CRAIG AND RUHL'S MODEL ADAPTIVE MANAGEMENT PROCEDURES ACT: PROPOSED AMENDMENTS

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I. THE CHALLENGES OF ENCOURAGING ADAPTIVE MANAGEMENT

There is now abundant environmental law literature that calls for greater flexibility in the legal system to allow for adaptive management.[1] Climate change is one motivator for these calls, though not the only one. But up until this point in time, many of the calls for greater flexibility have been fairly general. However, as good lawyers and legal scholars know, the devil in law is always in the details.[2] Crafting specific statutory language (or principles courts can apply in judicial decision making) is essential to the success of any legal reform effort.[3] Effective crafting of specific statutory language can make all the difference between success, and failure. Failure can be worse than failure to achieve the proposed reform goals; flawed reform efforts can make outcomes worse than they were before.

I am therefore grateful for the recent efforts by Craig and Ruhl to propose specific statutory language to make environmental and natural resources law (and administrative law broadly) more friendly to adaptive management.[4] Indeed, Craig

* Professor of Law, University of California, Berkeley, School of Law. Special thanks to Robin Kundis Craig, J.B. Ruhl, and two anonymous reviewers for very helpful comments. Any errors and mistakes in this article remain mine alone. Craig and Ruhl's generous comments on this article should not be interpreted as an explicit or implicit endorsement by them of any of my proposed amendments or of anything else in this article.

1. For summaries, see Robin Kundis Craig & J.B. Ruhl, *Designing Administrative Law for Adaptive Management*, 67 VAND. L. REV. 1, 8 (2014); Eric Biber, *Adaptive Management and the Future of Environmental Law*, 46 AKRON L. REV. 933, 936–39 (2013).

2. *See* Craig & Ruhl, *supra* note 1, at 14 ("Theorists (including us) have proposed the idea of a specialized procedural 'track' for adaptive management, but the devil is in the details. Here, we propose the details.").

3. Consistent with the theme of this special issue, I assume that legal change is necessary to encourage adaptive management. That assumption is, of course, open for debate, and I have explored that question elsewhere. *See* Biber, *supra* note 1.

4. I assume the reader is familiar with Craig and Ruhl's article and proposed statutory language. Because the focus of this special issue is on adaptive management and environmental law, I will also focus my analysis on the environmental and natural resources law aspects of Craig and Ruhl's pro-

and Ruhl have even done us the favor of providing a sample model statute. They have begun a conversation that is important and necessary. My goal here is to provide a thoughtful, substantive response to their initial efforts—a critical but constructive engagement, similar to what might occur in the session of a legislative committee doing a mark-up of a bill.

As Craig and Ruhl note themselves,[5] and as I have written elsewhere,[6] adaptive management will only be applicable in a range of decisions. Adaptive management will not be useful for many, perhaps most, environmental and natural resources decision making.[7] We therefore need to make sure that adaptive management is only used where appropriate.[8]

Most proposals for making law friendlier to adaptive management call for greater flexibility in decision making—which generally means greater discretion for the administrative agency making regulatory or management decisions.[9] The Craig and Ruhl proposal accordingly seeks to provide greater discretion for agencies when they are implementing adaptive management. However, in general, agencies will often wish to have greater discretion—in other words, fewer political, legal, or bureaucratic constraints on their decision making.[10]

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posal. However, their proposal is drafted to apply broadly to all administrative law decisions—from food and drug law to immigration to natural resources. Where I think my comments need to be elaborated or adjusted because of that broader scope, I provide more detail in this article. Otherwise, I think my comments have general applicability to their proposal beyond the scope of environmental and natural resources law.

5. *See* Craig & Ruhl, *supra* note 1, at 27 ("[W]e recognize and accept that adaptive management is not appropriate for all, or even most, administrative agency decisionmaking.").

6. *See* Biber, *supra* note 1.

7. I thus agree with a default rule that the agency must demonstrate that adaptive management is appropriate before initiating the special track for adaptive management. *See* Craig & Ruhl, *supra* note 1, at 50–51.

8. Evaluating when adaptive management has been appropriately used is a difficult question to answer—in part because there is significant debate over what the goals of adaptive management should be and therefore whether we can conclude that any particular adaptive management program has been successful. *See* Holly Doremus, *Adaptive Management, the Endangered Species Act, and the Institutional Challenges of "New Age" Environmental Protection*, 41 WASHBURN. L.J. 50, 52–53 (2001) ("Beyond the most general level, however, there is no consensus on what adaptive management requires."). One goal that has been frequently suggested for adaptive management in the literature is the reduction of uncertainty over how to achieve management goals. *See id.* at 52; Craig & Ruhl, *supra* note 1, at 20 ("The main thrust of adaptive management is to reduce uncertainty through integrative learning."). That goal appears to be a primary motivation for the Craig and Ruhl proposal and I adopt it here for purposes of this piece. Of course, if we adopt other goals for adaptive management, then that might change the assessment of when adaptive management is appropriate—a change in goals might also lead to other revisions to the Craig and Ruhl proposal (*e.g.*, to the findings the agency must make in concluding that an adaptive management program is appropriate).

9. *See, e.g.*, Craig & Ruhl, *supra* note 1, at 32–34, 44–46 (describing how judicial review, which is intended to cabin agency discretion, can be an obstacle for adaptive management, and calling for limits on judicial review in adaptive management implementation); *see also* U.S. FOREST SERVICE, USDA, THE PROCESS PREDICAMENT: HOW STATUTORY, REGULATORY, AND ADMINISTRATIVE FACTORS AFFECT NATIONAL FOREST MANAGEMENT 23–24 (June 2002) ("Without more flexible mechanisms, adaptive management will remain at best difficult to incorporate into national forest planning and analysis.").

10. *See* JAMES Q. WILSON, BUREAUCRACY: WHAT GOVERNMENT AGENCIES DO AND WHY THEY DO IT 26, 28, 179–81 (1989); Eric Biber, *The Problem of Environmental Monitoring*, 83 U. COLO. L. REV. 1, 48–51 (2011) [hereinafter *Problem*]. For example, the U.S. Forest Service in the 1980s promulgated a regulation requiring the monitoring of the status of native species on National Forests. However, over time that regulation began to be used by environmental groups to challenge agency decisions based on claims of inadequate or nonexistent monitoring. Some courts held that the agency could not pursue projects such as timber sales without adequate monitoring. The agency responded to this constraint on its activities

The challenge is to draft a law that increases agency discretion only where adaptive management is appropriate. Increasing flexibility and discretion for agencies has potential costs for other important values—including successfully achieving important environmental and natural resource goals. We therefore want to make sure that, if we do pay the costs that flexibility and increased discretion entail, we are in fact getting adaptive management that is useful and productive for achieving environmental and natural resource goals. We don't want agencies using sham proposals for adaptive management to simply gain more freedom from judicial review, or public participation requirements.[11] Sham here might mean developing a proposal for adaptive management that is, in fact, meaningless and ineffective, and/or developing a proposal for adaptive management for a management or regulatory decision that is entirely unsuited for adaptive management in the first place.

Striking the right balance is even trickier because an assessment of whether an adaptive management proposal is effective or is a sham requires significant expertise and resources. The success or failure of any individual adaptive management proposal will turn on factors such as the particular resource being managed, the effectiveness of the monitoring program being used to support the adaptive management program, the social and economic factors that affect resource management, the level of risk from a failed regulatory or management decision, and many more. These analyses will require significant expertise in a range of technical fields (statistics, ecology, chemistry, hydrology, geology, economics, just to name a few). Analyses will often be project-specific. An adaptive management program that works for salmon restoration in the Pacific Northwest may look very different from an adaptive management program that works in the Everglades. And analyses will be uncertain—we may not be able to predict very well if a particular adaptive management will be successful in the future.

Where decisions are uncertain, highly technical, context-specific, and resource-intensive, courts will generally defer to agency decisions. But under the Craig and Ruhl proposal, the agency decision—to adopt an adaptive management

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by revoking the regulation. *See id*. This particular example is especially relevant for adaptive management because monitoring is a necessary component of any adaptive management program.

There are exceptions. Agencies may wish to make politically difficult regulatory or management decisions; they can avoid the political cost of those decisions if they can claim that they have no discretion in making those decisions (*e.g.*, the court made us do it). *See* Elizabeth Magill, *Agency Self-Regulation*, 77 GEO. WASH. L. REV. 859, 889 (2009). Of course, the mere appearance of a lack of discretion can serve these ends.

