

Russell B. Doughty
David Perry

Week 4 Supplemental Paper:
A Framework for National Adaptive Resource Management

“Adaptive governance is a form of governance that incorporates formal institutions, informal groups/networks and individuals at multiple scales for purposes of collaborative environmental management (Folke et al., 2005).”

-Allen, et. al, 2011

Currently, the responsibility to properly and efficiently manage forest resources rests upon several governmental agencies, such as the NPS, BLM and Forest Service. Outside of public lands (and even inside), the effort to properly manage natural resources has been shameful. Without proper market incentives, or regulatory enforcement, private land owners will have no interest in managing their property in a sustainable fashion, nor undertake ecosystem restoration.

In addition to the legal problems associated with implementing adaptive management addressed by Allen, et al., (2011 p1343) and Ruhl and Fischman (2010), the problem with adaptive management is that it has been caged within the boundaries of public lands. Overarching goals such as ecosystem restoration, endangered species rehabilitation, hydrodynamic analysis, and invasive species removal expand far beyond the fence lines of our national lands (I would further argue that these goals are dependent on private investment). However, it seems our agencies have shouldered most of the burden for addressing the ecosystem, resource and climatic problems the Earth now faces. In their

current state, our agencies are in no way “matched to the appropriate scale”, which “is a significant barrier for sound environmental management” (Allen 1343).¹

Because adaptive management is most useful in high uncertainty situations (Allen 1344), it would be best utilized in situations where an entire ecosystem is trying to be restored, where top-down decisions could have profound affects for the structure and function of restored landscapes (Perry 157). For instance, imagine trying to convert 300 acres of cattle pasture into the old-growth pine forest it once held. The challenge would prove to be much more complex and uncertain than if we were simply trying to provide habitat for a pair of red-cockaded woodpeckers within 300 acres of forest. To adequately convert 300 acres of pasture into a “native” ecosystem, the management plan must remain flexible enough to adapt to unforeseen disturbances and outcomes over a period of time.

In essence, a market for the private restoration of ecosystem services must be created to adequately address the scope of the environmental problems we now face and achieve goals set by our natural resource agencies. Exactly how this market is created and how it functions is beyond the scope of this inquiry, but let us consider how adaptive management may function if these markets were created.

¹ The most profound example of this mismatch might be Scotch Broom. Despite the government’s relentless fight with the noxious weed, it now dominates not only many coastal towns and rural landscapes, but acres of forest understory and meadows. In my personal experience, pulling scotch broom is a complete waste of time and money. For each project area, I was provided a map by the Forest Service outlining the extent of the scotch broom invasion. In each instance, I left my crew to venture outside of project boundaries to survey areas that had not been visually inspected. I found hundreds of acres, complete hillsides in which scotch broom had taken the understory for itself... the remote sensing of which must not be possible due to crown density. I had the same exact experience with Houndstongue, and provided the ecologist with approximately a 1 sq. MILE plot of previously undiscovered Houndtongue. To be honest, it seems the FS is absolutely clueless as to the extent of invasive plant species.

Figure 1 reflects a hierarchical system of agents and the adaptive method of management at each level. At the top, we have a national management plan guiding subsequent management plans underneath, those created by the NPS, BLM and Forest Service. The adaptive management plan for each agency is an amalgamation of locally adaptive management systems, which are responsive and sensitive to localized characteristics.

In today's age, where would a landowner begin if they were to spontaneously decide to restore their agricultural lands to native habitat? Using Figure 1, it seems most logical to link private landowners with their closest land management office. For example, linking adaptive private landowner management practices into the feedback loop of a larger scale land management system can help reinforce the success of both small and large scale resource management. Back to today's age; how would the Forest Service respond to the land owner's desire to properly restore native ecosystems and habitat? Do they even have the capacity to do so?

With the exception of a "leadership with vision" and "funds for adaptive management", Figure 1 demonstrates all of the attributes of an adaptive governance system, as described by Allen (1343):

1. Legislation favoring adaptive management
2. monitoring of ecological system (at all levels)
3. information flow and cross-scale linkages

4. a variety of sources of knowledge
5. venue for collaboration

In short, the US government can take a much more proactive role in ecosystem restoration. By providing private landowners an economic incentive to restore native ecosystems and establishing a platform for joint co-adaptive management through existing resource management agencies, the United States can pioneer a system of ecosystem restoration that could be modeled and replicated globally.

