

Pilot Study for Envision the Susquehanna:

**The Conservation Attitudes, Behaviors, and Values of Residents in Counties Contiguous to the
Susquehanna River**

Final Report:

Phase I

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Executive Summary

The report is organized to highlight the assets, attitudes, challenges, and opportunities throughout the river counties. Each section is organized around the topical areas of cultural, social, environmental, and economic, as these categories provide the reader with a consistent frame for viewing each section. This report is not exhaustive, but selective and intended to provide in-depth snapshots. Within each section, a brief overview of key components is provided. These are meant to illustrate the type of in-depth knowledge held by interviewees about selected topics of importance for the survey development and the Envision the Susquehanna project. Additional and supplemental materials, specifically the survey outline and a dataset of 85 comprehensive plans gathered and organized by Student Research Assistant Buck Doyle, give the reader a broader view of the diversity of projects and actors across the river counties. Comprehensive plan datasets can be accessed through both the Place Studies and the Envision the Susquehanna websites. Further analysis of these plans will unfold in phase II, through the usage of textual analysis software, and results are to be included in the phase II final report. Inquiries about the report can be sent to Brandn Green – bgreen@bucknell.edu.

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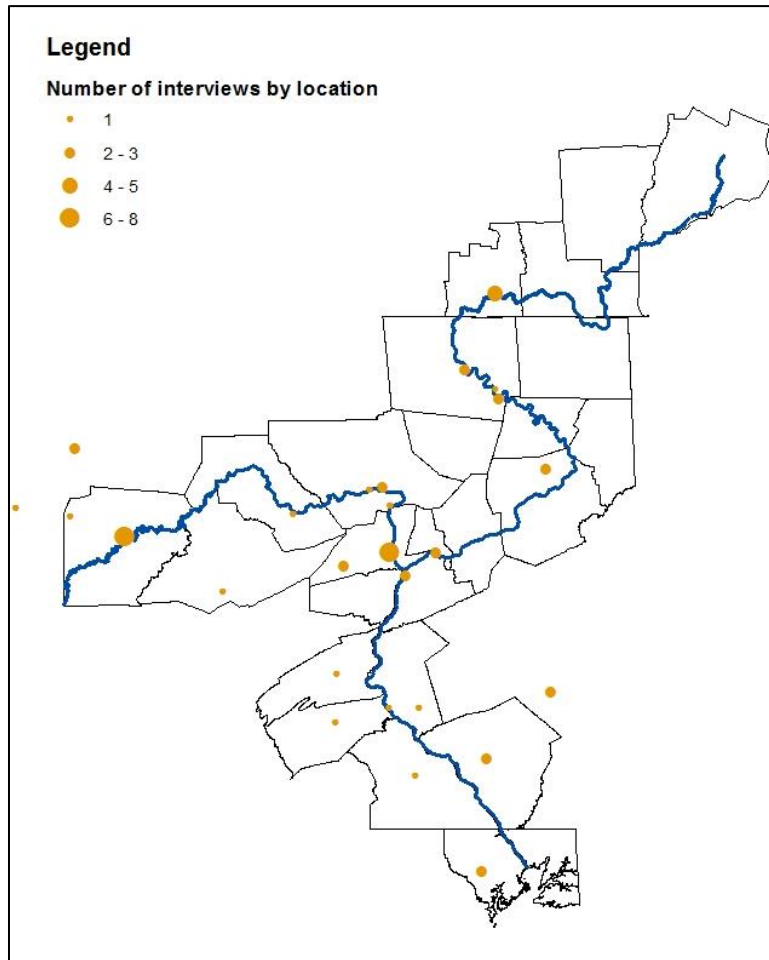
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Introduction

This report provides an overview of the assets, attitudes, challenges, and opportunities associated with and for land conservation throughout selected counties in the Susquehanna River watershed. Qualitative data was gathered through interviews with key informants from land conservation organizations in counties contiguous to the river throughout New York, Pennsylvania and Maryland. Throughout the report, the geographical region of the interviews will be referenced as the river counties. Interviews were carried out in 19 of the 22 river counties. The interview guide is included in Appendix A.



