Evolution of Ecosystem Management as a Modern Forestry Tool

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Thank you for the opportunity to talk a little with you here in Hawai'i. This is my second visit to Hawai'i. In 1965 I was on a troop ship with about 900 others coming back from Korea. We docked in Honolulu and were allowed off the boat at ten in the morning and required to be back on the boat at ten at night. We'd not been paid for about 45 days, and not drawing a lot of pay at that time we had very little spending money, and we left very little impact on the economy of Honolulu while we were here.

It is of special interest to be speaking at a koa conference. I won't be talking about your subject directly, but I dabble a little in wood carving and cabinetry, and my particular thrill is trying to draw out the grain that is in a piece of wood to help accentuate whatever I'm working on. Today is the first time I've ever seen koa wood, and it is indeed a beautiful wood. I'd love to work with some of it. The title that I was asked to talk about today is a a bit daunting. The field of ecosystem management is something I think is an evolving subject. What I will try to do today is give you a field practioner's view of what ecosystem management might mean and what it means on the ground, based on about 25 years of experience.

Some have argued that ecosystems can't be managed, and the example that I've heard is that the entire Mississippi River drainage is an ecosystem, and it is certainly not within our power or capability to manage that entire ecosystem. But I think it had been pointed out that there are valuable elements within that river systems that need to be taken care of, and that we can use sound ecological concepts and theories to take care of those parts of the river to maintain a healthy river ecosystem.

I was in Albequerque, New Mexico, last week and the chief of the U.S. Forest Service, Jack Ward Thomas, was there. There are many who claim that ecosystem management is poorly defined, and Jack's response to that is that ecosystem management is really a concept, and concepts aren't usually defined in black and white like other parts of our vocabulary. He challenged folks to think that the term "multiple-use management" was a concept that was never well-defined, yet a lot of people subscribe to multiple-use management, so ecosystem management is a move further along the scale of our knowledge.

It's a fact that I compete in lumberjack contests. One of the reasons that I still compete in those events is that I've come to realize that people who work in the woods by hand are very skilled individuals and are truly an important part of our heritage. If we don't hold on to parts of our heritage, we're doomed to a dismal life, I think. Where it kind of came to me was when one of the speakers today used the term "rape and pillage of the past" relating to clear-cut forestry. You know, if we cast dispersions on previous generations, we're doomed to that in old age ourselves. Those old lumberjacks that were working out in the woods by hand and that built a fantastic lifestyle and standard of living that you and I now enjoy weren't rapists and pillagers, they were simply intent on trying to make a living for themselves and provide society with a lot of things that society really wants. Many of them would have done their practices differently if the economy of the times would have allowed them. We all work within the context of the economic times and social atmosphere; we need to remember that.

Another speaker showed a slide earlier that said "Sustainable, Sustainable, Sustainable," and I've come to think that sustainability is really a bit more of a social thing than a scientific thing. For example, we could go to Iowa where they grow grain crops, and we could make a social decision that it's important to the human population that it's important to grow grain crops on that land, and I think that we probably can sustain that for a very long period of time. We can make an alternative decision and decide that we should return that land to the native prairie. And we *could* do that, and those lands would sustain native prairie for a long, long, long time. And yet, there is a third option: on some of those lands there where people are growing black walnut for a very, very long time. So, the question of sustainabilty

in that situation is really, "What does society want from that land," not "What is our scientific ability to do certain practices?"

I'm going to show you a little bit about Northern Idaho, which is where I've worked since 1962. I'll show you a little about my thoughts about ecosystem management, where we started some 35 years ago, and maybe where we are today.

The change factor in forests in Northern Idaho is forest fires. The Sun Dance burn occurred in 1967, a wild fire that whipped across about 55,000 acres. Just up the ridge line about twenty miles, another fire was started by the same lightning storm, the Trapper Peak Burn, which burned about 16,000 acres, and I've spent a good share of my time in Idaho working on both of these fire locations and reforestation and other management.

Some of the early thinking in forestry was that it will mimic natural forests. We felt that when we clear-cut ,slashed, and burned, we were in essence mimicking nature. Well, as we move along in our knowledge base, up the scale of knowledge, we come to find that there were some elements in the ecosystem that weren't particularly well addressed when we clear-cut slashed and burned, particularly with a burn that got as hot as fires often do. One of the early practices that the Forest Service began to apply was when had big elk herds in Idaho and the elk would browse back the brush to the point that there was no feed available for the elk to survive on. We used some ecological knowledge that if you run fire through brush fields that are old and decadent, you stimulate resprouting from the crowns and roots of the plants, and you can produce copious volumes of food for the animals on the site. That was probably one of our earlier applications of ecosystem management, returning fire into these brush fields so that we could maintain elk herds that the hunters so enjoy in Idaho.

About 25 years ago I began to move away form the clear-cut prescription and move into the seed-tree and shelter-wood systems, for a couple of reasons. One, we were really getting hammered on the looks of clear-cuts, and I thought maybe the seed-tree and shelter-wood systems would provide a viewscape to the public that would be a bit more acceptable.

