

## **Ecosystem Management Interviews: Two Points of View on the Forest Service Lands of Northern Wisconsin.**

Below is a description of and response to a pair of interviews. The first interview was with Brian Quinn, Forest Environmental Coordinator at the Rhinelander, WI office of the US forest service. The second interview was with Dave Zaber, Ph.D., Vice-President of Habitat Education Center (HEC), a Madison based environmental advocacy group. HEC recently took the forest service to court and won, forcing the forest service to take another look at the science supporting their justification for a number of timber sales. My response to individual questions is presented in line with the questions. A conclusion responding to the overall interviews follows.

### **What is your definition of ecosystem management?**

Brian described ecosystem management (EM) as being a broadly defined management system working across scales to meet a particular set of goals. This is similar to literal definitions of EM we heard. It is a vague enough to be a description of EM as a broad idea with diversity built in. Seems to fit well with the definitions put forth by governments and most official management agencies.

Dave took the approach that EM is just a new piece of political buzz vocabulary invented by academia and industry to fool people into thinking something good could be achieved through compromise and negotiation. He tended to think it didn't really exist in any real world situation, as we really have no idea how to manage ecosystems, only people.

### **How do you define an ecosystem in the context of your project?**

At a large scale, Brian defined the project as fitting into the northwestern great

lakes ecological province. He described four main ecosystem types within the overall eco-province: northern hardwoods, coniferous, pine barrens, and early successional aspen. Stress was put on a need for early successional forest. I found this surprising; my understanding is that the value of early successional forest is low to biodiversity and good for generalist, common animals.

Dave backed up my suspicion about the need for early successional forest. Brian used the goss hawk as an example, saying that cutting the forest creates more habitat for the prey of the goss hawk. Which should increase hawk numbers; however, it is not that simple. Dave compared this abundance of hawk food to a theoretical situation in which prohibitively expensive restaurants surround poor people. Goss hawk and red-shouldered hawk are adept at flying under the canopy of older forests with little ground cover in search of prey. Low lying plants and young trees provide cover for prey. The forest service ignores this fact in favor of continual early successional regions which are desirable for wood pulp production.

Dave gave a definition of an ecosystem in general. He calls ecosystem emergent phenomena defined by the questions at hand. Methods of definition are as diverse as the things they enclose. The idea of an ecosystem is that it can take on the shape of any number of nested ecological systems. This definition was presented in class, and seems to be the academic use of the word ecosystem.

### **Why have you chosen to practice ecosystem management?**

According to Brian EM was chosen to try and balance habitat types across the ecosystem, and strive toward pre-settlement ecosystem function. Brian also touched on considerations of human needs as well as natural system needs. Dave's take puts into perspective what might really be going on. Dave thinks that ecosystem management was chosen to fool the public into thinking something good is being done ecologically. Ecosystem management was chosen to allow compromise on matters that really should be left uncompromised. The reason for using this term seems to be well intentioned, but is being used to put a hood over the general populous' eyes. The abuse of ecosystem management alluded to by Dave is scary. The idea that people are using ecosystem

management to undermine conservation says to me it is a poor decision to get behind the concept.

**How has budget influenced or limited the goals of you project?**

Budget is really what determines what the forest service does. Funding for a specific project or goal is allocated and handed down by politicians. A major influx of funding is from timber sales. The forest service ends up being run somewhat like a business in that they have a product to sell and they gain from selling that product. It doesn't seem right to me, but that's the way it is. Brian was of the mind that budget isn't a major limiter. Dave was of the mind that budget is the main driver. They are both correct. Congress hands down funds to do things like cut trees and build roads, the forest service doesn't feel limited, while the environmentalists see things going in the wrong direction.

**What management models do you use and how have you incorporated them into your project?**

In previous forest plans, the forest service used optimization models to harvest as much timber as possible. In the most recent plan, models were not specifically targeted at maximizing timber production. Planning models were based on public involvement, to what level was not said. Simple spreadsheet analysis was used to balance habitat with economic opportunities. More sophisticated ecological analysis was used to determine critical habitat, but most analysis only showed further holes in knowledge and understanding of the systems. A series of round table talks were held to find some general guidelines and goals. Economic models were considered once all other data was in. The main decider seemed to be the experts at the roundtable. But further study and analysis is showing that the conclusions from these round tables are largely speculative and probably false.

