**Connecticut River Core Team Meeting Notes**

**Attendees (in person):** Kevin McGarigal, David Perkins, Andy Fisk, Kim Lutz, Marvin Moriarty, Scott Schwenk, Randy Dettmers, Andrew Milliken, Maritza Mallek, Nancy McGarigal, Andy French, Jeff Horan, BJ Peterson, Renee Vieira, Bridget MacDonald, Dave Eisenhower, Georgia Basso, Eric Sorenson, Mitch Hartley, Wendi Weber, Tanya Lama, Ken Elowe, Bill Labich, Dee Blanton, Dave Paulson, Dave Stier, Ken Sprankle, Rachel Cliche, Tim Wildman, Catherine Doyle-Captiman

**Attendees (phone):** Bob Houston, Brian Hall, Emily Preston, John Warner, Rachel Cliché, Chadwick Rittenhouse, Patrick Comins

*Topic (Speaker) [WebEx Video Timestamp]*

**Intro (Nancy):** Thanks everyone for attending and for your patience as we revise our agenda due to the DSL team experiencing a major hardware failure this month. Their work is backed up, but they do have to restore it and that will take some time. Today we have a lot on the agenda, and the format will be a bit different from last time (*see agenda*).

**Connectors (Randy) [6:15]:** We had a call on Wednesday to make our last decision, on the connectors. For those of you who haven't been as involved, we were looking at some scenarios (on the right) that involved various threshold of conductance and then buffering them. We had some feedback that this approach was covering too much of the landscape and did not maintain connections between some of the more isolated cores. We had about 10 people on the call, so we wanted to review our conversation for you today.

We want to thank Brad Compton for coming up with this alternative, which we're calling the "Top Ten" scenario. (*see slide for more details*) This approach already excludes roads and medium-high intensity development. Most of these connectors are going through areas that have very little development or roads. This somewhat reflects the overall conductance level. What this does is maintain more connections among more cores, and reduces the width of the formerly broad connections, where there were clusters of cores. On the call we had a really good discussion and came to an agreement that everyone could live with the "Top Ten Scenario 1". It's not everyone's preferred option, but we all agreed this was an acceptable way forward. This was a compromise between addressing concerns about connectivity. We also talked about raw conductance, in which there was a lot of interest. We all acknowledged that as part of the products that will be available, this conductance map is really important. But in terms of a single product, we decided to move forward with the "Top Ten Scenario 1."

When we looked more at the area captured, we see that 22% of the landscape is captured in connectors. This is just under 50% of the landscape being in the core or connectors. Some people are excited about this and some feel it's not strategic enough, but we agreed that we could move forward with this. This also gives us connections between 97% of the cores, which was a goal of rethinking the connectors. We compared the same area between the initial strategy and the newer top ten strategy. This is the decision we're recommending to the team.

**Mitch Hartley**: I would like to clarify that in the parts of the landscape that are more homogenous and intact, then conductance is higher and the connectors are wide, while in the parts of the landscape that are more heterogeneous and fragmented, conductance is lower and connectors are narrower.

**Kevin:** That is correct.

**Jeff Horan**: I'm putting on my Emily hat and looking at the core buffers. Are we going to include the core buffers?

**Randy Dettmers**: No, we're not going to be buffering the cores. We'll just have the black core areas and the blue connectors (*on maps on the slides*).

**Affirming Design Process Decisions (Scott) [18:09]:** I want to take a couple of minutes to reflect on how far we've come in the past 11 months. I think the extent and complexity of the decisions we had to go through was more than I expected – and I knew a lot about this project going forward. A lot of that is on us. Kevin came in with proposals and we asked him to make modifications to the initial design ideas. We've worked through these decisions together. I'll just review a few of our major decisions (*see slides*). TEN major decisions!

I want to give some examples from the terrestrial team, which I've been most involved with – I know the aquatics team has analogous contributions.

- Eric Sorenson championed the inclusion of rare and natural landscapes.
- Emily Preston helped define the amount of the landscape in core areas and set ecosystem priorities
- Patrick Comins helped set species objectives.
- Mitch Hartley helped us take into account regional context and climate change.
- Bill Labich helped us orient the design towards users.
- Kim Lutz helped us incorporate high priority floodplains.
- Rachel Cliche helped define species and ecosystem to be incorporated into the design.
- Jenny Dickson helped us define size and distribution of core areas.
- Georgia Basso helped us define ecosystem services.
- Bill Jenkins helped define conservation goals and impressed upon us the importance of telling a story that will connect with people.
- Marvin Moriarty helped make sure we set aggressive goals.
- Randy, Nancy, Jeff, Dave, John, Ken, and Andrew have all tried to listen to the core team and incorporate your ideas.
- We couldn't have done this without the responsiveness of Kevin and his team: hundreds of lines of code, terabytes of data.

I think that's what coming out of this process is unprecedented, unique, and really stands out in the country. This is something we should all be proud of. I also wanted to give the team a chance to bring up any outstanding concerns.

**Patrick Comins**: I think we'll need to be clear about the shortcomings; for example, some small habitats such as grasslands don't show up because of the lack of data. We need to be clear about that for implementation.
**Scott Schwenk**: Thanks Patrick. As part of our review and preparations for a next phase, we should document **Patrick**: I hate to be a pain and always point out shortcomings, because in general I think it's a great design and a great effort.

**Review of Restoration and Management Products (Kevin McGarigal) [26:00]:** As Nancy said we want to review some of the items that we've gone over briefly in the past. We wanted to give everyone a chance to ponder and ask questions about these aspects of the design. The DSL Team at UMass has focused on three main restoration activities. There's nothing in the model that deals algorithmically with management actions or prioritization. With respect to these, what we propose to offer is a description of each core area and why it's a core, which should inform management.

