DELTA CONSERVATION PLAN 1-1 (Nov. 2013).
[133] *Id.* at ES1, 7-1.
[134] Rachael E. Salcido, *The Success and Continued Challenges of the Yolo Bypass Wildlife Area: A Grassroots Restoration*, 39 ECOLOGY L.Q. 1085, 1128 (2012); February Dialogue, *supra* note 5.
[135] Salcido, *supra* note 134.

these tensions and challenges can occur even in smaller-scale plans, the difficulties are magnified as the scale increases to the landscape-level.

As the scale of planning extends even broader, the difficulties of expanding scale and breadth become more evident. The DRECP, for example, is in its planning stage, attempting to establish an area-wide, multi-agency, multi-species conservation effort that is unprecedented in scope and scale. The proposed plan area spans 22.5 million acres in California's desert, reaching from Highway 14 along the eastern portion of the State to the border with Mexico.[136] It would cover federal, state, and private lands in seven counties—Imperial, Inyo, Kern, Los Angeles, Riverside, San Bernardino and San Diego. Its purpose, as stated in the draft environmental impact report released in September 2014, would be to utilize both an NCCP and an HCP to provide for the development of renewable energy projects (wind, solar, and geothermal) in coordination with the conservation of habitat[137] for thirty-seven different plant and animal species.[138] Some involved with the draft plan's formation have expressed doubt as to whether it will be able to achieve the level of species protection necessary to qualify as an NCCP.[139]

The proposed plan alone is an over 8,000-page document, which is receiving considerable backlash from some due to its unwieldy "size, complexity and heavy use of jargon."[140] The sheer size of the document raises questions as to the feasibility of implementing a plan of this large a scope and scale. Its complexity and size may deter meaningful stakeholder participation, explored further in Section IV.C.3 *infra*, making implementation more difficult and detracting from the durability of the plan. In fact, the Bureau of Land Management and the California Energy Commission decided to delay "the non-federal portion of the plan after officials received more than 12,000 public comments on the draft" in order to address the comments and refine the proposed plan.[141] The renewable energy industry raised concerns about the "'extremely complex' permitting process for development projects" and how it is "in conflict with the idea of streamlining."[142] The DRECP's Independent Science Panel has also criticized the plan, noting that it lumps diverse habitats with distinct ecological characteristics (for instance, desert shrublands and coastal chaparral) into the same categories and proposes to manage them identically.[143] The plan also fails to address a number of species of concern that will likely be affected by desert renewable energy development.[144] Although the trend among HCPs has been to expand to increasingly large scales and scopes, that trend is beginning to

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[136] DESERT RENEWABLE ENERGY CONSERVATION PLAN, *Plan Area and Covered Activities*, *supra* note 67.
[137] *Id.*
[138] DESERT RENEWABLE ENERGY CONSERVATION PLAN, *Conservation Strategy*, *supra* note 67.
[139] Telephone Interview with Kim Delfino, Cal. Program Dir., Defenders of Wildlife (Dec.10, 2014).
[140] Sammy Roth, *DRECP Strategy Full of Complexities, Some Say,* THE DESERT SUN (Nov. 7, 2014, 11:28 PM), http://www.desertsun.com/story/tech/science/energy/2014/11/08/drecp-strategy-complex-say/18704431/.
[141] Scott Streater, *BLM, State to Rework Calif. Desert Solar Plan After Public Criticism*, ENERGY & ENV'T REPORTER (Mar. 10, 2015), http://www.eenews.net/greenwire/2015/03/10/stories/1060014774.
[142] *Id.*
[143] Initial Recommendations of the DRECP Independent Science Panel (August 2012), *available at* http://www.drecp.org/documents/docs/Independent_Science_Panel_2012_Initial_Recommendations.pdf.
[144] *Id*.

experience some push back as plans like the DRECP grapple with the complexity of planning on a landscape-level.

To reduce the manageability challenges of broadening scale, some plans have sought to focus the planning analysis and conservation management on a single issue. For example, the Great Plains HCP tackles conservation of endangered and threatened species over an enormous area of land. However, it only addresses a single issue—the impacts from wind energy development. By limiting the landscape-scale planning to a single issue, such landscape-level, area-wide, multi-agency HCPs are trading off plan depth for breadth.

During the February 2014 dialogue, participants identified a disconnect between the conceptualization of landscape-level planning efforts and actual on-the-ground implementation. Outside the HCP program, many landscape-level initiatives such as LCCs and SHC have been particularly popular recently as high-level policy. However, these initiatives have yet to make significant progress in integrating into concrete management decisions by the rank and file.[145]

C. LESSONS ON DURATION

In conjunction with trends to expand the scale and scope of species conservation planning and management, area-wide multi-agency HCPs also have had to consider the additional complexities and uncertainties of extending a permit's duration. The Services' five-point policy provides factors to consider in determining permit duration, such as the duration, nature, and scope of the proposed activity, as well as "the extent of the information underlying the HCP, the length of time necessary to implement and achieve the benefits of the operating conservation program, and the extent to which the program incorporates adaptive management strategies . . . [and] varying biological impacts" of the proposed activity.[146] However, the Services do not set a maximum permit duration; instead providing that "the allowable duration of a permit is flexible but an expiration date must be specified."[147] As a result, permit durations have ranged anywhere from several months to as long as one hundred years.[148] Larger-scale, area-wide, multi-agency HCPs generally have longer-duration permits, on average about thirty to fifty years.[149] With the trend towards larger-scale HCPs, a greater number of plans are tackling conservation issues over greater time horizons.[150]

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[145] Anastasia Telesetsky, *Ecoscapes: The Future of Place-Based Ecological Restoration Laws*, 14 VT. J. ENVTL. L. 493, 533–34 (2013) (stating that because LCCs are not authorized to create binding regulatory networks, there is no legal obligation to consider the LCC geographical unit when making future governmental decisions).
[146] HCP Handbook Addendum, *supra* note 64, at 35,255–56.
[147] HCP HANDBOOK, *supra* note 27, at 6-25.
[148] KAREIVA ET AL., *supra* note 89, at 2 (referencing a plan in Travis County, Texas and the Murray Pacific Company's HCP in Washington, respectively).
[149] Paola Bernazzani et al., *Integrating Climate Change into Habitat Conservation Plans under the U.S. Endangered Species Act*, 49 ENVTL. MGMT. 1103, 1104 (2012); *see also* Database, *supra* note 69.
[150] *See* Database, *supra* note 69.

1. The Advantages of a Longer Term

Some contend that area-wide, multi-agency HCPs necessitate planning over longer time horizons.[151] Some participants in the February 2014 dialogue who have been working on HCP implementation noted the desirability of longer-term permits for larger plans.[152] Participants identified one of the values of landscape-level planning is its emphasis on the management of dynamic ecological systems. A longer time horizon, coupled with planning on a landscape-level, allows a prospective analysis of a broad range of habitats with certain species in mind and an evaluation of the most desirable in the area for those species over time. Such an approach can promote dynamic ecosystem planning, which is critical to area-wide, multi-agency HCPs and their increasing need to adapt to changed circumstances, discussed in Section VI *infra*. Longer-duration permits may also be preferable to permittees because of the expense and time consumed in preparing a plan[153] and because they may provide greater land use regulatory certainty.[154] Further, some commentators have noted that a longer permit term may be necessary in order to meet the stricter "beyond mitigation" conservation standard of NCCPs because significant time and money are required to put protections in place that enable the recovery of each of the covered species.[155]

2. The Challenges of a Longer Term

On the other hand, longer-duration permits may be less desirable because of the inherent complexity and uncertainty that comes with managing dynamic species and habitats over extensive time horizons and the difficulty of projecting impacts of development many years out. As with moving to deeper, multi-species planning and landscape-scale analysis, lengthening the time horizon raises the costs and uncertainties of the plan's initial analysis and/or the risks that the original planning is flawed and inadequate, particularly in light of the No Surprises policy discussed in detail in Section VI *infra*. A study that assessed the adequacy of scientific analysis at each stage of the HCP process found that shorter-duration permits have better estimates of take that will occur under the HCP.[156] Some assert a shorter time horizon is more appropriate for the DRECP because information gaps are inevitable for such a large plan area and predicting renewable energy development in the desert more than twenty-five years out is extremely difficult.[157]

Moreover, if a plan with a longer-duration permit does not incorporate an effective strategy for adjusting conservation measures to integrate new data or ecological changes, the plan may not be able to meet its conservation goals.[158] Thorough up-front scientific analyses and effective adaptive management measures may help address the challenges of lengthening the permit term in the face of uncertainty,

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[151] Bernazzani et al., *supra* note 149, at 15; February Dialogue, *supra* note 5.
[152] *See also* Telephone Interview with Jake Li, *supra* note 50 (noting the extensive time and resources required to develop larger plans couldn't be rationalized if the plan only lasted for twenty to thirty years).
[153] Telephone Interview with John Hopkins, *supra* note 46.
[154] KAREIVA ET AL., *supra* note 89, at 33.
[155] Telephone Interview with John Hopkins, *supra* note 46 (noting also that achieving conservation goals in thirty years as opposed to fifty years is a much greater hurdle and may not be practical given current funding constraints).
[156] KAREIVA ET AL., *supra* note 89, at 4.
[157] Telephone Interview with Chris Beale, Att'y, Res. Law Grp. (Jan. 14, 2015).
[158] *See* KAREIVA ET AL., *supra* note 89, at 33.

addressed in detail in Section VI *infra*. Nonetheless, a longer permit term thus places increased pressure to ensure that the initial analysis is scientifically sound and that subsequent implementation measures are sufficiently well-formulated and adaptive to manage the increased likelihood of new information or changed circumstances altering the appropriate management strategies.

D. RECONCILING SCOPE, SCALE, AND DURATION

As illustrated above, a successful area-wide, multi-agency HCP requires an express understanding of the interplay of the tensions between scope, scale, and duration. Increasing any of these three features inevitably incorporates greater complexity and uncertainty into the planning process. With the parallel trends toward plans designed at even larger, landscape scales to monitoring and managing multiple species and ecosystems, and over long time horizons, the challenge of promoting efficient, manageable, and effective area-wide, multi-agency HCPs becomes even greater.

1. Clear and Candid Consideration of Tradeoffs

In light of the experience in the HCP program detailed above, when designing area-wide, multi-agency HCPs and similar large-scale ecosystem-based conservation planning initiatives, deliberate consideration of the tradeoffs between scope, scale, and duration is likely to be invaluable. Interested authorities may need to explicitly decide whether to concentrate primarily on scope or scale. The more extensive the scope of the HCP, the more modest in scale the plan area may need to be in order to promote better plan manageability and the likelihood of effective conservation. Similarly, if a larger landscape-scale is the concentration, a reduction in the number of issues and species[159] addressed may provide for a more effective and manageable plan.

Political realities will also play a role in balancing scope, scale, and duration with effective planning. The pilot NCCP Scientific Review Panel would have preferred to plan the entire NCCP region as a single entity, but recognizing this was politically and administratively unfeasible, recommended division into subregions reflecting the locations of the largest areas of habitat.[160] Ultimately, the subregional boundaries reflected a mix of habitat locations and political realities.[161] Nonetheless, to the extent possible the tradeoffs between wider scale, scope, and duration should be clearly and candidly considered and addressed at the outset of the scoping of issues for the plan, and choices that escalate the complexity by expanding one dimension are more likely to be effective if accompanied by choices that reduce the complexity for others.

[159] However, some insist that given the likely alternative of no protection measures whatsoever for non-listed species not included in a plan, it is better from a conservation perspective to include more species in a plan. Telephone Interview with John Hopkins, *supra* note 46.

[160] POLLAK, *supra* note 91, at 17.

[161] *Id*. (noting the Orange County Central-Coastal subregional boundaries reflected patterns of land ownership and the San Diego MSCP reflected the boundaries of the Metropolitan Sewerage System).

2. Resources that Match Complexity

As explained above, though the advantages are significant, the increased complexity from expanding the scale, scope, and duration is also considerable. The experience of area-wide, multi-agency HCPs is that insufficient attention and resources are given to providing the funding, monitoring, and research commensurate to a plan's increased complexity. Though the provision of sufficient resources for plan implementation is an issue for all HCPs, the problem is particularly acute as complexity increases. In this sense, a plan such as the DRECP can choose to plan over a broad scope and wide scale, but can only do so effectively if it commits extensive resources proportionate to the scale and breadth of the planning task.

3. Reliance on Robust Scientific Apparatus

The increased complexity of managing a large scope of issues over long time horizons in area-wide, multi-agency HCPs requires a robust, information-gathering method from the very beginning of the planning process and its continuation throughout the development of the HCP. The CDFW encourages front loading the planning process with "a strong scientific foundation" and requires early consultation with independent science advisors.[162] Gathering "biologically relevant" information regarding, *inter alia*, types of habitat occupied by endangered species, the species' habitat requirements with respect to foraging and breeding, and natural and human threats to the species[163] facilitates informed decisions when it comes to determining the appropriate scope, scale, and duration of the HCP.

For example, understanding the science behind edge effects and the best ways to minimize them can be essential to those involved in the HCP planning process.[164] A study on the invasive Argentine ant species within the Orange County Central and Coastal NCCP/HCP found that the reserve was vulnerable to invasion in areas that were within two hundred meters of an urban or agricultural edge.[165] The study predicted the NCCP/HCP reserve system will become "less functional over time" and that native ant ecological functions will be compromised within invaded areas.[166] Had these edge effects been accounted for at the start of the planning process, the plan's scale and configuration may have been adjusted to minimize the negative consequences.

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[162] CAL. DEP'T OF FISH & WILDLIFE, *Guidance Documents*, *supra* note 42 (click on "Lessons Learned from Regional Conservation Planning Efforts. 2003."); e-mail from Brenda Johnson, Program Manager, Cal. Dept. of Fish & Wildlife, to author (Feb. 19, 2015; 12:15 PST); *see also* CALLIHAN ET AL., *supra* note 58, at 59 (recommending independent science committees as part of an HCP's development).

[163] HOOD, *supra* note 7, at 13–15.

[164] Telephone Interview with James M. Sulentich, Exec. Dir., & Milan J. Mitrovich, Ecologist, Nature Reserve of Orange Cnty. (Dec. 4, 2014) (listing entry points for people or weeds and natural predators subsidized by the urban system as examples of edge effects that can cause higher levels of disturbance and have a negative impact on reserve systems).

[165] Milan J. Mitrovich, et al., *Ants as a Measure of Effectiveness of Habitat Conservation Planning in Southern California*, 24 CONSERVATION BIOLOGY 1239, 1244–45 (2010); *id.* (explaining this was due to modified conditions at these edges, such as soil moisture, that made areas near the edges particularly suitable for establishment of colonies).

[166] Mitrovich, et al., *supra* note 165, at 1246.

4. Clear Adaptive Management Protocols

Relatedly, as a plan's complexity increases, so does the extent of uncertainty; as a permit's duration increases, the likelihood of changed circumstances increases. Accordingly, the trends toward increased scale, scope, and duration intensify the pressure for effective adaptive management processes to account for new information and adjust to changed circumstances. Unfortunately, as detailed further in Section VI *infra*, area-wide multi-species HCPs have paid insufficient attention to integrating and encouraging the use of such protocols.

5. Tiering of Management Decisions

Finally, employment of strategic tiering[167] of planning and management that matches decision making to the planning stage can help deal with complexity and serve to integrate information obtained in ongoing monitoring into the management process. The tiered approach is an "iterative decision-making process for collecting information in increasing detail" and is intended to provide an opportunity for evaluation and decision-making at each tier.[168] The approach would involve establishing a broad plan in the initial planning stages of the HCP that could then be built upon as more concrete information became available over the time horizon of the plan.[169] Of course, as discussed further *infra*, development and implementation of tiered information-gathering and decision-making mechanisms to reconcile a longer time horizon with a large scope or scale requires significant and stable resources (Section V) and an effective mechanism for inter-jurisdictional problem solving (Section IV).

IV. Promoting Inter-jurisdictional Problem Solving

The rapid development since the 1970s of an environmental legal infrastructure has challenged private and public institutions to regulate ecological and health effects that transcend boundaries. More recent advances in information technology have better enabled public and private institutions to plan and work systemically over broad geographic spaces. As a result, some have argued that prevailing governance structures can and should continue to evolve to better respond and adapt to effects that transcend their jurisdictional boundaries.[170]

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[167] The USFWS recommended a tiered approach in the Land-Based Wind Energy Guidelines for addressing the potential adverse effects of proposed wind energy projects on species and habitat. U.S. FISH & WILDLIFE SERV., LAND-BASED WIND ENERGY GUIDELINES (2012), *available at* http://www.fws.gov/windenergy/docs/WEG_final.pdf.

[168] *Id.* at vi.

[169] However, it should be noted that the plan must still have sufficient detail at the initial stage to meet permit issuance requirements, which some assert may be lacking under a "tiered" approach. *See* e-mail from Brenda Johnson, *supra* note 162.

[170] J.B. Ruhl, *Regulation by Adaptive Management-Is It Possible?* 7 MINN. J.L. SCI. & TECH. 21, 27 (2005); Camacho, *supra* note 21, at 357–58.