11. Craig and Ruhl note this risk. *See* Craig & Ruhl, *supra* note 1, at 11; *see also* HOLLY DOREMUS ET AL., CENTER FOR PROGRESSIVE REFORM, MAKING GOOD USE OF ADAPTIVE MANAGEMENT 3 (2011), *available at* http://www.progressivereform.org/articles/Adaptive_Management_1104.pdf; Doremus, *New Age of Environmental Protection*, *supra* note 8, at 53 ("[The] fuzziness of the concept" of adaptive management, "invites the use of the term . . . as an empty symbol. Agencies can use claims of adaptive management as a ploy to placate demands for environmental protection without actually imposing any enforceable constraints on themselves"). Craig and Ruhl provide some specific criteria in section 3 (for example) to evaluate whether an agency adaptive management plan will provide real, rather than sham adaptive management. *See* Craig & Ruhl *supra* note 1, at 68–74.

For an example of potentially sham adaptive management, see Martin Nie's discussion of the Forest Service's proposed revisions to the forest planning rules in the early 2000s. Martin Nie, *Whatever Happened to Ecosystem Management and Federal Lands Planning?*, *in* THE LAWS OF NATURE: REFLECTIONS ON THE EVOLUTION OF ECOSYSTEM MANAGEMENT LAW AND POLICY 67, 72–73, 76 (Kalyani Robbins, ed. 2013) (noting how critics of those rules argued that they "used the rhetoric of adaptive management as a means to remove standards, undermine [relevant environmental laws], and maximize agency discretion").

program—would produce significantly greater agency discretion. We are asking courts to provide deference to agency decisions to grant themselves greater discretion. Agencies therefore may well have a strong incentive to create adaptive management programs—whether effective or not—to insulate future decision making from judicial review or public participation.

Even assuming agencies always operate in good faith—and I personally believe that they usually do so—we may hesitate to give this level of power to agencies ex ante. First, agencies may make mistakes in good faith. Agency decision makers may firmly believe that they know how to make the right decisions to achieve good regulatory or management outcomes, if only they could get those pesky, inexpert courts and outside litigants off their backs. Or agency decision makers may not even be conscious of how the lure of increased discretion is skewing their decision making to overuse adaptive management. Second, political pressures might come to bear on the agency, forcing it to make regulatory or management decisions that it would otherwise refuse to make, or that are in tension or contrary to underlying statutes. Such pressures surely already occur, either from the White House, Congress, or political appointees within the agency.[12] But judicial review and public participation requirements can provide a significant check on such pressures.[13] We might end up with poor outcomes if political pressures encourage or even force agencies to use sham adaptive management programs to shield future agency decision making from judicial review or public participation requirements.

Of course, all of these concerns depend on highly uncertain estimates about how much agencies operate in good faith, how much agencies will seek to shield themselves from discretion, and how important political pressures on agencies are. Providing checks and balances to reduce these risks would necessarily undermine the whole purpose of providing greater flexibility for the pursuit of adaptive management—if we have overly stringent review of agency decisions to pursue adaptive management, we will undermine the very purpose of the reforms. Finally, any assessment of whether greater legal flexibility is worth the costs discussed above depends on highly uncertain estimates about how beneficial adaptive management will be in the future: How many decisions can adaptive management help improve?

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12. For example, Fish and Wildlife Service decision making under the Endangered Species Act was badly compromised by pressure placed by a political appointee, Julie MacDonald. *See* OFFICE OF INSPECTOR GEN., DEP'T OF THE INTERIOR, INVESTIGATIVE REPORT ON ALLEGATIONS AGAINST JULIE MACDONALD, DEPUTY ASSISTANT SECRETARY, FISH, WILDLIFE AND PARKS 2 (2007); OFFICE OF INSPECTOR GEN., DEP'T OF THE INTERIOR, REPORT OF INVESTIGATION: THE ENDANGERED SPECIES ACT AND THE CONFLICT BETWEEN SCIENCE AND POLICY 2 (2008); Mike Ferullo & Linda Roeder, *Fish and Wildlife Service Announces Review of Decisions Influenced by Former Official*, 38 ENV'T REP. (BNA) 1685 (July 27, 2007); *U.S. Fish and Wildlife Service: Endangered Species Act Decision Making*: *Testimony before the H.R. Comm. on Natural Res.*, 110th Cong., GAO-08-688T (2008), *available at* www.gao.gov/new.items/d08688t.pdf (statement of Robin M. Nazzaro, Dir. Natural Res. and Env't).

13. This is one of the situations where an agency might wish to have its discretion limited in order to protect it from political pressures to make decisions that the expert agency believes are inappropriate. For instance, litigation played an important role in limiting the harm caused by Julie MacDonald in FWS decision making. *See, e.g.*, *Ctr. for Biological Diversity v. U.S. Fish & Wildlife Serv.*, No. C 04-04324 WHA, 2005 U.S. Dist. LEXIS 49107, 2005 WL 2000928 (N.D. Cal., Aug. 19, 2005); *W. Watersheds Project v. U.S. Forest Serv.*, 535 F.Supp.2d 1173 (D. Idaho 2007).

How costly will adaptive management be to pursue? How many benefits can adaptive management provide?

Craig and Ruhl's proposal seeks to strike a balance between providing the flexibility needed for effective adaptive management and reducing the concerns about the overuse of adaptive management. For instance, they provide for judicial review of the agency decision to pursue adaptive management in the first place, and limited judicial review of the agency's adaptive management plan.[14] They also provide for robust public participation in the agency decision to pursue adaptive management and the agency's development of an adaptive management plan. But I do think it is fair to say that Craig and Ruhl are somewhat optimistic about both the benefits of adaptive management for environmental and natural resource decision making, and about the willingness of agencies to use their decision-making discretion in good faith.

I am somewhat more skeptical about the benefits of adaptive management and more concerned about the risks of agency discretion.[15] My proposed amendments to the Craig and Ruhl draft bill therefore focus on providing more searching review to ensure that any adaptive management plan the agency seeks to adopt is not just an effort by the agency to gain more discretion without truly pursuing adaptive management. I also try to provide some additional assurances that the costs of

14. Craig and Ruhl's proposal provides a range of criteria in sections 2 and 3 by which an agency's decision to pursue adaptive management, and the adaptive management plan itself, can be evaluated by a reviewing court. Some of these constraints have more bite than others. For instance, in order to place a project on the adaptive management track, the agency must make an initial finding that the project "deals with a complex system." Craig & Ruhl, *supra* note 1, at § 2(D)(2)(a). A complex system in turn is defined as a "policy-management context in which the relevant social, economic, technological, biological, physical, and environmental components are numerous, diverse, and interrelated; exhibit feedback between each other as conditions change; and adapt to stressors, perturbations, and management measures over time, based at least in part on how other components within the policy-management context respond." *Id*. at § 1(G). This definition is broad enough that it seems to encompass many, if not most, of the significant management and regulatory programs within the federal government. Likewise, the agency is required to find that the program "is subject to unknowns or uncertainties about the system, its stressors, and/or best management practices." *Id.* at § 1(D)(2)(c). It is hard to imagine any significant management or regulatory program that does not involve some uncertainty.

The requirements for an initial adaptive management plan in section 3 are much more detailed, generally in ways that should be very helpful to encourage the development of more effective adaptive management plans. However, they still leave tremendous discretion for the agency to determine which goals it wishes to pursue, what risks it wishes to take as it pursues those goals, and how it seeks to achieve those goals. That discretion, combined with the elimination of other substantive constraints besides the legislation that authorizes the agency action in the first place, gives substantial leeway for the agency. For instance, Craig and Ruhl's proposal does not require an agency to consider (for example) the impacts of its proposal on endangered species when drafting an adaptive management plan pursuant to section 3. An agency could draft an adaptive management plan that would allow for the extinction of an endangered species, and section 3 would exclude the application of the ESA to prevent such an outcome. 1 Perhaps a court might conclude that such a plan was inconsistent with the agency's initial determination under section 2 to pursue the adaptive management track and the associated ESA analysis for that determination. However, this would require a court to conclude that the failure to consider endangered species in the adaptive management plan would be "arbitrary and capricious" because it was inconsistent with the original section 2 determination and its associated ESA analysis. That requires both (a) a broad understanding of arbitrary and capricious under section 6 of the statute; and (b) that any ESA evaluation of the section 2 determination was thorough, searching, and specific enough to constrain the agency from causing the extinction of an ESA-listed species through the agency's adaptive management plan. Given the general nature of the section 2 determination, I am concerned this latter requirement might not be met. *See infra* at notes 24–25 and accompanying text.