Dave was unaware of any models in particular other than the standard forest service model of cut it before anyone has a chance to say no. His interpretation of their

management model is to work around science to minimize conflict and cost while externalizing as much cost as possible. I can see some truth in this point of view. The spreadsheet analysis to balance habitat and economic opportunities was almost definitely based on speculation as far as the ecology is concerned. The “cut it before anyone has a chance to say no” model is based on a lack of precaution on the part of the forest service in the face of major scientific uncertainty.

### **How is ongoing scientific research integrated into your management plan?**

I was very surprised by the fact that a good portion of the data that has been collected in the past is largely unanalyzed. The analysis that has been performed is showing that the experts from round table discussion during the planning phase are wrong close to half of the time. Brian went so far as to say that 40 to 50 percent of the conclusions on biodiversity have been shown to be wrong. Research and analysis of data is showing time and again that assumptions and what was thought to be true is false. Brian made it seem like the more scientific analysis that is performed the more we realize we have no idea how the system works.

Dave spoke to the tendency of the forest service to ignore or misrepresent science. He made the accusation that the Forest Service trumps up pseudo-science. Brian admitted that analysis is showing that what the forest service has been presenting as the right course of action is not right. I tend to believe they are putting their faith in pseudo-science in an attempt to maximize timber production. The precautionary principle should come into play here, but does not. The Forest service prescribing more early successional forest for reasons that are totally false makes me think they just want to cut more trees not be stewards of the land.

### **How important is monitoring and evaluation within the planning and management of your conservation area?**

Monitoring was an area that my two interviews agree completely. The consensus was that monitoring should be a top priority in order to better understand the impact of management decisions, but isn't. Whether these impacts are good or bad, without

monitoring, there is no way of knowing either way. Ignorance may be bliss, but accountability and feedback as to success of plans is of the utmost importance and is being completely ignored in some cases. Both interviewees saw a serious lack in monitoring activities.

The main reason sighted to explain low levels of monitoring is that the levels of funding are not adequate. The reason for this lack of funding is open to speculation. The main reason that came up is that politicians like to fund actions, not monitoring past actions. It's really an issue of time scale and the political cycle. Along with other factors, the inability of politicians to rise above re-election in the here and now completely dismantles the idea of long-term adaptive management. Brian pointed out that much of the monitoring and accompanying analysis being performed has shown just how wrong past actions have been. No one wants to be proven wrong, which makes me think that Dave's allegations that the forest service turns a blind eye to sound science may be frighteningly true.

### **What barriers exist to the integration of scientific research into your planning?**

The main barrier is the weak link between universities and the forest service. The entity that is supposed to be responsible for working between is the forest science lab. As Brian sees it the forest science lab hasn't stepped up. This results in the forest service being left conducting analysis they should not be responsible for. The forest service runs analytical models in order to determine management goals and strategies. Brian believes these models should really be in the hands of grad students and teams of scientists at universities. Unfortunately, there is no communication or system established to allow the forest service to outsource its analysis. This is an area the Brian sees growth of in the future.

Dave points out that the Forest service staff is really not trained and don't fully understand the scientific research necessary. In Dave's experience, the models and research that is conducted lacks numeric criteria and thresholds defining success or failure. In this way, the forest service is unable to judge if what they are doing is working or not. Beyond not being able to do scientific research to academic standards, the people

are simply overworked, and in some cases pressured not to look at science at all.

**How do scale related issues present problems in your work? How do you work around these problems?**

Scale presents problems in that the forest service has many parcels of land that vary greatly in makeup. The lands are fragmented and have many adjacent landowners. There is a large amount of variation from one plot of land to the next in terms of soil, land cover, animal communities etc. This complexity of the forest service's lands at a large scale is a major stumbling block. It takes a huge amount of time to detect the actual cause of some of the problems that are present. This amount of time and resources required even to find the cause of problems at large scales can be prohibitive to even starting to find a solution.