Area-wide, multi-agency HCPs are some of the first and most prominent regulatory experiments in inter-jurisdictional problem solving and coordination. These plans and the California NCCP program developed at least in large part as mechanisms for addressing trans-jurisdictional problems by encouraging the various public authorities to work together and with private stakeholders to develop a common plan for habitat conservation. Yet allowing for or promoting a more multilateral and participatory process is not without its costs, and the HCP program has certainly experienced those as well. There are tradeoffs to integrating more intensive mechanisms for problem solving, and different circumstances may call for the use of different processes. This section seeks to explore the possible benefits and costs of increased communication, collaboration, or even coordination of private and public parties in habitat conservation planning, management and implementation. It also reviews the experience of area-wide, multi-agency HCPs to consider the potential circumstances under which more intensive, multi-party governance processes (such as area-wide, multi-agency HCPs) are likely to be effective.

A. THE BENEFITS OF MULTI-AGENCY GOVERNANCE

The legislative history to the 1982 ESA amendments creating the HCP program made clear that Congress intended a flexible HCP program that would encourage "creative partnerships between the public and private sectors."[171] Congress had indicated that HCPs should facilitate comprehensive planning that would encompass multiple landowners, multiple jurisdictions, and multiple species,[172] as pioneered by the San Bruno HCP entered into by San Mateo County, three cities, private landowners, developers, and environmental groups.[173] However, the lack of any express requirements or other incentives to motivate the initial and sustained participation of the full range of potentially interested public and private parties resulted in two general tracks of HCPs—a small number of large-scale, multi-jurisdictional HCPs actively seek to promote participation and collaboration while the vast majority of HCPs rely on a bilateral, traditional form of regulatory decision making.[174]

The conventional, bilateral HCP approach has been criticized frequently as leading to patchy, ad hoc mitigation measures that limit the ability to plan for species recovery or prevent species from declining.[175] These two-party agreements between the applicant and the Services, created to mitigate a single project or development, are not designed to prevent habitat fragmentation or foster a comprehensive planning process consisting of diverse interests.[176] In addition, some have contended that the many separate, piecemeal, and duplicative reviews of each development project can create costly delays and uncertainty for local governments, landowners, and developers, and enforcement of the project-by-project approach can be

[171] H.R. REP. NO. 97-835, at 30 (1982) (Conf. Rep.), *reprinted in* 1982 U.S.C.C.A.N. 2860, 2871.
[172] Sheldon, *supra* note 6, at 296–98; Lyons, *supra* note 52, at 102–03.
[173] *See* H.R. REP. NO. 97-835, at 32 (1982) (Conf. Rep.), *reprinted in* 1982 U.S.C.C.A.N. 2860, 2873 (recognizing that the San Bruno HCP establishes "a permanent institutional structure to insure uniform protection and conservation of the habitat throughout the area" despite overlapping jurisdictions of governmental agencies and "the complex pattern of private and public ownership").
[174] *See e.g.,* Camacho, *supra* note 21, at 355.
[175] POLLAK, *supra*, note 37, at 8.
[176] Sheldon, *supra*, note 6, at 300.

contentious and litigious.[177] For these reasons, the conventional approach has been adjudged to be unsatisfactory both to conservation advocates and to development interests.[178]

In contrast to these bilateral plans, the San Bruno HCP and the other multi-jurisdictional, MSHCPs were early prototypes of how collaborative planning and implementation can occur. Many area-wide, multi-agency HCPs have been developed by local or state bodies that outline conservation initiatives and mitigation requirements for identified activities in a specified area.[179] These multi-permittee HCPs have adopted a more multilateral, regional approach that seeks to promote the participation of the various affected agencies and interests to develop a comprehensive, coordinated plan.[180]

This evolution was part of a broader trend in the United States seeking to promote inter-jurisdictional planning and governance. A wide range of scholars and policymakers have suggested that institutional reforms are necessary to achieve the type of creative regulatory responses needed for effective governance in general and endangered species protection and ecosystem management in particular.[181] These proponents asserted that hybrid public-private governance structures, based on information sharing, performance monitoring, and collaborative problem solving, were necessary to promote integrated ecosystem management at the scale discussed in Section III.B *supra*.[182] In this view, parties representing diverse interests at multiple, nested spatial scales can collaborate to develop locally or regionally tailored solutions within broader structures of coordination and public accountability.[183]

Proponents assert that these multi-party processes can lead to better decisions with a higher likelihood of implementation, while simultaneously preparing agencies and stakeholders for potential challenges.[184] They contend this is because the information sharing that occurs in these contexts can build a better understanding of the issues, which allows agencies to educate the public and manage uncertainty.[185] They claim these collaborative processes can lead to wiser decisions by solving common problems, resolving disputes, and building support for decisions.[186] Other asserted benefits in the context of area-wide, multi-agency HCPs include reduced planning time, increased quality and quantity of information gathering based on the best available science, enhanced working relationships, increased likelihood of HCP approval and implementation, and decreased likelihood of litigation.[187] Dialogue participants agreed that area-wide, multi-

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[177] *Id*.
[178] POLLAK, *supra*, note 91, at 7.
[179] JAIMEE LEDERMAN & MARTIN WACHS, TRANSPORTATION AND HABITAT CONSERVATION PLANS 6 (2014).
[180] This is especially true with the NCCP program in California. *See* HOOD, *supra* note 7, at 41–42.
[181] *See, e.g.,* Ruhl, *supra*, note 170, at 27; Camacho, *supra* note 21, at 357–58.
[182] Bradley C. Karkkainen, *Collaborative Ecosystem Governance: Scale, Complexity, and Dynamism*, 21 VA. ENVTL. L.J. 189, 193–94 (2002).
[183] *Id*.
[184] JULIA M. WONDOLLECK & STEVEN L. YAFFEE, MAKING COLLABORATION WORK: LESSONS FROM INNOVATION IN NATURAL RESOURCE MANAGEMENT 23 (2000).
[185] *Id*.at 24–30.
[186] *Id*. at 30–35.
[187] LEDERMAN & WACHS, *supra* note 179, at 84–98; Camacho, *supra* note 21, at 318–19.

agency HCPs offer the opportunity to increase the connectivity not only among fragmented lands and disparate plans, but also among fragmented regulatory and management institutions.[188]

To further encourage inter-jurisdictional planning, the California legislature established the NCCP program as one of the first comprehensive frameworks for regional integrated ecosystem management. A key goal of California's NCCP program was to overcome the limitations of the conventional bilateral approach and encourage interagency cooperation and agreements among local, state, and federal agencies, along with private parties.[189] State and federal wildlife agencies collaborate in overseeing the planning process so that plans can be approved simultaneously under the state NCCP Act and the federal HCP law.[190] By using the NCCP program as a proving-ground, USFWS could choose to incorporate some of its innovations into policies and regulations governing the federal HCP process.

As discussed at the December 2014 dialogue, this experiment in decentralized habitat conservation planning and management is exemplified in the San Diego MSCP,[191] which subdivides the large subregion into eleven planning subareas to implement the broad subregional program. Emphasizing local land-use control, the "umbrella" HCPs are structured to remove regional land-use policy from USFWS control and give it back to local government.[192] Each jurisdiction within a subarea has the authority to issue its own permits and the San Diego Association of Governments (SANDAG), the Metropolitan Planning Organization (MPO), coordinates the land-use between all the jurisdictions and works with all area HCPs.[193] The Western Riverside MSHCP, detailed in Section IV.C.1 *infra*, was also discussed as a strong model for integrated regional planning. Some December 2014 dialogue participants suggested expanding this experiment with possible pilot efforts such as coordination among California MPOs and Regional Transportation Planning Agencies to create a regional integrated planning approach for conservation in the context of infrastructure/development and local, regional, state, and federal planning, policy, and regulation.

B. CHALLENGES AND LIMITATIONS OF MULTI-AGENCY GOVERNANCE

Despite these potential benefits of multi-agency, regional HCPs, these more multilateral and participatory processes also have notable tradeoffs. The literature and participants in the dialogues identified numerous constraints to collaborative planning for area-wide, multi-agency HCPs.

1. Persistent Regulatory Fragmentation

As the experience of area-wide, multi-agency HCPs has demonstrated, there are barriers to effective implementation of cross-agency planning due to the tension with decentralized land use planning regimes.

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[188] February Dialogue, *supra* note 5.
[189] POLLAK, *supra* note 91, at 7.
[190] *Id*.
[191] Robert L. Fischman & Jaelith Hall-Rivera, *A Lesson for Conservation from Pollution Control Law: Cooperative Federalism for Recovery Under the Endangered Species Act*, 27 COLUM. J. ENVTL. L. 45, 105–06 (2002).
[192] LEDERMAN & WACHS, supra note 179, at 19–20.
[193] *Id*.

The HCP program and various area-wide, multi-agency HCPs have been criticized for their fragmented approach to regulation,[194] and the dialogues further reinforced the view that there is a tendency toward agency inertia and operating within defined silos despite the existence of inter-jurisdictional governance regimes.[195] Moreover, "as U.S. environmental law has ripened over the past few decades, most ecological communities have become subject to a clutter of government programs with limited jurisdiction and information and thus limited capacity to learn and adapt."[196] Such fragmentation creates barriers to intergovernmental learning and the development of responses to large-scale conservation problems.

2. Process Costs and Manageability

Because such inter-jurisdictional planning arrangements rely on the sustained involvement of virtually all of the relevant, interested parties, they often can take substantial amounts of time and resources to work effectively.[197] Even regional HCPs with more elaborate participatory measures struggle with the competing goals of being responsive to multiple constituents and efficiency.[198] Excessive bureaucratic review and approval processes have resulted in time delays[199] and some participant dissatisfaction.[200] With these delays there is an increased likelihood that elected official and staff turnover will negatively impact support for the plans and compound process inefficiencies.[201]

As plans grow in size and complexity, time and costs were identified as particularly significant constraints by dialogue participants. Some development interests argue that plans do not go far enough in streamlining the regulatory process.[202] More concretely, the length of time needed to complete the planning

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[194] Camacho, *supra* note 21, at 357.
[195] *See also, e.g.*, STEERING COMM. ON FED. INFRASTRUCTURE PERMITTING & REVIEW PROCESS IMPROVEMENT, IMPLEMENTATION PLAN FOR THE PRESIDENTIAL MEMORANDUM ON MODERNIZING INFRASTRUCTURE PERMITTING 7–8 (2014) (explaining that over time, permitting requirements for major infrastructure projects "have resulted in more than 35 distinct permitting and review responsibilities across more than 18 Federal agencies and bureaus").
[196] Alejandro E. Camacho, *Adapting Governance to Climate Change: Managing Uncertainty Through A Learning Infrastructure*, 59 EMORY L.J. 1, 26 (2009).
[197] Michael McCloskey, *Problems with Using Collaboration to Shape Environmental Public Policy*, 34 VAL. U. L. REV. 423, 429 (2000); Peter S. Alagona & Stephanie Pincetl, *The Coachella Valley Multiple Species Habitat Conservation Plan: A Decade of Delays*, 41 ENVTL. MGMT. 1 (2007).
[198] JEREMY ANDERSON & STEVEN L. YAFFEE, BALANCING PUBLIC TRUST AND PRIVATE INTEREST: PUBLIC PARTICIPATION IN HABITAT CONSERVATION PLANNING 27 (1998); *see* CAL. HABITAT CONSERVATION PLANNING COALITION, ET AL., IMPROVING EFFICIENCY DURING PREPARATION OF REGIONAL HABITAT CONSERVATION PLANS 2 (2013) (reporting difficulty in reaching agreements and politics as top reasons those involved in conservation plan preparation in California gave for plan preparation delays).
[199] *See e.g.* Telephone Interview with Jake Li, *supra* note 50 (explaining the stress on the Services' limited resources has resulted in them turning away HCP applicants).
[200] ANDERSON & YAFFEE, *supra* note 198; CALLIHAN ET AL., *supra* note 58, at 18–21, 31–33; *see* CAL. HABITAT CONSERVATION PLANNING COALITION, ET AL., *supra* note 198.
[201] Telephone Interview with Trish Adams, Nat'l Habitat Conservation Planning Coordinator, U.S. Fish & Wildlife Serv. (Dec. 10, 2014); Alagona & Pincetl, *supra* note 197; CALLIHAN ET AL., *supra* note 58, at 21.
[202] POLLAK, supra note 91, at 27 (developers and landowners argued that the environmental review conducted for the MSCP should serve as a programmatic Environmental Impact Report); *cf.* ECON. & PLANNING SYS., INC., *supra* note 70, at 11 (explaining "opportunity cost savings that might accrue to private sector developers from elimination of . . . regulatory delay reflects the rate of return that developers would be able to achieve in investing in other projects").

process may exceed the amount of time allotted.[203] The lack of adequate funding for plan formation and implementation, discussed in Section V.C *infra*, is a chronic problem. Relatedly, February 2014 dialogue participants identified manageability issues associated with multilateral approaches. It is difficult to convene working groups of a size that is manageable as well as sustained for potentially interested public and private actors to participate on an on-going basis. This is particularly difficult in light of the growing trend toward landscape-level planning and even broader geographic scales for area-wide, multi-agency HCPs.

3. Information Deficits and Discrepancies

Also, dialogue participants identified the lack of shared information and data as a major hindrance to meaningful participation.[204] A mechanism to facilitate information sharing across jurisdictions and with all interested parties is necessary, as is promoting information comprehension.

4. Legitimacy

Though not of particular concern to dialogue participants, critics of multilateral governance approaches have claimed that such power-sharing arrangements are vulnerable to treating governments as simply stakeholders and can upset traditional models of representative democracy by giving more weight to vocal, well-resourced minorities.[205]

5. Agreement Quality

Some critics have asserted that multilateral governance processes can lead to lowest common denominator compromises rather than quality decisions.[206] Given the large number of parties and diverse interests involved, there is the risk that the collaborative process may result in a plan that may represent consensus, but does not reflect the complexities inherently involved in this type of ecosystem management.[207] Relatedly, a consensus, multi-party agreement embodies a bias towards the status quo.[208] Some critics assert that localized conservation collaboration cannot effectively address the magnitude of ecosystem-scale management that implicates multiple jurisdictions, agencies, parties, and remedies.[209] It is important to note that though many participants in area-wide, multi-agency HCPs give favorable reviews, some participants from both industry and environmental organizations are critical.[210]

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[203] February Dialogue, *supra* note 5 (noting that the Santa Clara plan nearly collapsed due to time constraints); Alagona & Pincetl, *supra* note 197 (noting the trend toward longer planning timeframes as plans increase in complexity); CALLIHAN ET AL., *supra* note 58, at 20 (stating applicants expected the Coachella Valley HCP to take six to seven years to develop and approve, but actually took fourteen years).

[204] Some participants mentioned that they often have to file FOIA requests in order to obtain information.

[205] McCloskey, *supra* note 197, at 426, 431.

[206] *Id*. at 429

[207] *Id*.

[208] *Id*. at 430–31.

[209] George Cameron Coggins, *Of Californicators, Quislings, and Crazies: Some Perils of Devolved Collaboration*, *in* ACROSS THE GREAT DIVIDE: EXPLORATIONS IN COLLABORATIVE CONSERVATION AND THE AMERICAN WEST 163 (Philip Brick et al. eds., 2001).

[210] For some HCPs, some landowners complain that the "voluntary" or "cooperative" process of negotiating a binding regional land use plan consistent with habitat protection looked more like extortion. Karkkainen, *supra* note 182, at 230. For the NCCP

C. CONDITIONS FOR SUCCESS

Area-wide, multi-agency HCPs provide a range of lessons regarding the possibilities and challenges of cooperative, inter-jurisdictional habitat conservation. As discussed at the dialogues, there are a number of important factors that are likely to increase the likelihood that inter-jurisdictional, problem-solving initiatives like area-wide, multi-agency HCPs will bear fruit.

1. Clear and Efficient Organizational Structure

There is a tension between the decentralized land use planning regime that empowers local governments and large-scale, regional planning that transcends local jurisdictions.[211] There is also a tension between the new model of hybrid public-private governance structures, based on information-sharing and collaborative problem solving, and traditional hierarchical governance structures. Successful governing structures for area-wide, multi-agency HCPs typically provided clear and concrete avenues for coordination among many stakeholders in the HCP planning process.[212] Successful implementation requires both a local administrative structure and effective coordination with state and federal partners.[213] In California, common implementation structures are joint powers authority,[214] private non-profits,[215] and intergovernmental and interagency committees.[216] For example, the parties to the Western Riverside MSHCP formed a joint powers authority, Western Riverside County Regional Conservation Authority (RCA), for implementation and management of the MSHCP.[217] This "Cooperative Organizational Structure" facilitates collaboration among the permittees and the wildlife agencies and assures that monitoring and management is consistent across jurisdictional boundaries.[218]

Streamlining to minimize redundancy and promote learning can mitigate some of the difficulties of inter-jurisdictional interaction. For example, some commenters have concluded that greater efficiency can be achieved through dedicating a specific USFWS staff member in the local office to HCP planning and development, and encouraging that staff member to "triage" and prioritize tasks that cause the greatest delays in the process.[219] This also avoids problems associated with high turnover, lost institutional knowledge, and

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pilot program, the Farm Bureau felt the plan threatened the economic viability of agriculture in San Diego County. POLLAK, *supra* note 91, at 28. The NCCP program has also divided the environmental community, with some supporting the process, but others distrustful of the process and its results. *Id*.

[211] February Dialogue, *supra* note 5.

[212] LEDERMAN & WACHS, *supra* note 179, at 98.

[213] *Id.*

[214] *E.g.*, E. CONTRA COSTA CNTY. HABITAT CONSERVATION PLAN ASS'N, FINAL EAST CONTRA COSTA COUNTY HABITAT CONSERVATION PLAN / NATURAL COMMUNITY CONSERVATION PLAN 8-1 (2006).

[215] *E.g.*,NATURE RESERVE OF ORANGE CNTY., http://www.naturereserveoc.org/ (last visited Mar. 11, 2015).