Interviews were initially completed to provide information for the development of a survey that will be undertaken in the 22 counties as phase II of the research. However, it became clear that interviewees each possessed a wealth of information and that the purpose of the interviews should expand. Interviews began to be designed to generate qualitative data on the key topics, assets, and risks identified by land and water conservation officials, as well as the attitudes of these conservation leaders toward environmental attitude objects and the conservation context of Pennsylvania. This report is a synthesis of these themes and provides an overview of the plan for the survey.

The research was requested by the Chesapeake Conservancy to inform their Envision the Susquehanna program. During a planning meeting in the fall of 2013, I discussed a research design for understanding the conservation attitudes, values and behaviors of residents in river counties. This design included, as a first wave, key informant interviews, a phone survey as a second wave, and focus groups throughout the watershed to be organized by the Chesapeake Conservancy.

Interviewee Group Specifics & Selection Methodology

Interviewees were recruited from a list of conservation officials and leaders put together by the principal investigator. Organizations of possible interest and positions within them were identified, contact information for individuals was located, and the list was double-checked by members of the Envision the Susquehanna Steering Committee. In total, a list of 300 possible, key informants across the river counties was identified. From this list, a total of sixty-two interviews were completed. An overview of interviewee types is below:

Organizational Type	Number of Interviews
Outfitters	3
County Conservation District Managers	7
County Conservation District Technical Staff	12
Land Conservancy Directors	7
PA Game Commission Officials	5
DCNR Representatives	3
Visitor Bureaus/Heritage Regions/Chambers of Commerce	4
Regional or Local Planning Offices	8
Federal Agencies	6
Unaffiliated Citizens	8
Total	62

Cultural Geography of the Watershed

The simplest division of the Watershed is usually identified as:

- West Branch – Curwensville to Sunbury
- North Branch – Cooperstown to Sunbury
- Main Branch – Sunbury to Lancaster
- Lower Susquehanna – Lancaster to Havre de grace

Below is a more nuanced version that emerged over the course of the research process. These are brief overviews of each micro-section. These will be referenced throughout the report. One specific overview, developed by Bucknell student Buck Doyle, is provided in Appendix C as an example of how micro-region overviews can aid in the work being undertaken by the conservancy.

Micro-Regions

Upper West Branch – Start of River to Renovo

Key Features: Marked by AMD and remediation efforts. Curwensville Reservoir. Low water levels. Improving water quality. Isolated recreation stretch. State ownership of corridor land. Lower population density. Lack of recreation supporting social infrastructure.

Lower West Branch – Renovo to Sunbury

Increased population density. Manufacturing and industrial histories. River access projects in river towns. Sewage treatment facilities. Increased salience of river for residents. Parallel road infrastructure. Towns are integrating passive usage of the river – drinking on pontoon boats during river-front concert series.

Headwaters – Cooperstown

Elite, liberal, well financed and protected area. Tied heavily to tourism. Disconnected from downstream.

Upper North Branch – Cooperstown to Binghamton

(This is the only section not visited.) Heard from others, impacts of Tompkins County (Ithaca) and Cooperstown keep this section relatively protected. Flows through rural counties until it reaches the metro areas. Metro areas demonstrate increased usage and impacts.

Middle North Branch – Binghamton to Wilkes-Barre

Marked by the cooperative management of the Upper Susquehanna coalition. Rural, agricultural in heritage, regions free of past mining impacts. Currently heavily connected to Marcellus. Small towns with few resources prior to Marcellus. Stories of the strongest ideological resistance to government interventions came from here.

Lower North Branch – Wilkes-Barre to Sunbury

Similar to Lower West Branch. Increased population density. River becomes subsumed by the human infrastructure. Increasing river awareness, still limited. Recreation occurs in specific segments identified as being the most beautiful. A few outfitters. River starts to become central in tourism efforts. Power plants.

Main Stem – Sunbury to Harrisburg

Shallow. Bass Fishing. River access alongside Rt. 15. Small river towns without direct access to the river. Seemingly the most disconnected section.

Capital Region – Harrisburg to Wrightsville

Increased population density. Starting to see impacts of the hydroelectric dams. Increased # of outfitters and green infrastructure. River is linked with bike trails. Land-use pressures and sediments from development are identified as significant environmental issues. River is seen as an electricity producer for the Eastern seaboard.