Dam removal: There are 1470 dams in the database. The analysis looks at the effect on aquatic connectivity of removing any individual dam in the watershed. Each dam gets a score based on the change in aquatic connectivity, and then we ranked them. Any questions about how we did this analysis or what the results mean?

**Ken Elowe**: Thanks Kevin. Does the analysis look at the amount of aquatic habitat that can be accessed, or how it improves the integrity of the systems it connects?

**Kevin**: It's not species based, so there's isn't an explicit species connection. It is in the context of ecological integrity. In our discussion about aquatic connectedness … we used that ecological dissimilarity as a measure of resistance to movement. Then we used a resistant kernel to measure how much spread is likely to occur up to some maximum distance. The more dissimilar you are, the more resistance there is, and so the kernel goes less far. So the connectedness is decreased. One settings variable that goes into that is barriers, such as dams and culverts. Each are assessed and given an aquatic passability score. If you are moving upstream against a dam, resistance will be high and your aquatic connectedness will be much less. Same thing with a culvert – your connectedness will be much less. If we remove a culvert or dam we can then reassess aquatic connectedness.

**Ken Sprankle:** I understand there is value in using this overlay. What jumps out to me as a fishery biologist is that those dams are for water supply and there is no expectation of those coming out in our lifetimes. Is there a possibility that we could identify those and filter the results?

**Kevin**: Yes, this is a purely ecological assessment – it does not take into account socioeconomic concerns. I would suggest we keep this to show the full picture. If we removed a dam, the scores wouldn't change – the ranks would. So you can ignore the ones that are not practical to remove and still use the current data.

**Patrick Comins**: I would add that flood control dams would be in the same category.

**Kevin**: The way to do this would be based on an attribute in the dams database.

**Eric Sorenson**: I think there's a lot of value in leaving everything on the map, so it shows the ecological cost of maintaining social things that we need.

**Ken**: I wouldn't take any off either because we've made a lot of decisions on ecological values alone. If we remove some things, it could become a slippery slope. Knowing the ecological value of the dams is a really important piece of information.

**Kevin**: Also, none of this affects the core area network. Leaving these in won't change the network.

**Andy Fisk**: From a communications perspective, we should avoid titling anything "Dam Removal Priorities," particularly if we include all the data. I think we might want a different legend and indicate that we are not calling for the removal of key dams that provide drinking water, for example.

Culvert Upgrades [38:20]: Based on the same process as described in dam removals. This involves simulating improvement to road-stream crossings based on putting in a great culvert.

**Andy Fisk**: What does bridge equal in terms of a structure dimension?

**Kevin**: I believe we use the average of bridge passability scores from the field. So it's not perfect passability – it's the mean measure passability for a bridge. It's possible we used the minimum score for a bridge. I don't remember exactly, but the difference between those two is not nearly as big as the difference between a crummy culvert and a decent bridge.

**Dave Perkins**: How do we make this most valuable given that we don't have an actual assessed value for most of the culverts? So we're really just measuring some potential.

**Kevin**: We're using the mean passability score for the unsurveyed culverts. The reality is that in the field, the actual could be either greater or lower. So what we get from this is the average, or expected increase in aquatic connectedness given the removal of an individual barrier. This shouldn't be used for funding decisions; it should be used to strategically decide where to go out and do field surveys.

**Dave**: I wasn't sure if you were using the modeled values or the mean values.

**Kevin**: This map may be slightly out of date, but we will redo it to ensure it's based on the mean scores, not the modeled questions.

**Scott**: What kind of culverts tend to be high priorities?

**Kevin**: Due to computational constraints, this is a take one culvert out at a time. So if you have a river segment with several crossings, then you won't see much improvement from removing a single culvert. So it's likely to pick out more isolated culverts. Also because of the way the algorithm works, it's likely to have a bigger predicted improvement if you're in a stream segment where the stream is classified similarly for a large stretch, because the resistance will be low on either side of the culvert. In an area where the stream conditions (e.g. water temp, profile/slope) are changing frequently, removing a culvert will have a smaller benefit. You could approach this question differently. You could try and

restore culverts in areas with the most ecologically different characteristics, which would be a very different resistance calculation.

Terrestrial Road Passage Structures [48:10]: Based on a similar idea, but we predict the effect of installing a road passage structure. The scores are based on calculating terrestrial connectedness. This is done by taking all roads outside of urbanized areas and that are intermediate in size where it seems like the most likely place to put in a road passage structure. For that filtered set of roads we put in a road passage structure for every 300 m section of road and calculate the effect.

**Eric**: Was this based on conductance? Ideally we'd put in passage structures where there is high conductivity between cores.

**Kevin**: This can be overlaid on the core connector network to see where you have high road passage structure that overlaps with cores or connectors. We didn't want to integrate it at an earlier step.

**Bill Labich**: Eric, your question brings up something I've been sitting on for a while. Kevin, you said your team will put together a report for the cores that provides details about each the ecosystems and species represented in that core and provides guidance on management that will maintain the integrity of those cores. When we talk about integrity…I think there's a gap here between the science and the practitioner. I think it's really important to provide guidance – and not just say we can do an overlay. There are probably other circumstances; I have specific ones in mind, where there is a bridge that could serve as a large mammal crossing as well as an aquatic passageway. That's not something I expect your analysis to cover, but there's a lack of guidance out there, and if we're going to implement this plan we need guidance on all these aspects. I wonder if that could be a bridge between this analysis and the implementation.

**Kevin**: I'm going to ask you to be more specific on the kind of guidance you're looking for. I see this overlay as providing guidance on where you might potentially get the biggest improvement in aquatic connectivity across the landscape. None of this design is going to tell you where to expend resources. It's going to tell you where to look. You wouldn't just look at the top culvert either – you'd want to look at 20 or 30 in the field and then make decisions based on those findings.