Brian compared our actions in the forest to ripples on a pond to put scale into perspective. A large action projects a large wave across the pond. White tailed deer are a big boat on the pond, and can withstand a very large wave. More sensitive animals can't handle such a large wave, so we must be careful where and how large of a wave we can make. The forest service strives not to make too large of waves, but tries not to focus too closely on the small waves. This lack of emphasis on small scale effects of disturbances threatens sensitive species.

Dave points out that the forest service tends to do its analysis at inappropriate scales in order to hide from an issue. One claim is that logging actually increases diversity. Which is true on a small scale in some cases. Overall, logging serves to homogenize the forest leaving no niches of unique habitat. In this way, large-scale diversity is lost. This is frightening because the forest service actually seems to be using scale to dishonestly show they are doing good things for biodiversity. Recognizing scale is the first step; but scale recognition can be used in ways that don't do good for the environment.

**What kinds of classification techniques are used and how is it used or connected with scientific data?**

This is an area that the forest service seems to be up to date, but not on the conservation track. On an ecological level, they use standard USFWS classification systems. Land is classified by land type phase, soil type phase, and forest by stand polygons in a GIS. The categories of data assigned to the forest stand polygons include, dominant forest cover, size, density, and year of origin. These categories seem to correspond to the value of the forest stand for timber harvest. Brian made the claim that they are used to classify habitat and make decisions on how much of a given habitat is needed for a given population.

As Dave points out, all forest service maps were developed to exploit, not protect resources. Databases that show the value of the forest to timber companies have very little ability to show habitat value. The forest service claims that the pine martin needs 50 year and older stands of hardwoods. They go on to claim that there are plenty of 50-year-old stands of hardwood. The truth is deeper than simply having 50-year-old trees. The pine martins need the full forest habitat including generations of deadwood and the myriad of species supported by an old growth forest floor.

### **How much focus is placed on endangered species with respect to management?**

The focus placed on threatened and endangered species is according to federal law. The visible endangered species like eagles and wolves are doing quite well. Brian is of the opinion that these two species could be de-listed. There are other species, like lynx, that are not doing as well. The reasons for this are mostly unknown. Unfortunately, the amount of work to bring back rare species is only according to what the law requires and what the public demands. As a result, very little is done to study or work toward the re-establishment of some species.

### **In dealing with rare or endangered species, there is a lot of uncertainty in analyses of species status. How do you deal with this uncertainty?**

The forest service's approach is course filter. They ask the question, are we

providing enough habitat? The goals are defined in terms of leaving enough habitat to support viable populations. This method works for some species, but there are those species that we are not sure what enough or what kind of habitat is needed. These species are overlooked and, as a result, tend to do poorly on forest service lands. Dave pointed out that the forest service tends to prescribe logging when there is uncertainty because there is nothing saying they shouldn't log. To me, this complete divergence from a precautionary principle shows a real lack of environmental ethics.

**Should there be an individual species as an indicator approach in ecosystem management? What alternative indicator approach, if any, do you use?**

In the past, the forest service used individual indicator species. It seemed like a good idea in the spirit of a canary in a coalmine. The approach proved completely ineffective in practical use. Brian pointed out that the forest service really doesn't manage on a species level at all anyways. They pay much more attention to habitat, using the "build it and they will come" mentality. Brian was clear in saying this really doesn't work, even when providing ideal habitat for a single species. Brian also pointed out that there is variability beyond what the forest service can control such as climate change.

Indicator species are a thing of the past. What is really needed is a suite of species along with other indicators of ecological function. When information is not available, the only path that serves conservation is the precautionary principle. Unfortunately, this is completely lost when talking about the forest service. When there is no data showing good or bad, logging is given the go ahead even though it is the one thing that will guarantee complete destruction of habitat. Dave pointed to the 1985 Millennium Grove incident in which the forest service gave the ok to cut trees before courts could make a ruling even though there were protestors sitting in trees adjacent to those being cut.