Additional Discussion

Figure 1 is very elementary. Not included are NGOs and other formal/informal institutions, which may have a profound affect on our web of adaptive management. Private land owners can be placed almost anywhere in the web. Perhaps landowners could even coalesce into something like an organization or “agency”, with overarching land management goals that may apply to the restoration of all ecosystems, regardless of type. However, individual landowners would still need to work with their local land management agencies to most appropriately manage their land. In essence, private ecosystem restoration should be incorporated with existing public land management goals at the local level.

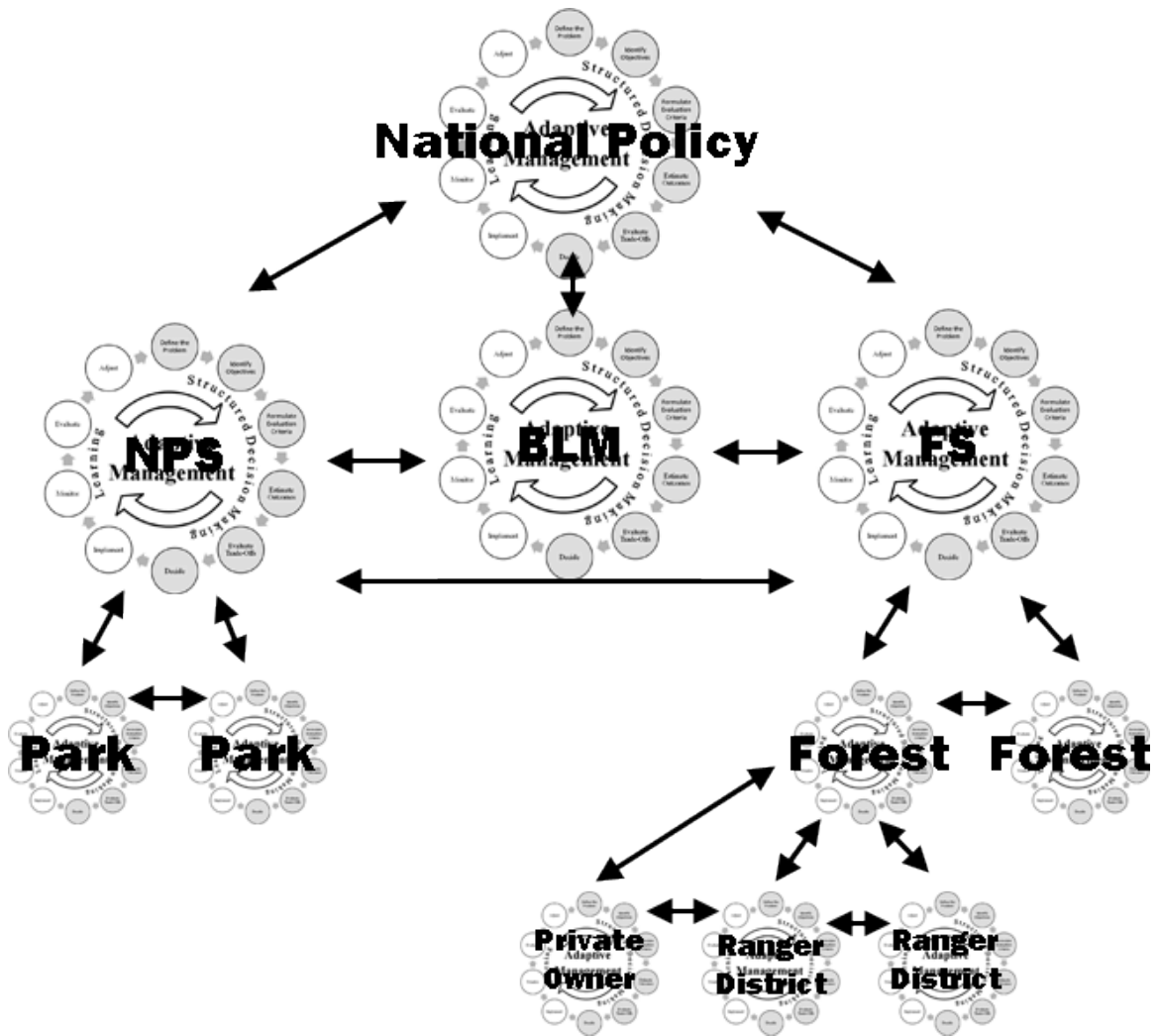
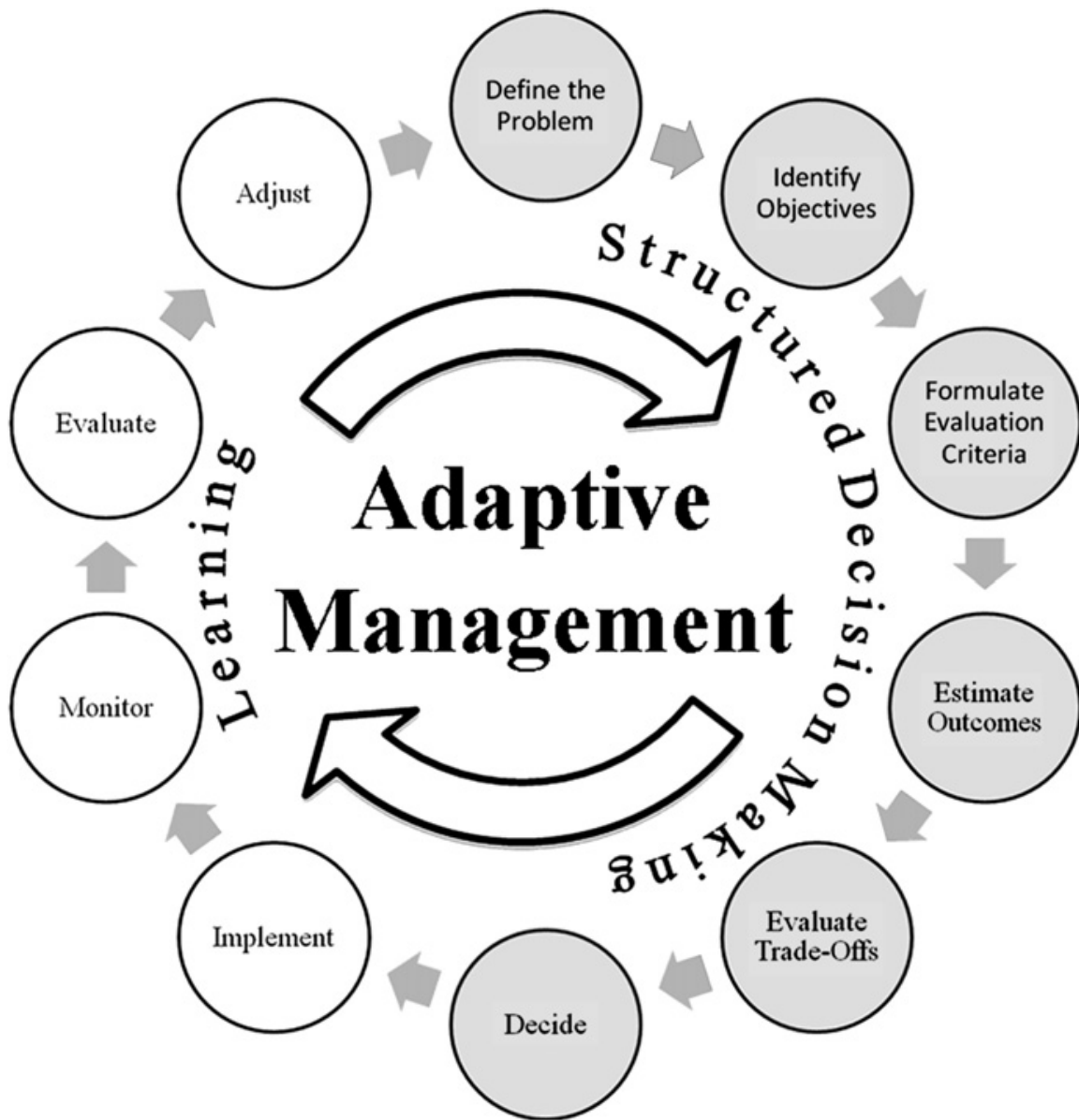


Figure 1 – Hierarchical web of adaptive management systems of differing scale, and their respective feedback avenues.



Source image for Figure 1 (Allen 1340)

References

- Perry, David *et al.* (2008) *Forest Ecosystems*. The John Hopkins University Press, Baltimore, MD.
- Allen, Craig R; Fontaine, Joseph J; Pope, Kevin L; Garmestani, Ahjond S.
“Adaptive management for a turbulent future” *Journal of environmental management*, 05/2011, Volume 92, Issue 5, pp. 1339 – 1345.
- Ruhl, JB and Fischman, RL. Adaptive management in the courts. *MINNESOTA LAW REVIEW*, 12/2010, Volume 95, Issue 2, pp. 424 - 484