15. See Biber, *supra* note 1 for a detailed explication of the reasons for my skepticism.

adaptive management will be minimal.[16] In doing both, however, I believe that the amendments I suggest would still retain substantial flexibility for the agency, sufficient flexibility to allow for successful adaptive management in most of the cases where it is appropriate.

II. SETTING THE RIGHT INCENTIVES

If we are indeed concerned about a general desire of agencies to push for more discretion, then an ideal set of reforms would on average leave the agency indifferent between "normal management" and "adaptive management" in situations where both might be plausible approaches for a regulatory or management problem.[17] In other words, when considering all of the various procedures, possibilities for judicial review, etc., an agency should not have an incentive to pursue adaptive management simply because adaptive management would give the agency more discretion.[18]

This standard is not necessarily in tension with the proposition that we need to provide legal flexibility for effective adaptive management. As I have noted elsewhere, I believe that what we need for effective adaptive management is not necessarily greater overall legal flexibility, but different kinds of legal flexibility that are a better fit for adaptive management than the traditional administrative law system.[19] For instance, we might change the focus for judicial review and public participation requirements from one level of decision making (e.g., the day-to-day implementation of adaptive management that requires iterative, repeated decisions) to another level of decision making (the overall decision about whether and how to implement adaptive management).

The Craig and Ruhl proposal is quite consistent with this model. Instead of completely eschewing judicial review or public participation for adaptive management, they instead move judicial review and public participation more towards programmatic-level decisions about whether and how to pursue adaptive management, and instead only insulate the day-to-day implementation of adaptive management from judicial review.[20] They also provide the agency with something of a tradeoff:

16. For a full discussion of the costs, see Biber, *supra* note 1.

17. In particular, we would be concerned about an agency attempting to use the adaptive management track to obtain more discretion in order to solve problems for which adaptive management would be inappropriate. Making adaptive management no more or less appealing to an agency from the perspective of its overall discretion helps reduce that risk.

18. The form and nature of discretion in adaptive management might be qualitatively different compared to normal management, so this comparison may be difficult to do, at least at a high level of precision. Nonetheless, I believe this is a helpful way of framing the institutional design problem, even if we cannot exactly measure whether discretion in one category is comparable or equal to discretion in another category.

Of course, agency discretion in and of itself is not necessarily problematic. The problem is the use of discretion by an agency to achieve goals that diverge from the relevant statutory mandates.

19. Biber, *supra* note 1, at 962.

20. *See* Craig & Ruhl, *supra* note 1at 14 ("[B]ecause the adaptive management track accords a participating agency more ongoing discretion than typical front-end decision making, we purposely have designed our adaptive management track so that an agency's decision to take it must be considered, deliberate, and— to the extent that procedural constraints can so guarantee—committed to following in good faith proper adaptive management procedures."); *id.* at 31 (proposing public participation at the "periodic 'big decisions'" about whether and how to conduct adaptive management, rather than for adaptive management implementation); *id.* at 41–44 (same, including judicial review); *id.* at 66–68 (standard procedures apply to

the insulation from judicial review for implementation is paired with specific, mandatory duties for the agency to conduct ongoing monitoring (an essential component of adaptive management) and provide reports to the public based on that monitoring.[21] This is a substantial improvement on the status quo—where courts rarely force agencies to conduct monitoring or produce monitoring reports.[22]

I would make two amendments on this topic. First, Craig and Ruhl focus greater scrutiny on the agency's proposal of whether or not to adopt an adaptive management approach; here the agency must comply with all of the various procedural and substantive requirements derived from other statutes, regulations, and executive orders (e.g., NEPA, ESA). But they completely exempt the agency's plan for adaptive management implementation from review under those statutes (though they still require substantial public participation and judicial review for this stage pursuant to their model statute and the statute that authorizes the agency's project in the first place).[23]

However, the agency decision about whether to adopt an adaptive management approach will be a very general decision—it would (appropriately) focus on whether adaptive management might help reduce uncertainty and improve decision making. It is hard to see how NEPA or ESA review would provide much traction or benefit at this stage.[24] The risk is that NEPA or ESA analysis at this stage would

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decision whether to pursue adaptive management); *id.* at 83–84 (judicial review applies to decision whether to pursue adaptive management); *see* Craig & Ruhl, *supra* note 1 at 68 (public participation requirements for development of adaptive management plan); *id.* at 83–84 (allowing for judicial review of adaptive management plan); *id.* at 84 (exempting implementation of adaptive management plans from most judicial review).

21. *See* Craig & Ruhl, *supra* note 1, at 31, 53, 71.

22. *See Problem*, *supra* note 10, at 60–65.

23. *See* Craig & Ruhl, *supra* note 1, at 49, 54–55 (proposing heightened public participation for the development of an adaptive management plan, but exempting review of those plans "from the substantive and procedural requirements of any statutes, regulations, or executive orders other than the statute that authorized the agency to engage in the relevant management activities in the first place"); *id.* at 74 (exempting development of adaptive management plan from procedural and substantive requirements except for statute that authorizes the relevant management decision). Craig and Ruhl state that this exemption "is intended to provide agencies with an incentive for engaging in the rigorous process of adaptive management planning and implementation." *Id.* at 55.

24. For instance, there have been a number of trenchant critiques (from both outside and within the agencies) of the utility of NEPA and ESA analysis in the context of oil and gas leasing and land use planning by land management agencies. The criticism is that both leases and plans provide inadequate specificity about the particular activities that the lessee or the agency might pursue in the future, making the NEPA and ESA process either ineffective (because they are overly vague), overly burdensome (because they seek to analyze a wide range of possible future activities), or both. *See, e.g.*, Jan G. Laitos, *Paralysis by Analysis in the Forest Service Oil and Gas Leasing Program*, 26 LAND & WATER L. REV. 106 (1991); Marla E. Mansfield, *Through the Forest of the Onshore Oil and Gas Leasing Controversy toward a Paradigm of Meaningful NEPA Compliance*, 24 LAND & WATER L. REV. 86, 124 (1989) (noting "the fear that if NEPA procedures are grafted onto indefinite or abstract activities, NEPA would founder" because "[o]nly theoretical impacts of potential impacts from differing levels of activity will result"); Michael J. Gippert & Vincent L. DeWitte, *The Nature of Land and Resource Management Planning Under the National Forest Management Act*, 3 ENVTL. L. 149, 175–77 (1996) (arguing for greater use of ESA review at the site-specific, rather than plan level, for Forest Service decision making because "it allows the Forest Service to assimilate new information into concrete project decisions"); National Forest System Land Management Planning, 72 Fed. Reg. 48,514, 48,524 (Aug. 23, 2007) (Forest Service statement that conducting a full NEPA analysis for planning documents "was impractical, inefficient sometimes inaccurate, and not helpful with the plan decision making process" and that "the Agency has concluded that environmental impacts of projects and activities cannot be meaningfully evaluated without knowledge of the specific timing and location of the projects and activities"); *id.* at 48,525–26 ("Meaningful analysis of the effects of a plan is not

turn into bland generalities that do little to inform decision makers and even less to provide necessary constraints on agency discretion as to whether and how to undertake adaptive management.[25]

In contrast, the second stage, where an adaptive management plan is developed, would provide many more details—what kinds of management options might be used; how the management program will specifically reduce uncertainty; what environmental resources will be covered by the monitoring program; what possible risks to various environmental resources the proposed management options might create; what triggers to use to determine whether the adaptive management program should be terminated, etc. It is here that there are sufficient specifics to allow for a fruitful NEPA or ESA review that can actually examine (for example) whether the specific management options being considered in the adaptive management plan would jeopardize the existence of endangered species. Moreover, more detailed, specific review at this stage is more likely to separate sham from effective adaptive management proposals, and thus reduce the risk that agencies are using the cover of adaptive management to acquire increased discretion. Thus, I would propose that the second stage of the adaptive management process developed by Craig and Ruhl be also covered by all relevant procedural and substantive requirements that would otherwise apply to agency action.[26]

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possible because plan components typically cannot be linked in a cause-effect relationship over time and within a geographic area to effects on the human environment. This cause-effect relationship is lacking when plans do not include proposals for actions that approve projects and activities."); National Environmental Policy Act Documentation Needed for Developing, Revising, or Amending Land Management Plans; Categorical Exclusion, 70 Fed. Reg. 1062, 1062–63 (Jan. 5, 2005) (similar discussion in Forest Service proposal of categorical exclusion of forest plans from NEPA review) ("[I]t is usually infeasible to do meaningful environmental analysis for a national forest as a whole that is sufficiently site specific to allow projects to be carried out without further detailed NEPA analysis."); National Environmental Policy Act Documentation Needed for Developing, Revising, or Amending Land Management Plans; Categorical Exclusion, 71 Fed. Reg. 75481, 75,482–84 (Dec. 15, 2006) (similar discussion in Forest Service announcement of final decision on categorical exclusion). Indeed, the Forest Service has argued that, in promoting adaptive management, site-specific review is more effective than programmatic NEPA review. National Forest System Land Management Planning, 72 Fed. Reg. at 48,525.

