It's Time to Learn to Live With Adaptive Management (Because We Don't Have a Choice)

by J.B. Ruhl

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On May 12, 2009, President Barak Obama issued Executive Order No. 13508 to address protection and restoration of the Chesapeake Bay.[1] The Bay is in bad shape and getting worse. Something more needs to be done, and the order proclaims "a renewed commitment" on the part of the federal government toward that end. Bravo! But how will the federal government approach the task? The order makes clear that the future of the Bay depends on two themes of governance: ecosystem management to establish the substantive context; and adaptive management to design the method of implementation.

There is no getting around the practice of ecosystem management for such an undertaking. Not a cubic millimeter of the earth's biosphere is untouched by the human species.[2] Like it or not, this means that the entire enterprise of environmental law is an exercise in ecosystem management. Here, I use ecosystem management in its broadest sense. Any effort of environmental law to regulate human behavior toward the environment has at least as part of its direct or indirect motivation the goal of changing ecological conditions and managing that change, usually, we like to think, for the better. What is "better," of course, and how to make it so are normative questions we hammer out through political, judicial, administrative, and other legal institutions. But any way you cut it, this is what environmental law is about: changing something about some condition in the biosphere. Even "protecting" or "preserving" what we identify as "natural" or "native" about some spot within the biosphere fits in this realm—it is all ecosystem management. Fittingly, therefore, President Obama's Chesapeake Bay order includes provisions directing federal agencies to provide "decision support for ecosystem management."

So far, so good. From there, however, the order refers repeatedly to "adaptive management" as the methodology for putting its substantive ecosystem management goals into action. And those have become fighting words to many environmental and industry interests alike. To put it mildly, it is adaptive management in particular, not ecosystem management in general, that gives them the jitters.

But first things first—what *is* adaptive management? You won't get a clue from President Obama's order. It directs a host of federal agencies to develop a strategy "for the implementation of adaptive management principles," to make decisions for management of the Bay that "reflect adaptive management principles," and to use "adaptive management to plan, monitor, evaluate, and adjust environmental management actions." But nowhere does the order provide more detail about what "adaptive management principles" entail.

Could it be that adaptive management is now such standard operating procedure in environmental law that the president need merely recite the magic words and federal agencies know what is meant and what to do without further explanation? Yes and no. The theory of adaptive management—what is meant by the words—is quite well established. It is the practice of adaptive management—what to do to make those words come true—that has been far more elusive to get on the page.

Scientists have become adept at defining what adaptive management means. Recently, for example, the National Research Council (NRC) branch of the National Academy of Sciences convened a committee of scientists to explore how adaptive management might be used to improve resource agency decisionmaking for ecosystem management in the Klamath River Basin, which straddles southern Oregon and northern California.[3] The committee outlined eight steps of adaptive management: (1) definition of the problem; (2) determination of goals and objectives for management of ecosystems; (3) determination of the ecosystem baseline; (4) development of conceptual models; (5) selection of future restoration actions; (6) implementation and management actions; (7) monitoring and ecosystem response; and (8) evaluation of restoration efforts and propos-

1. *See* 74 Fed. Reg. 23099 (May 12, 2009).
2. *See* Symposium, *Human Dominated Ecosystems*, 277 Science 485 (1997).
3. *See* Comm. on Endangered and Threatened Fishes in the Klamath River Basin, Bd. on Envtl. Studies and Toxicology, Div. on Earth & Life Studies, National Research Council, *Endangered and Threatened Fishes in the Klamath River Basin: Causes of Decline and Strategies for Recovery* (2004).

als for remedial actions.[4] The committee's description of the last stage provides some flavor of how adaptive management differs from conventional natural resources management:

> After implementation of specific restoration activities and procedures, the status of the ecosystem is regularly and systematically reassessed and described. Comparison of the new state with the baseline state is a measure of progress toward objectives. The evaluation process feeds directly into adaptive management by informing the implementation team and leading to testing of management hypotheses, new simulations, and proposals for adjustments in management experiments or development of wholly new experiments or management strategies.[5]

It is no wonder the ability to engage in this sort of process appeals to scientists and others responsible for natural resources management in the field. Ultimately, however, we need a legal definition of adaptive management to ensure that what happens in the field is consistent with the applicable legal authority for decisionmaking over public and private resources. And one might have thought that lawyers, once they sunk their teeth into adaptive management, would have defined it with characteristic lawyerly attention to detail. They might have taken the NRC's eight-stage description and added meat to each step, defined all the subsidiary terms, and cross-referenced subsections to subsections. One would have been wrong to think so. Rather, if anything, in most legal contexts, descriptions of adaptive management have become policy platitudes.