**Kim Lutz**: We may get to this later in the day. I think we should use story maps where you have data, policy, and action all connected, and maybe a list of groups that have done projects. We're not giving recommendations per se – that's a lot to expect from this project – there are really simple ways to provide connections for people to help them understand how to use the data.

**Ken Elowe**: Bill I think you've really hit on something important for the next steps. I don't see why we would (or would want) to remove intelligent thought and socioeconomic considerations from our decision-making process. This design is a tool. And it's likely that a professional ecologist will have to work with planners and decision-makers to interpret the science. I don't think we can provide a cookbook for what to do that serves all needs.

**Kevin**: This map shows the cores and connectors, plus the culvert upgrade, wildlife passage structures, and dam removal sites, symbologized by their importance rank. The best visualization for this is a work in progress.

Management Priorities [1:01:00]

**Kevin:** With respect to the core fact sheets: we plan to provide a composition analysis. This would include the proportion in terms of macrogroups, the landscape capability information for each species. It could also include a measure of how important that core is, among all the cores, for a particular macrogroup or species. Are there any other thoughts on what to put in these documents?

**Jeff**: The other opportunity of course would be to look at the adjacent areas. For example, floodplains – if they are surrounded by crops, that could be a restoration opportunity (although you might lose meadowlark habitat, for example). But the question is whether we are going to expand the analysis to include the area around the cores, perhaps specifically the connectors?

**Kevin**: That's an interesting idea. The devil's in the details, so we'd have to discuss it further to determine if there is a way to effectively describe best management practices for the connectors.

**Jeff**: The challenge here is to conceptually apply something to an entire landscape. Mass Audubon might have a more simple set of objectives, and ours are quite complicated. Where do want to protect land fee simple and where is an easement sufficient?

**Andy French**: Depending on how mobile your target species is, maybe the connector isn't so important. It could be counterproductive to try and manage a connector a certain way – you could potentially create a sink – unless you are trying to move a whole host of other species as well.

**Kevin**: I agree. It's hard when you're dealing with ecosystems and thousands of species. And even when we only focus on representative species, there are still competing needs. This would be a straightforward problem if we were focused exclusively on one species. We're only dealing with 14 representative species and it's already not tractable to meet all their needs all the time. You're absolutely right about the needs, but I'm not sure how we could actually address them in a way that could simultaneously meet all ecosystem needs and objectives.

**Andy French**: From a wildlife management standpoint, you need to be very careful about what's done in the connections, because you could have a negative impact.

**Eric**: Relatedly, to me the result that is most useful isn't that the map tell us what to do, but rather that it tells us what the conditions is of the area that comprises a core, and what you want those conditions to be in order to provide benefits to rare species, biodiversity, etc. I think that's very doable.

(*General agreement in the room*)

**Georgia Basso**: I think in highly urbanized areas it's simpler. We have land that's really being squeezed we can highlight the core and connectors and trying to protect those areas.

**Kevin**: Yes, and that's really the main priority of this – to highlight what areas are most important to maintain as undeveloped.

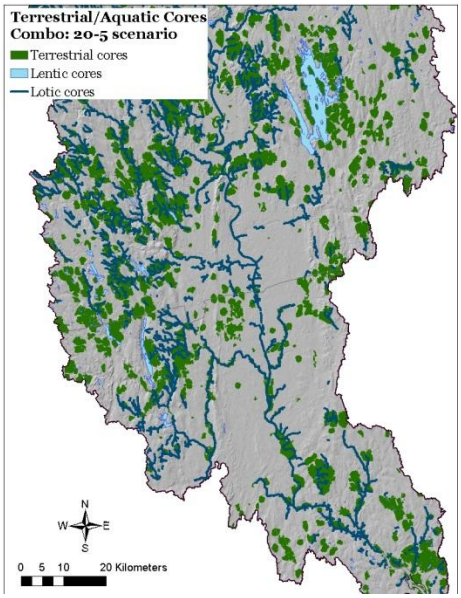
**Bill Labich**: I don't expect the map to provide all the answers, but people are conserving land all the time. They're learning about landscape ecology. They want to increase connectivity, however it's defined. If we can provide some guidance about how to increase connectivity between cores, it would help our partner organizations. Sometimes I'm surprised that people aren't sure what to do to increase connectivity between protected areas. I'm not expecting an encyclopedia, but let's think about the 22% area in connectors. There is a connector that runs through the center of Shutesbury, and I'm trying to think about what to say to explain why that connector is going to be useful. We're advancing the practice of landscape scale management.

**Kevin**: The way I've been describing this, I wasn't thinking about land protection, but rather about management. Clearly, stepping back, land protection is the priority for connectors. I thought you were getting at what specific management to do within the connectors. So what the design gives you is … What is more problematic is trying to figure out, for a given protected land, what additional management would promote connectivity. And that's where it gets tricky because we're trying to promote connectivity for lots of different things.

**Patrick**: I really think urban connectivity just works a lot differently from rural connectivity.

**Kevin**: It's my expectation that in many of these corridors the result is going to be a series of stepping stones, rather than a swatch of protected lands. It's all interesting, but it sounds like to do anything model-oriented, we would have to get very specific in order to translate these ideas into an algorithm.