25. Another risk from premature NEPA and ESA analysis is that it might lead to less predictable judicial review. Where proposed agency actions are rather vague, the scope of the agency action may be difficult to determine. *See* Laitos, *supra* note 24, at 114 (noting that questions of scope are "exceptionally difficult to answer in the case of federal onshore oil and gas leasing" given the uncertainty of site-specific actions and impacts). Thus, there is a wide latitude for litigants and courts to identify different ways to make the analysis more specific in particular areas (i.e., to challenge the scope of the review of the action). Later environmental review might in fact be preferable from an agency's perspective. This is, in fact, consistent with efforts by the Forest Service to move environmental review away from its planning process and more toward site-specific, project-level decision making, such as the 2005 and 2008 proposed revisions to the Forest Service planning rules. *See* Nie, *supra* note 11, at 72–73.

26. If we are concerned that this would create a substantial burden on the agency that might deter the pursuit of adaptive management, one could exempt the first stage—whether to pursue adaptive management—from these procedural and substantive requirements. One could even make the first stage decision unreviewable in court. This would offset to some extent the increased burden of full compliance with these requirements at the second stage, though not entirely, since the greater specificity of the second stage means compliance will be more thorough and therefore more burdensome. Such a switch seems to me likely to produce a substantial gain in useful information and accountability for the agency (with the heightened review for the second stage) with relatively small costs (with the lessened review at the first stage). Again, the generality of the first stage decision about whether to pursue adaptive management likely means that any analysis will be of limited utility—both in terms of information production and in terms of accountability.

Thorough environmental review of an adaptive management plan can be challenging, even with the additional specifics at this second stage. Adaptive management necessarily requires flexibility for management or regulatory changes to respond to new information or to produce new information. That means that the adaptive management plan will necessarily have limits on the specifics that can be evaluated. Nonetheless, there are elements of the plan that will allow for evaluation. For instance, trigger mechanisms in the adaptive management plan to reduce or prevent irreversible harm to vital resources (e.g., endangered species) can provide sufficient information to allow for a range of analyses (e.g., ESA consultation).[27] The overall cost of an adaptive management program can usually be estimated, and provide the basis for any mandatory cost-benefit analyses.

Indeed, many of these additional analyses will dovetail nicely with other findings that should be essential to any determination that a proposed adaptive management plan will provide effective adaptive management. ESA consultation, for instance, can assure that the plan truly is minimizing the risk of irreversible harm to endangered species—and reducing the risk of irreversible harm is one factor that is generally agreed to be an essential component of any effective adaptive management plan.[28] Cost-benefit analysis might help us determine whether an adaptive management plan will produce useful information at a cost that we are willing to pay—again, if the social costs of an adaptive management plan exceed its benefits, we should not be pursuing it in the first place.[29] Review at this stage is therefore an important double-check to ensure that the adaptive management plan that the agency proposes will fulfill the promises the agency has made in its initial proposal to proceed on the adaptive management track.

Second, I would switch the default for renewing adaptive management programs—at least after a certain period of time after the initial adaptive management program is adopted. Currently, the Craig and Ruhl proposal requires the agency to justify its departure from the adaptive management track after the initial adaptive management plan has ended.[30] In other words, the burden is on the agency to terminate adaptive management for a particular regulatory or management problem. Any subsequent plan must be based on the agency's monitoring data and conclusions from the previous iteration of the adaptive management program.[31]

Again, a key question is how easy it is for the agency to continue on the adaptive management track, with its significant protection from judicial review and public participation. Under the Craig and Ruhl proposal, the burden would be on challengers to convince a court that the agency should not continue on the adaptive

27. For a discussion of the important role that triggers might play in adaptive management, see MARTIN NIE & COURTNEY SCHULTZ, DECISION MAKING TRIGGERS IN ADAPTIVE MANAGEMENT, REPORT TO USDA PACIFIC NORTHWEST RESEARCH STATION, NEPA FOR THE 21ST CENTURY (2011).

28. Craig & Ruhl, *supra* note 1, at 19; *see also* Biber, *supra* note 1, at 947.

29. *See* Biber, *supra* note 1, at 946–47; Holly Doremus, *Adaptive Management as an Information Problem*, 89 N.C. L. REV. 1455, 1479 (2011); Eli P. Fenichel & Gretchen J.A. Hansen, *The Opportunity Cost of Information: An Economic Framework for Understanding the Balance Between Assessment and Control in Sea Lamprey (Petromyzon marinus) Management*, 67 CAN. J. FISH. AQUAT. SCI. 209, 210 (2010) (providing a model analyzing whether adaptive management would be worth the costs in terms of additional information gained).

30. *See* Craig & Ruhl, *supra* note 1, at 60, 75 § 4(A).

31. *See id.* at 77, § 4(B)(3)(b).

management track. My proposal would be to flip the burden of proof after a certain period of time has passed, requiring the agency (as with the initial proposal for adaptive management and the initial adaptive management plan) at least every six years to demonstrate that adaptive management is still the appropriate choice and that the adaptive management plan will be effective. This of course raises the cost to the agency of continuing adaptive management—ensuring that the agency will only pursue adaptive management if it believes that adaptive management continues to be the best way to achieve regulatory or management goals. It also reduces the risk that once regulatory or management programs enter onto the adaptive management track they will stay there forever—regardless of whether adaptive management is indeed improving decision making—simply because the agency wishes to shield its program from extensive judicial review or public participation requirements.[32] Requiring the review to be every six years—rather than after each adaptive management plan expires—allows for the agency to use short-time frame adaptive management plans (e.g., one- or two-year plans) without the burden of having to redo their analysis every time. This creates some incentive for agencies to consider more frequent revisions of those adaptive management plans without triggering burdensome review and consultation requirements.

III. ENSURING EFFECTIVE AND EXPERT REVIEW OF ADAPTIVE MANAGEMENT PROPOSALS

As noted above, one of the challenges in evaluating whether adaptive management is appropriate for a particular program and will be successful in improving decision-making outcomes is the significant level of expertise that is required to evaluate adaptive management programs. The risk is that because of this requirement for expert assessment, courts will simply defer to an agency's adaptive management proposal or plan—even though this deference will make it easier for an agency to gain additional discretion in future decision making.

How should the problem of ensuring thoughtful and effective review of agency decision making by courts when courts do not have any expertise in the area be addressed? In the context of endangered species protection, one solution that has been developed is to have the original agency decision reviewed by another agency that has expertise in the area—the U.S. Fish and Wildlife Service.[33] We thereby

32. Craig and Ruhl's proposal includes a provision in which agencies could terminate an adaptive management program if the agencies conclude that the program is not effective. While this provision seems eminently sensible, it is also questionable how much an agency will invoke this provision. Again, if agencies generally value the increased discretion that the adaptive management track provides, they may be reluctant to voluntarily terminate an adaptive management program even if it is not proving effective. Given what I believe to be an agency's general reluctance to terminate adaptive management programs and their associated discretion, I would provide less searching judicial review of agency decisions to terminate adaptive management programs than Craig and Ruhl would—specifically, I would not require the agency to provide "clear and convincing evidence" that the requirements for termination have been met.

Consistent with flipping the default rule for an agency decision to renew an adaptive management program, I would not require an agency that terminates an adaptive management program to "immediately proceed to adopt a new adaptive management program," as is currently mandated in the Craig and Ruhl proposal. Craig & Ruhl, *supra* note 1 at 80, § 5(B).