Western larch is a very valuable species in our forest, but it is terribly expensive to collect seeds for the western larch, or at least it was in those days. And there was evidence around that if you left seed trees on an area and did a good job of under-burning, you could get larch to regenerate underneath itself as a natural seedling. So, we began to do this, essentially a partial cutting and then running fire through the understories of these trees.

We began to have a lot of experience with seed-tree shelter-wood cutting, having done it on several thousand acres. People in the northwest had talked about leaving "legacy" trees, and this was related primarily to the spotted-owl issue. We began to look at some of these shelter-wood cuts and say, Gee, this really looks a lot like summer wildfires. Some of those 1000-, 2000-, 5000-acre wildfires cross our landscape on a pretty routine basis and leave scattered individual trees that would survive the fire and be the monarchs that would re-establish forest on the area. At the same time, they were providing some elements of ecosystem that we hadn't been providing in our clear-cut, slash and burn. They're providing some vertical diversity in the canopy that was appealing and important to many species of wildlife.

Early on in the clear-cut logging days we were focusing on deer and elk habitat, and now our national laws indicate we need to be concerned about spotted owls, certain woodpeckers, and so on. Our objective was to establish good, healthy forest regeneration. Initially, I had started into the stands with an intention to leave the seed trees long enough to get their reproduction and then pull the seed trees off. We are now leaving portions of these seed trees on stands for long periods of time, perhaps more than one rotation, as legacy trees.

If you work near fire ecosystems, you find that nearly every one of us is a pyrotechnic at heart. It's not hard to find people to go out on these crews and lay strips of fire across the stand and do this underburning. We can produce well-controlled burns that exactly meet the prescription that was designed for the site. As we moved along our scale of knowledge, our foresters went from almost nearly pure conifer stands, to stands that have pockets of aspen, which probably occured more frequently in the past when there was more fire on the landscape, because aspen is an early pioneer species. So when we moved along, we began to leave these clumps out of the burns for their wildlife habitat. Aspen is also a tree that you can kill the tops by fires and the roots will send up sucker sprouts, and you can re-establish an aspen stand pretty quickly with fire.

I think it's imperative on the national forest lands

that we use something called ecosystem management. I talked earlier about the Trapper Peak Burns, burned in 1967. We didn't realize at the time we began re-foresting this area that it was core habitat grizzly bear, a threatened species on the endangered species list, and it's also a core area for the woodland caribou, an endangered species on the list. Well, if you're a grizzly bear, you're going to get along real well in such a burn. Grizzly bears feed on the plants that come in after a fire, so a grizzly bear is going to get along pretty well on a burn like the Trapper Peak Burn, at least until well into its re-vegetation phases. However, if you're a caribou and you require different type of timber stand, you are going to have a long wait before you've got a home to go to on the Trapper Peak Burn.

And so I think, in my vision of things, if we're going to keep grizzly bear and caribou in these districts in Idaho, we absolutely have to manage our timber stands, or one or the other of the species could go extinct in that area, because without management, we are not going to have the proper proportions of the landscape that both of these species need. They, I think, define the need for ecosystem management very well, because they work at opposite ends of the ecological spectrum. Man has moved in, and we farm in the valleys and build roads and run power lines around the countryside, but grizzly bear and caribou don't have the luxury of moving long distances—like they did prior to human habitation—to find the kinds of habitats that they need. So, we'll have to do some deliberate things on the landscape to help them find what they need to live.

In the re-forestation of the 16,000-acre burn, we did a lot of tree planting in the 1970s. The plan was designed to move us to desired proportions of caribou and grizzly bear habitat in the shortest period of time. We established some targets, and we can look at what the present acreges are and see how we're moving toward our target. In the early plan we allocated certain lands for caribou habitat, but research on the caribou and their needs has moved along as well and we now find that caribou needs some land for early winter. They have a summer-range need, a spring-range need, a late-winter need, and a late-summer need. And each of the types of timber stands in each one of those categories is somewhat different.

And at the same time, we had the grizzly forage that was laid out keeping stands in more condition to feature grizzly bear. This gives us at least a plan to work to, and we can compare parent-stocking levels, and we can look at the current stocking levels to compare them and track progress toward the kinds of habitat that are most suited. And we can do deliberate things in those stands, with sending thinners in or doing other cultural activities in the stands to help speed those stands toward desired habitat conditions. We can take our targeted stocking levels and compare to the plan and move to another situation.

In the western United States, ponderosa pine or savannah types of timber stands don't exist at near the proportions they did at the turn of the century. The reason for that is that we excluded fire from them. So one way to maintain those savannah types of timber stands is by allowing fire to re-enter on a recurring basis. We also feel that under that savannah type that our forest will be healthier than if allowed to naturally overpopulate the stand, because there won't be so much competition for water and nutrients.

More and more, particularly across the Western United States, we find that nice homesites are built out in the wildland-urban interface. When fires start, these houses often don't survive. For ecosystem management right now, this wildland-urban interface is going to be a real challenge to foresters and fire fighters across the country. I appreciate the opportunity to give you my field view of where ecosystem management started and where we are today. I am happy to have been here.