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Point-Counterpoint: Practitioner Adaptive Management vs. External Scientific Assessment – A No-Holds Barred Debate

For External Scientific Assessment

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External Evaluation is Critical for Increasing Conservation Effectiveness.
I venture that every academic in conservation biology and or wildlife management, at one time, or many times, asks the question: Why don't managers listen to me as they make their management decisions? My information is so much more current and explicit than what they are using in decision making. It has happened to me repeatedly. In spite of this lack of success, I am taking the position today that: **the only way to improve our conservation practices and outcomes is through full-blown, external review processes.**

To argue this position, I have had to characterize, for myself, why managers and administrators don't listen to my outsider's generous offering of information that could so obviously make their insiders' work so much more effective. To argue this position, I have had to contrast what I perceive the mindset, skill sets, and most important, the operational domain of the manager/conservation practitioner vs. the outside academic to be. To briefly summarize in six examples:

Example One: There is an inevitable tension between the outsider ivory tower academic vs. insider hands-on worker bee conservation practitioner.
From the point of view of the insider practitioner, the outside review process may be perceived as a hapless, ivory tower, theoretically inclined, academic exercise where the results have no particular consequence beyond suggesting that the shortcomings are glaring and changes must be made. The pay back for the academic is simply measured in the number of peer-reviewed papers produced by that academic and his or hers squad of graduate students, most probably resourced from what would have been the practitioners' budget. The pay back for the inside practitioner is the resulting reports that must be generated to counter the outside reviewers comments rather than spending the same resources in just getting on with the job.

BUT conservation project evaluation can strongly benefit from the same processes that have advanced the science enterprise: *independent objectivity and transparency that the outside peer review brings to the evaluation.*

Example Two: Lets call it the tension between the open and closed operating domains of the insider and the outsider evaluator.
I argue that the "insiders" operating domain and the "outsiders" operating domain are as different as night and day or as an open or closed door. The insider's labor is constrained by, I would go so far as say trapped by, the intellectual and legal framework set by the enabling legislation and subsequent operational rules that guide the insider practitioners' efforts.

I liken this to the concept of the typological species -- a species as a constant type – and as contrasted to the biological species concept. I believe there is an analogy here with how managers think about their management charge be it a wilderness area or national park in the US or a tiger reserve in India. The conditions that managers must meet in managing a wilderness area, national park, or tiger reserve, for example, are set through the enabling legislation and subsequent rule setting to implement the legislation. That is pretty much it: managers think of national parks, wilderness areas, or tiger reserves as typological land management entities in a land management taxonomy, that is constant, in form and structure, much like an early-day taxonomist might think of individual species as constant types.

BUT: Typological species thinking is an out-dated notion of how nature works. For more than 100 years naturalists have realized that species of organisms are not fixed, unchanging types or classes but are populations or groups of populations that adapt to environmental changes through evolution by natural selection. I argue that insider evaluators are constrained by their typological thinking, and are not, and perhaps even can not, effectively examine and adapt their work to changing conditions that their management areas face in a changing world. Outsider evaluators, on the other hand, are more attuned to think in terms of changing systems, such as the biological species concept, and thus, can more effectively bring an adaptive management perspective to conservation performance evaluation.

Example Three: Insider top-down management vs. outsider bottom-up evaluation leads to tension.
On the surface this might seem reversed, but let me explain.
I suggest there is a significant tension between the conservation managers and administrators are essentially trained and operate as engineers, with a penchant for top-down imposed exactness in contrast to conservation scientists with their love of bottom-up, messy data that are just full of variations. Manager-engineers don't have time for the conservation scientist's bottom-up, messy variation. Inside managers see academic conservation scientists trying to expand their influence on the development of conservation practice and replace the top-down, engineering approach that has been the practical basis of management decision-making from the founding of our management agencies.

BUT: Variation and the forces of change are the very stuff that conservation scientists relish: never static; always questioning; trying one more time for clarification. Scientists, particularly scientists who work at the scale of populations and landscapes, relish the

messiness of variation and seek to learn from the extent and nature of variation. Scientists cherish outliers as learning paths into the systems they study; engineers find outliers bothersome. I argue that outsider evaluators, those who understand and use variation as a way of knowing, can most effectively evaluate and provide adaptive learning recommendations to improve conservation outcomes.

Example Four: I call this the tension between the "balance of nature" view of the world as seen by insiders and the "forces of change" view of nature seen by outsiders evaluators.

To expand on examples two and three: inside evaluators tend to see their management units and the ecological process they manage as containable and distinct and independent from each other and the surrounding environmental and social-political template. I would generally say that most conservation units are managed from the perspective of a "balance of nature" paradigm where it is postulated there exists a great balance of nature, that nature left alone will inevitably achieve a permanent form and a constant structure. Or that an individual resource could be scientifically managed in isolation to provide a predicted and sustainable off take.

BUT: I argue that insider evaluators are limited in their effectiveness because the paradigm under which they labor was established prior to emerging understanding of scale effects, historical effects, ecological resiliency domains, forces of change, and other environmental complexities. In his book *Discordant Harmonies* (1990) Daniel Botkin put it this way "…our ideas of static beauty and perfection in biological nature were replaced with a new appreciation of the dynamic and process in ecological system… Ecologists now speak of change as natural and discuss life and ecological processes from a planetary perspective because our advancement in science methodology and instrumentation allow us to track ecological change even in real or near real time."

I argue that outside evaluators are better equipped to bring the larger landscape, even planetary perspective in their evaluations to increase conservation effectiveness.

Example Five: Monitoring for what? Surveillance or targeted monitoring.

You can not manage what you can not measure is an old engineering and business saying. Conservations talk about the utility of environmental monitoring which can be though of as a time series of measurements of physical chemical and/or biological variables. For example, surveillance monitoring of the status and trends of populations and communities has been a hallmark of good stewardship and enlightened conservation management because it is said to provide some information about the biological system of concern. Many times however, monitoring data are gathered with the vague hope that somehow they will prove useful for conservation. It is usually done by insiders, usually informally, more rarely formally. Insiders argue this is sufficient to detect adverse populations and community changes that can trigger active conservation immediately or initiate studies to understand the cause of the changes followed by active conservation initiatives.

BUT: Surveillance monitoring is frequently "the more study needed" delaying tactic conservationists often encounter rather than engaging in an informed decision-making

process. I would argue (with thanks to J. Nichols and B. Williams) that surveillance monitoring is a very inefficient use of conservation funds and even a form of political and intellectual displacement behavior. Environmental monitoring is a time series of measurements of physical chemical and/or biological variables **that must be designed to answer questions about environmental change to have any utility.** I argue that while insiders can move from surveillance to targeted monitoring approaches that discriminate among competing hypotheses, these targeted monitoring programs are better designed by outside evaluators for the reasons argued in Example One above: objectivity and transparency subject to peer review.

To sum up: I believe in and champion the dedicated work of the on-the-ground conservation practitioners. I argue however for the purposes here those insider practitioners can be counted on to strive to maintain the status quo. I posit here that **"improvements" in conservation practice can be more fully achieved when outside evaluators are fully engaged in the process.** I use as my example to support this view all the reports from the Board on Environmental Studies and Toxicology, National Research Council.