33. There is unfortunately no comprehensive study that I am aware of that explores the extent to which section 7 consultation results in the production of additional information about endangered species. Certainly the process has the potential to produce more information. *See* Holly Doremus, *Lessons Learned*,

ensure some thoughtful, independent review of the original decision by an agency that has more expertise in the particular area than a reviewing court would. If the independent review determines that the project meets the relevant standards, courts would apply their usual deference; if not, then courts might apply a heightened standard of review to the agency decision.

Of course, this additional stage adds costs and delays to the decision as to whether and how to pursue adaptive management. But if this review is limited to only the programmatic stages (such as the development of the adaptive management plan), those costs and delays are relatively limited. Moreover, the expert review by an outside party may make judicial review easier or quicker since the court can rely on a thoughtful, independent review—as opposed to the possibly self-interested analysis of either the agency or the outside parties challenging the agency decision.

There are other ways in which an outside expert body might facilitate the adaptive management process—both ensuring greater accountability and possibly also streamlining the process as well. First, the outside body might have the power to develop guidelines or regulations to define key terms, provide more specific guidance as to the key concepts relevant for adaptive management, and provide best practices about adaptive management implementation. The model here would be the Council on Environmental Quality guidelines for NEPA. Of course, given the context-specific nature of effective adaptive management, any such guidelines will be fairly general (as are the CEQ NEPA guidelines), but they may be nonetheless helpful. They could also create a structure or mandate for individual agencies to draft their own specific guidelines for adaptive management proposals and plans—again similar to the CEQ guidelines, which require individual agencies to develop their own NEPA regulations. These guidelines could help provide more specificity for judicial review of adaptive management proposals and plans—again this can produce multiple benefits, including making judicial review quicker, easier, and more predictable, producing more accurate determinations of whether adap-

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in THE ENDANGERED SPECIES ACT AT THIRTY: RENEWING THE CONSERVATION PROMISE 195, 205 (Dale D. Goble et al. eds. 2006). For a discussion of the role that the ESA in general has played in producing improved information about endangered species, see Eric Biber, *Too Many Things to Do: How to Deal with the Dysfunctions of Multiple-Goal Agencies*, 33 HARV. ENVTL. L. REV. 1, 20–22, 55–57 (2009) [hereinafter *Too Many Things to Do*] (discussing how ESA consultation and litigation produced improved outcomes for and information about old-growth forest-dependent species in the Pacific Northwest); Eric Biber & Berry Brosi, *Officious Intermeddlers or Citizen Experts? Petitions and Public Production of Information in Environmental Law*, 58 UCLA L. REV. 321, 365–70 (2010) (discussing how citizen petitions in the ESA listing process can produce additional information); Randy Molina et al., *Protecting Rare, Old-growth, Forest-Associated Species Under the Survey and Manage Program Guidelines of the Northwest Forest Plan*, 20 CONSERVATION BIOLOGY 306 (2006) (describing a large-scale survey program for old-growth forest-dependent species that was initiated in response to ESA and other litigation over Forest Service management in the Pacific Northwest).

Another example of how outside review may produce additional information about difficult problems is the requirement that the Office of Management and Budget (OMB) review all major federal regulations to determine the costs and benefits of those regulations. That review process has produced more information about the costs of regulations. *See Too Many Things to Do*, *supra*, at 6.

tive management proposals and plans will truly be effective, and ensuring more accountability for agency decisions to pursue adaptive management.[34]

Those guidelines may have additional benefits as well: as with environmental review pursuant to NEPA in the 1970s, we are still exploring how adaptive management will be implemented in practice by management and regulatory agencies. The development of guidelines that flesh out how adaptive management will work for agencies in practice can be extremely helpful in articulating minimum standards for what is effective adaptive management, identifying and disseminating best practices, and ensuring rigorous application by individual agencies. Again, this is to some extent what the CEQ NEPA guidelines have done for the practice of environmental review within the federal government for all agencies.

A final role for an outside agency might be to intervene during implementation of an adaptive management program if the program is proving ineffective or if the implementing agency is not truly implementing the program. Craig and Ruhl rightfully attempt to shield agency implementation of adaptive management programs because of the need for flexibility and frequent changes in decision making—and their proposal does produce a few safety valves for the agency, or outside parties, to seek to terminate the program if it is ineffective or unimplemented.[35] However, a heavy reliance on the agency to terminate adaptive management programs that are failing might be problematic, given the potential attractiveness to the agency of the shelter the adaptive management rack receives from judicial review or public participation. Similarly, a heavy reliance on outside parties to terminate failing adaptive management programs is troublesome because outside intervention will rapidly increase costs and delays, fundamentally undermining the benefits of the adaptive management track. Outside parties also will have their own agendas—they may challenge adaptive management implementation not because of any problems with the adaptive management program per se, but because they wish to obstruct or alter the substance of the implementing agency's decision making (regardless of whether it is adaptive or not).

Craig and Ruhl's proposal attempts to strike this balance by setting the bar very high for a successful challenge to an agency's implementation of adaptive management.[36] But that bar may be so high that the possibility of outside intervention might be extremely small, too small to be effective.[37] Moreover, again the

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34. *See* Craig & Ruhl, *supra* note 1, at 34 (arguing that by providing concrete guidelines for what an adequate adaptive management program entails, legislation can make it easier for courts to identify "legitimate adaptive management from imposters").

35. *See id.* at 45, 56 (noting need for "escape valve" from adaptive management program due to changed circumstances, ineffectiveness, or failure to implement but also stating that any such escape valve should be "tightly controlled" to reduce the risk of undermining the flexibility needed for effective adaptive management).

36. *See id.* at 45 (noting need for a heavy burden of proof and strict standard for judicial action in response to requests to terminate adaptive management programs).

37. One way the bar is set high is requiring plaintiffs to provide "clear and convincing evidence" that an adaptive management program must be terminated. *Id.* at 80–82 § 5(D), (E).

Likewise, the standard for a plaintiff to demonstrate that the agency has failed to implement an adaptive management program or associated monitoring reports is quite high. *See id.* at 866 § 6(G)(7) (§ 5(D)–(E), allowing an agency to continue with an adaptive management program as long as it "has undertaken any other activity within the last two (2) years that indicates that it has not completely abandoned the adaptive management program"); *id.* at 86 §6(G)(4) (allowing agency to defeat a plaintiff's challenge if it shows that it has "released monitoring data to the public at least once in the last two (2) years"). By setting the bar

problem of expertise is present here—how is a court lacking in expertise supposed to determine whether an agency's adaptive management program is ineffective or unimplemented?[38]

Again, an outside agency provides the possibility of expertise, relative impartiality, and a gatekeeper role. The outside agency can bring expertise to determine whether an adaptive management program should be terminated or not; it brings impartiality (at least with respect to the dispute between the agency and any third-parties), since its discretion is not at stake in the determination of whether to terminate the program; and it can serve an important gatekeeper role, screening out frivolous complaints, or complaints that are based on criticisms of the underlying substance of the implementing agency's decision making, rather than on criticisms of whether the adaptive management program is working. Petitions for terminating or changing an ongoing adaptive management program might be first directed to this outside agency, which could review them and make an initial determination as to their validity; petitions could then be reviewed by the courts under the same extremely deferential standards of review (but with presumably less deference if the outside agency concluded that they petition had validity).[39]

What agency might serve in this supervisory role for adaptive management? A new agency could be created, with a focus on adaptive management. Creating a new agency would have the advantage of also jumpstarting the process of creating a formal home for adaptive management in the federal government—a place where the practice and theory of adaptive management can be honed, articulated, and spread throughout the federal government. On the other hand, creating a new agency increases the difficulty of getting any legislation enacted in the first place.[40]

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so high for showing a failure to comply, there is a risk that an agency will be able to provide "sham compliance" to avoid judicial intervention. For instance, would a monitoring report that simply provides a statement that no monitoring data has been collected suffice under this standard? Would an agency be able to demonstrate that a single, small implementation action is enough to foreclose judicial review—for instance, in a program to control non-native fish, would one staff member going out for five minutes one day to try and catch non-native fish with a net be adequate? I would amend the provisions in § 6(G) to clarify that more than trivial compliance with the mandates is required.