**Review recommendations for portraying final combined aquatic and terrestrial core-connection design (Kevin) [1:23:00]**



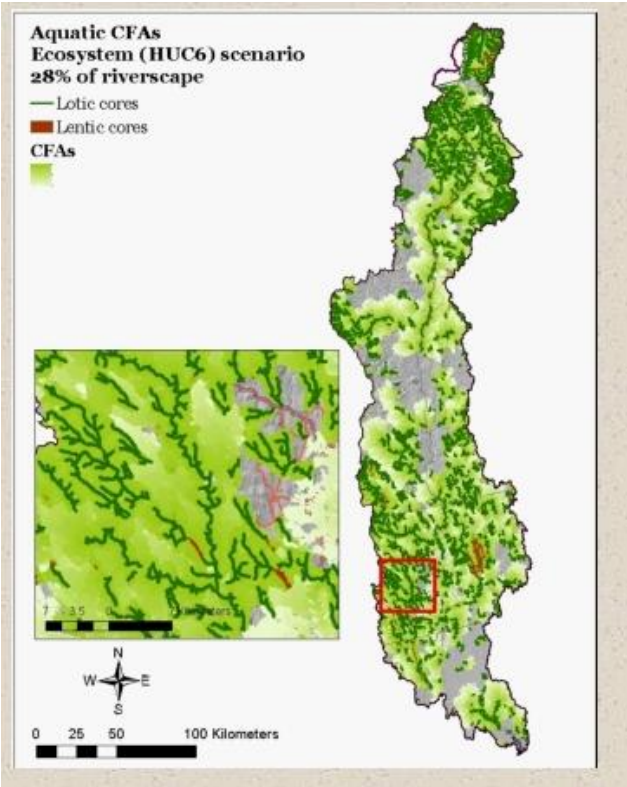

**Kevin**: I am not sure that there is a meaningful modeled way to integrate the terrestrial and aquatic cores. To me they are separate products done with different objectives using different methodologies, and they have different outcomes. They may have complementary outcomes, but I don't think it will be helpful to integrate them. As an overlay, it is easier to understand why a given area is a core, and if you combine them you actually lose information and detail.

**Marvin**: I understand and agree with your sensibility about this. I think there's always a yearning to see what these look like together. But in Data Basin, won't we be able to look at these things and how they overlap.

**Kevin**: Yes, I'm just suggesting they be maintained as separate products.

**Mitch**: I tend to agree with what you said about them being different and discrete. But I'm also assuming that the aquatics stuff would really benefit from some sort of buffer around it that would protect those waterways. I can't remember if the aquatic cores have buffers. I know it's hard to have a one-size-fits-all buffer. But is there a buffer width we could agree on for all the water features, it would be nice to see what that would add in terms of total water protected?

**Kevin:** On the aquatic side, you may recall, that we have these constrained watershed buffers, which are depicted on this slide. These were buffers in the sense that they were contributing watersheds that would probably have a high influence on the integrity of cores. That's what we've been calling the aquatic core buffers. This is the buffer that's been proposed and implemented on the aquatic side. As you heard this morning, the terrestrial team decided not to include an additional buffer. I'm not sure whether you were suggesting a buffer on the aquatic or terrestrial cores.




**Mitch**: I was thinking of a simple streamside buffer. I don't know enough to understand how the aquatic buffers work. I'm curious how the percentage of landscape in the design would change if we implemented a buffer around the streams.

**Kevin:** The zone of influence increases as you go upstream. It's meant to be a functionally relevant buffer, rather than a fixed-with buffer, which doesn't have an ecological basis. So we have that and it can be thresholded at any level.

**Scott**: I agree that for good reasons we kept terrestrial and aquatic separate. However, the integrity of the aquatic environment is related to the terrestrial land surrounding it. I do like the idea of one map that puts it all together. I don't know if we can include the zone of influence, connectors, and all cores. If you have a terrestrial core or connector that overlaps with an aquatic core or buffer, that's important to know. We might keep the data separate but display it together.

**Andy French**: I think keeping them separate works well, and we can paste them together if we want to. I don't think applying a generic buffer is a good idea because the utility of a buffer depends on the landscape and the goals. Structure, function, and water quality all lead to different decisions on buffers.

**Kevin**: Are you advocating for not including the aquatic watershed buffers?

**Andy French**: I'm advocating against a standard one, for some of the reasons you mentioned. That's something where context matters.

**Kevin**: Just to clarify for those who don't know, the aquatic buffers are for lotic and lentic systems, but not for wetlands, which are treated under terrestrial.

**Mitch**: There are a lot of tools for wetlands: NRCS, zoning, easements. I understand that it's hard to come up with a set distance, I think having a farm field, lawn, or parking lot that goes to the edge of a river is universally bad. And having a 100 ft buffer is universally better than nothing. So there are black and white values there. There are programs off-the-shelf where NRCS could give 50 bonus points to protect an aquatic buffer that was part of the design, and boom – overnight we have millions of dollars to implement this.

**Kevin**: Yes, and we were thinking of it somewhat from that perspective. Our approach says that there is a lot of value buffering around a core, and the value degrades as you get farther away.

**Eric**: This map does remind me of riparian areas and how important they are. The use of riparian areas for connectivity is something we've missed in this design. The left map sort of screams that to me. You can see a lot of terrestrial cores connected by rivers and streams. Making that really explicit is, I think, something we've missed in this. Look at the connection – they're not modeled connections; they are real.

**Kevin**: You may recall that the aquatic cores were developed using the ecosystem approach combined with the brook trout and anadromous fish cores. All of the mainstem that you see highlighted because of the anadromous fish core – we didn't do any buffers on that. All the buffers here were on the ecosystem based cores. I don't remember if the brook trout based cores were incorporated. But the important thing is that we didn't put a buffer on main stem, anadromous cores. We didn't do the watershed area of influence on the mainstem because it would be silly. But we could do a fixed-width buffer on the mainstem aquatic core if people wanted it buffered to recognize that value, and then include the watershed-based value on all of the smaller cores.

**John Warner**: My assumption was that the buffers for the headwaters and the fixed-width buffers on the ecosystem based cores would be part of the final design. I've always envisioned that it would be valuable to see where those overlap with terrestrial cores and connectors. So I thought that was the whole point.