[216] *E.g.*,CITY OF SAN DIEGO, CITY OF SAN DIEGO MSCP SUBAREA PLAN 49 (1997), *available at* http://www.sandiego.gov/planning/programs/mscp/pdf/subareafullversion.pdf.

[217] WESTERN RIVERSIDE MSHCP, *supra* note 85, at 6-78 to 6-79.

[218] LEDERMAN & WACHS, *supra* note 179, at 98.

[219] *Id.* at 101.

lack of leadership that occurs when agencies place inexperienced staff in charge of plan development.[220] For federal transportation projects, the Federal Highway Administration (FHWA) has successfully funded a liaison position for HCP development within USFWS offices.[221] However, there may be benefits from allocating independent authority to portions of the regulatory process,[222] or even leveraging private parties to promote more effective implementation.[223] For example, some assert dividing responsibility for plan implementation from management and monitoring between two distinct entities can result in better data and better informed management decisions.[224]

As highlighted at the December 2014 dialogue, to address time and money challenges, the San Diego area HCPs have developed an expedited process for plan implementation. They hold monthly meetings for member jurisdictions, resource agencies, and other stakeholders at which they discuss upcoming projects, setting deadlines, and deciding on actions for moving forward under the plan.[225] Mitigation activities are streamlined because SANDAG, as the recipient of TransNet funds, works with all area HCPs to coordinate mitigation. This revenue stream makes it both a mitigation tool and an implementation mechanism for the regional plan.[226]

2. An Integrative Approach

In many circumstances, greater efficiency may be achieved through inter-agency coordination and by integrating the disparate permitting requirements according to ecological boundaries such as watersheds. This integration, combined with the mitigation streamlining discussed in Section IV.C.1 *supra*, can ameliorate the time and money constraints often associated with large-scale, regional planning.

December dialogue participants noted that there have been recent efforts to integrate Clean Water Act (CWA) Section 404 permitting with the HCP program. In May 2012, the nation's first Regional General Permit (RGP) was issued to the East Contra Costa County HCP/NCCP[227] as a means of "coordinating conservation activities at a regional and watershed scale."[228] The RGP authorizes activities within the plan area that involve discharges under Section 404 of the CWA and that are of "minimal individual and cumulative

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[220] *See* CALLIHAN ET AL., *supra* note 58, at 62 (finding the most common suggestion for program improvement among HCP applicants is to increase the availability of experienced USFWS personnel to work on the program); Telephone Interview with Ron Rempel, Former Program Adm'r, San Diego Mgmt. & Monitoring Program (Jan. 16, 2015).
[221] LEDERMAN & WACHS, *supra* note 179, at 101.
[222] *See e.g.*, CALLIHAN ET AL., *supra* note 58, at 28 (finding USFWS Regional Offices in Sacramento strongly prefer that the USFWS staff person who conducts Section 7 consultation not be the same person who conducts the biological review in order to provide a check and balance); e-mail from Brenda Johnson, *supra* note 162 (stating that separating management from monitoring promotes objectivity, checks and balances, and helps avoid conflicts of interest during adaptive management decision-making).
[223] *See e.g.*, CALLIHAN ET AL., *supra* note 58, at 28.
[224] Telephone Interview with Ron Rempel, *supra* note 220 (referencing the Natomas Basin HCP as a successful example of splitting responsibility—the City of Sacramento administers and implements the plan, a nonprofit will do the management and monitoring).
[225] LEDERMAN & WACHS, *supra* note 179, at 85.
[226] *Id*. at 101–02.
[227] U.S. ARMY CORPS OF ENG'RS, REGIONAL GENERAL PERMIT 1 (2012); ECON. & PLANNING SYS., INC., *supra* note 70, at 15;
[228] U.S. ARMY CORPS OF ENG'RS, REGIONAL GENERAL PERMIT 1 (2012).

impacts on the aquatic environment.[229] Several other northern California HCPs are working with the U.S. Army Corps of Engineers and the Environmental Protection Agency to integrate plans with Section 404 permitting and "broader aquatic resources needs,"[230] as well as efforts to integrate the plans with the water quality permitting under the state Porter Cologne Act and a watershed approach under the new state wetlands protection regulations being prepared by the California Water Resources Control Board.[231]

In addition, the Strategic Growth Council has taken an integrative regional planning approach in identifying major ecological regions and the strategic opportunities for advance mitigation planning, as discussed further in Section V.D.4 *infra*.[232] One project under consideration for this type of regional integrative planning approach is the California high speed rail.[233] Others have recommended integrating National Environmental Policy Act review into the HCP document and ESA Section 7 consultation into the HCP development process to streamline processing requirements.[234] Some also suggest integrating the regional transportation and land use planning required under SB 375's "sustainable communities strategies" (SCS)[235] with habitat conservation planning.[236]

3. Open Participation

Particularly for area-wide, multi-agency HCPs, participation and transparency are necessary to promote collaborative planning and implementation. Successful planning processes typically incorporated stakeholder participation, with wildlife agencies, local agencies, development interests, and environmentalists meeting and negotiating over the plans.[237] A well-managed public participation process has the potential to provide significant benefits to applicants, agencies, outside stakeholders, and affected species,[238] as well as broader social benefits such as where to zone open space and how to manage growth.[239] Increased participation by diverse parties is more likely to produce a durable plan because effective public participation and deliberation is one of the most important elements to a plan's ultimate success.[240] At least one court has struck down an ITP for a lack of public deliberation on appropriate mitigation measures and funding

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[229] *Id.*
[230] ECON. & PLANNING SYS., INC., *supra* note 70, at 15.
[231] Telephone Interview with John Hopkins, *supra* note 46.
[232] CAL. STRATEGIC GROWTH COUNCIL, http://sgc.ca.gov/ (last visited Jan. 28, 2015).
[233] December Dialogue, *supra* note 5.
[234] CALLIHAN ET AL., *supra* note 58, at 34, 60.
[235] The Sustainable Communities and Climate Protection Act, 2008 Cal. Legis. Serv. Ch. 728 (S.B. 375) (amending scattered sections of Cal. Gov't Code and Cal. Pub. Res. Code). Each of California's MPOs must prepare an SCS to reduce greenhouse gas emissions as an integral part of its regional transportation plan. CAL. ENVTL. PROT. AGENCY, *Sustainable Communities*, http://www.arb.ca.gov/cc/sb375/sb375.htm (last visited Feb. 24, 2015).
[236] Elisa Barbour & Lara M. Kueppers, *Conservation and Management of Ecological Systems in a Changing California*, 111 CLIMATIC CHANGE 135, 158 (2012) (describing how SB 375 requires only that SCSs recognize existing NCCPs, but not that new NCCP plans be developed and integrated with other processes).
[237] POLLAK, *supra* note 91, at 18–19 (noting the San Diego MSCP working group included USFWS, the Navy, CDFW, Caltrans, SANDAG, the County Water Authority, the County, five cities, seven conservation organizations, landowners, the Building Industry Association, the County Farm Bureau, SDG&E, and various development companies).
[238] ANDERSON & YAFFEE, *supra* note 198, at 4.
[239] Thomas, supra note 6, at 163.
[240] LEDERMAN & WACHS, *supra* note 179, at 84–95

assurances.[241] Though undoubtedly there are challenges with promoting meaningful and broad participation, area-wide, multi-agency HCPs must be designed to be open, transparent, inclusive, accessible, and strive for balanced representation. A full range of relevant and diverse interests should be invited and encouraged to contribute to the process with meaningful opportunities for participation.[242] When present, participants generally found the working group process beneficial in enhancing understanding and effective communication, and helped environmental representatives in particular accept the reasoning behind the complex decisions being made.[243]

Many of the early multi-party HCPs (e.g. San Bruno Mountain, North Key Largo, and Carlsbad/Fieldstone MSHCPs) utilized a "planning" model that relied on a self-selected working group led by a nonaligned facilitator and made up of USFWS officials as well as other public and private interests.[244] The working group was charged with collaboratively identifying concerns, issues, opportunities, and considerations, as well as alternatives and related impacts, with final decision by the various governmental actors with jurisdictional authority. Though these working groups were open to all, they tended to eventually winnow to those who were significantly interested. These HCPs tended to lead to a consensus agreement, which some participants suggest was largely because the parties were not willing to lose control to the formal decision makers. In the process, participants often developed greater trust and understanding of the various differing interests. As the HCP program has evolved, newer HCPs have adopted similar processes.[245]

The Bay Delta Conservation Plan HCP/NCCP and the ensuing conflict over the Yolo Bypass Wildlife Area serve as an illustration of the difficulty but importance of providing sufficient opportunities for meaningful access to relevant public authorities. Self-described as a collaborative resolution to the conflicts in the Sacramento-San Joaquin Delta, the BDCP sought to promote intergovernmental and interagency coordination across multiple tiers of government—tribal, local, state, regional, and federal. Though there was a strong state-federal partnership for large-scale conservation, the BDCP has been criticized for largely excluding relevant local government interests and not recognizing the distributional impacts of conservation decisions.[246] Local governments play an essential role in conservation planning because community concerns are often represented best by formal local government institutions.[247] According to some, the BDCP overlooked the potential for local government input to add value to the planning process, educate the public,

[241] *Sw. Ctr. for Biological Diversity v. Bartel*, 470 F. Supp. 2d 1118, 1123 (S.D. Cal. 2006).
[242] Thomas, *supra* note 6, at 164; LEDERMAN & WACHS, *supra* note 179, at 93–95.
[243] POLLAK, *supra* note 91, at 19.
[244] *See, e.g.,* Thomas, *supra* note 6, at 151 ("[T]he *Coachella Valley Fringe-Toed Lizard Habitat Conservation Plan* was completed in 1985 by a steering committee composed of a wide spectrum of stakeholders, including representatives from local governments, state and federal agencies, an Indian tribe, and a non-profit environmental group.").
[245] *See, e.g.,* LEDERMAN & WACHS, *supra* note 179, at 94–101 (reviewing selected HCPs' reliance on previously-tested and trusted organizational structures as indications of potential success).
[246] Salcido, *supra* note 134, at 1108–13 (noting that local Delta governments were not initially included in the BDCP Steering Committee).
[247] McCloskey, *supra* note 197, at 431.

and legitimatize land use decisions.[248] Although the role for local government in the BDCP process has evolved over time, some assert that they continue to be treated more as private stakeholders rather than equal collaborators with state and federal government agencies and water contractors.[249] Accordingly, a lack of coordination and collaboration between government entities in support of conservation efforts may limit opportunities for progress.

4. Initial Scoping of Issues and Disagreements

HCP processes that were more successful at promoting collaboration often integrated an initial scoping of the issues that identifies the proposed action, concerns, issues, opportunities, considerations, alternatives, impacts, and recommendations.[250] Some encourage use of a neutral facilitator during the process.[251] To the extent that there is disagreement among those involved, the intent would be to include an articulation of those disagreements, which may be in the words of those who disagree.[252] Finally, recognizing the need for local input so that plans can be tailored to fit the unique circumstances of the region is critical.

5. Managing Complexity through Information Sharing Mechanisms

For some HCPs, participants felt that their ability to influence policy decisions was hindered by the technical complexity of the issues and limited ability to bring technical experts to the table.[253] These planning processes often prove to be more complex than anticipated, perhaps not surprisingly given the many stakeholders and the scope of the plans. Multi-agency HCPs tend to be thick documents because they stipulate a diverse range of actions that are allowed or required across multiple ownerships and jurisdictions.[254] In the case of the Desert Renewable Energy Conservation Plan, as discussed in Section III.B.2 *supra*, many stakeholders, including full-time environmental staffers, feel flummoxed by the complexity of the plan.[255]

However, given the complexity of area-wide ecosystem management, regulators and stakeholders will always be working from a chronic shortage of information.[256] The increased expertise offered by the larger number of participants is more likely to produce a plan capable of managing for resilient ecosystems, as climate change and other threats impact species and their habitat.[257]

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[248] Salcido, *supra* note 134, at 1120–21. The Delta's multiple counties and municipal governments were placed in the same position as all other interested participants, whose input would be heard, but only possibly considered and incorporated into the plan. *Id.* at 1112–13.
[249] *Id*. at 1113.
[250] February Dialogue, *supra* note 5.
[251] CALLIHAN ET AL., *supra* note 58, at 59.
[252] *See id.* (stating in some cases, use of dispute resolution processes may be warranted).
[253] POLLAK, *supra* note 91, at 19.
[254] Thomas, *supra* note 6, at 153.
[255] The over 8,000-page plan was prepared by the Renewable Energy Action Team, a consortium of state and federal agencies, including the California Energy Commission, CDFW, USFW, and the Bureau of Land Management. DESERT RENEWABLE ENERGY CONSERVATION PLAN, *What is DRECP*, *supra* note 67.
[256] Karkkainen, *supra* note 182, at 205.
[257] *Id*.

Accordingly, the key is the integration of a well-funded mechanism to facilitate information sharing across jurisdictions and with all interested parties. An accessible library of HCPs and related documentation, including findings from monitoring programs and implementation evaluations, would enhance participation, transparency, and accountability.[258] Moreover, the Services should facilitate the dissemination of innovative ideas employed by specific HCPs, including perhaps a yearly summary of HCP developments across the country.[259]

6. Resources and Training

As plans increase in size and complexity, the costs, both transactional and administrative, and time requirements are much greater for area-wide, multi-agency HCPs. December 2014 dialogue participants corroborated that this is due to the larger number of parties involved and the inherent costs involved in coordinating and collaborating with multiple agencies and stakeholders and the volume of information and resources necessary to produce and implement the plan. There is a risk that some applicants will simply choose not to participate in the HCP process given the greater costs involved. However, a cooperative multi-party approach, as opposed to a potentially more adversarial bilateral approach, may actually reduce time delays and costs by increasing the level of resources available and reducing the likelihood of litigation.[260] Providing sufficient training sessions and resources for parties at the outset of a collaborative planning and implementation process can improve the likelihood of participation and effective problem solving.[261]

7. Strong Incentives to Work Together

As discussed in more detail in Section III.A.1 *supra*, the threat of the gnatcatcher listing in southern California and enforcement of the ESA's prohibition on "take" of a listed species destabilized the existing regime of land use and development law.[262] This created an incentive for all parties to engage in genuine collaboration toward a new bargained-for solution that would both protect species and habitat and allow for development to occur.[263] Relatedly, a number of February 2014 dialogue participants identified the value of strong leadership that encouraged participating authorities to develop an inclusive process but provided sufficient discretion to participants to allow for creative solutions.[264]

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[258] Thomas, *supra* note 6, at 167; *see also supra* note 69 and accompanying text. USFWS' database does not "aggregate[] the data into a programmatic summary," and thus is of "marginal value and cannot serve as a valuable learning tool." Camacho, *supra* note 21, at 338–39.

[259] LEDERMAN & WACHS, *supra* note 179, at 89.

[260] *Id.* at 94 (citing a USFWS representative, "not including a potential stakeholder is the best way to get sued").

[261] *Id*. at 89 (recommending a multi-day training session for stakeholders at the outset of the planning process to build collaborative relationships); *see also* CALLIHAN ET AL., *supra* note 58, at 58 (recommending creation of "Expert Support Teams" to jump-start the HCP development process with a multi-day workshop to explain the requirements and process, clarify responsibilities, and provide helpful tips).

[262] Bradley C. Karkkainen, *Getting to "Let's Talk": Legal and Natural Destabilizations and the Future of Regional Collaboration*, 8 NEV. L.J. 811, 816–17 (2008).

[263] *Id*.

[264] *See* CALLIHAN ET AL., *supra* note 58, at 59 (recommending a "more active FWS 'partnership' approach" as opposed to a "'hands-off applicant-driven' process").

Processes also tended to bear fruit when the managing authorities attended to participants' incentives to promote relationship building, institutionalize good behavior, and find common ground. February 2014 dialogue participants emphasized that relationship building in area-wide HCPs served to promote not only social capital but more effective and resilient habitat conservation.[265] This may be the case especially as the duration of plans lengthens, requiring agencies and interested participants to work together over the course of many years.[266]

V. Funding for Habitat Conservation and Planning

Since the inception of the HCP program, there has been a critical need to find revenue to acquire and manage land for habitat conservation that has only grown as the program has matured. Funding has often been identified as a significant concern that restrains the effectiveness of the HCP program[267] and inhibits habitat conservation more generally. The inadequacy of funding has plagued all major stages of HCP development, from preparation and planning to long-term implementation, management, and oversight, including monitoring and adaptive management protocols. At least two HCPs have been struck down by courts because of inadequate funding mechanisms.[268]

Beyond the HCP program, funding for habitat conservation often has been provided on a very ad hoc basis, and revenue streams are often not guaranteed.[269] Observers identify funding as a key challenge for the future because many funding mechanisms for habitat conservation have been susceptible to failure.[270] As such, in addition to providing insights for improving the HCP planning and implementation process itself, a review of funding under the HCP program and other related efforts to fund habitat conservation offers lessons for the future in developing effective methods for providing funding for habitat conservation in other resource management programs as well.