For example, the U.S. Department of the Interior, in its *Adaptive Management Technical Guidance*, defines adaptive management as

> a decision process that promotes flexible decision making that can be adjusted in the face of uncertainties as outcomes from management actions and other events become better understood. Careful monitoring of these outcomes both advances scientific understanding and helps adjust policies or operations as part of an iterative learning process . . . It is not a "trial and error" process, but rather emphasizes learning while doing.[6]

Federal agency regulations and policies are littered with similar tributes to "learning while doing,"[7] which sounds no more adaptive than contingency planning on steroids. For the most part, however, that is where the regulatory text of adaptive management ends. Notably absent are the management simulations and experiments included in the NRC's active version of adaptive management. Is this because agencies don't know how to put the theory of active adaptive management into practice? No. It is because as a practical matter they are not truly expected or allowed to. It is because the administrative state has become acculturated to high-stakes litigation that depends on massive inputs of public participation anytime an agency thinks of making a move, probing and interminable judicial review after the agency takes a position, domineering congressional oversight, and endless political maneuvering along the way. Agencies know how to practice truly active, experimental adaptive management, but why in this hostile environment would any sane agency choose to do so?

Adaptive management sends chills to the bones of the environmental and industry interests entrenched in the warfare that environmental law has become. Of course, the real fear is that the ground interest groups can gain and lock in through the high stakes "front-end" approach to decisionmaking will no longer be much ground at all, nor as locked in if agencies can move in response to changed conditions and new information more iteratively and fluidly. But that is not what the concerned parties say. Rather, here is just a partial list of what they claim is wrong with adaptive management:

- Agencies will defer the "tough" decisions for later in promises of adaptive management, but then never make them.
- Agencies will truncate public participation and ignore public input.
- Agencies will enjoy and exercise unbounded discretion beyond the reach of judicial review.
- Agencies will collaborate in loose networks so as to hide accountability.
- Agencies will parse decisions into smaller units, making it difficult to identify which decision to challenge in court.
- Agencies will not rely on sound science and robust data.
- Agencies will operate as central planning science elites.

These are all legitimate concerns, but they are not new—much of the administrative state has been built around keeping them in check. Raise your hand if you think it is working like a charm.

The problem is that adaptive management is not just an option anymore; it has become a necessity. We have been fooling ourselves into believing otherwise in the face of thorny problems such as invasive species, nonpoint source pollution, habitat loss, and the list goes on. Yet, believe what we like about the potency of environmental assessment, notice and comment, probing judicial review, and the strong arm of the U.S. Congress, this business-as-usual approach has gained little if any ground on these familiar nuisances. And climate change is a different ball game altogether. There

4. *See id.* at 332-35.
5. *Id.* at 335.
6. U.S. Dep't of the Interior, *Adaptive Management Technical Guidance* vii (2007).
7. I review them in J.B. Ruhl, *Adaptive Management for Natural Resources—Inevitable, Impossible, or Both?*, 54 Rocky Mtn. Mineral Law Institute Annual Proceedings 11-1 (2008).

is no more deluding ourselves into thinking federal agencies can propose a "big decision" at the front end of climate change (which is already in the past), let a myriad of interests take potshots at it, run it through the judicial gristmill, gear up what survives, and not look back for fear of having to do it all over again if the world changes. They can't do that because they can't even profess to know what's going to happen in the first place. When it comes to the effects of climate change on the ground, there are no robust computer models, no well-documented analogs, no playbooks that tell us if we do X then Y happens. As much as uncertainty defines the game of environmental policy today, two decades from now, these will be looked back on as the good old days.

We are at a fork in the road. In one direction we continue down the path of folly. Presidents, Congress, governors, and state houses continue to command agencies to practice adaptive management, yet keep the agencies' hands tied in the ropes of conventional administrative process. Environmental impact statements pile up, records of decision proclaim all is solved, litigation abounds, and little ground is gained on the problem. But we all have our say before the agency and our day in court. In the other direction, we sober up to the reality of massive, complex problems such as climate change and build a new structure of administrative law to activate the theory of adaptive management. It will be a structure in which interest groups participate rather than maneuver for litigation, in which agencies can make mistakes and not be crucified, and in which courts act as referees not police. It will also exhibit the transparency and accountability rightfully demanded of unelected institutions in a democratic society.

Easier said than done, I concede—maybe even a pipe dream—and I don't profess to having drawn the blueprint. But I'd rather face the reality that what we've got isn't working, roll up my sleeves, and keep working on a new way of making environmental policy than delude myself into thinking that all we need to bring climate change to its knees is another strong dose of the 1970s.