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## **“THE PARABLE OF THE SALT CEDAR”**

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The most pressing issue in watershed management is less about the very real degradation of soil, water and energy that confronts us and more about the values that dictate our thinking about watersheds.

What is it that we want to protect and restore? If it is the productivity of our lands that we most value, then as both a practical and a philosophical matter, we must consider that it is from the land's overall ecological health that our land's productivity comes. We have ample evidence of this fundamental truth and yet we continue to focus on the short-term, year to year struggle with the vagaries of commodity markets and our wildly variable climate. There is very definitely a big picture, a timeline longer, and a set of relationships more complex than we know. In fact, we are embedded in ecosystems as both biological and economic creatures.

Today, I offer the “Parable of the Salt Cedar,” which I hope will help us to think more pragmatically about our proper relationship to using, protecting, and restoring our watersheds.

The story of salt cedar is a story of what seems to happen whenever we focus our energies on a single desirable outcome. Salt cedars were introduced into our watersheds in what we now see as a misguided effort to stabilize stream banks and arrest soil erosion. This organism does have the sort of root structure that would seem to serve the purpose. It grows thick so as to armor gullies and it grows prolifically in disturbed and saline soils. For all we know, it may have actually served its intended purpose. But it also did something pernicious: it invaded huge tracts of our southwestern riparian areas. It has out-competed and forced out native biota and now contributes to loss of land productivity. It drinks copious amounts of water.

With the benefit of hindsight, we can deduce that the problem that we brought salt cedar in to “solve” was one of over-use of resources—mining the trees and grasses of the land. Had we defined our problem as such, we might have responded differently: moderated our land use practices and taken time to heal the forest

and range in harmony with the natural system. But we were impatient and single-minded and were enticed by the lure of the easy fix.

Today, we are tempted to view salt cedar as the problem and “treatments” with bulldozers and herbicides (or fire and goats) as the cure. I want to suggest that the problem ought not be viewed as a problem with the plant, which after all responds to its environment as it has been programmed by evolution and its own biology to do. Salt cedar plagues us because we have created conditions in which it can thrive. It is more suited to today’s altered hydrograph: the loss of great springtime floods, and to the imposition of engineering technology—levees and jetty jacks and channel straight-ening, which have disconnected streams from their flood plains.

Watershed science teaches us that ecologically healthy watersheds depend upon natural disturbance to produce a dynamic equilibrium among riparian forests, habitat, water storage, water quality, animal migration and biodiversity. Riparian forests are at the heart of a healthy watershed.

The disturbance regime with which southwestern riparian forests have evolved is flooding. Flooding moves more than water. It moves sediment, cycles nutrients and maintains channels. Flooding also moves whatever else we place in floodplains. Floods are inconvenient because, in the short-term, they disrupt land productivity.

To date, our society’s response to floods is to attempt to control them. In the process, we have created unintended consequences, disrupting the transportation of sediments, the consequent formation of channels and movement of energy through the ecosystem. One result is the invasion of non-native species, such as salt cedar.

If we want to reduce the plague of salt cedar, we might well seek to accommodate the natural disturbance regime, to manage floods instead of controlling them, and to mitigate floods by locating our capital improvements on higher ground. In short, the lesson of the salt cedar is that our economic activity ought to be conducted in harmony with natural processes.

I believe that attempting to eliminate the plague of noxious non-native plant associations with a “nuke the baby salt cedar” approach will ultimately prove futile and that the more appropriate approach is to restore the competitive advantage of the natives.

To this end, we could begin by building into our problem solving an alarm system. If we are tempted to

apply a simple, technological fix to an environmental problem, the sirens should go off. Then we should sit down, think of our watersheds as the complex systems they are, look for the fundamental disruption that is more responsible for the problem and, favoring diversity of landscapes and lifeforms over their simplification, devise a solution that preserves, and when necessary restores, the most fundamental components of long-term watershed vitality.

Working with natural processes does not mean that we reject use of our ingenious technologies, rather that we view them as tools instead of cures. It very definitely means testing our conceptual solutions with scientific data collection and monitoring. It means accommodating both human activities and fundamental processes. And it will require of managers a lot more of the hard work of promoting cooperation among stakeholders.

## SUMMARY

Watershed degradation is a real phenomenon which reduces the ecological health of a watershed. The health of an ecosystem is the measure and determinant of a land’s productivity. Techniques that attempt to restore land productivity without deliberate reference to ecological health are subject to the law of unintended consequences. This is the parable of the salt cedar.

## REFERENCES

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