A. HCP FUNDING REQUIREMENTS AND STAGES

Under the ESA, an HCP submitted in support of an ITP application must specifically detail the funding that will be made available to undertake monitoring, minimization, and mitigation of likely impacts resulting

[265] February Dialogue, *supra* note 5.
[266] Telephone Interview with Ron Rempel, *supra* note 220.
[267] *See, e.g.,* Thomas, *supra* note 6, at 155; Camacho, *supra* note 21, at 327, 339, 349, 355; HOOD, *supra* note 7, at 47.
[268] *Sierra Club v. Babbitt,* 15 F. Supp. 2d 1274, 1280–82 (S.D. Ala. 1998); *Nat'l Wildlife Fed'n v. Babbitt*, 128 F.Supp.2d 1274, 1278 (E.D. Cal. 2000).
[269] Fischman, *supra* note 13, at 471–75.
[270] HOOD, *supra* note 7, at 50 (explaining changes in the economy can bankrupt a permittee, a downturn in the housing market makes reliance on developer fees difficult, and voter-approved measures and appropriations from Congress or state legislatures are likely the most fragile funding sources).

from the proposed taking of the species for which permit coverage is requested.[271] The applicant must demonstrate an ability to provide the requisite level of funding for these activities prior to permit approval.[272] However, while funding obligations for HCP implementation must be met after permit issuance, actual possession of the funds is normally not required prior to permitting.[273]

Adequate funding is needed for each of the three main stages of the HCP: planning and agreement formation, initial implementation of the HCP agreement (primarily land acquisition), and long-term implementation and adaptive management.[274] December 2014 dialogue participants emphasized that funding must be tailored to each stage, as each has distinct challenges and opportunities.[275] Costs associated with the initial planning stage include research of biology, social impacts and economics, as well as meetings, preparation, negotiation of documents and regulatory processing.[276] Inadequate funding in the planning stages may cause the HCP to fail before permitting ever occurs.[277]

Participants in the dialogues were particularly concerned with implementation funding. The short-term and long-term implementation stages include land acquisition, habitat management, biological monitoring, monitoring for compliance and naturally occurring changed circumstances, reporting, and agency/organization oversight (the institution responsible for implementing the HCP). Funding requirements typically include onsite measures during project implementation and onsite and offsite measures required after completion of the project.[278] As detailed in Section V.C.2 *infra*, the funding of adaptive management during the long-term implementation stage has been difficult to address and too often neglected.[279]

B. TYPES AND EXAMPLES OF HCP FUNDING MECHANISMS

While the ESA requires proof of funding for HCPs, it does not specify *how* HCPs will be funded; consequently, a variety of mechanisms have been developed from private and public sources.[280] The Services do not explicitly endorse one funding method over another;[281] the applicant(s) must determine the most appropriate source of HCP funding and then adequately demonstrate the funding is assured in order

[271] 16 U.S.C. § 1539(a)(2)(A)(ii) (2014); HCP HANDBOOK, *supra* note 27, at 3-10, 3-33; *Nat'l Wildlife Fed'n*, 128 F.Supp.2d at 1278.
[272] 16 U.S.C. § 1539 (a)(2)(B)(iii); HOOD, *supra* note 7, at 47.
[273] 16 U.S.C. §§ 1539(a)(2)(B)(iii); HCP HANDBOOK, *supra* note 27, at 3-35; MICHAEL J. BEAN ET AL., RECONCILING CONFLICTS UNDER THE ENDANGERED SPECIES ACT: THE HABITAT CONSERVATION PLANNING EXPERIENCE xii (1991); *Nat'l Wildlife Fed'n*, 128 F.Supp.2d at 1295.
[274] BEAN ET AL., *supra* note 273, at 15.
[275] *See* December Dialogue, *supra* note 5 (discussing variations on how the phases of an HCP might be described).
[276] BEAN ET AL., *supra* note 273, at 15.
[277] LEDERMAN & WACHS, *supra* note 179, at 51.
[278] HCP HANDBOOK, *supra* note 27, at 3-33 to 3-34.
[279] Emily Gardner, *Adaptive Management in the Face of Climate Change and Endangered Species Protection,* 40 ECOLOGY L.Q. 229, 232 (2013).
[280] HOOD, *supra* note 7, at 47.
[281] Ruhl, *supra* note 170, at 398–99.

for the Services to approve the funding mechanism.[282] Primary sources of funding for HCPs include the following categories and mechanisms.

1. Direct Landowner/Developer Funding

Because the ESA requires the applicant to demonstrate adequate funding, direct landowner/developer funding ultimately serves as a backstop to all other types of HCP funding.[283] While much scholarship regarding area-wide, multi-agency HCPs focuses on multiple-payer HCPs, the single landowner/developer HCP presents at least as many challenges because it focuses all burden for maintaining funding on a single source. During the planning stage, the main drawback for the single landowner/developer funding model is the potential for bankruptcy or the need to sell off holdings before the plan period ends.[284] Implementation with a single landowner/developer presents its own challenge, as it requires the developer to remain connected to the project long after all transfers of land interests are completed.[285]

2. Local Government Funding

Local government funding for planning of HCPs may come from the city or county's general fund, landfill tipping fees, contributions from special districts, or other local agencies. Local funding has also come from voter-approved increases in local sales taxes to fund conservation measures. In the Western Riverside MSHCP, a condition for local agencies to access funds from a voter-approved transportation bond measure was to "participate" in the HCP; this "participation" equals $121 million in HCP funding.[286] The City of San Diego and San Diego County rely on general fund resources for habitat conservation funding,[287] which can be advantageous when development slows because the amount of funding available does not fluctuate with development rates as it does in Western Riverside.[288]

In San Diego County, a half-cent sales tax (*TransNet*) was renewed in 2004 for funding HCP mitigation.[289] To offset impacts caused by the construction of transportation projects, the

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[282] E-mail from Dan Cox, Habitat Conservation Planning Coordinator, U.S. Fish & Wildlife, Serv., to author (Jan. 5, 2015, 3:46 PST).

[283] HOOD, *supra* note 7, at 47; Telephone Interview with John Hopkins, *supra* note 46 (explaining developer funding is the standard for northern California county-scale plans as the costs for mitigating for impacts are entirely the responsibility of those creating the impacts).

[284] *Id.*

[285] Ruhl, *supra* note 170, at 398–99.

[286] LEDERMAN & WACHS, *supra* note 179, at 76.

[287] TRANSNET, *Environmental Mitigation Program*, http://www.keepsandiegomoving.com/EMP/EMP-intro.aspx (last visited Feb. 12, 2015).

[288] LLOYD DIXON ET AL., RAND CORP., BALANCING ENVIRONMENT AND DEVELOPMENT: COSTS, REVENUES, AND BENEFITS OF THE WESTERN RIVERSIDE COUNTY MULTIPLE SPECIES HABITAT CONSERVATION PLAN 163 (2008) (concluding factors that could lead to low land values could also lead to low revenues, decreasing the likelihood of "scenarios in which current revenue sources are adequate" for assembly and operation of the reserve); telephone interview with Michael Allen, Dir., Univ. of Cal., Riverside Ctr. for Conservation Biology (Dec. 9, 2014) (explaining the mechanism for obtaining funding for land acquisition in Western Riverside is dependent upon new development, which is problematic because when there is little development, the price of land drops, but the funds available to RCA also drop, and when development increases, RCA has the money to purchase land, but the price increases).

[289] TRANSNET, *supra* note 287.

TransNet Environmental Mitigation Program (EMP) set aside $40 million for the first ten years for implementation, management, and monitoring of the San Diego HCPs.[290] In addition, the EMP buys large parcels of land early at lower prices, resulting in cost savings that are then put toward management and monitoring of the HCPs.[291] The $850-million program began purchasing property in 2008 and has now acquired more than 3,300 acres around the region at a cost of $99.5 million.[292] The *TransNet* EMP serves as a model for other cities and counties looking to build a permanent revenue stream for HCP mitigation, monitoring, and management.[293]

3. State Funding

On the state level, funds may come from a diverse range of sources. For conservation plans in which the permittee is a government agency, funding may be appropriated by the state legislature every year, such as with the Washington Department of Natural Resources HCP.[294] State-level agency funding was used for the Kern County HCP, where the California Division of Oil and Gas contributed $350,000 and the California Energy Commission contributed $100,000 to HCP planning efforts.[295] Funding for HCPs in California has also come from the state Department of Transportation (CalTrans), which contributed funds towards the East Contra Costa and Butte County HCPs, and participates as a paying permittee in the Western Riverside and Coachella Valley MSHCPs.[296]

State grant funding, including grants made available through voter approval of state bonds, is another potential source of funding. The California Wildlife Conservation Board utilizes a portion of state bond funding to implement NCCPs, with an emphasis on land acquisition.[297] The California Department of Parks and Recreation's Habitat Conservation Fund also provides annual grant funding for wildlife conservation.[298] It should be noted that these state grants may not be used to mitigate for impacts (housing and commercial development, infrastructure projects, etc.); they are only available for measures that go "beyond mitigation." CDFW also sponsors the NCCP Local Assistance Grant Program, which "provides state funds for urgent tasks associated with implementation."[299]

A possible future example of using bond money to fund HCPs is the Bay Delta Conservation Plan, for which the California state legislature has repeatedly proposed a state-wide bond measure to fund

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[290] *Id.* (click on "Management & Monitoring" tab).
[291] *Id.*
[292] TRANSNET, *supra* note 287.
[293] Telephone Interview with Dan Silver, Exec. Dir., Endangered Habitats League (Dec. 1, 2014).
[294] HOOD, *supra* note 7, at 48.
[295] BEAN ET AL., *supra* note 273, at 15.
[296] LEDERMAN & WACHS, *supra* note 179, at 73–75.
[297] Funding for the Wildlife Conservation Board comes from Propositions 40, 50 and 84. CAL. WILDLIFE CONSERVATION BD., *Wildlife Conservation Board Funding*, https://www.wcb.ca.gov/Funding-Sources (last visited Feb. 13, 2015). Prop 84 includes $450 million for protection and conservation of forests and wildlife habitat. *Id.*
[298] CAL. DEP'T OF PARKS & RECREATION, *Habitat Conservation Fund*, http://www.parks.ca.gov//?page_id=21361 (last visited Mar. 9, 2015).
[299] CAL. DEP'T OF FISH & WILDLIFE, *Grants for NCCPs and HCPs*, *supra* note 42.

HCP/NCCP mitigation, monitoring, and management.[300] While the BDCP bond measure has been introduced for the ballot numerous times since its enabling legislation was passed in 2009, it has yet to appear before California voters for approval.[301]

Cap and trade auction revenue, pursuant to the 2006 California Global Warming Solutions Act (AB 32), may be a future source of conservation planning funding. In 2013, the California Air Resources Board released an Investment Plan that recommends providing funding to "develop and implement NCCPs to maximize conservation and carbon sequestration benefits."[302] For the current 2014 to 2015 fiscal year, the total auction revenue is $832 million, and this sum is expected to increase greatly in the future.[303]

4. Federal Funding

The USFWS administers the Cooperative Endangered Species Conservation Fund (ESA Section 6 funding) for planning and implementing HCPs.[304] Since 2003, the program has been funded through the Land and Water Conservation Fund (LWCF), and funds are awarded on a nationwide, competitive basis.[305] For planning purposes, states may apply to the HCP Assistance Fund, while the purchase of HCP lands may be funded in part through the HCP Land Acquisition Fund.[306] For land acquisition, Section 6 funding is limited to acquisition of land that goes beyond compensation (furthering the mitigation required by the HCP and/or contributing to species recovery), and cannot be used for compensatory mitigation (land acquisition which offsets effects of covered projects).[307] Section 6 grants are one of the most common sources of funds for HCP planning. However, even though the number of approved HCPs needing funding continues to grow, annual Cooperative Endangered Species Conservation Fund appropriations have decreased dramatically over the last decade.[308]

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[300] CALIFORNIA LEGISLATIVE ANALYST'S OFFICE (LAO), FINANCING THE BAY DELTA CONSERVATION PLAN 4 (Feb. 12, 2014), *available at* http://www.lao.ca.gov/handouts/resources/2014/Financing-the-BDCP-02-12-14.pdf.

[301] The water bond was put on the ballot in 2010 and 2012, but was rescinded each time by the legislature before voting could occur. CAL. STATE ASSEMBLY, *Water FAQ*, http://awpw.assembly.ca.gov/waterfaq (last visited Feb. 17, 2015). The 2014 water bond does not include funding for the Bay Delta Conservation Plan, but does include $285 million for restoration projects administered by the Department of Fish and Wildlife. CAL. STATE ASSEMBLY, *Proposition 1: The Water Quality, Supply, and Infrastructure Improvement Act of 2014*, *supra*.

[302] CAP AND TRADE AUCTION PROCEEDS INVESTMENT PLAN (May 14, 2013), *available at* http://www.arb.ca.gov/cc/capandtrade/auctionproceeds/final_investment_plan.pdf.

[303] CAL. STATE BUDGET, CAP AND TRADE EXPENDITURE PLAN 42 (2014–15), *available at* http://www.ebudget.ca.gov/2014-15/pdf/Enacted/BudgetSummary/CapandTradeExpenditurePlan.pdf.

[304] U.S. FISH & WILDLIFE SERV., *Endangered Species Grants*, http://www.fws.gov/endangered/grants/ (last visited Jan. 27, 2015).

[305] *Id*. (explaining HCP grant programs require project applicants to contribute 25% of estimated project cost or 10% when two or more States or Territories implement a joint project).

[306] *Id.* (explaining that for FY 2014 grants there is a $2 million cap for HCP land acquisition grants and a $750,000 cap on HCP planning assistance grants).

[307] *Id.*

[308] CAL. HABITAT CONSERVATION PLANNING COALITION, CONSERVING NATURAL RESOURCES FACILITATING ECONOMIC DEVELOPMENT 2 (depicting annual fund appropriations were reduced from $104 million in FY 2001 to $85 million in FY 2010 to $45.2 million in FY 2013).

Since 2001, USFWS has also awarded State Wildlife Grants (SWG) for the "development and implementation of programs for the benefit of wildlife and their habitat."[309] To participate, each state developed a State Wildlife Action Plan identifying species of greatest conservation need.[310] Congress annually appropriates funds for the SWG program through a formula based on population and geographic area.[311] In 2008, Congress established the SWG Competitive Grant Program with a special focus on promoting and advancing cooperative partnerships that result in large-scale landscape conservation.[312] USFWS also administers the Partners for Fish and Wildlife Program, which "provides technical and financial assistance to private landowners, tribes and schools on a voluntary basis to help meet the habitat needs of federal trust species."[313]

Other less-known federal funding opportunities exist for habitat conservation more generally.[314] Beginning in 2012, the Community Forest and Open Space Conservation Program offers funds through the 2008 Farm Bill for habitat acquisition.[315] Launched in 2004, the Readiness and Environmental Protection Initiative allows the Department of Defense to foster innovative land conservation partnerships to preserve buffer zones around military bases.[316] The Healthy Forests Reserve Program was established in 2003 to promote the recovery of endangered species and increase carbon sequestration.[317]

5. Energy, Sales, and Development Taxes

With this funding model, HCP and other conservation programs are funded by local, regional, state, and federal taxes on energy (electricity, oil, gas), water, utilities, sales (general, real estate), and development. The San Diego *TransNet* funds discussed in Section V.B.2 *supra* are an example of this funding type.[318] Most state fish and wildlife agencies derive the bulk of their budget from the sale of hunting and fishing licenses and matching federal dollars from the Wildlife and Sport Fish Restoration Program.[319] At the federal level, the Pittman-Robertson Act imposes an excise tax on hunting equipment, and revenues are used toward wildlife habitat.[320]

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[309] U.S. FISH & WILDLIFE SERV., *Wildlife & Sport Fish Restoration Program*, http://wsfrprograms.fws.gov/Subpages/GrantPrograms/SWG/SWG.htm (last visited Jan. 26, 2015).
[310] U.S. DEPT. OF THE INTERIOR, U.S. FISH & WILDLIFE SERV., WILDLIFE SPORT FISH RESTORATION PROGRAM, STATE WILDLIFE GRANTS COMPETITIVE GRANT PROGRAM: NOTICE OF FUNDING AVAILABILITY AND APPLICATION INSTRUCTIONS 1 (FY 2015), *available at* http://wsfrprograms.fws.gov/Subpages/GrantPrograms/SWG/SWG-NOFA2015.pdf.
[311] U.S. FISH & WILDLIFE SERV., *supra* note 304.
[312] *Id*.
[313] U.S. FISH & WILDLIFE SERV., *Partners for Fish and Wildlife Program*, http://www.fws.gov/partners/ (last visited Mar. 9, 2015).
[314] ANDREW DILLON & ANDREW DU MOULIN, THE TRUST FOR PUB. LAND, UNDER-RECOGNIZED FEDERAL PROGRAMS FOR HABITAT CONSERVATION, *available at* www.eoearth.org/files/198801_198900/198836/under-recognized-federal-programs-for-habitat-conservation.pdf.
[315] *Id.* at 7.
[316] *Id.* at 9.
[317] *Id.* at 19.
[318] TRANSNET, *supra* note 287.
[319] U.S. FISH & WILDLIFE SERV., *supra* note 309.
[320] DILLON & MOULIN, *supra* note 314, at 15.