**Jeff**: I thought Scott articulated this pretty well, but I think it's important to have a single front-facing design. We decided to do the cores and connectors for the terrestrial design. We also, I think, decided to include the aquatic cores. I was hoping that the IEI would also show. This would provide a continuous surface. I want us to have a package that shows the products from the terrestrial or aquatic perspective. I love riparian buffers, even if the decision was made not to include those. There is higher integrity in some but not all of the area that would be covered by such a buffer. I hope we can have a package that highlights the products from both perspectives – the aquatics and the terrestrial – so you can see how they work together.

**Kevin**: I think we'll have to try out a few different underlays and see what works. There are several options, and we want to make all of those available. All of the individual layers can be seen as separate products that can be turned off and on.

**BREAK [1:44:00-1:47:00]**

**Relationship of design to local and regional needs (Ken) [1:47:00]:** The design is not a final conservation solution. It should be strategic and allow us to connect high-value areas in a way that makes sense so that it acts as a *foundation* for conservation across the region. The second point I want to make is that this design will look differently than what you see at a local level. We're looking at multiple resources (ecosystems and species) plus change over time (climate change and development). Local areas also have additional information: we only used data that was regionally consistent. So this design should complement that higher resolution local information. That high quality local information is really important; it should not be supplanted by this watershed design. So that's the context I want us to keep in mind as we discuss what we want the design to do. This design is a strategic conversation starter – not something we give to a municipal planner and say "go forth and do well." This design reflects a united, consensus-driven process by a large group of conservation professionals and scientists.

**Andy French**: It seems like the people who have been participating in this process know best how we collectively would like to see it used. It seemed like the storymap that Kim mentioned … start connecting it to these other pieces so that as we bring new people in we show them how this information is intended to be used. I think if we emphasize this as a complement and show the design connects to other work we will get more buy-in.

**Ken**: Thanks Andy for that. What you're talking about is a lot of what we want to focus on this afternoon.

**Kim Lutz**: Andrew Milliken and I discussed this a bit. People will want to know how this differs from BioMap or other products. Is one of things you want us to do is have a descriptor of how it differs. Sometimes BioMap might be the best tool, and other times the Pilot design. I think people might be confused about when the Pilot design is the best solution and why.

**Ken**: That's perfect. So much of what we're talking about is communication.

**Mitch**: I've been critical of our bird conservation plans over the years. My angle is: does this plan tell you where to spend the first $1 million? Can we say that this design tell us that? If not, is it a next step?

**Ken**: I want to allow others to answer, but in my opinion, it could. It will depend on the organization and their particular goals. One challenge for our rollout is to figure out how to integrate other organizations and their efforts to this design.

**Andrew**: This incredible important design shows a set of connected valuable areas. It's also the first page of an atlas with a lot of additional data. So I think it can tell you where to spend your first million, but it depends on where you're getting the money, and it won't tell you that without looking at other pages in the atlas.

**BJ**: To echo Kevin, it might not tell you where to spend a million dollars, but it will tell you where to look.

**Patrick**: I think it will also help us evaluate opportunities to purchase land or easements as they come up.

**Discuss distribution of final design to core team members, process of member's review, and confirmation of respective agency/organization agreement of utility of the design and information during February, products needed for inreach (Nancy & Scott) [2:03:15]**

**Kevin**: We had a simultaneous hard drive crash (2 at the same time) and despite our redundant backup procedures, the recovery of the many terabytes of data will take a week to 10 days. After that we have to run the final design. So we're at least 3 weeks out before we can deliver a final set of products.

**Scott**: This is a straw proposal for you to think about (the handout). Think of it as a starting point. The first page is our short-term ideas, and the second is the long-term perspective. We've identified a set of process step and the scope and sideboards on the review that we thought might make sense. So, sometime in February do we want to get together, in person or on the phone, to go over the final products? We do need to decide what the final set of products consists of, and what do we want to call a "package." Do folks have ideas on this?

**Andy Fisk**: A conference call is useful.

**Emily**: Yes, but how much written documentation will be done by that time? This has been really complicated. The conference call is a good idea but something written would help us stay on track.

**Scott**: What kinds of materials would you want, beyond Data Basin?

**Marvin**: I would like to see a document with the answers to the key decisions document.

**Scott**: We have a key decisions document that we've passed out in the past. It's gotten about 2 months out of date, but we can have it for such a call. I see heads nodding. There might be a gap in time between when we get the data and when we can get it up on Data Basin for you.

**BJ**: Kevin and I discussed how to make the attribute available for each core area. It doesn't lend itself too easily to put into a traditional GIS attribute table. But if we limited it to the top 3 attributes maybe we could. We could also make the full set of attributes available as a spreadsheet. It wouldn't be integrated into Data Basin. We could also distribute a shapefile for GIS users, but that may be a later accomplishment. Kevin asked if we can do a hotlink in Data Basin where we would click on an area and it would pop up a file.

**Scott**: How much time would it take from when we get a package from Kevin to when it would be up on Data Basin?

**BJ**: We would need to try a test dataset first. It would depend on the number of datasets, how we want to symbolize them, etc. I am thinking it would take a couple of weeks.

**Nancy**: Do we need another tutorial on how to access Data Basin, for those who haven't jumped in yet? We'll probably offer that around the time we release the information

**Scott**: It might make sense to have the conference call when we have the data in Data Basin, and then as part of that the call would be a tutorial on how to review the data.

**Bill**: I suggest videotaping the tutorial. That way everyone who wants to access Data Basin could watch it when they are able to.

**BJ**: I want folks to know that there are some tutorials already available on data basin.

**Patrick**: It would be nice to export to KML files.

**Kevin**: That can happen for the cores and connectors, but the other layers are raster, which don't play well with KML.

**Jeff**: Perhaps we want to have a very set approach we want to ask people to go through to look at this. Maybe there are questions we want to ask them as they go through it. I wonder if we could have a relatively standard approach for looking at the data. Say, the final design and a few of the subproducts.