**Do your project's goals integrate the communities around your study area? If yes, how so?**

The ten-year forest plan process does take into account some local needs and

wants, but minimally. Very rarely does the forest service work with locals to set priorities or goals. When they do, it tends to be with towns that have a strong interest in logging. The trend recently has been that logging towns get concessions, quickly exhaust local resources and go under. The truth is that communities that have intact wilderness tend to have a sustainable source of income from tourism and other forms of income unrelated to extraction of forest resources. Logging is not a practice that will sustain a community in the north woods.

### **How is your project/management area affected by growth and development in your region?**

The Forest is not as affected as some areas closer to major urban centers, but still has its issues with development. The cabin land ideal of the north woods has caused nearly all the lakeshore to be developed. The results of this have been devastating to the myriad of species that used to exist on lake edges. Development tends to serve fragmentation of habitat by the building of roads, golf courses, and large vacation homes.

The forest service has run into problems in dealing with new land owners who are not aware that land near or adjacent to theirs is scheduled for logging, and get upset when the land is changed. Vacation homes and cabins tend to house people with an interest in the beauty of nature around them. These people actually serve the cause of conservation and come up against the forest service from time to time.

### **What are the effects of agriculture on your project?**

In many ways, the forest is the main agriculture in the north woods. The forest service is within the department of agriculture and manages the forest like it is a tree farm. They work around areas where they are forced by law to conserve habitat, but cut timber as is economically most profitable everywhere they can. There is no major effect on the project from outside agriculture, as the most profitable form of agriculture in the area is tree farming.

**What do you see as the major institutional or political obstacles for implementing ecosystem management? Time? Scale? Agency rules? Practicality? Complexity? Money? Staffing?**

Working closely with National Environmental Policy Act (NEPA) proceedings, Brian sees the NEPA and the accompanying hurdles as a major obstacle. He also feels it is a very good thing because it forces disclosure and transparency which would probably not be present if it weren't for NEPA rules. The NEPA and environmental impact statements have put serious limitations on the forest service's ability to implement projects on large scales. Brian sees it as a cumbersome, time consuming, necessary evil; he argues that court actions have changed the intention of NEPA from dealing with big important issues to little ones that could be left out of the picture.

Dave, speaking generally, sees obstacles in many places. Professionals working toward EM goals are poorly trained and unable to fully grasp what needs to be done. Corporate control of media and government means that the inherent compromise in EM will constantly be used to do things that probably should not be done within the confines of conservation. The total lack of technical knowledge and data in terms of ecosystem function and makeup is a huge issue.

How are we expected to manage something we really don't understand? It's like trying to fix a broken down car without knowledge of what it is supposed to run like. Beyond not understanding or having data, what we do know doesn't always fit together. We try and make assumptions and figure out patterns but are consistently proven wrong. The list of obstacles could go on and on.

**At the state or federal level how should ecosystem management be implemented? Should it be mandated?**

Implementation of EM at the federal level would mean progress in some places and regression in others. Wisconsin, being a progressive state, is leading the nation to a certain extent in moving toward the principles of EM. Where other states are not nearly as far along and may be helped by federally mandated standards. Brian thought it would

make sense to implement mandated standards at a state level. I agree that if any level of governance is capable of implementation the state level would be the one. Scale wise it just seems to make the most sense.

There is a need for implementation with the right intentions ranging from individual back yards to entire nations because problems and solutions exist at every level. This is very true, but would require a land ethic and level of care that does not seem to exist right now. Dave tends to think that standards are the wrong way to go. He thinks that a diverse set of approaches coming from many different organizations and individuals is desirable. The real point is finding solutions that work, no matter who they come from or how they are implemented.

**Over the course of your career what changes have you seen with regards to the thinking about ecosystem management?**

In 20 years with the forest service, Brian has seen a general shift toward a overall ecosystem perspective. He has seen people's perspectives broaden and shift in the right direction but not as far as they need to in order to fulfill EM ideals. One of the defining differences is that the focus has gone from "What we want from the ecosystem" to "What we want the ecosystem to look like." The second definition still has man defining what the ecosystem should be like. This shift is in the right direction but needs to go further to let the system define itself.