The LWCF is a primary source of federal funding for states and federal agencies to conserve habitat. LWCF revenue is primarily generated from annual royalties paid by energy companies drilling for oil and gas on the outer continental shelf, and collection is authorized up to $900 million, subject to Congressional appropriations.[321] However, nearly every year Congress diverts much of this funding to non-conservation purposes, resulting in a substantial backlog of federal and state land acquisition projects.[322]

6. Development Assessments

Development assessments are used in HCPs by single and multiple landowners for acquiring habitat and ongoing management measures. Beginning with the San Bruno HCP, development assessments have been the standard method of funding HCP implementation.[323] In cases such as San Bruno Mountain, Bakersfield, and Coachella Valley in California and Clark County, Nevada, and Balcones Canyonlands in Texas, HCP land purchases have been funded by local assessments, tallied either per dwelling unit, square footage of office space, or per acre of undeveloped land.[324] These assessments may apply across an entire HCP area regardless of whether affected species are present on a given parcel, or they may apply only (or at an increased amount) when particular land includes affected species habitat.[325] The Western Riverside MSHCP requires all development within the 1.2 million-acre plan area to pay a fee of $1,938 per residential unit (or an equivalent fee per acre) and $6,600 per acre of commercial or industrial development (in addition to lands required to be kept in open space).[326] Similarly, the East Contra Costa MSHCP requires developers to pay between approximately $6,000 and $18,000 per acre.[327]

Density bonuses are a new type of assessment introduced for the Western Riverside MSHCP, where developers acquire the right to develop an additional 25% increase in density by providing enhancements to their projects and by paying a "Density Bonus Fee" of $3,000 to $5,000 per additional unit.[328] The MSHCP assumes that between 10% and 20% of the residential units built in the unincorporated County area will

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[321] LAND AND WATER CONSERVATION FUND, *What Is the Land and Water Conservation Fund?,* http://lwcfcoalition.org/about-lwcf.html (last visited Jan. 29, 2015).
[322] *Id.*; Fischman, *supra* note 13, at 473 ("the failure of Congress to appropriate fully LWCF receipts is a broken promise from the 1964 law, which earmarked receipts from motor boat fuels taxes and other sources").
[323] Thornton, *supra* note 34, at 622; HOOD, *supra* note 7, at 48.
[324] HOOD, *supra* note 7, at 48; *see also* METROPOLITAN BAKERSFIELD HABITAT CONSERVATION PLAN v (1994), *available at* http://www.co.kern.ca.us/planning/pdfs/metrobakhcp.pdf; FINAL CLARK COUNTY MULTIPLE SPECIES HABITAT CONSERVATION PLAN AND ENVIRONMENTAL IMPACT STATEMENT FOR ISSUANCE OF A PERMIT TO ALLOW INCIDENTAL TAKE OF 79 SPECIES IN CLARK COUNTY, NEVADA 2-11 (2000), *available at* http://www.clarkcountynv.gov/Depts/dcp/Documents/Library/current%20HCP/chap2.pdf; FINAL RECIRCULATED COACHELLA VALLEY MSHCP 5-9 (2007), *available at* http://www.cvmshcp.org/Plan%20Documents/12.%20CVAG%20MSHCP%20Plan%20Section%205.0.pdf.
[325] For example, the Balcones Canyons plan charges all residents of the area, but charges an additional $5,500 per acre for development of prime warbler habitat. FINAL ENVIRONMENTAL IMPACT STATEMENT / HABITAT CONSERVATION PLAN FOR PROPOSED ISSUANCE OF A PERMIT TO ALLOW INCIDENTAL TAKE OF THE GOLDEN-CHEEKED WARBLER, BLACK-CAPPED VIREO, AND SIX KARST INVERTEBRATES IN TRAVIS COUNTY, TEXAS (1996), *available at* https://www.traviscountytx.gov/images/tnr/Docs/Habitat_Conservation_Plan_Final_Environment_Impact_Statement.pdf.
[326] WESTERN RIVERSIDE MSHCP, *supra* note 85, at 8–15 (2003); telephone interview with Charles Landry, Exec. Dir., W. Riverside Cnty. Reg'l Conservation Auth. (Dec. 3, 2014).
[327] E. CONTRA COSTA CNTY. HABITAT CONSERVANCY, *Fee Calculator Worksheet*, *available at* http://www.co.contra-costa.ca.us/depart/cd/water/hcp/project-permitting.html.
[328] WESTERN RIVERSIDE MSHCP, *supra* note 85.

participate in density transfers, producing a projected $66 million in additional revenue for the HCP.[329] However, due to the recession that began in 2008, less development has meant less developer impact fees, resulting in reduced funding for the HCP.[330]

7. External Private Funding

Foundations and non-profit organizations have been particularly useful in securing funding for the planning stage of HCP preparation. In the Marina Dunes HCP, landowners and the California Coastal Conservancy each contributed $60,000 to underwrite planning.[331] The Nature Conservancy (TNC) contributed nearly $100,000 to cover consulting expenses for the Coachella Valley HCP.[332] TNC has also been pioneering conservation-related impact investing, launching a division that will deploy one billion in conservation funding over the next three years.[333]

8. Mitigation Banks

Mitigation banking is a mechanism for implementing compensatory mitigation where public or private institutions acquire and hold habitat for conservation purposes and provide mitigation credits to a developer who is required to provide such mitigation as an incident of its project.[334] These arrangements take a variety of forms and include projects managed by national, non-profit organizations as well as smaller, non- and for-profit mitigation banks. An HCP mitigating in excess of its own requirements could sell the excess as credits to other projects, so that mitigation itself serves as a source of HCP funding.[335] Banks may be particularly effective if they are used when compensatory mitigation is carried out in advance of foreseeable future projects, or when a single, large mitigation action compensates for the impacts of multiple future development projects.[336] For example, a conservation banking program might be used to "enable interested companies to make early investments" in habitat currently being inventoried in anticipation of the potential listing of the greater sage grouse in 2015, which then might be credited to future infrastructure projects.[337] While regional HCPs typically perform their own off-site mitigation, the Western Riverside MSHCP incorporates conservation banks within its planned conservation acreage.[338]

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[329] *Id.*
[330] Michelle Ouellette & Charles Landry, *The Western Riverside County Multiple Species Habitat Conservation Plan: Looking Forward After Ten Years,* 29 NAT. RES. & ENV'T 1 (2015).
[331] HOOD, *supra* note 7, at 48.
[332] BEAN ET AL., supra note 273, at 15.
[333] Telephone Interview with Elizabeth O'Donoghue, Dir. of Infrastructure & Land Use, The Nature Conservancy (Jan. 23, 2015); NATUREVEST & EKO, INVESTING IN CONSERVATION: A LANDSCAPE ASSESSMENT OF AN EMERGING MARKET (2014) (noting conservation investing is seeing 26% growth annually and is estimated to hit $5.6 billion by 2018).
[334] DOI Mitigation Strategy, *supra* note 126, at 3.
[335] *Id.* ("In one, credits from the bank are intended to be used to offset projects carried out by the bank creator. Other banks, however, earn credits that can be sold to third parties whose projects require compensatory mitigation.").
[336] *Id.*
[337] HAYES, *supra* note 105, at 61.
[338] LEDERMAN & WACHS, *supra* note 179, at 5.

C. CHALLENGES FOR FUNDING

The ESA's HCP program does not establish a comprehensive regime for the funding of habitat conservation, including habitat acquisition, planning, and implementation. Accordingly, there are considerable challenges for area-wide multi-agency HCPs, especially for those that seek to promote more comprehensive habitat conservation beyond the mitigation of the direct habitat effects of planned development. The LWCF (used for ESA Section 6 grants) has not been fully funded, and the use of LWCF funds has changed little since its inception in 1964.[339] Moreover, most governmental agencies have insufficient funding to conduct major long-term planning for habitat conservation, and the growing number and magnitude of HCPs has exacerbated the problem of locating adequate funding.[340] Participants at the dialogues identified the following additional hurdles.

1. Lack of Broad Political Support Historically

As discussed during the dialogues, it is difficult to garner the broad legislative support necessary for national or even state funding because HCPs largely have been focused within a few biodiversity "hot-spots," including California, Florida, and Texas. In addition, development interests and even some public entities have treated habitat conservation as a regulatory hurdle to oppose, and they often have been reluctant to support funding for wildlife agencies and conservation that might reduce funding for urbanization and infrastructure.[341] However, as detailed further in Section V.D.3 *infra*, there is some evidence that this is changing.

2. Increased Complexity, Uncertainty, and Costs

As HCPs and habitat conservation efforts have grown in size and complexity, the time and cost required to complete and implement projects has increased dramatically, in part because of the growth in the number and diversity of agencies and interests involved and the increasing technical competence required (which includes increases in the information required). Though there are clear benefits to this larger-scale, multilateral approach, this increased complexity is accompanied by increased planning, implementation, and monitoring costs. The initial focus of mitigation funding was on the acquisition of habitat to be conserved and less on the costs of monitoring, ongoing management, restoration of habitat, or adaptive management to account for changed circumstances or new information. As reflected in the dialogues, these post-acquisition costs are now being consistently acknowledged, especially where the lands that were acquired and managed comprise small fragmented parcels, which are relatively more expensive to manage.

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[339] KEN SALAZAR ET AL., AMERICA'S GREAT OUTDOORS: A PROMISE TO FUTURE GENERATIONS (2011), *available at* www.doi.gov/americasgreatoutdoors/documents/upload/AGO-Report-With-All-Appendices-3-1-11.pdf [hereinafter AGO Report].
[340] Fischman, *supra* note 13, at 474 ("the scale of federal payments to address the extinction problem must increase dramatically, probably to levels equivalent to agricultural subsidies"); December Dialogue, *supra* note 5 (noting Section 6 funding has been decreasing, while the number of HCP applicants has been increasing).
[341] February Dialogue, *supra* note 5.

Furthermore, lack of funding often significantly hinders the development and implementation of adaptive management plans,[342] which (as discussed in Section VI *infra*) are of crucial importance as they address the possibility of new information or changed circumstances. This stage is too often overlooked and not provided for sufficiently in the crafting of an HCP.[343] If included and made a condition of every permit, it would require increased funding commitments. However, it is vital for advancing long-term habitat and species conservation through the planned management of both foreseeable and unforeseeable ecological changes, particularly in light of climate change.

D. LESSONS FOR ADDRESSING IDENTIFIED FUNDING CHALLENGES

The recent trend toward area-wide, multi-agency HCPs has illustrated the importance of reliable funding for this type of cross-agency, multifaceted ecosystem planning. As the plans grow in size and complexity, so do the challenges, particularly the challenge of securing adequate funding to accomplish the myriad goals identified in the plans. Several lessons from recent and current HCP planning efforts are identified below.

1. Seek Diverse and Innovative Funding Sources

As detailed in Section V.B *supra*, a diverse and growing array of funding sources exists at the local, state, and federal level, as well as from private sources. Agencies and organizations working to conserve priority habitat areas have traditionally only tapped into the well-known federal conservation programs such as the LWCF and the Forest Legacy Program, yet a recent Presidential report lists 150 federal programs that in varying degrees address habitat conservation.[344] California HCPs have made some effort to seek diverse funding sources, using state water bond and parks bond funding, local tax revenue, private donations, and in-lieu land donations,[345] and considering tapping into private impact investment.[346] Additionally, revenue from California's cap and trade auctions may be available in the future for HCPs/NCCPs in California that help reduce or mitigate greenhouse gas emissions.[347]

As discussed at the December 2014 dialogue, to address the need for a reliable funding source that would enable RCA to complete land acquisition while prices are relatively low, proponents of the Western Riverside MSHCP have lobbied Congress for a federal revolving fund to provide loans that are repaid over time with proceeds from local sources, including taxes and exactions.[348] The FHWA and the Secretary of Transportation also expressed interest in facilitating area-wide HCPs because the plans enable the prompt

[342] Gardner, *supra* note 279, at 240.
[343] Camacho, *supra* note 21, at 328–35.
[344] AGO Report, *supra* note 339, at 5.
[345] December Dialogue, *supra* note 5.
[346] Telephone Interview with Elizabeth O'Donoghue, *supra* note 333.
[347] CAP AND TRADE AUCTION PROCEEDS INVESTMENT PLAN, *supra* note 302.
[348] Legislation introduced by Senator Feinstein and Representative Royce, The Infrastructure Facilitation and Habitat Conservation Act of 2013, H.R. 2280, 113th Cong. (2013), would provide loans and loan guarantees for HCP land acquisitions.

delivery of large-scale infrastructure, particularly transportation projects.[349] The lesson from Western Riverside is that local governments may be able to access new financing sources at reduced borrowing costs by integrating HCPs with long-range comprehensive planning—including transportation planning and general plans.[350]

2. Build a Broad Coalition

A broad coalition of diverse interests, such as infrastructure agencies and industries that rely on natural resources and amenities (beaches, resorts, nature tourism),[351] is invaluable for achieving the level of funding needed for successful area-wide, multi-agency HCPs. December 2014 dialogue participants emphasized that incentivizing land developers and public agencies to support habitat conservation will help build this alliance both regionally and nationally.

A prominent example of a broad coalition is the California Habitat Conservation Planning Coalition (Coalition), which consists of over thirty federal, state, and local agencies, conservation organizations, and businesses. Formed in 2009, one of their goals is to increase funding for HCPs and NCCPs. To further this goal, they have recently worked at the state level to promote funding in the Water Bond bills and Park Bond legislation and have sought funding for regional conservation plans through the annual budget allocation of cap and trade auction revenue under California's Global Warming Solutions Act (AB 32). The Coalition stresses the importance of highlighting the economic benefits of conservation in order to gain greater support.[352] At the national level, the Coalition is working to build broad bipartisan support in Congress for HCP funding.[353] Various December 2014 dialogue participants identified the value of a coalition in increasing funding for acquisition and implementation efforts, and suggested the possibility that a broader network would be beneficial. As a result, the Coalition is exploring, in conjunction with CLEANR and other dialogue participants, the possibility of a national coalition of large-scale HCPs.

3. Potential for State-wide Habitat Conservation Funding

Though dialogue participants recommended that those developing and implementing HCPs should be creative and seek out the diverse suite of available sources of funding, these participants also expressed concern that HCP funding is divided in a dizzying array of "piece meal" and "ad hoc" private, federal, state,

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[349] Title V of the Water Resources Reform and Development Act of 2014 authorized a pilot Water Infrastructure Finance and Innovation Act (WIFIA), which included a provision for loans and loan guarantees for habitat conservation plans in conjunction with otherwise eligible water infrastructure projects. PUB. L. NO. 113-121, 128 Stat. 1193. The Transportation Infrastructure Finance and Innovation Act (TIFIA) provides loans and loan guarantees to finance transportation projects of national and regional significance. 23 U.S.C. §§ 601–09 (2014). HCP proponents are optimistic that an amendment to TIFIA for habitat conservation funding will be successful in 2015. Telephone Interview with Douglas Wheeler, Consultant for RCA (Dec. 18, 2014).

[350] DOUGLAS P. WHEELER & RYAN M. ROWBERRY, *Habitat Conservation Plans and the Endangered Species Act, in* ENDANGERED SPECIES ACT: LAW, POLICY, AND PERSPECTIVES 221, 234–40 (Donald C. Baur & Wm. Robert Irvin eds., ABA Section of Environment, Energy & Resources, 2d ed. 2010); Ouellette & Landry, *supra* note 330, at 4.

[351] December Dialogue, *supra* note 5.

[352] *Id.* (noting Coachella Valley's success in gaining political support for their HCP by emphasizing its ability to accelerate the delivery of a transportation project).

[353] Telephone Interview with John Hopkins, *supra* note 46.

and local sources.[354] Some also were troubled that certain HCPs rely too heavily on local sources, anticipating that at least 50% of conservation planning funding will come from non-federal and non-state sources, and identifying this as a particularly serious issue for some of the rural areas in which conservation planning occurs.[355] Accordingly, many are advocating for the need for broader, more stable sources of funding for habitat acquisition, conservation planning, and plan implementation.

Encouragingly, several states recently considered ballot initiatives in November 2014 that would provide habitat conservation funding on a state-wide basis. For example, in North Dakota, the Clean Water, Wildlife and Parks constitutional amendment (Measure 5) would dedicate 5% of tax revenue from oil development for conservation and recreation over the next 25 years.[356] The measure faced strong opposition from the oil and gas industry and only received approximately 20% of votes cast.[357]

However, a proposed constitutional amendment in Florida was approved via popular initiative, with approximately 75% of the votes cast supporting the measure.[358] Amendment 1 will dedicate 33% of annual revenue from an existing tax on real estate transactions over the next twenty years to conservation projects. The measure will fund the state's Land Acquisition Trust Fund to acquire, restore, improve, and manage conservation lands including wetlands, forests, fish, and wildlife habitat and outdoor recreation properties.[359] The amendment's success has been attributed to (1) its focus on water quality, which has also been instrumental in garnering support for state environmental bonds in California and Texas, and (2) its minimal impact on residential and development interests due to the fact that the funding is a reallocation of existing revenue streams.[360] The development of state-wide funding programs that leverage broad funding streams to promote habitat conservation can considerably boost funding certainty and promote more comprehensive approaches to habitat conservation.