**Scott**: We kind of have it sketched out on this page.

**Bill**: It would be good to have a description of each product – what it is and what it could be used for, emphasizing the appropriate use.

**Scott**: We tried to break this discussion into short and long term needs. Would you need this for this conference call?

**Bill**: I would like to have it before I talk to my staff about it.

**Nancy**: So you would like a product like that for your inreach, to talk with your internal people.

**Kevin**: There will be a detailed technical document that will go into depth on all of this. I can't promise that will be available in the short-term. Certainly it will be done before a public rollout. Would a paragraph for each layer be sufficient for this short term?

**Bill**: Yes, just 2-3 sentences for each layer.

**Kevin**: I can do that. Do you want it as metadata or as a separate document?

**Bill**: I would say both, but for the short term a PDF would be good, for those who don't know what metadata is or can't access it.

**Scott:** Maybe we should capture the key products for inreach. It sounds like core and connectors for terrestrial, core and buffers for aquatic, each of the species results, IEI, resiliency, the combined selection index, conductance, and the restoration products. Those are the key things that people will want. Kevin, are there others we'll want for that inreach review?

**Dave**: What kind of summary statistics will we have as part of the completed product?

**Kevin**: There are several summary tables to be included in the detailed technical report. I hadn't thought of doing that for the initial next call; I was thinking of it for the public rollout. Scott, I basically concurred with the list you gave. There are a few other products that are ready to go: local and regional vulnerability, the core area and the link prioritization. We could also show the max LC for all the representative species.

**Scott**: We can work on a list of the key products and maybe Kevin's team will be able to contribute a little to help generate initial abstracts.

**BJ**: I think information about each dataset is important, but there is also a fairly short document that we could put together that would talk about resolution of the datasets, scale, what the project was intended to do or not do: what you should expect to get or what you should not expect to get. We've had some good discussion around that today. Patrick brought up a good example with the grasslands. I'm not sure the needs are that different between inreach and outreach.

**Scott**: If there is something so problematic in the design that you think it renders it useful, then we need to know that as soon as possible. Then we need to determine whether it can be part of a version 2 improvement. That said, I'll emphasize again that the design complements but doesn't replace local data. It's a reflection of a consensus-based set of decisions that the team made. I think everyone compromised at different points along the way. We don't expect this to line up exactly with other products, like BioMap or BioFinder. If it did then what was the point? But if there are major issues, please tell us about them. And then we can work with you to determine if there's a workaround. We're expecting that 4 weeks after receiving the design seems enough for a review.

**Nancy**: We're hoping that within 4 weeks you will have also talked within your agency or organization to ensure that there is affirmation or endorsement from them, such that your organization would be willing to publicly endorse using the design.

**Patrick**: I would like to be able to show the layers on Data Basin to selected staff.

**Scott**: I think we could give core team members the opportunity to designate some folks to get access to the Data Basin CT team.

**Andy French**: Where is the part where you describe how this fits/intersects/complements with other efforts?

**Scott**: In terms of application, we need your help to show examples.

**Patrick**: I think it would be good to have that to illustrate that this is *a* tool, not *the* tool. It's an additive process. You're going to consult BioMap, Audubon Focal Area, etc. Where you find overlaps there will be additive value. At other times you'll find new things. So I think it would be good to outline that.

**Kim**: I have a process suggestion. Maybe at the same time that we're providing endorsement (and what is that? Written? Verbal?), the organizations that have some of these other tools can write a paragraph that explains which tool is for what purpose. That way you take care of both steps at the same time.

**Ken Elowe**: We've struggled with the word "endorsement." We're not looking for some high official thing, but rather recognition of the effort put in, the credibility that that brings, and the backing of that organization.

**Eric**: I think Ken answered my concern: I can write a letter that says I like the product, but an endorsement requires the governor. So we need guidance on what you mean by endorsement. A letter is doable.

**Andy French**: I think a short little paragraph about why you're going to use the CT Design is a good endorsement, and one that will be so helpful to all of us. Those paragraphs are going to be critical to me moving into the CCP. That's a critical deliverable for me.

**Nancy**: We decided not to use the word endorsement and then I did right away. It sounds like something more informal would be easy to do. I think we can say all the agencies involved support it.

**Scott**: The minimum would be can your name and affiliate organization can be on it. Preferably we would say that your organization, without committing to using it, participated and sees value in it.

**Marvin**: Would it help to frame all of this in the context of the LCC. As in, the LCC did this and the participating organizations support it through the LCC.

**Andrew Milliken**: It is an LCC effort and we'll continue to discuss it with our LCC committees. But I don't want to lose the power of all the individual organizations and the leadership of FWS staff.

**Scott**: We're also bringing this up now so that if there are discussions you need to have internally in order to publicly support, that those begin soon.

**Nancy**: And we'd like to have all of that happen in that 4-week timeframe.

**Scott**: So assuming there are no major problems, what do you guys think about meeting in March? Show of hands?
**Nancy**: I see almost unanimous consent. Any dissent on the phone? No. Great.

**Scott**: As you come across needs for products and/or information you need for review or for inreach, please get in touch – maybe to the communications subcommittee that Dave will talk about soon – and we can see about creating that. We also want to identify additional products for a potential Version 2.0. For example, there was a new aquatic layer that came out recently, but too late to be integrated into the design. So we want a list of data like that.

**Ken Elowe**: We've also noticed places where there is high uncertainty, and where places with high uncertainty has more impact on the model. So that might focus additional data collection, both remote-sensed and field collected. I would also like to hear more about the process and lessons learned for you

as individual team members. I don't anticipate repeating this process in the same way again, but it would still be helpful to hear what worked and didn't work.

**Nancy**: I would also like that discussion to be part of the March meeting.

**Marvin**: I would be interested in hearing about other rollout efforts and what worked and didn't. We want to learn from others' past successes and failures.