38. Craig and Ruhl's proposal allows for termination of the adaptive management program for "severe disruptions," but this category is "limited to events such as natural disasters, economic collapses, or acts of war or terrorism." *See id.* at 80–82. This definition appears overly narrow. For instance, it appears to exclude the introduction of a new non-native species that is highly invasive, and highly damaging to one of the resources covered by the adaptive management program. This would seem to be the kind of event that would also warrant revisiting the adaptive management program and that might not have been considered in the original program. I would revise the definition of "severe disruption" to "changes in the complex system being managed that were not identified or anticipated in the currently applicable adaptive management plan and that are likely to result in significant risks of major and irreversible harm to important components of the complex system being managed by the adaptive management program."

39. It seems likely that if this outside agency found the petition to have validity, the agency doing adaptive management implementation might take its own steps to correct the problems, foreseeing potentially troublesome litigation on the horizon. This might save all parties the time and cost of litigation.

40. Another issue related to the creation of a new agency is whether the mission of an adaptive-management specific agency would facilitate, or hinder, the production of helpful information for the evaluation of agency adaptive management plans. It is possible that an agency that only focuses on adaptive management and is staffed with adaptive management experts might see its role as being a "booster" of adaptive management, encouraging the proliferation of adaptive management throughout various agencies. Such an agency might provide overly optimistic assessments of the quality of proposed adaptive management plans. On the other hand, it is also possible that the staff of such a specialized agency might see its mission as trying to maximize the quality of adaptive management plans and encouraging excellence in

Another possibility is to make CEQ a possible locus for this supervisory role—at least initially. It has a significant amount of experience with environmental review processes, which raise many similar issues to adaptive management.[41] It has experience supervising compliance with environmental decision-making procedures by a wide range of agencies. A major weakness of relying on CEQ is that it has a small staff and has limited area-specific expertise (environmental).[42] It is possible that with a modest increase in budget, CEQ could add the necessary staff and expertise. Another concern with relying on CEQ is its location within the White House—it may be overly susceptible to political pressure, including budget cuts from a hostile President. Finally, CEQ only focuses on environmental issues while, as Craig and Ruhl note, adaptive management has the potential to help with a much broader range of government decisions.[43] However, many of the current issues and proposals for adaptive management are in the environmental and natural resources arena. Thus, in terms of the subject matter where the adaptive management track is most likely to be used initially, where the most difficulties of early applications are likely to arise and existing expertise is strongest, it might make sense to have CEQ take an initial, transitional role in setting up the framework for adaptive management in the federal government. As adaptive management expands into other areas of decision making (hopefully because it has been successful), then we might transition this role to another, perhaps new, agency.[44]

A third option for outside review would be to rely on ad hoc panels for peer review, instead of creating a new organization to provide review. Agencies that propose adaptive management programs would be required to obtain peer review of those programs. Peer reviewers might be assembled through the National Academy of Sciences, the U.S. Geological Survey, or through a specialized advisory board (as is done for a range of EPA decisions). Peer review might also be used for periodic review of existing adaptive management programs and claims that an existing program should be terminated. Special ad hoc panels might also be convened to draft overall guidelines and to revise those guidelines on a periodic basis. Ad hoc panels obviate the need for a significant investment to create a new agency to conduct reviews; they also avoid the risk that adding reviews to an existing agency (like CEQ) will be ineffective because the existing structure, mission, and priorities

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those plans. Certainly there are examples of adaptive management scholars who have been thoughtfully critical of the implementation of adaptive management and the implementation of ineffective adaptive management plans by agencies. *See, e.g.*, David A. Keith et al., *Uncertainty and Adaptive Management for Biodiversity Conservation*, 144 BIOLOGICAL CONSERVATION 1175, 1178 (2011) (discussing examples of problematic adaptive management implementation). Thus, if we create a separate agency, it is vital that those who setup the new agency encourage a culture of excellence in adaptive management implementation.

41. Specifically, environmental review processes require the collection, analysis, and presentation of information about the environment. Likewise, at the heart of adaptive management is a determination about whether more information is needed for decision making, how to obtain that information through management options and monitoring, and how to analyze it for future decision making.

42. CEQ in 2012 had a budget of about $3 million and a staff of 24. *See Fiscal Year 2013: Congressional Budget Submission*, EXECUTIVE OFF. OF THE PRESIDENT, CEQ-5–CEQ-6 (2013), *available at* http://www.whitehouse.gov/sites/default/files/docs/2013-eop-budget1.pdf.

43. Craig & Ruhl, *supra* note 1, at 8.

44. Accordingly, in the draft amendment language in my Appendix, I propose CEQ as the outside agency. If a legislature believes that a wide range of agencies will pursue adaptive management in the near future, it makes more sense to create a new agency that focuses primarily on adaptive management.

of that agency will not be amenable to focusing on adaptive management. However, the ad hoc nature of review panels has corresponding weaknesses—lack of institutional memory; the lack of an institution that can fight for funding in the appropriations arena; and the possibility of high variance in the nature and quality of reviews, given the lack of an institutional mandate, mission, or accountability.[45]

My proposal for an expert, outside reviewing agency is my most tentative suggestion.[46] My goal here is to facilitate consistent, high-quality adaptive management plans and programs, and to reduce the need for courts to attempt to resolve these disputes without expert, outside assessments. However, if guidelines are not helpful and the creation of a central expert body is not feasible—for instance, because the practice of adaptive management is so context-specific—then there is no helpful role to be played by an outside agency. My amendments are written so that any such outside agency (whether CEQ or a new agency) has the power—but no obligation—to draft guidelines. I have also written the amendments so that if the outside agency fails to provide, within a statutorily mandated time frame, an assessment of the adaptive management proposal or plan, or of citizen petitions to terminate an adaptive management program, then the court would proceed to review the relevant dispute as if no outside review had occurred (i.e., under the default standards that would apply in any case).

IV. ENSURING FIDELITY TO KEY REQUIREMENTS FOR SUCCESSFUL ADAPTIVE MANAGEMENT

Again, the purpose of giving agencies greater flexibility is to encourage them to do effective adaptive management—which in part requires ensuring that the regulatory or management decision making process in question is suitable for adaptive management. An important effort to ensure this suitability is incorporated in the first stage of Craig and Ruhl's proposed process—the proposal stage, where the agency must demonstrate that adaptive management is appropriate for the questions the agency seeks to answer.

There are some important requirements for successful adaptive management that I would add to the list of criteria for evaluating agency proposals in this first stage.[47] First, adaptive management is only appropriate when the risks of adverse outcomes from adaptive management are neither too large nor irreversible.[48] I would explicitly require a finding by the agency that the adaptive management pro-

45. Some of these downsides could be reduced if the peer review process was coordinated and supervised by a small staff at an existing agency. Another potential way to provide more institutional support for ad hoc review is the process by which the EPA, pursuant to section 309 of the Clean Air Act, provides reviews of environmental impact statements by other agencies. Agencies might be tasked with reviewing adaptive management programs within their area of special knowledge, either using their own staff or assembling ad hoc peer review panels.

46. In the draft language I focus on the option of creating a separate agency. However, one could adjust that draft language to accommodate the ad hoc panel approach.

47. Here I draw on the discussion in Craig and Ruhl's article, as well as my own work. *See* Craig & Ruhl, *supra* note 1, at 19–21; Biber, *supra* note 1, at 944–45, 947.

48. *See* Craig & Ruhl, *supra* note 1, at 19; Biber, *supra* note 1, at 947.

gram and plan would not impose significant risks of major, irreversible damage to environmental resources.[49]

Second, adaptive management is only useful if decision makers actually have some control over the system they are attempting to manage.[50] If the system is outside of human control, then the improved knowledge that adaptive management might provide isn't particularly useful, because we really can't do any management anyway. Even more fundamentally, if the system is outside human control, it's unlikely that there is any management that can be examined or investigated through adaptive management. For instance, if we plan to use simultaneous multiple management options to determine whether there are different resource outcomes across those options, we actually won't get much useful information if there is no connection between management and resource outcomes.[51] I would explicitly require a finding by the agency that the complex system being managed is susceptible to human control or management (or that we are unsure whether the complex system is susceptible to human control or management, and adaptive management will help us determine whether control or management is possible).

Third, adaptive management is, at heart, about producing useful information about how management or regulatory choices affect resource outcomes. If useful information will not be produced from the adaptive management program, it seems unlikely that the benefits of adaptive management will outweigh its costs.[52] I would explicitly require a finding by the agency that adaptive management may produce useful information that would improve future management of the complex system in the future.