4. Front Load Costs and Advance Mitigation

One proven approach to funding challenges, particularly for area-wide multi-agency HCPs, is to front load the funding requirements to the greatest extent possible. This strategy anticipates long-term fluctuations in the value of land to be purchased as HCP mitigation lands, while minimizing the risk that various stakeholders will be unable to meet their long-term commitments.[361] As December 2014 dialogue participants

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[354] February Dialogue, *supra* note 5.
[355] *Id.*
[356] Mike Nowatski, *Stakes High for Measure 5*, GRAND FORKS HERALD (Nov. 2, 2014, 12:10 AM), http://www.grandforksherald.com/content/stakes-high-measure-5.
[357] BALLOTPEDIA, *North Dakota Clean Water, Wildlife and Parks Amendment, Measure 5 (2014)*, http://ballotpedia.org/North_Dakota_Clean_Water,_Wildlife_and_Parks_Amendment,_Measure_5_(2014) (last visited Mar. 13, 2015).
[358] BALLOTPEDIA, *Florida Water and Land Conservation Initiative, Amendment 1 (2014)*, *supra* note 357.
[359] Jennifer Portman, *Amendment 1 Would Commit State Money to Conservation*, TALLAHASSEE DEMOCRAT (Oct. 17, 2014, 5:38 PM), http://www.tallahassee.com/story/news/local/state/2014/10/05/amendment-commit-state-money-conservation/16791933.
[360] December Dialogue, *supra* note 5.
[361] *See* Ruhl, *supra* note 170, at 397–98 (advising constructing HCPs so as to minimize long-term funding commitments, mindful that "failure at any time during the life of a permit to provide committed funding is grounds for revocation of the permit"). Fluctuations in future land values could be somewhat normalized though participation in mitigation banks, but this solution

highlighted, greater assurances of funding at earlier stages would allow for comprehensive planning that better integrates the different stages of the HCP. Given the No Surprises policy (discussed in Section VI *infra*) the use of performance bonds or other contingency funding mechanisms, where the funds would be used if additional mitigation became necessary, is recommended, particularly for plans that are in effect for multiple decades.[362]

During the dialogues, advance mitigation was identified as an efficient approach for many area-wide, multi-agency HCPs. Advance mitigation is the "proactive acquisition and restoration of lands for mitigation in advance of anticipated future impacts."[363] It may potentially reduce HCP funding requirements through reduced overall permitting time, lower permitted mitigation ratios, and reduced monitoring costs achieved through economies of scale.[364] Mitigating in advance allows for more efficient project approvals, more certainty to cost estimates, and takes advantage of conservation opportunities before important land is lost to conversion.[365] Advance mitigation can also provide greater predictability and certainty in the design, development, and implementation of projects by avoiding the need for late project revisions and analyses and by providing for coordination and consistency among agencies.[366] This can serve to reduce project costs and promote operational certainty in a time of rapidly changing climate.[367]

A common theme during the December 2014 dialogue was the need to integrate infrastructure planning agencies, such as transportation planning, much earlier and more effectively in regional HCP processes. By adopting early regional mitigation needs assessment and planning for habitat-level impacts from multiple infrastructure projects, agencies save both time and money. Early adoption also generates ecological benefits due to economies of scale, and because earlier mitigation implementation means potentially developable but ecologically crucial parcels may still be available for conservation.[368] Increasingly, transportation agencies and others involved in infrastructure development see the value of integrating advance mitigation into infrastructure planning. It can help streamline the process while promoting more comprehensive prospective habitat conservation by allowing conservation plans to leverage portions of transportation funding that is dedicated to meeting environmental permitting requirements.[369]

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assumes fungibility of mitigation lands. *See* Kiesecker et al., *supra* note 105, at 261 ("A major problem with this approach is that it implies that all habitats can be offset.").

[362] HOOD, *supra* note 7, at 51.

[363] Keith Greer & Marina Som, *Breaking the Environmental Gridlock: Advance Mitigation Programs for Ecological Impacts. Environmental Practice*, 12 ENVTL. PRACTICE 228 (2010).

[364] *Id.* at 227; DOI Mitigation Strategy, *supra* note 126, at 10–13.

[365] Greer & Som, *supra* note 363.

[366] *See* Telephone Interview with Jake Li, *supra* note 50 (stating advance mitigation is a potential solution to balancing adaptive management and the No Surprises policy).

[367] Greer & Som, *supra* note 363.

[368] James H. Thorne et al., *Integration of Regional Mitigation Assessment and Conservation Planning* 14 Ecology & Soc'y Art. 47 (2009).

[369] December Dialogue, *supra* note 5.

California's Regional Advance Mitigation Planning (RAMP)[370] provides a good model as it allows for landscape-level planning for mitigation independent of individual projects.[371] A pilot project based in the Central Sacramento Valley overlaid CalTrans and Department of Water Resources future infrastructure projects with a conservation greenprint to analyze potential, unavoidable impacts in the region in the next twenty years.[372] This landscape-level approach aids in identifying the best opportunities for high-level mitigation (existing HCPs/NCCPs, mitigation banks, land trusts, agency-sponsored banks) to meet conservation needs.[373] In San Diego County, the TransNet EMP, described in Section V.B.2 *supra*, allows SANDAG to buy land early, at lower costs, and bank the land for future needs. It is estimated that $200 million in economic savings could be achieved for all the transportation projects identified under the 40-year Regional Transportation Plan by investing in advance mitigation while also assisting with the habitat conservation efforts of the NCCP.[374] Western Riverside has also undertaken recent efforts to develop a Comprehensive Integrated Plan that will address conservation together with transportation and housing.[375] As funding devolves to the local level, December 2014 dialogue participants agree that there will be many opportunities to integrate transportation planning and funding with local conservation initiatives.

Indeed, recent high-profile, federal initiatives emphasize the importance to streamlined infrastructure development of advanced planning and mitigation systems. As provided for in a March 2012 Executive Order,[376] May 2013 Presidential Memorandum,[377] Interior Secretary Jewell's October 2013 Secretarial Order,[378] and the Department of the Interior's April 2014 Strategy implementing the Secretary's order,[379] there is a growing recognition of the value of planning for, funding, and implementing a further array of mechanisms that promote prospective habitat conservation by tying it to infrastructure development and mitigation.[380] Further, because the demand for conservation measures typically has been in direct response to proposals for development—a time at which the open space involved has increased in value with the

[370] Formed in 2008, the RAMP Work Group consists of over fourteen infrastructure and natural resource agencies, nongovernmental organizations, and academic researchers. REGIONAL ADVANCE MITIGATION PLANNING, https://rampcalifornia.water.ca.gov/ [hereinafter RAMP] (last visited Jan. 27, 2015).
[371] Telephone Interview with Elizabeth O'Donoghue, *supra* note 333.
[372] RAMP, *supra* note 370 (click on General RAMP Fact Sheet).
[373] Telephone Interview with Elizabeth O'Donoghue, *supra* note 333.
[374] Greer & Som, *supra* note 363, at 233.
[375] *Id.*
[376] Improving Performance of Federal Permitting and Review of Infrastructure Projects, Exec. Order No. 13604, 3 C.F.R. 237 (Mar. 22, 2012).
[377] Memorandum on Modernizing Federal Infrastructure Review and Permitting Regulations, Policies, and Procedures, 2013 DAILY COMP. PRES. DOC. DCPD201300346 (May 17, 2013).
[378] Secretarial Order No. 3330, *supra* note 68.
[379] DOI Mitigation Strategy, *supra* note 126.
[380] David J. Hayes, *Addressing the Environmental Impacts of Large Infrastructure Projects: Making 'Mitigation' Better,* 44 ENVTL. LAW REPORTER (2014).

prospects of development[381]—the benefits of advance mitigation efforts and early funding, as well as landscape-scale conservation, are becoming increasingly evident.[382]

Funding can be challenging for advance mitigation itself, as the mitigation site must be constructed several years in advance of permitting.[383] Yet, land acquisition funding is often dependent on development fees or tax revenues that are collected concurrently with or after development.[384] The state of Washington provides a solution by offering funding for early mitigation work through the Advanced Environmental Mitigation Revolving Account.[385] The opportunity to use advance mitigation to conduct area-wide conservation provides a greater likelihood of conservation success and the ability to avoid disruption of habitat.[386]

Typically, only entities developing infrastructure projects have the funds for advance mitigation, while private development projects rely on future development to generate funds for the plan.[387] Nonetheless, as the recent strategies by the President and Interior Department make clear, there is considerable momentum toward adopting prospective, more comprehensive approaches to habitat conservation that facilitate a more stable funding regime.

VI. Managing for Uncertainty and Change

Ecological systems are exceptionally complex and dynamic, and knowledge about these systems and the effects of human activities is inevitably limited. From the beginning of the HCP program, area-wide, multi-agency HCPs have been faced with how to appropriately manage uncertainty about ambient conditions, the potential effects of development and other human activities, the effectiveness of proposed and adopted conservation measures, and potential changes in conditions. Area-wide, multi-agency HCPs attempt to manage these conservation issues over "significant time horizons"[388] and considerable geographic scales.[389] Species and their habitat that area-wide, multi-agency HCPs strive to conserve are not static entities.[390] The relationship between species and their habitat is dynamic, and the processes of the ecosystems they make

[381] For example, the cost of land required to be purchased for the Western Riverside MSHCP has doubled since the HCP was drafted. LEDERMAN & WACHS, *supra* note 179, at 67.
[382] Hayes, *supra* note 380.
[383] December Dialogue, *supra* note 5.
[384] *Id.*
[385] WASH. STATE DEP'T OF TRANSP., *Advance Mitigation*, http://www.wsdot.wa.gov/Environment/Wetlands/Mitigation/AdvanceMitigation.htm.
[386] *Id.*; *see also* LEDERMAN & WACHS, *supra* note 179, at 3.
[387] E-mail from Dan Cox to author, *supra* note 282.
[388] Bernazzani et al., *supra* note 149, at 1104.
[389] For example, see the discussion of the DRECP and Great Plains HCP in Section III.B *supra*.
[390] *See* Doremus, *supra* note 15, at 229.

up are constantly changing.[391] In this sense, uncertainty is a characteristic feature of habitat conservation. Over time, the HCP program has developed mechanisms and policies that seek to manage these uncertainties and allocate the risk among the various private and public parties and participants to the HCP. The HCP program, and in particular area-wide, multi-agency HCPs, have attempted to manage uncertainty and changed circumstances through three relevant efforts—contingency planning, adaptive management, and the No Surprises policy.

This section analyzes the evolution of the HCP program's experience with managing uncertainty and change, including the reasons provided for (and criticisms of) adopted protocols, and the lessons that have developed as these measures have been implemented. An assessment of these efforts provides valuable lessons for area-wide, multi-agency HCPs and the HCP program more broadly as they continue to evolve, particularly in the face of the growing need to address climate change and its impact on endangered species and their habitat. As some of the earliest governance experiments that intentionally sought to integrate more adaptive approaches to habitat conservation planning, the experience of area-wide, multi-agency HCPs also should provide useful information on managing uncertainty and change for other parallel efforts that seek to promote habitat conservation more generally.

A. CONTINGENCY PLANNING AND ADAPTIVE MANAGEMENT

Contingency planning is a method of managing for changed circumstances by developing alternative strategies to address contingencies.[392] The Services encouraged contingency planning fairly early in the HCP program, stating in the HCP Handbook adopted in 1996 that "participants should ensure that techniques used are proven and reliable or, if relatively new, that contingency measures . . . are included to correct for failures."[393] In addition, Section 10 regulations require applicants to engage in contingency planning for changed circumstances that are reasonably foreseeable.[394] The Services make a distinction between reasonably foreseeable changed circumstances, where contingency planning is required, and unforeseeable circumstances, where the Services provide assurances that no additional requirements will be imposed, as explained in Section VI.B *infra*.[395]

Adaptive management, on the other hand, is management with an experimental design[396] embedded in the HCP's provisions: monitoring for implementation compliance and effectiveness based on explicitly stated goals and measurable indicators, continuous and systematic learning from monitoring data, and redesigning the HCP based on the knowledge gained through the process.[397] In the HCP Addendum, the Services distinguish adaptive management from contingency planning. Adaptive management is "a more

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[391] *See id.* at 226.
[392] HCP Handbook Addendum, *supra* note 64, at 35,243; Camacho, *supra* note 21, at 329.
[393] HCP HANDBOOK, *supra* note 27, at 3-22.
[394] *See* 50 C.F.R. §§ 17.22(b)(1)(iii)(B); 17.32(b)(1)(iii)(B) (2014).
[395] Wilhere, *supra* note 62, at 24–25.
[396] HCP Handbook Addendum, *supra* note 64, at 35,252.
[397] *See* Thomas, *supra* note 6, at 156; HOLLY DOREMUS, ET AL., CTR. FOR PROGRESSIVE REFORM, MAKING GOOD USE OF ADAPTIVE MANAGEMENT 2 (2011).

experimental approach," while contingency planning involves the "implementation of measures in the event of changed circumstances where there is little uncertainty."[398] The Services explain "an adaptive management strategy is essential for HCPs that would otherwise pose a significant risk to the species at the time the permit is issued due to significant data or information gaps."[399] The NCCP Act goes a step further and requires that all plans integrate "adaptive management strategies that are periodically evaluated and monitored."[400]

B. THE NO SURPRISES POLICY

In light of the 1982 amendments to the ESA, discussed in Section II.B *supra*, the Services wanted to provide a "clearer policy associated with the permit regulations . . . and regarding the assurances provided to landowners entering into an HCP."[401] This led to the development of the No Surprises policy[402] in order to provide "economic and regulatory certainty regarding the overall cost of species conservation and mitigation."[403] Many also state that the policy was "designed primarily to create incentives for applicants to complete HCPs,"[404] and point to this policy as a significant reason for the rapid proliferation of HCPs between 1992 and 2000.[405] In 2000, the HCP Handbook was revised to include the No Surprises policy and the five-point policy, which was intended to "further enhance the effectiveness of the HCP process in general through expanded use of five concepts, including permit duration, public participation, adaptive management, monitoring provisions, and biological goals."[406]

Though obligating applicants to address foreseen circumstances identified at the formation of the HCP, the No Surprises policy places the financial burden on the Services if unforeseen circumstances take place during implementation of the HCP that require a change in management strategy.[407] It assures the applicant that, in the event of unforeseen circumstances, no new land-use restrictions will be imposed on the applicant and no "commitment of additional land, water, or financial compensation" will be required.[408] Thus, the No Surprises policy shifts responsibility for implementing conservation measures that may become necessary in the future away from the landowner and onto the federal government.[409] The certainty provided

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[398] HCP Handbook Addendum, *supra* note 64, at 35,245.
[399] *Id.* at 35,252.
[400] CAL. FISH & GAME CODE § 2820(a)(2) (2014).
[401] HCP Handbook Addendum, *supra* note 64, at 35,242.
[402] 50 C.F.R. §§ 17.22(b)(5), 17.32(b)(5), 222.307(g) (2014).
[403] HCP Handbook Addendum, *supra* note 64, at 35,242.
[404] Thomas, *supra* note 6, at 149; *see also, e.g.*, Camacho, *supra* note 21, at 332 (citing Fred P. Bosselman, *The Statutory and Constitutional Mandate for a No Surprises Policy*, 24 ECOLOGY L.Q. 707, 722–23 (1997)).
[405] *E.g.*, HOOD, *supra* note 7, at 5; Wilhere, *supra* note 62, at 23–24.
[406] HCP Handbook Addendum, *supra* note 64, at 35,242.
[407] Camacho, *supra* note 21, at 332.
[408] 50 C.F.R. §§ 17.22(b)(5), 17.32(b)(5), 222.307(g) (2014). Of course, a permittee may volunteer to contribute or fully fund the resolution of unforeseen circumstances. E-mail from Brenda Johnson, *supra* note 162.
[409] HOOD, *supra* note 7, at 5.

by the No Surprises policy gives landowners strong incentive to develop HCPs in order to shield themselves from future listings.[410]

C. LESSONS FROM AREA-WIDE, MULTI-AGENCY HCPS

1. Robust Monitoring is Essential

Monitoring is a crucial component to effective HCP management because it provides information on whether an HCP is meeting its objectives.[411] It is a mechanism for determining whether changed circumstances have arisen or new information has become available. By monitoring a take's impact on the species and habitat as well as the effectiveness of adopted conservation measures, permittees can then adapt the HCP according to any changes discovered.[412] An effective adaptive management plan must also take into account ecological and biological knowledge and changing environmental conditions.[413] All of this information can be used in developing future HCPs.

For a myriad of underlying reasons, there often has been insufficient attention and resources paid toward monitoring, implementation, and enforcement after an HCP is adopted.[414] A major criticism of the HCP program is its failure to systematically assess the efficacy of adopted conservation measures and the program more generally.[415] In some cases, it was a matter of not understanding or anticipating the needs of new program implementation—staffing requirements were not sufficiently appreciated or realized, there was inadequate funding,[416] and there were gaps in regulatory provisions, which, all together, made it impossible to adequately address unanticipated issues.[417] The San Bruno HCP, introduced in Section II.B *supra*, did not implement any form of habitat monitoring, which might account for the plan's inability to restore native grassland and address the exotic species invasion that threatened the area.[418]

On the other hand, a number of HCPs have recognized the importance of monitoring and included robust monitoring plans. The Western Riverside MSHCP's Biological Monitoring Program is conducted by

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[410] *Id.*
[411] Janet Franklin, et al., *Planning, Implementing, and Monitoring Multiple-Species Habitat Conservation Plans*, 98 AM. J. OF BOTANY 559, 559 (2011).
[412] *See* Camacho, *supra* note 21, at 324.
[413] HOOD, *supra* note 7, at 26.
[414] CALLIHAN ET AL., *supra* note 58, at 43 (finding a majority of effort goes into developing HCPs, not monitoring them and that almost 75% of USFWS staff surveyed stated they did not have sufficient time nor resources to monitor compliance and implementation of HCPs they supervised).
[415] Camacho, *supra* note 21, at 340; *see also id.* at 47 (stating "[t]he HCP program does not have an explicitly defined strategy, purpose or objectives – nor does it have associated performance measures . . . Due to data limitations and lack of metrics, it is difficult to objectively measure the program's overall impact, or its impact on species status or future recovery potential"); Thomas, *supra* note 6, at 154.
[416] *E.g.* Telephone Interview with Jake Li, *supra* note 50 (explaining the dollar amount per species spent every year has not grown over the past twenty years).
[417] Franklin, *supra* note 411.
[418] HOOD, *supra* note 7, at 30, 35–36.