**Bill**: This product could represent consensus on what would it take to sustain ecological integrity. I've been thinking about relevancy. If you roll it out with an undersell, then it has to be really relevant to convince people to use it. But if you have some doubt about how to get people to pick it up, then we have to think more about the story we're going to tell about it. Just saying it's a consensus on an ecological approach to decision-making doesn't really do it for me. Instead, what is its highest value? The highest potential? If we set aside our concerns. We should think about what we're working on. In terms of communication, we don't want to oversell it, but I don't want to undersell it either.

**Andy Fisk**: I think working on the review will help us come up with that information. But I want to underscore what Marvin said. I worked on the Blueway Initiative for 18 months and it was really frustrating how a little thing done wrong in the rollout brought the whole thing down in flames. And it was a good product. Unfortunately we do have to think about how this can be used against us.

**Scott**: Let me try to summarize the discussion so far. What is our main message, what are we trying to accomplish, and what is the big picture? Those are key questions we have to be able to answer. We need to finish the key decisions document. We need to put together the package of datasets with abstracts describing their appropriate use. We need tutorials for how to look at them on Data Basin. We need to put the data on Data Basin. We will collect names of others in your organization who should have access to the CT Pilot group on Data Basin. We can put together some summary tables based on past info and can put together some new ones too. BJ suggested a short document giving an overview of resolution, scale, and project purpose. Those are the main action items I have down.

**Discuss process/timeline for updating design over short- and long-term and other relevant products under development (Andrew) [3:00:00]:**

**Andrew M** (long-term needs): I want to continue to thank everyone for all their hard work on this. It's great to see this all coming together. Now, this is a pilot, and we will be doing other landscape conservation designs. Part of what Kevin's team was charged with was a prototype regional conservation design; this is something our steering committee is very interested in. They are in their final year of revising State Wildlife Action Plans and developing Regional Conservation Opportunity areas, which is on track to be done this summer. Some of you are actually involved in that. There has also been interest in other subregions and regions. There are 2 people on our core team who are observing in order to prepare for landscape design there. Bob Houston has been listening in; he's involved with the Gulf of Maine. And Mike Slattery is affiliated with Envision the Susquehanna which is hoping to create a landscape conservation design in the Chesapeake Watershed. These projects have

the potential to be led by partners rather than by the LCC and UMass staff. So those are the two things this Pilot is working toward.

I also want to talk about what kinds of things could lead to some kind of refresh in a year or so from now. If we want to call this 1.0, we could call that 2.0 Scott mentioned the lakes and ponds improvement, and I've listed some others on the handout. We haven't thought about all the logistical details of bringing people back together.

**Mitch**: I had a meeting last week among all the Joint Ventures. One thing that came up is that we don't do the human dimensions piece. The question I have is do we want to do some formal evaluations to gauge how well this is received and understood by other people, and make that part of the evaluation of the process.

**Andy French**: We have a CCP coming out with a Land Protection Plan alongside it. When you go from 1.0 to 2.0 – I'm wondering if there would be big changes or if the differences be refinements. Is the next phase going to be something where decision-makers suggest we wait for it to come out before taking action?

**Andrew M**: I would certainly characterize 2.0 as a refinement. Maybe 1.1 is a better way to say it.

**Andy French**: I'm more comfortable with a refinement. A version 2.0 – people wait for the new iPhone, for example.

**Patrick**: I'll also point out that I don't think we're going to take anything away in 2.0. We'll probably only add things.

**Andrew M**: Next there are some things that UMass is working on (*see handout*). The first has already been discussed today: complete documentation of the tools that went into the process that are part of the DSL project. And then our technical committee last year discussed the need to transition from the UMass models that depend on UMass to run, to a set of function that well trained technical staff could run on their own. Ultimately the ideal would be a standalone decision support software product that people with less experience could use. Some things yet to come are a focus on early seral lands, and restoration of agricultural lands to wetlands/forest. We also want to assess the utility of the representative species approach, and how well they worked in the design.

**Dave Perkins**: This seems like a good point to bring up one of the gaps on the aquatic side, which is water quality. We lacked a regionally consistent dataset that we need to incorporate it.

**Andrew M**: That's great, and I also want to make the point that part of the adaptive approach is identifying gaps like that one. Part of the LCC role is to address those gaps through our science needs process, so that we can refine and improve decision support tools. Please let the LCC know about any gaps, especially in regionally consistent datasets.

**Jeff Horan**: I'd like to jump on that bandwagon also. I think it would really help to tee up a series of – you stated the regional conservation opportunity areas, or the joint ventures, looking at the

representative species models and give feedback on how to improve those. Within refuges we have an aquatic ecosystem group, and they are very interested in better understanding priorities among headwater streams. Where do we go to start looking at culvert passability? I think we could line out a series of these and partners would run with it, and I think it could be done sooner rather than later. I think by doing that you show a way to use all this data. But to send them to data basin to look at it – there's no way. We need to give folks a specific way to approach this on a number of different levels. There are many potential approaches; I hope we can select a few of them to focus on.

**Andrew M**: Yes, one of the best validations is for people to use the design and then give feedback.

**Patrick**: About water quality – this is probably beyond 2.0 – it's difficult to quantify how changes on the ground could lead to changes in water quality. To be able to answer how protecting parcel X would improve water quality? That's something there's a real need for in the restoration community.

**Andrew M**: I wanted to also let you know about some related projects. Partly funded through the LCC and partly from Hurricane Sandy money, we have a number of projects related to aquatic connectivity and coastal resiliency (both beach and tidal marsh) that will inform future designs. I also wanted to let you know about some exciting new initiatives. One of those is the FWS flagship geographic regions for climate change, and the Connecticut River Watershed has been selected as one of those. Also, a group of partners in the watershed recently got a grant for Long Island Sound conservation.

