Notes on Science & Conservation Planning
Session 1: Resilience Science Workshop

Jennifer Melville, Open Space Institute, David Wolf, N. Quabbin Regional Landscape Partnership, Jay Rasku, Mt. Grace Land Conservation Trust

Notes prepared by Donna Merrill

Part I: Jennifer Melville, Open Space Institute

Why climate change (CC) matters to land trusts: CC impacts places we/Land Trusts care about. Therefore, must search for answers to questions such as: What will happen to plants and animals as climate changes? Why protect land when the species will be moving north once it warms? How will the species relate to each other and rearrange themselves? Since LT's investments are meant to last in perpetuity they must ask: how do we invest wisely in what is to come? The Nature Conservancy is trying to answer these questions and has funding from the Doris Duke Foundation for this purpose. They acknowledge unpredictability, are oriented to a very long timeframe and therefore are focusing on things that will not be changing rapidly—geology, elevation, soils, and topography.

What correlates with biodiversity? Number of geology classes, calcareous bedrock, latitude, elevation, etc. The Stage: geophysical settings = geology + elevation Right now, what is not adequately conserved are the productive, fertile, low-level environments valued by people.

A resilient landscape is bigger, locally connected & has complexity: has micro-climates based on variability, such as different kinds of rock, elevations, and land types (wetlands); maintains ecological function to sustain diversity of species. In identifying resilient landscapes TNC also added latitude to the formula to assure they are comparing apples to apples. Then they scored the parcels, compared them and put in relative blocks. (Data is all available)

Resiliency of land for the benefit of wildlife in a warming world: Science on this is still evolving. Ground truthing is key. LT's must choose lands that are resilient when they do their planning as to what lands to protect. Resiliency data is available online: Google "terrestrial landscape" to find it. The work conducted is very wildlife focused. There is coastal resiliency and watershed resiliency information too, but one must dig for it. Work is being done to answer the question: What areas will become refuges?

Part II: David Wolf, Mt. Quabbin RLP

Climate Resilient Co-Occurrence Modeling

N. Quabbin RLP looked at biodiversity data and asked : How do we take the body of science and work it into a conservation plan? (In this partnership, they had trouble getting this large group, representing 26 towns, to agree.) The first step was to strip it down to protecting biodiversity, not farmland, etc. They also had to understand what a co-occurrence model is, viz., an area where a variety of natural resource elements overlap. This implies that many overlaps have higher conservation importance. As each resource was mapped it was counted by using the number 1. Additive arithmetic was applied: 1 + 1 + 1. Then the areas were ranked. This is simplistic but is all that needs to be done in the beginning.

First, the group was asked to rank what they cared most about. Started by finding forest cores (given a value of 1); then added aquatic cores (value of 1) and found that some things started to coincide. These areas then were given a value of 2. Added wetland cores and in areas where all 3 overlapped they were valued at 3, where just 2 overlapped they were valued as 2's, etc.; added vernal pools, priority natural communities, habitat for species of concern, etc. Each time something was added a new blob appeared. Areas where 4 overlaps happened were valued at 4. All this winds up as blobs, but were analyzed to the level of 30 meter pixels. Added TNC resilience—scored after breaking into thirds to weight this data. Added TNC underrepresented geophysical settings. Cut out the protected land because wanted to see where to go in the future. Then did TNC resiliency and doubled its weight, then took out TNC data altogether. This is where the project is now. Found it very important that the model has buy-in across the group. The important thing when using this model is keeping it simple which yields good results, and helps with decision making.

Part III: Jay Rasku, Mt. Grace LCT
Challenges for Regional Conservation Partnerships & Lessons Learned

A big challenge was bringing the group along because the data is quite confusing. We didn't want TNC or OSI to "tell us what to do". It takes a lot of time to understand the data. RCP members need time to understand and feel comfortable with data and the concept of protecting the "stage" instead of protecting the species also took a while to get used to.

Brainstormed what layers they wanted and came up with 28 layers with varying weights—this was too much and should have been simplified in the beginning. Also, it didn't work well when smaller groups made decisions outside of the larger group. We had small working groups, which didn't include some of the key leaders from the larger group. This was a mistake. Another problem was that the complexity of the data was not fully explained in the beginning. This made it harder to explain later. It was also important to remember that TNC data is only for biodiversity so therefore another analysis must be done to bring in the other concerns. Fortunately, the final data agreed with the locations where the group was already doing work. If that hadn't been the case and it had thrown the group for a loop, it may have been a problem. Caveat: co-occurrence data sometimes minimizes things that are important therefore it is important to go back and pull apart the layers and reconsider again. Model will be helpful to pass next initiative.

Comment: TNC analysis should go beyond just wildlife and look at infrastructure, coastal flood plains, and other natural resource data like stream corridors, and should consider things in the framework of its importance for human resiliency.