RCA,[419] and the University of California, Riverside Center for Conservation Biology (CCB) analyzes RCA's monitoring data for trends.[420] Through monitoring, RCA discovered the Quino Checkerspot butterfly populations within the MSHCP were moving to higher elevations.[421] Fortunately, the varied terrain throughout the MSHCP makes accommodation of this species' movement possible.[422] CCB has collected data sets and conducted modeling in order to predict the types of areas to which the species is moving.[423] The models can then help determine which areas and corridors within the MSHCP need to be protected in order to support the species' movement.[424] Without monitoring, this proactive protection of habitat would not be possible. The San Diego MSCP also contains a monitoring plan that includes monitoring certain target species, population fluctuations, "acreage of natural habitat, changes in habitat through disturbance like fire and flood, . . . changes in habitat quality over time, . . . [and] wildlife corridor usage."[425] Unfortunately, although the MSCP contained a more comprehensive monitoring plan than other HCPs in existence in the late 1990s, many still believed the plan was not sufficiently funded to be able to adequately conduct a monitoring plan.[426] Without robust monitoring and subsequent adjustment, HCPs are not likely to effectively manage uncertainty and changed circumstances.

The importance of robust monitoring has become more evident in recent years as genetic analyses on species populations are increasingly conducted.[427] Genetic analyses have shown that different populations of a single species can have genetic differences.[428] If one population of a species is lost, an entire genetic group may be lost.[429] Therefore, plans should no longer be based on the assumption that a single species can be managed in the same way across different populations, [430] which increases the burden on monitoring to collect sufficient data to account for the possibility of genetic population differences.

2. Appropriately Targeted Monitoring Data is Essential

For monitoring to inform whether an HCP's conservation measures are effective, the experience of the HCP program is that there must be monitoring of multiple species and habitat.[431] Early single-species focused HCPs that implemented a monitoring plan, however, had a tendency to concentrate on "manipulation

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[419] W. RIVERSIDE CNTY. REG'L CONSERVATION AUTH., *About RCA*, http://www.wrc-rca.org/about_rca.asp (last visited Jan. 15, 2015); telephone interview with Charles Landry, *supra* note 326 (stating depending on the time of year, there are fifteen to twenty-five people collecting data on the 146 covered species and associated habitats on a full-time basis).
[420] Telephone Interview with Michael Allen, *supra* note 288; *id.*
[421] Telephone Interview with Charles Landry, *supra* note 326.
[422] *Id.* (suggesting transplantation of populations may be possible with the use of state and RCA funding and because a population was successfully transplanted in the MSHCP five years ago).
[423] Telephone Interview with Michael Allen, *supra* note 288.
[424] *Id.*
[425] HOOD, *supra* note 7, at 35.
[426] *Id.*
[427] Telephone Interview with Ron Rempel, *supra* note 220.
[428] *E.g.* John E. McCormack & James M. Maley, *Interpreting Negative Results with Taxonomic and Conservation Implications: Another Look at the Distinctness of Coastal California Gnatcatchers*, 132 THE AUK: ORNITHOLOGICAL ADVANCES 380 (2015).
[429] *See id.* at 382–84.
[430] Telephone Interview with Ron Rempel, *supra* note 220.
[431] HOOD, *supra* note 7, at 35.

of individual animals instead of . . . managing habitat."[432] To best plan for various contingencies and changing circumstances, an HCP's monitoring plan must be sufficiently comprehensive to address "complex, community-level patterns and processes."[433]

The 1986 single-species HCP for the Coachella Valley fringe-toed lizard, described in Section III.B.1 *supra*, illustrates, not only the importance of monitoring, but also of what factors are included in a monitoring scheme. The HCP included a plan for annual monitoring of the lizards,[434] but failed to include monitoring of the species' "key drivers of population changes."[435] As a result, when the lizard population showed it had declined between 1988 and 1990, the Services presumed the HCP's conservation measures were inadequate.[436] However, by 1992, the population had rebounded to the highest levels recorded.[437] Had the original monitoring plan taken population drivers into account, the Services would have realized the population decline was actually due to a two-year drought.[438] HCPs need to appreciate the dynamic nature of the species and habitat included in such plans. Changed circumstances can be accounted for through monitoring, but not just monitoring of a species in isolation. An HCP's plan must incorporate monitoring of multiple species in the context of their "environmental drivers" of "occurrence and abundance"[439] to account for "environmental variability."[440]

3. Incentivizing Effective Adaptive Management

The Services have repeatedly acknowledged that adaptive management and contingency planning are valuable characteristics of HCPs.[441] According to the Services, adaptive management provisions in an HCP benefit habitat conservation and species preservation by providing a mechanism to account for unpredicted consequences of development or the availability of new information during the life of the HCP.[442] Adaptive management by definition includes monitoring, so it is not surprising that HCPs that include adaptive management provisions are much more likely to have clear monitoring plans.[443] However, there is limited funding[444] and lack of incentives for applicants and Services staff to engage in monitoring,[445] despite the fact

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[432] *Id.* at 31.
[433] Cameron W. Barrows et al., *A Framework for Monitoring Multiple-Species Conservation Plans*, 69 J. WILDLIFE MGMT. 1333, 1335 (2005). Some even recommend developing monitoring systems that operate across multiple HCPs. CALLIHAN ET AL., *supra* note 58, at 61; Telephone Interview with Ron Rempel, *supra* note 220.
[434] Barrows et al., *supra* note 433, at 1340.
[435] *Id.* at 1341.
[436] *Id.* at 1340.
[437] *Id.*
[438] *Id.*
[439] *Id.* at 1333.
[440] HOOD, *supra* note 7, at 27.
[441] *See* HCP Handbook Addendum, *supra* note 64, at 35,248.
[442] HOOD, *supra* note 7, at 26–27. Ideally, HCPs would consider possible environmental fluctuations and catastrophic events even though it is difficult, or impossible, to assign responsibility in such a case.
[443] KAREIVA ET AL., *supra* note 89, at 29. ("In particular, 88% of the plans with provisions for adaptive management had clear monitoring plans, whereas less than 30% of the remainder had clear monitoring plans.").
[444] Camacho, *supra* note 21, at 334. See Section V.C *supra* for a discussion of the funding challenges faced by area-wide, multi-agency HCPs.
[445] Camacho, *supra* note 21, at 323–28; *see also* Wilhere, *supra* note 62, at 26.

that it is mandated under the HCP program.[446] As a result, the vast majority of monitoring programs are inadequate and oversight of HCP compliance is usually deficient.[447] Additionally, subsequent HCP adaptation to integrate new data or respond to changed circumstances during plan implementation is even rarer.[448] Adaptive management is only mandated in a narrow set of circumstances,[449] and empirical evidence suggests that the Services and applicants often have limited capacity if not an aversion to implementing contingency planning or adaptive management.[450] There are unfortunately very few HCPs that incorporate contingency planning and adaptive management,[451] and even for those that do, there will always be a gap between true adaptive management and what agencies are actually capable of doing in the face of major resource and political constraints.[452]

Unfortunately, while the No Surprises policy provides an incentive for developers to participate in the HCP program, it simultaneously creates a strong disincentive for permittees to identify conditions as foreseeable, thus reducing the efficacy of contingency planning and adaptive management strategies.[453] Accordingly, some critics argued that the policy is "ecologically unsound" as it removes incentives to implement contingency planning and adaptive management measures.[454] Critics explain that the certainty the No Surprises policy provides reduces permittees' incentive to share information and resources, thus constricting adaptive management.[455] Changes presented by, for example, species population fluctuations, natural disasters, or new scientific information[456] pose a much greater risk of thwarting conservation efforts if an HCP has not contemplated redesign in the event of changed circumstances.[457] Moreover, the federal government is expected to finance and implement any measures to address unforeseen circumstances. As has typically been the case, the federal government has very limited funds available to carry the financial burden of implementing adaptive management measures once unforeseen events occur.[458] According to interviews and participants in the February 2014 dialogue, circumstances under which the federal government has stepped in to implement a strategy to manage an unforeseen circumstance are incredibly rare.

In order to provide sufficient assurances to encourage applicant participation without also encouraging developers to evade adaptive management responsibilities, the HCP program must include

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[446] 50 C.F.R. §§ 17.22(b)(3), 17.32(b)(3) (2014); *see* HCP Handbook Addendum, *supra* note 64, at 35,253–54.
[447] CALLIHAN ET AL., *supra* note 58, at 43; Camacho, *supra* note 21, at 326 (citing Bradley C. Karkkainen, "*New Governance" in Legal Thought and in the World: Some Splitting as Antidote to Overzealous Lumping*, 89 MINN. L. REV. 471, 474 (2004) and Thomas, *supra* note 6, at 144, 153-55); Fischman & Hall-Rivera, *supra* note 191, at 152.
[448] Camacho, *supra* note 21, at 336–37.
[449] HCP Handbook Addendum, *supra* note 64 at, 35,252.
[450] Camacho, *supra* note 21, at 332–35.
[451] *See* Wilhere, *supra* note 62, at 20.
[452] E-mail from Dan Tarlock to author, *supra* note 38.
[453] *See, e.g.*, Camacho, *supra* note 21, at 355; Thomas, *supra* note 6, at 149.
[454] Thomas, *supra* note 6, at 149.
[455] *Id.* at 167–68.
[456] HOOD, *supra* note 7, at 5.
[457] *See* Thomas, *supra* note 6, at 149.
[458] *See* HOOD, *supra* note 7, at 5.

other strong incentives to engage in robust monitoring, contingency planning, and adaptive management.[459] There is broad recognition that a tension exists between the assurances of the No Surprises policy and the flexibility and redesign required by adaptive management.[460] However, the HCP program has yet to incorporate any affirmative measures for achieving a balance.

Various types of incentives have been recommended that can be utilized to encourage implementation of adaptive management even with the No Surprises policy in place. One proposed reform, similar to the assurances provisions in the NCCP Act,[461] is to tailor the "duration or rigor of the assurance to the quality or expected performance of the HCP's conservation strategy," which would be based on the "magnitude of the HCPs contribution to the target species' recovery."[462] The greater the net benefit of the HCP on conservation, the greater the duration or comprehensiveness of the assurance would be.[463] However, in practice, negotiating assurances in such a way is difficult due to political pressure and applicants' insistence on assurances for the total length of the permit.[464] Another incentive recommended is the use of triggers,[465] which are "prenegotiated commitments in an adaptive-management plan that specify what actions are to be taken and when on the basis of information obtained from monitoring."[466] Area-wide HCPs might also require applicants to furnish a bond in an amount that would cover the worst-case risk scenario; the bond would be reimbursed in portions whenever permittees "demonstrated that the worst-case damages were less than had been conservatively anticipated when the HCP was adopted."[467] Other recommendations include providing direct federal loans, grants, or tax credits to permittees who engage in adaptive management.[468] However, all reforms recommended for increasing the implementation of adaptive management strategies will have to be weighed against the possibility that they may deter participation in the program more generally and the consequences that may bring.

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[459] Camacho, *supra* note 21, at 355–56.
[460] *See, e.g.*, Robert D. Thornton, *Habitat Conservation Plans: Frayed Safety Nets or Creative Partnerships?*, 16 NAT. RESOURCES ENV'T 94, 96 (2001); Gregory A. Thomas, *Where Property Rights and Biodiversity Converge Part III: Incorporating Adaptive Management and the Precautionary Principle into HCP Design*, 18 ENDANGERED SPECIES UPDATE 32, 38–39 (2001).
[461] CAL. FISH & GAME CODE § 2820(f) (2014).
[462] Thomas, *supra* note 460, at 39–41.
[463] *Id.* at 41.
[464] Telephone Interview with Ron Rempel, *supra* note 220.
[465] Martin A. Nie & Courtney A. Schultz, *Decision-Making Triggers in Adaptive Management*, 00 CONSERVATION BIOLOGY 1, 2–3 (2012); Telephone Interview with Jake Li, *supra* note 50.
[466] Nie & Schultz, *supra* note 465, at 1, 5 (explaining Montana's Native Fish HCP requires mitigation actions if stream temperature increases by 1.0° C). However, such triggers are not without challenges—"the choice of the level of statistical certainty . . . is one way triggers could be designed strategically to be more or less precautionary or enforceable," and triggered conservation commitments are criticized for being "biologically insufficient, vague, and uncertain to occur." *Id.* at 5–6.
[467] Camacho, *supra* note 21, at 356–57.
[468] *Id.* (citing Endangered Species Recovery Act of 1997, S. 1180, 105th Cong. § 5(h), 5(m) (1997) and Endangered Species Recovery Act of 2007, S. 700, 110th Cong. (2007)).

4. Reducing Uncertainty with Advance Mitigation

Advance mitigation, as described in Section V.D.4 *supra*, is increasingly recognized as a means to proactively protect species and their habitats, while simultaneously implementing infrastructure projects.[469] A significant advantage of advance mitigation is the ability to prove it is biologically effective before it is relied on as mitigation, due to the fact that on-the-ground effectiveness of a mitigation measure must be demonstrated before mitigation credit becomes available.[470] By requiring proof of effectiveness prior to approval, advance mitigation greatly decreases the likelihood that unforeseen circumstances will prevent the initial completion of mitigation, which reduces the likelihood that No Surprises assurances will need to be relied upon.[471] Accordingly, though of course unforeseen circumstances might subsequently reduce the efficacy of adopted strategies, the additional certainty advance mitigation initially provides can help balance against the disincentives the No Surprises policy creates with respect to managing for uncertainty and changed circumstances.[472]

D. MANAGING FOR CLIMATE UNCERTAINTY AND DISRUPTION

Managing for uncertainty and changed circumstances has and will become increasingly difficult, but even more crucial, in the face of existing and projected global climate change. The dialogues confirmed that one of the most significant but least-addressed substantive issues likely to shape the future of habitat conservation is how to manage long-term habitat conservation despite the potentially overwhelming effects of climate change on species migration and habitat fragmentation. In the Fifth Assessment Synthesis Report released in November 2014, the Intergovernmental Panel on Climate Change warned, "[w]ithout additional mitigation efforts beyond those in place today, and even with adaptation, warming by the end of the 21st century will lead to high to very high risk of severe, widespread, and irreversible impacts globally."[473] Climate change "threatens to move ecosystems outside their historic variability at an exceptionally fast rate," resulting in species extinctions or significant shifts in geographic distributions, "as the locations they currently occupy will become unsuitable for them."[474] Due to climate change in concert with other anthropogenic stressors (like human-induced habitat loss, over-exploitation, invasive species, and disease), substantial losses in species diversity are projected to occur without concerted assistance.[475] It is increasingly imperative that the HCP

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[469] Secretarial Order No. 3330, *supra* note 68; Greer & Som, *supra* note 363, at 234; *cf.* Announcement of Draft Policy Regarding Voluntary Prelisting Conservation Actions, 79 Fed. Reg. 42525, (proposed July 22, 2014) (encouraging taking voluntary, species conservation actions prior to listing that can be used to mitigate for detrimental effects of another action taken after listing).
[470] Telephone Interview with Jake Li, *supra* note 50; *see* Greer & Som, *supra* note 363, at 229.
[471] Telephone Interview with Jake Li, Dir. of Endangered Species Conservation, Defenders of Wildlife (Feb. 11, 2015).
[472] *Id.*
[473] INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2014 SYNTHESIS REPORT SYR-33 (2014).
[474] Alejandro E. Camacho, *Assisted Migration: Redefining Nature and Natural Resource Law under Climate Change*, 27 YALE J. ON REG. 171, 179–80 (2010); *see e.g.*, Barbour & Kueppers, *supra* note 236, at 138 .
[475] Camacho, *supra* note 474; Barbour & Kueppers, *supra* note 236, at 137. For example, some February 2014 dialogue participants noted that the number of narrow (in terms of soil, water, and land temperature) and very localized endemic plant species in California makes managing for climate change particularly important, but also difficult. "One study projected climate change-driven loss of habitat for endemic species in California at 16 to 64%, with anywhere from 2% to 46% of endemics facing extinction." Barbour & Kueppers, *supra* note 236, at 138 (citing Jay R. Malcom et al., *Global Warming and Extinctions of Endemic Species from Biodiversity Hotspots*, 20 CONSERVATION BIOLOGY 538 (2006)).

program and individual HCPs identify potential climate-related changes and develop specific management responses.[476]

Participants in the February 2014 dialogue discussed how climate change places even greater weight on the development of effective adaptive management strategies, including providing sufficient resources and other incentives for relevant actors to select appropriate indicators and concrete triggers for action. The increased need for dynamic implementation in light of climate change reinforces the need for increased attention to both short-term and long-term funding not only for habitat acquisition, but also adaptive plan management.[477] February 2014 dialogue participants also discussed the need for a range of active adaptation strategies to facilitate species movement, including wildlife corridors[478] (particularly to reverse historic losses in connectivity), rolling easements,[479] connecting recovery plans to HCPs to help guide future development of plans, and assisted species migration.[480]

For existing HCPs, the extent of projected ecological change raises extensive challenges to their successful implementation. During the February 2014 dialogue, a number of participants noted that most existing HCPs were not designed (and therefore do not seek) to account for climate change effects in their planning efforts, though some noted certain adaptation strategies (such as species transplantations and improving weather forecasting[481]) currently being undertaken by some HCPs. Unfortunately, while some recent HCPs may mention climate change in the context of the importance of adaptive management, they do not "analyze[] the implications of climate change or develop[] specific linkages between climate-change scenarios and conservation actions."[482] Existing HCPs thus are likely premised on faulty projections, as well as subject to significantly more uncertainty about the potential type and magnitude of stressors on habitat designated for protection. More fundamentally, most existing HCPs also assumed the capacity to maintain, by and large, the present ecological conditions in the designated plan area. To the extent that global climate change pushes conditions into the unforeseeable realm, the No Surprises policy places even greater pressure on the federal government to manage the HCP to account for such unforeseen circumstances—despite the uneasy track record in the HCP program of the Services having the resources to do so. The