**Andy Fisk**: (*Spoke about the Long Island Sound Regional Conservation Partnership Program.)* They are hoping to develop high priority local projects, but also projects that will fit into regional plans. Like EPA's TMDL (Total Maximum Daily Load) for Long Island Sound. The states want to track changes in water quality data and BMP implementation.

**Andy French**: Andy Fisk brought up matching funds. This team is a good place to start in terms of thinking about what might be available from members in the LCC. One thing that came up yesterday is that the value of land could potentially be used. I'm aware of $80,000 in donations up in NH. If we put our heads together we can start chipping away at that $10 million match.

**Nancy**: We combined some items earlier in the agenda, so next up is Dave Eisenhauer.

**Communications (Dave) [3:25:40]:** We need to communicate consistently and strongly, and tell the story about why we're doing this and how it helps us accomplish shared conservation goals. So I'm here to talk about forming a subteam that will focus on developing an outreach strategy that will help us tell our story effectively and consistently. I'll go over some of the components and then lead a discussion on what else we can add.

When we talk about communications, the first thing is to define our audience. Who are the stakeholders? Who else will want to know about this? Defining the audience is a key first step. The next is that we need to define our goals and outcomes, and potential challenges. We've discussed these a little today already. Part of the strategy is going to be the key messages. These don't have to be talking points, but rather themes. I've been focusing on why did we do it, how did we do it, what's it for?

Finally, we can brainstorm a list of specific strategies that will support our communications goals and outcomes. The thinking is that working with the core team leads and a segment of the core team we can flesh this out. Any questions so far? (none)

First I want to talk about the target audience. Who are the key audiences?

- Andy Fisk: Members of the Friends of Conte, FEMA, Other LCCs
- Bill L: The 12 RCPs and all their members; regional planning agencies, USFS, state forestry agencies
- Eric: Planning Commissions
- Patrick: regional planners and decision makers, ACOE
- Georgia: wildlife refuges; within the states, where decisions are being made on land acquisition, urban wildlife refuges, both within the watershed and elsewhere in the region
- Andy French: USDA; people affiliated with working landscapes (esp. forests and farms)
- Kim Lutz: Land trust alliances, Congressional delegations
- Marvin: skeptics; everyone → high school level
- Scott: transportation agencies
- Jeff: Joint Ventures, FWS programs

What does successful communications look like in terms of outcomes?

- Bill L: Acres conserved that are within the cores and connectors (rate or total, before or after); zoning changes that cite our design; increased users on Data Basin; individual landowners that design stewardship plans for their land using this design
- Ken: For people to understand that this map is not an acquisition plan. This shouldn't look like a regulatory or acquisition plan. We don't want to put out this as a map of something to be bought or regulated on a private lands basis. / The whole idea of the public accepting this brings up the idea of relevance. So there should be a way to make this relevant.
- Marvin: Informed decisions that add up to something bigger
- Scott: I think there might need to be a message tailored to private landowners; e.g. You might be interested in knowing you have a very valuable piece of land and you could consider some stewardship strategies for it – *not* "Hey, we want to come buy that." There may need to be tailored message about what it means; there are a lot of tools besides acquisition.
- Georgia: It's a jumping off point for thinking of innovative ways and conversations about how to do conservation on private lands. We could expand the conversation to include private landowners. This is certainly relevant in the urban wildlife refuge context. Some structure for action or continuing conversations would be great.
- Andy Fisk: People understand the difference between the Conte CCP and the Pilot Design.

What are the messages we want to put out there?

- Andrew M: One of the most compelling stories about an ecologically connected landscape is that it appears to be one of the most important things we can do in the face of climate change

to ensure resistance and resilience. It talks about geophysics, resiliency, and other factors. Our story is that we're thinking about what to do in the face of climate change with the best information available to adapt.

- Mitch: We should show how this relates to water supply and flood control. These are avoidance of regulatory burden issues. This can help us avoid listing species by providing mechanisms for their persistence.
- Kim: Back to the story map idea. My thought is that we would pick a handful of stories that resonate with a broad populous. People are always interested in water quality. We want to show how we can protect healthy forests. We could have a person tell the story from their perspective and then have pictures. I think if we choose a couple of themes and build stories that illustrate these themes from actual examples.
- Andy F: We should figure out what's important to the stakeholders and frame this work in terms of what matters to them. We talk about working forests and farmlands. We talk about things that conservationists normally don't. In my experience, this works.
- Marvin: The New England Governor's Council has desires. We should look at their past efforts and make certain that our message connects to their goals. It would be a good way to build support within the Pilot subregion and a step towards building support in the FWS 13-state region. We could recommend the Harvard Forest Report, which recommends 70% cover. So we should cite other work as part of a conversation.
    - Ken: I think this Pilot is in direct response to what the Council was asking for.

**Dave**: Thank you all so much. I'd like to hear who would be willing to be on a team or at least review materials.

(Andy, Jeff, Bill, Scott, Andy, Kim, BJ, Marvin, others)

**Ken Elowe**: Bill, I've never been accused of underselling the Pilot before. I just want to say thank you to all of you. This is one of the most exciting efforts I've ever been involved with. We're doing stuff that has never been done before, not at this scale, not at this level of complexity. Thank you to Kevin and the team. We have the design now. We're talking about how to implement it. We're asking if you want to be part of this team for a longer term, not as a commitment to a future meeting, but as a long-term collaboration.

**Nancy**: I thought we covered a lot of ground today. We have consensus with our last decisions. We talked about some steps we'll be asking you to follow through on in a few weeks when we get the final design. Then we'll have a meeting toward the end of March. I'd like to suggest the last Friday in March to keep the same pattern going. We'll also have a call when Kevin releases the final design, and then the 4 week review period will begin. Are there any other lingering questions? Feel free to contact any of us with questions.

**Patrick**: I'd like to see this in other areas and at different scales. Also I would like the cartoon, please.