Dave has seen no real change. He points out that the concept of EM has really not done much to stop environmental degradation. I feel like EM has actually been a step backwards, allowing people to justify compromise where there is no justification for it. At a certain point, we as a society will have to say enough is enough, we have to save some natural places as completely natural. For EM to work, we need far more understanding of the implications of our compromises. Until we can show that our exploitation of the environment is truly sustainable and ok, we should use a conservative, precautionary principle if we actually intend to serve the purposes of conservation.

## **What are key conditions/factors contribute to the success of ecosystem management through your experiences with the project/program?**

The key conditions and factors are as of yet unknown. EM has really not been shown to work on any scale beyond small communities. Dave points out that it hasn't even succeeded at the arboretum. How is it going to work across states and nations if we can't make it work at the smallest scale? It seems to be self-defeating in that the goal is a pre-European, pre exploitation state. Yet within its ideals is allowing human use, ie exploitation of ecosystem resources.

## **Conclusions**

### **Ethics and Compromise**

Environmental ethics are highly varied. Ecosystem management gives an opportunity to people with questionable environmental ethics to have adverse impacts they are only afforded because of the holism and compromise embodied by EM. The intention for EM to involve compromise between conservation and extraction relies on a strong environmental ethic. With our societies overall lack of environmental ethics, the compromises made in the EM process result in poor management and environmental degradation. Many of the examples above show that it is too easy for people who stand to gain from exploitation to use EM toward their ends.

### **Understanding**

Our understanding of ecosystem function is the major factor that bars us from succeeding as "ecosystem managers." The managers that are part of an EM project are really like engineers in a major building or remodeling project. The key difference is that engineers use a factor of safety and really do understand the components of their project. If an engineer does not understand a portion of the project, and can not get answers in order to understand, they set up tests and figure it out before proceeding. With our current knowledge, we cannot be ecosystem engineers/managers. We must fall back on a

precautionary principle and use what works.

## **Idealism**

In an ideal world, we could use EM to compromise while maintaining ecosystem function and allowing people to extract resources as they need. Unfortunately, this is not an ideal world. People will take advantage of every opportunity to get ahead of the next guy. People care little about future generations. People are disconnected from the land and care little if there is a pre-European level of biodiversity. These are all reasons that EM will probably not work for people on the side of the environment. Dave Zaber pointed out that it is ridiculous to expect people, to be able to manage ecological systems they know little about. What we should really be managing are the people and the impacts they cause.

## **Interviews**

1. What is your definition of ecosystem management?

B: A management system with goals defined by many parts of the overall system considering how your work fits into a larger scale.

D: It doesn't exist, new vocab invented by academia – we know how to manage people, not ecosystems. Politicized buzz words.

2. How do you define an ecosystem in the context of your project?

B: At the large scale, as an ecological province, for this project that is the northern WI woods, the UP of Michigan, and this general region of the great-lakes. At a smaller scale, the “northern hardwoods”, “coniferous forest”, “pine barrens”, and “early successional”

D: Emergent phenomena, defined by the question you are asking. Many methods of definition, no one is best.

3. Why have you chosen to practice ecosystem management?

B: To provide balance of habitat types, strive toward pre-settlement system function, while considering both the needs of people and nature.

D: Chosen to use the term to fool the public into thinking they are doing something ecological – put forth by the iron triangle, industry, government, and lobbyists

4. How has budget influenced or limited the goals of your project?

B: Mostly limits land acquisition. Timber sales help keep budgets up. Budgeting process controls the overall pace that things can get done. Overall, not a major limiting factor.

D: Infinitely important. Congress gives money to cut timber and build roads and that's what they do.