V. PROPOSED AMENDMENTS:

In paragraph 2(D)(2), add after subparagraph (h):

"i. involves a system susceptible to human control or management, or alternatively involves a system for which it is uncertain whether that system is susceptible to human control or management and adaptive management may help resolve that uncertainty;

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49. There may well be some difficulty of fully doing this analysis in the first stage. Thus, I would make clear that an agency's finding at this initial stage can be made conditional on developing in the adaptive management plan adequate triggers or other plan components to adequately minimize risk to system components. I also accordingly would add this risk factor to the standards used to evaluate the agency's adaptive management plan in the second stage, including development of the monitoring plan and indicators. I believe these changes are consistent with the requirements already proposed by Craig and Ruhl that adaptive management plans must identify "potential stressors and perturbations to the managed system." Craig & Ruhl, *supra* note 1, at 52.

50. *Id.* at 19.

51. Of course, we may not know yet that there is no connection between management options and resource outcomes. In that case, adaptive management would be quite useful to demonstrate the lack of controllability. However, if we know that this is the case already, adaptive management is not helpful.

52. *See* Craig & Ruhl, *supra* note 1, at 19–20 (rightfully emphasizing that if a system is not dynamic enough, there is no informational gain to be had from adaptive management, since future predictions will be generally accurate); Biber, *supra* note 1, at 944–45 (another possible reason that we may not get useful information from an adaptive management system is that systems may be too dynamic to allow for useful learning to occur).

It is also important that the specific measures proposed in the adaptive management plan will reduce uncertainty. Thus, I would add this requirement to the standards for approving adaptive management plans as well.

j. does not involve a system whose important components would be subject to a significant risk of major, irreversible damage from adaptive management. (In making this determination the agency may rely on the use of monitoring, indicators, and management measures in any future adaptive management plan.);

k. involves a system for which adaptive management may provide a substantial reduction in uncertainty about the functioning of the system."

In section 2, add after subsection (E):

"(F) During the public comment period for the rulemaking pursuant to 5 U.S.C. § 553 [state equivalent statute], the Council on Environmental Quality [state equivalent] may review the agency's findings with respect to paragraph (D)(2). The Council may, within the timeframe for public comment, provide an assessment of whether the agency's findings are consistent with the requirements of paragraph (D)(2). Any such assessment shall contain specific findings about how and why the agency's findings are consistent with the requirements of paragraph (D)(2). The Council may draw on regulations promulgated pursuant to section 7 of this Act in its assessment, including regulations promulgated by the agency itself. Any assessment by the Council shall be made public concurrently with the promulgation of the final rule by the agency. A court conducting judicial review pursuant to § 6(A) shall give substantial weight to the Council's assessment in determining whether the agency's findings meet the requirements of this Act. The Council may provide feedback and informal consultation to the agency prior to the public comment period. A failure by the Council to provide an assessment within the public comment period shall not be deemed by a reviewing court to be an assessment that the findings are or are not consistent with the requirements of paragraph (D)(2)."

In subsection 3(A), add after paragraph (2):

"(3) During the public comment period for the rulemaking pursuant to 5 U.S.C. § 553 [state equivalent statute], the Council on Environmental Quality [state equivalent] may review the proposed initial adaptive management plan. The Council may, within the timeframe for public comment, provide an assessment of whether the plan meets the requirements of subsection (B) and this Act. Any such assessment shall contain specific findings about how and why the plan meets the requirements of subsection (B) and this Act. It shall also specifically identify the requirements of subsection (B) that the plan satisfies and the requirements the plan does not satisfy. The Council may draw on regulations promulgated pursuant to section 7 of this Act in its assessment, including regulations promulgated by the agency itself. Any assessment by the Council shall be made public concurrently with the promulgation of the final rule by the agency. A court conducting judicial review pursuant to § 6(B) of the initial adaptive management plan shall give substantial weight to the Council's assessment in determining whether the plan meets the requirements of subsection (B) and this Act. The Council may provide feedback and informal consultation to the agency on any adaptive management plan being developed prior to the public comment period. A failure by the Council to provide an assessment within the public comment period shall not be deemed by a reviewing court to be an assessment that the plan meets or does not meet the requirements of subsection (B) or this Act."

In paragraph 3(B)(1), insert after subparagraph (c), and renumber accordingly:

"d. the important components of the system that it is managing, and any significant risks of major, irreversible damage to those components."

In subparagraph 3(B)(1)(e) (as renumbered), amend to read:

"e. the relationships among (a), (b), (c), and (d)."

In paragraph 3(B)(1), insert after renumbered subparagraph f:

"g. the uncertainty that the adaptive management plan seeks to reduce."

In paragraph 3(B)(3), amend subparagraph (a) to read:

"the system indicators that will or could reveal the existing and changing relationships among the agency's management goals; threats, stressors, and perturbations of the system; significant risks of major, irreversible damage to important system components; and the agency's proposed management measures;"

In paragraph 3(B)(3), amend subparagraph (g) to read:

"changes in indicator status that would indicate a negative change in the system being managed (i.e., a change that retards the ultimate or immediate management goals or that indicates a significant risk of major, irreversible damage to important system components) and at least one means of determining whether such changes are caused by management measures that the agency has implemented."

In section 3(B)(5), add after subparagraph (e):

"f. how the management measures will prevent any significant risks of major, irreversible damage to important system components; and

g. how the management measures may reduce uncertainty about the system."

Amend paragraph 3(C)(2) to read:

"(2) Notice of Termination. The agency shall publish notice of its intention to terminate the implementation of its initial adaptive management plan in the Federal Register [state equivalent]. Unless judicial review of the agency's decision is sought, the agency shall, at least thirty-one (31) days but not more than ninety (90) days after publication of the Federal Register termination notice, terminate implementation of the initial adaptive management plan. The agency may choose to adopt a new adaptive management plan pursuant to § 4 of this Act. Judicial review of the agency's decision to terminate shall be in accordance with § 6."

Delete subsection 3(C)(4).

Amend subsection 4(A) to read:

"(A)(1) After completion or termination of an initial or subsequent adaptive management plan, an agency may choose to adopt a subsequent adaptive management plan, unless:

Congress [the legislature] has expressly and specifically required that the agency terminate the adaptive management track for the project, management action, or category of projects and management actions at issue; or

Congress [the legislature] required the agency to pursue the adaptive management track and the system has achieved the system status, indicator statuses, or management goals that Congress [the legislature] specified must be achieved in order for the adaptive management track to be terminated.

At least every six years after the adoption of an initial adaptive management plan, the agency shall make the findings required by § 2(D)(2).

At least every six years after the adoption of an initial adaptive management plan, the agency shall make a finding that any adoption of a subsequent adaptive management plan shall be consistent with any relevant statutes, regulations, or ex-

ecutive orders otherwise precluded from consideration by paragraph (C)(4) of this section.

Findings pursuant to paragraphs (2) and (3) of this subsection shall be reviewable by a court in accordance with § 6 of this Act as if the agency had made an initial decision to place a project on the adaptive management track and as if the agency had adopted an initial adaptive management plan. Findings pursuant to paragraphs (2) and (3) of this subsection shall be made using the notice-and-comment ("informal") rulemaking procedures of 5 U.S.C. § 553 [state equivalent statute], except that the exceptions noted in that provision shall not apply to any decision made under this section. Findings pursuant to paragraphs (2) and (3) of this subsection may be made concurrently with an agency's adoption of a subsequent adaptive management plan and a single rulemaking may be made for the findings and adoption of a subsequent adaptive management plan. If the findings pursuant to paragraphs (2) and (3) of this subsection are negative, the agency shall either remove the project, management action, or category of projects or management actions from the adaptive management track pursuant to the provisions of paragraph (5) or shall proceed to develop a revised subsequent adaptive management plan that would permit the agency to make positive findings pursuant to paragraphs (2) and (3) of this subsection. Any such revised subsequent adaptive management plan must be accompanied by the appropriate findings pursuant to paragraphs (2) and (3) of this subsection.