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476 Bernazzani et al., *supra* note 149, at 1111.
477 See Section VI.A through VI.C *infra*.
478 Bernazzani et al., *supra* note 149, at 1108; Camacho, *supra* note 474, at 234.
479 *E.g.*, Jesse J. Richardson, Jr., *Conservation Easements and Adaptive Management*, 3 SEA GRANT L. & POL. J. 31, 50–53 (2010).
480 *See generally* Camacho, *supra* note 474.
481 The Nature Reserve of Orange County (NROC), the nonprofit that manages the Orange County Central and Coastal Subregion NCCP/HCP, is working on a way to build flexibility into their systems to better match resource allocation with changing weather conditions for purposes of improving habitat restoration. Telephone Interview with James M. Sulentich & Milan J. Mitrovich, *supra* note 164. As weather becomes more variable with climate change, NROC recognizes the need for seed storage systems and the sharing of resources in order to endure drought years and be better prepared to take advantage of wet years for seeding and planting. *Id.* NROC is coordinating with the University of California, Irvine on improving environmental forecasting and hopes eventually to be able to forecast local weather conditions as far as six months out. *Id.*
482 Bernazzani et al., *supra* note 149, at 1105; *see also* MELINDA TAYLOR & HOLLY DOREMUS, HABITAT CONSERVATION PLANS AND CLIMATE CHANGE: RECOMMENDATIONS FOR POLICY 10 (2011) (finding that of the thirty-two HCPs reviewed, only eleven mentioned or addressed climate change).

potentially serious consequences of not integrating climate change into adaptive management strategies is compounded by the fact that "typical management horizons for the larger plans [are] 30-50 years."[483]

The projected effects of climate change on species and habitat also likely call for fundamental changes in how future HCPs are designed.[484] Some February 2014 dialogue participants involved in HCP implementation emphasized the need to extend permit plan periods to allow for a longer plan horizon. Agency participants, however, raised concerns about even longer-term permits in the face of substantial ecological uncertainty. A few February 2014 dialogue participants suggested that future HCPs could better promote ecological health and resilient ecosystems by being formulated as ecosystem resilience plans that would focus on maintaining the plan area's functional diversity rather than attempting to maintain preexisting historical conditions or specific species. However, many February 2014 dialogue participants and interviewees raised significant impediments in comprehensively addressing climate change through the HCP program as currently designed and funded. For existing HCPs, assurances to permittees and limited governmental resources to address change and unforeseen circumstances limit the implementation of climate change adaptation strategies. Even for future HCPs, under the existing ESA there are significant questions regarding the ability to project and integrate into plans the effects of wide-scale shifts in climate on ecological conditions.

A changing climate might ultimately require a fundamental reconsideration of the focus and goals of the HCP program.[485] Prevailing approaches to habitat conservation, including the HCP program, have fundamentally been premised on passive management and the reservation of land to promote and/or restore pre-existing resources. Climate change will raise significant challenges to the prevailing place-based approach to habitat conservation planning. In particular, as climatic conditions shift, some of the resources initially deemed worthwhile of significant protection may no longer be compatible with the new conditions, while others may be more compatible.[486] It remains unclear how resource managers will be able to reconcile place-based goals focused on native ecosystem preservation with species-specific goals of endangered species preservation when these various pieces may be incompatible in light of changing climatic conditions.[487] Moreover, each of these foci for conservation may increasingly be incompatible with goals of promoting ecological vitality and function.

The HCP program, and habitat conservation more generally, may need to evolve to manage not only increased ecological stress, but also these increasing stressors on the governance process. Virtually all participants in the dialogues recognized the need for landscape-level planning to address climate change.

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[483] Bernazzani et al., *supra* note 149, at 1104.
[484] Barbour & Kueppers, *supra* note 236, at 156 (asserting that "NCCPs and HCPs should no longer be treated mainly as isolated reserves, but rather as part of an integrated system of reserves managed flexibly in response to adaptation needs").
[485] *See* Camacho, *supra* note 196, at 7 (arguing "climate change necessitates a fundamental reformation of natural resource governance").
[486] Camacho, *supra* note 474, at 179–80.
[487] *See* Barbour & Kueppers, *supra* note 236, at 155 (contending "climate change may challenge basic premises of the NCCP approach by rendering more tenuous the assumed link between current assemblages of species and given habitat areas").

February 2014 dialogue participants observed that relying on larger plans and providing for a variety of habitats is necessary to anticipate future habitat shifts. Some February 2014 dialogue participants, however, questioned whether the HCP program as currently constituted, with its focus on mitigating development impacts rather than the effects of other broad-scale changes, is the appropriate mechanism for meaningfully addressing climate change. To these participants, climate change must be addressed through broader, more comprehensive planning efforts than even large-scale, regional HCPs.

Outside of the HCP program, there have been a number of efforts to explore and begin to manage the climate change effects on conservation lands. At the federal level, the primary initiative for considering and eventually managing the effects of climate change on habitat has been the inter-jurisdictional coordination of information gathering through LCCs, established by the Department of the Interior in 2010 and described in Section III.B.1 *supra*.[488] In addition, the National Climate Adaptation Strategy,[489] co-developed by the USFWS and the Council on Environmental Quality in response to a congressional directive,[490] aims to "conserve habitat to support healthy fish, wildlife, and plant populations and ecosystem functions in a changing climate," recognizing that "sustaining a diversity of healthy populations over time requires conserving a sufficient variety and amount of habitat and building a well-connected network of conservation areas to allow the movement of species in response to climate change."[491]

On the state level, in 2009, California created the California Climate Change Adaptation Strategy [492] that seeks to safeguard wildlife through a proactive, adaptive, and collaborative approach to climate change.[493] One strategy proposed is the creation of a network of preserves across the state that would allow species free movement between the reserve areas in order to adjust to climate change.[494] The report acknowledged a number of significant steps before such a system of priority reserve areas was possible, including the required conservation of a significant amount of private lands,[495] updating of the NCCP program and state Wildlife Action Plan, significant collaboration and coordination between state regulatory programs

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[488] Part of the LCCs' stated mission is to "develop and provide integrated science-based information about the implications of climate change and other stressors for the sustainability of natural and cultural resources." LANDSCAPE CONSERVATION COOPERATIVES, *About the LCC Network*, http://www.lccnetwork.org (last visited Nov. 3, 2014).

[489] U.S. FISH & WILDLIFE SERV. & NAT'L OCEANIC & ATMOSPHERIC ADMIN., NATIONAL FISH, WILDLIFE AND PLANTS CLIMATE ADAPTATION STRATEGY (2012), *available at* http://www.wildlifeadaptationstrategy.gov/pdf/NFWPCAS-Final.pdf [hereinafter CLIMATE ADAPTATION STRATEGY].

[490] U.S. FISH & WILDLIFE SERV. & NAT'L OCEANIC & ATMOSPHERIC ADMIN., *The Strategy*, http://www.wildlifeadaptationstrategy.gov/development.php (last visited Feb. 17, 2015); *see also* H.R. REP. NO. 111-316, at 77 (2009) (Conf. Rep.) (noting in the Joint Explanatory Statement of the Committee of Conference the direction in the fiscal year 2009 appropriations act to the Secretary of the Interior to develop a national strategy for managing climate change impacts).

[491] CLIMATE ADAPTATION STRATEGY, *supra* note 489.

[492] NATURAL RES. AGENCY, 2009 CALIFORNIA CLIMATE ADAPTATION STRATEGY, *available at* http://resources.ca.gov/docs/climate/Statewide_Adaptation_Strategy.pdf.

[493] It emphasized that habitat conservation strategies need to be consistently re-evaluated and altered because of the ever-changing environmental conditions brought on by the changing climate.

[494] NATURAL RES. AGENCY, *supra* note 492, at 57.

[495] In support of this, it sought ways to encourage local land use planners to adopt climate change adaptation actions, as well as public education campaigns regarding the effects of climate change. This effort would follow the lead of the California State Park system. *Id.* at 63.

in the development and review of the proposed reserves to ensure that all of the adaptation plans are complementary, and modification of federal laws that limit federal agencies from acquiring land.[496]

However, these federal and state adaptation planning efforts remain nascent. Concrete adopted strategies for managing the effects of climate change on ecological resources and habitat conservation are quite rare, with most existing measures focusing on vulnerability assessment, information sharing, and broad programmatic declarations. Tellingly, the HCP program and existing HCPs have not been integrated into these federal and state climate initiatives. In particular, though the USFWS took a significant step in adopting a National Fish, Wildlife and Plants Climate Adaptation Strategy that seeks to promote consideration of climate change effects in USFWS efforts, incorporation and management of the effects of climate change in implementation of the ESA and habitat conservation planning remains inchoate. Only relatively recently have federal endangered species listing decisions[497] even considered climate change effects, and conservation measures for managing these effects have been very limited.[498] Dialogue participants overwhelmingly agreed a better and well-resourced infrastructure is needed for data pertinent to habitat conservation, and that the HCP program must be much more fully coordinated with existing climate change initiatives.

VII. Conclusions

Particularly in light of the projected convulsive effects of climate change on ecological resources, the need for broad-scale, inter-jurisdictional, adaptive planning is only increasing. Area-wide, multi-agency HCPs, and the HCP program more generally, have offered valuable lessons that can help improve existing HCPs and provide direction for future HCP planning efforts. In consultation with dialogue participants and other experienced practitioners involved in habitat conservation planning, CLEANR identified scale, focus, and

[496] More recently, California has adopted Safeguarding California, an action plan by the California Natural Resources Agency intended to update the 2009 Strategy. NATURAL RESOURCES AGENCY, SAFEGUARDING CALIFORNIA: REDUCING CLIMATE RISK, *available at* http://resources.ca.gov/docs/climate/Final_Safeguarding_CA_Plan_July_31_2014.pdf. The plan seeks to take into account the 2012 climate assessment and to incorporate Cal-Adapt, a web-based climate adaptation planning tool created by the California Energy Commission. CAL. ENERGY COMM'N, http://cal-adapt.org/ (last visited Feb. 13, 2015).

[497] 16 U.S.C. § 1533(a)(1) (2014).

[498] The first such listing was the polar bear in 2008, with the USFWS stating that the arctic sea ice used as habitat by the polar bear would continue to be affected by climate change. 50 C.F.R. § 17.11 (2015) (listing the polar bear as threatened). The USFWS had considered climate change in earlier listing decisions, but not with the same certainty as the polar bear. *See e.g.*, Endangered and Threatened Wildlife and Plants; Withdrawal of the Proposed Rule to List the Sacramento Mountains Checkerspot Butterfly as Endangered with Critical Habitat, 69 Fed. Reg. 76428, 76429 (proposed rule withdrawal Dec. 21, 2004) (stating "we recognized in the proposal that the butterfly may be vulnerable to changes in climate. We also not that this does not imply that the species cannot survive natural events . . . since the butterfly evolved in an environment subject to periodic atypical weather events"); 12-Month Finding for a Petition to List the California Spotted Owl, 68 Fed. Reg. 7580, 7607 (Feb. 14, 2003) (stating that although the USFWS ultimately decided listing the California spotted owl was unwarranted at the time, it thoroughly discussed the implications of greenhouse gases and climate change on spotted owl populations).

duration, inter-jurisdictional problem solving, funding, and managing uncertainty and change as the four topics of particular value as learning tools from the area-wide, multi-agency HCP experience.

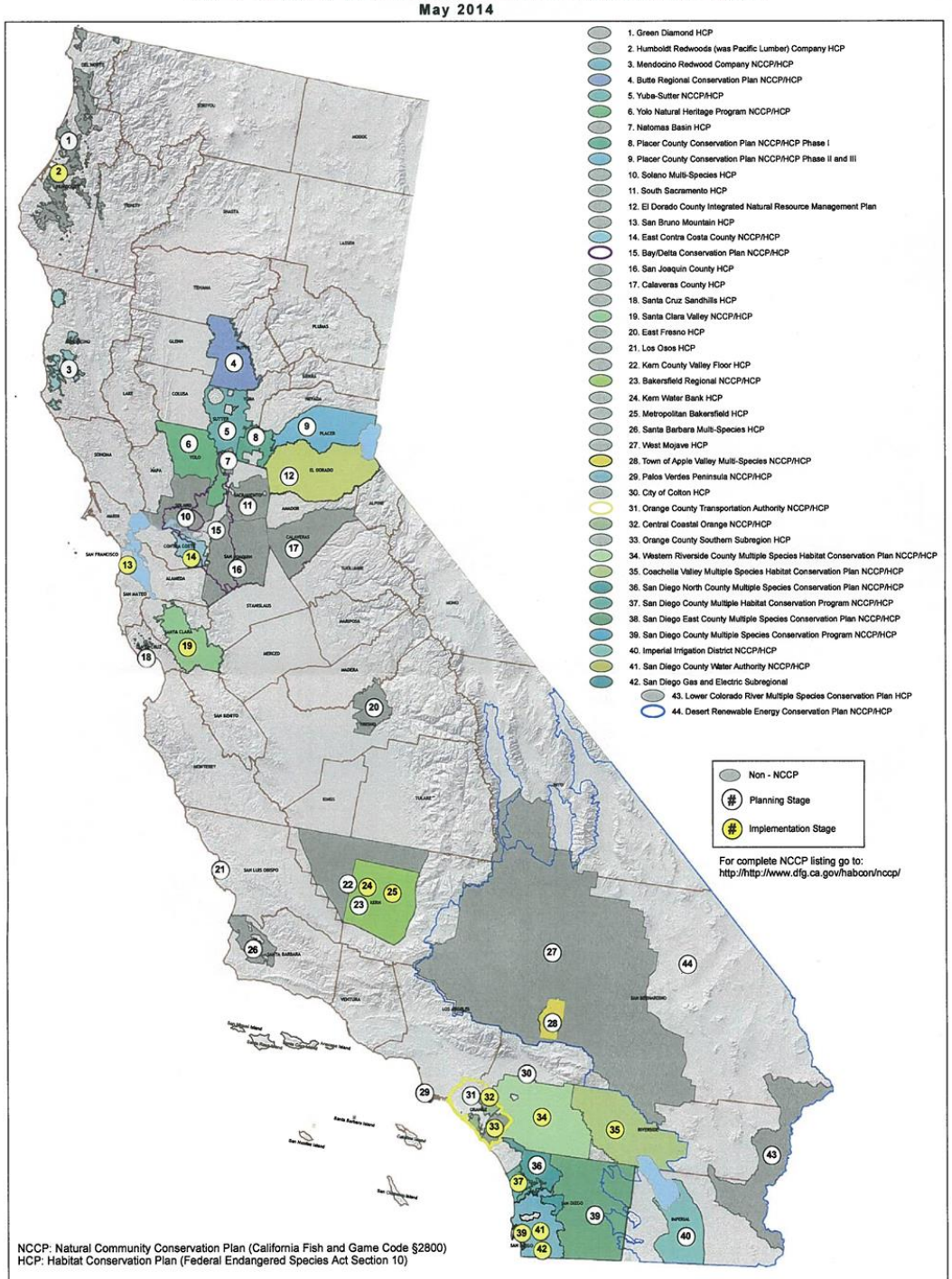
Yet these topics, and the lessons provided for each, are undoubtedly interrelated. As the scale of planning widens, the scope deepens, and the duration lengthens, the uncertainties, funding challenges, and difficulties of inter-jurisdictional problem solving accelerate. As some of the first experiments in large-scale, ecosystem-based, inter-governmental, and adaptive conservation planning, area-wide, multi-agency HCPs illustrate the inherent conflict in comprehensive habitat conservation planning and governance. Particularly in light of the limited and unreliable amounts of funding provided for habitat conservation planning, these tensions have resulted in clear tradeoffs between scale, depth, duration, cost, certainty, and efficacy.

However, the experience of area-wide, multi-agency HCPs suggests that close attention to these underlying tradeoffs—along with recognition of when appropriate conditions exist and careful institutional design choices—can maximize the likelihood of effective, multi-jurisdictional, large-scale, and adaptive conservation planning. To help develop effective inter-jurisdictional problem solving, authorities must foster a clear and streamlined inter-agency framework that relies on an initial scoping process, promotes open participation and information sharing, assists participants with resources and training, and adopts an early regional mitigation needs assessment. Instituting robust but targeted monitoring and incentivizing institutional actors to adapt management strategies to account for new information and changes in circumstances is essential. Finally, given the uncertainty that inherently characterizes conservation of dynamic species and habitat, advance mitigation mechanisms and state-wide funding are increasingly recognized as invaluable for promoting stable funding for broad-scale inter-jurisdictional conservation.

Appendix

CALIFORNIA REGIONAL CONSERVATION PLANS

May 2014



CALIFORNIA FISH & WILDLIFE

Conservation plans are in various stages of review, and subject to change. In some cases, boundaries have not been submitted by participants, and are estimated locations.

Data Sources: Bioregions:California Department of Forestry and Fire Protection (1992); Conservation Planning Areas: California Department of Fish and Wildlife, U.S. Fish and Wildlife Service, Bureau of Land Management, CALFED Bay/Delta Program, Mendocino Redwood Company, San Diego Association of Governments, and Coachella Valley Association of Governments.

Projection: Teale Albers, units in meters, NAD83. LGUSTAFSON 10/01/13