5. What management models do you use and how have you incorporated them into your project?

B: Used several models developed in the private sector and by the forest service. Models were based on public involvement. Did not use optimization models. Looked at opportunities and habitat types - used simple spreadsheet analysis to find balance between these. Desired results were identified using above methods and areas of greatest concern were determined with more sophisticated analysis of data from the past and current studies. Cultural diversity and biological diversity were discussed at round table discussions between experts from several fields mostly coming from academia. "the Delphi process" Economic models were also run on possible scenarios. On the individual project level, used more mass data analysis etc.

D: Not totally sure of management models. They do work around honest science. Minimize internal conflict maximize external cost.

6. How is ongoing scientific research integrated into your management plan?

B: Data from the past and new data being collected are somewhat unanalyzed. What has been looked at, has shown that 40-50% of the bio-diversity conclusions from the round tables may be incorrect. Through research we are finding more instances where we don't know what is going on. Research helps uncover complexity and dictates future decisions.

D: Minimally, science is ignored, or misrepresented. Sudo-science is trumped up.

7. How important is monitoring and evaluation within the planning and management of your conservation area?

B: Monitoring is extremely important. It lets us know if we are succeeding. Validates assumptions. Wisconsin is weaker on this than some western states. Funding for monitoring is dictating the lack. Monitoring is ultimately important for making adjustments and being able to practice adaptive management. Doesn't cost THAT much, but is under funded. Seems to be the best bang for our buck, but politicians fund projects that are going to happen NOW not monitoring that might show that their projects aren't working.

D: Should be top priority, they don't want to do it because it shows damage. Goss hawk aren't limited by food abundance. Goss hawks fly under the canopy. When forest cut the food is under dense brush.

8. Does your monitoring incorporate both ecological and social considerations?

B: Do some social monitoring, mostly ecological and biological. Other agencies types and levels of government in the area provide socio economic data.

D: No, don't know how to take social considerations into account.

9. What barriers exist to the integration of scientific research into your planning?

B: Frankly, and locally, the weak link is between universities and agencies. The Forest science lab hasn't stepped up. The forest service does quite a bit of analytical models that should be done by academia. Bridge building is ongoing.

D: Poorly trained staff don't understand the stuff. Complete absence of numeric criteria and thresholds, so there is no evidence of success or failure, overworked, no time, or directly pressured not to look at science.

10. How do scale related issues present problems in your work? How do you work around these problems?

B: Complexity of larger scale is the major stumbling block. It's easy to look at a little piece and see what is going on. At large operational scale of forest service lands, have more landowners, more species, and more interactions. We have to take time to figure out the actual problem/solution. Weigh the trade offs, try to minimize "ripples". We have to try to not get too caught up in the "little ripples" created by our actions. But this is hard when we have big ships, like white tailed deer, and little ships like purple martin, on the same pond. Little ripples can be huge to the pine martin. We focus on trying to not rock any of the many sized boats in the sea. This includes political biological, ecological, and social. The size and sensitivity of every boat in the pond is important.

D: Multiple problems: Analyze at inappropriate scales designed to min the adverse effects of actions. They use scale to hide from an issue. Say that logging increases diversity, but this is done all over which ends with overall homogenization. Lost large-scale diversity, high diversity on a small scale.

11. What kinds of classification techniques are used and how is it used or connect with scientific data?

B: Standard USFWS classification on a ecological level. Land systems, land type phases, soil type phases, forest stand polygons in GIS with values including dominant forest cover, size, density, and year of origin. Used in the process of classifying habitat and making decisions on how much is needed for how many animals.

D: Almost all maps were developed to exploit resources not to protect resources. They've said pine martin need 50-year-old northern hardwoods and we have plenty of that. This may not be true. Timber data base is used to evaluate wildlife habitat.

12. Do your classification techniques help to reconcile scale related issues?

If they are hierarchical, it can help, but forest service doesn't really get that far.

13. How much focus is placed on endangered species with respect to management?

B: One of the highest priorities considering federal law. Endangered and threatened species have responded well. Bald eagle, and wolves could be delisted. Lynx just doesn't seem to want to be here.

D: Only as much as public demands.