An agency's decision not to adopt a subsequent adaptive management plan after completion or termination of an initial or subsequent adaptive management plan, and therefore to remove a project, management action, or category of projects or management actions from the adaptive management track shall be reviewable by a court in accordance with § 6 of this Act. Any such decision shall be made through a notice-and-comment ("informal") rulemaking pursuant to 5 U.S.C. § 553 [state statutory equivalent], except that the exceptions noted in that provision shall not apply to any decision made under this section. Any such decision may be made concurrent with the appropriate findings under paragraphs (2) and (3) of this subsection and a single rulemaking may be made for those findings and the decision to remove a project, management action, or category of projects or management actions from the adaptive management track."

In subsection 4(B), add after paragraph (2), and renumber the subsequent paragraphs accordingly:

"(3) During the public comment period for the rulemaking pursuant to 5 U.S.C. § 553 [state equivalent statute], the Council on Environmental Quality [state equivalent] may review the proposed subsequent adaptive management plan. The Council may, within the timeframe for public comment, provide an assessment of whether the plan meets the requirements of paragraph (4) of this subsection and this Act. Any such assessment shall contain specific findings about how and why the plan meets the requirements of paragraph (4) of this subsection and this Act. It shall also specifically identify the requirements of paragraph (4) of this subsection that the plan satisfies and the requirements the plan does not satisfy. The Council may draw on regulations promulgated pursuant to section 7 of this Act in its assessment, including regulations promulgated by the agency itself. Any assessment by the Council shall be made public concurrently with the promulgation of the final rule by the agency. A court conducting judicial review pursuant to § 6(B) of the subse-

quent adaptive management plan shall give substantial weight to the Council's assessment in determining whether the plan meets the requirements of paragraph (4) of this subsection and this Act. The Council may provide feedback and informal consultation to the agency on any adaptive management plan being developed prior to the public comment period. A failure by the Council to provide an assessment within the public comment period shall not be deemed by a reviewing court to be an assessment that the plan meets or does not meet the requirements of paragraph (4) of this subsection or this Act."

Amend paragraph 4(C)(2) to read:

"(2) Notice of Termination. The agency shall publish notice of its intention to terminate the implementation of its current adaptive management plan in the Federal Register [state equivalent]. Unless judicial review of the agency's decision is sought, the agency shall, at least thirty-one (31) days but not more than ninety (90) days after publication of the Federal Register termination notice, terminate implementation of the adaptive management plan. The agency may choose to adopt a new adaptive management plan pursuant to § 4 of this Act. Judicial review of the agency's decision to terminate shall be in accordance with § 6."

Amend paragraph (4)(C)(4) to begin "Except as provided in paragraph (A)(1)(3) of this section . . ."

Amend subsection 5(B) to read:

"(B) If the implementing agency concludes on the basis of its ongoing monitoring data that the system has achieved the abort indicators specified in the adaptive management plan, the agency shall, unless the agency can attribute those statuses to the occurrence of an unexpected and temporary perturbation to the system whose effects are not expected to be permanent or long lasting, immediately publish notice of its intention to terminate the implementation of that plan in the Federal Register [state equivalent]. Unless judicial review of the agency's decision is sought, the agency shall, at least thirty-one (31) days but not more than ninety (90) days after publication of the Federal Register termination notice, terminate implementation of the adaptive management plan. The agency may choose to adopt a new adaptive management plan pursuant to § 4 of this Act. Judicial review of the agency's decision to terminate shall be in accordance with § 6."

Delete from subsection 5(C) "by clear and convincing evidence."

Amend paragraph 5(C)(1) to read:

"(1) the system has been subjected to a 'severe disruption,' defined as changes in the complex system being managed that were not identified or anticipated in the currently applicable adaptive management plan and that are likely to result in significant risks of major and irreversible harm to important components of the complex system being managed by the adaptive management program."

Amend subsection 5(D) to read:

"(D) Any person may file a petition for mandamus in the U.S. District Court for the district in which the agency project or management action is occurring [state court], or in any U.S. District Court for a district in which the agency may be found [alternative state court]. Prior to filing the petition, the petitioner must give ninety (90) days' notice of the petition to the agency and the Council on Environmental Quality [state equivalent], including a full copy of the allegations in the petition and supporting documentation that the criteria in paragraphs (1), (2) and (4) have been met. The Council may review the petition and provide, at the end of ninety

(90) days, an assessment of whether the petition demonstrates, by clear and convincing evidence, that the criteria in paragraphs (1), (2), and (4) have been met. The reviewing court shall give substantial weight to the assessment by the Council in reviewing the petition for mandamus. The Council's failure to provide an assessment shall not be deemed by a reviewing court to be a finding that a petition does or does not meet the criteria in paragraphs (1), (2) and (4). The reviewing court shall grant the petition if the petitioner can prove by clear and convincing evidence that:"

Delete paragraph 5(D)(4). Renumber the remaining paragraphs in this subsection accordingly.

Amend subsection 5(E) to read:

"(E) Any person may file a petition for mandamus in the U.S. District Court for the district in which the agency project or management action is occurring [state court], or in any U.S. District Court for a district in which the agency may be found [alternative state court]. Prior to filing the petition, the petitioner must give ninety (90) days' notice of the petition to the agency and the Council on Environmental Quality [state equivalent], including a full copy of the allegations in the petition and supporting documentation that the criteria in paragraphs (1), (2), (3) and (5) have been met. The Council may review the petition and provide, at the end of ninety (90) days, an assessment of whether the petition demonstrates, by clear and convincing evidence, that the criteria in paragraphs (1), (2), (3), and (5) have been met. The reviewing court shall give substantial weight to the assessment by the Council in reviewing the petition for mandamus. The Council's failure to provide an assessment shall not be deemed by a reviewing court to be a finding that a petition does or does not meet the criteria in paragraphs (1), (2), (3), and (5). The reviewing court shall grant the petition if the petitioner can prove by clear and convincing evidence that:"

Delete paragraph 5(E)(5). Renumber the remaining paragraphs in this subsection accordingly.

Amend paragraph 5(E)(1) to read:

"(1) the system has been subjected to a severe disruption, defined as changes in the complex system being managed that were not identified or anticipated in the currently applicable adaptive management plan and that are likely to result in significant risks of major and irreversible harm to important components of the complex system being managed by the adaptive management program."

In subsection 6(B) add after paragraph (2), and renumber subsequent paragraphs accordingly:

"(3) in excess of statutory jurisdiction, authority, or limitations, or short of statutory right, unless application of the relevant statute is otherwise precluded by this Act;"

Amend subsection 6(E) to read:

"(E) Any person may challenge an agency's decision to terminate the implementation of an adaptive management plan pursuant to §§ 3(C)(1), 4(C)(1), 5(B), or 5(C) of this Act within thirty (30) days of the agency's publication in the Federal Register [state equivalent] of its decision to terminate in the U.S. District Court for the district in which the agency project or management action is occurring [state court] or in any U.S. District Court for a district in which the agency may be found [alternative state court]. The court shall reverse the agency's decision to terminate

and shall reinstate the previously operative adaptive management plan if it finds that the agency's decision to terminate does not satisfy the requirements of §§ 3(C)(1), 4(C)(1), 5(B), or 5(C) or is otherwise found to meet the criteria in paragraphs (1), (2), (3), (4), and (5) of subsection (B)."

Add at the end of subsection 6(F) the following language:

"A failure to comply with monitoring or reporting requirements under this subsection includes trivial compliance by the agency."

Add at the end of subsection 6(G) the following language:

"A failure to implement an adaptive management plan under this subsection includes trivial compliance by the agency with monitoring or reporting requirements, or trivial implementation by the agency of the adaptive management plan."

Add after section 6:

"section 7: Council on Environmental Quality [state equivalent] Regulations

(A) The Council on Environmental Quality [state equivalent] may promulgate regulations to implement this Act. Those regulations may include:

Guidelines to assist agencies with the determination under § 2(D) as to whether projects, management actions, or categories of projects or management actions are suitable for the adaptive management track. Such guidelines may be used by courts in judicial review of rules promulgated under § 2(E) and the findings under § 4(A)(2) of this Act.

Guidelines to assist agencies with the development of adaptive management plans pursuant to § 3 and § 4 of this Act. Such guidelines may be used by courts in judicial review of rules promulgated under § 3(A)(1) and § 4(B)(1) of this Act and findings under § 4(A)(3) of this Act.

(B) The regulations promulgated pursuant to subsection (A) may also include requirements that agencies develop their own guidelines. Such agency-specific guidelines may also be used by courts to review relevant determinations under this Act."