14. In dealing with rare or endangered species, there is a lot of uncertainty in analyses of species status. How do you deal with this uncertainty?

B: A coarse filter approach – are we providing habitat? Goal is to provide habitat for a viable population. Species of interest is the spruce grouse. Not common, but we are on the edge of its range. We are not planting the kind of trees spruce grouse need, but it is of little concern because it does fine in other parts of the country.

D: Its ignored. They tend to prescribe logging for most anything.

15. Should there be an individual species as an indicator approach in ecosystem management? What alternative indicator approach, if any, do you use?

B: In old planning, yes. New planning – no. Proved ineffective in management use. Seems useful as a canary in a coalmine method, but one species never tells the whole story. Brook trout is one of the best, and is still kind of in use. A healthy river will support trout. Indicators are good, but much research must back up conclusions from this method. The forest service doesn't really manage for animals so much as plants and habitat to support animals. Mild winters have affected pine martin, hard to do anything about not enough snow. "Build it and they will come" may not work. There is more than simply providing and protecting habitat for a single species.

D: You need a suite of species, and there are other indicators. When you don't have the info, use precautionary principle. mid 1990's millennium grove scheduled for logging. Forest service cut the grove before courts could make a ruling.

16. Do your project's goals integrate the communities around your study area? If yes, how so?

B: The ten year planning process considered local needs and wants, but community involvement is small. The process is ongoing within the ten year plan with three steps. 1) Define Goals 2) Define requirements to meet goals 3) monitor outcomes to see if we're on track.

D: Very rarely – cater to logging towns and logging towns go under. Areas that have more wilderness like eely do much much better.

17. How do you build compromise among different stakeholders?

D: Lawsuits – they must be forced to compromise.

18. How have you communicated with stakeholders about your ecosystem management project, how has that affected the implementation of the project?

D: They communicate in a deceptive and manipulative way in order to continue their goals. Communication is not supported by science and much science is left out.

19. How is your project/management area affected by growth and development in your region?

Not as affected as areas closer to urban areas. Most impact is on lake shores. Use is increasing, for lake plans, people do get in the way. New residents of development aren't aware of forest service plans and get upset when they see change.

Harmed: Need bigger tracts, development has created more fragmentation. Lake shore development has been devastating.

20. What are the effects of agriculture on your project?

B: Minor

D: Forest service is in the dept. of agriculture. They have an agricultural mindset in timber terms. The whole forest is looked at as agriculture.

21. What do you see as the major institutional or political obstacles for implementing ecosystem management? Time? Scale? Agency rules? Practicality? Complexity? Money? Staffing?

B: NEPA is good. Forces disclosure and transparency. Can limit implementation at large scales as it forces us to spend a lot of time looking at “little ripples” Environmental Impact Statements are time consuming cumbersome yet necessary.

Case law and court action have changed the intention of NEPA from big issues to little ones.

D: Poorly trained professionals, corporate control of medias and gov. Lack of technical info, complete absence of ability to integrate data into management.

22. At the state or federal level how should ecosystem management be implemented? Should it be mandated?

B: Not sure that implementing federal standards would mean progress everywhere. Wisconsin is very progressive. Fragmentation, literally and otherwise could be addressed a little more easily. Some states, like WI, need to lead others.

D: Should be implemented at all levels from the backyard to the western great lakes to the whole nation. People being on the same page is not really needed. Finding solutions that are diverse and WORK is what is important.

23. Over the course of your career what changes have you seen with regards to the thinking about ecosystem management?

B: From 20 years Forest Service experience.

A general ecosystem view

Broadening perspectives is good

Practices have changed. Focus has gone from "what we want from the ecosystem" to "what we want the ecosystem to look like"

D: No real change: Scale recognition has increased. Ecosystem management has been around during the most damaging time ever.

24. What are key conditions/factors contribute to the success of ecosystem management through your experiences with the project/program?

D: We don't know because it hasn't succeeded. It hasn't worked even at the arboretum, simply can't get people on board because we don't manage for people. The ultimate goal is pre-European state of species and processes because this was pre-exploitation.