Lower Susquehanna – Wrightsville to Havre de Grace

The river becomes a series of lakes. Users shift away from human powered vessels to motor powered. A lot of land ownership by utility companies, both creates access problems and opportunities for conservation. Residents begin to be more oriented toward the Chesapeake. River is viewed as a source of pollution, rather than something that is pristine.

Micro-regions are useful for qualitative data collection and analysis, as well as for contextualized intervention planning and resource identification. However, they are also too fine grained for statistical comparisons and potentially too small for rhetorical and communication usefulness. A list of sub-regions, which collapses many of these micro-regions, is now provided:

Sub-Regions – Counties

West Branch – Clearfield, Clinton

Headwaters & Southern NY – Chenango, Owego, Broome, Otsego

North Branch – Bradford, Wyoming, Luzerne

River towns Region – Lycoming, Columbia, Montour, Northumberland, Union, Snyder, Perry

Capital – Dauphin, Cumberland

Lower – York, Lancaster

Maryland – Cecil, Harford

My recommendation is for these sub-regions to be used in the classification and sampling for the survey that will follow from these key informant interviews. By using these slightly more careful distinctions, I anticipate that we will be able to identify sub-regional differences in attitudes about conservation actors, conservation needs, environmental risks, and the saliency of green infrastructure projects.

Assets

Cultural Assets

Native American History

Every interviewee was asked about the relevance of Native American history to the work they did and about the attitudes residents have about Native American history. Integration of care for Native American sites, and of using this history for the generation of tourism, varied across organizations. The variation was in concert with the value orientations of the given organizations. For most of the state-level groups, they are required to pass land development projects through the Cultural Resources Geographic Imaging System (CRGIS) which is managed by the PA Bureau of Historic Preservation. One exception to this trend is along the lower Susquehanna, where dam relicensing efforts have included more extensive identification of cultural resources and sites for protection.

The valuable assets of key sites along the Susquehanna were identified by a range of interviewees. Specifically, the Wyalusing prayer rocks, the petroglyphs in the Lower Susquehanna, and the sites of Friedenshutzen and French Azilum were mentioned during interviews. Engagement from and by the Eastern Delaware members with the Envision the Susquehanna program has also been noted as an opportunity to integrate underutilized cultural assets within the watershed. Native American identification in Pennsylvania is markedly different from both Maryland and New York. These differences, specifically that there is no recognition of Native peoples by the state of Pennsylvania, should be interacted with thoughtfully. Organizations that are cognizant of the best ways to respectfully interact with Native populations and Native history across the river counties are currently an asset. Haudenosaunee participation in southern NY was also mentioned as a key asset to land conservation efforts.

Industrial History

Historical preservation societies, tourism groups, and outfitters highlighted interest in the industrial history of the regions across the watershed as an underutilized asset. Interpretation of the industrial history viewed from the river represents an opportunity to create a more comprehensive understanding of the role that the river has played in the economic history of the United States. To my knowledge, this resource does not currently exist along the Susquehanna. Land conservancies face a challenge when it comes to the built infrastructure, as does the Game Commission, as both expressed an inability to effectively manage buildings on properties they acquire. Often these buildings should be removed, according to interviewees. There was also recognition that on occasion, a potentially historically meaningful and therefore interesting location is destroyed because these organizations do not have capacities to cover the financial costs of maintenance.

Built Infrastructure

Communities throughout the river counties have been focusing on the creation of river-facing spaces for concerts and cultural events. Specifically, Wilkes-Barre, Clearfield, Lock Haven, Binghamton, and Sunbury were mentioned as towns that have recently completed infrastructure projects toward these ends. A more comprehensive knowledge of the ways river towns have been developing infrastructure to support cultural events can be accessed through the plan database.

Social Assets

Organizational Actors

Susquehanna River counties contain a diverse and impressive array of organizational actors, each functioning within a given geographical scale and interacting with a range of successes. Coalitions exist across nearly every section of the river, as leaders across localities have attempted to overcome the limitations of organizational silos. In addition, funding needs and availability have created additional incentives for collaboration. There are a few types of associations and they have formed in different ways and serve different functions.

Problem-focused associations have been created through the intentional organizing efforts of staff at local conservation organizations, but are made up of many volunteers. Local watershed associations are the most common example, as the

creation of these groups was incentivized by the DEP in PA, and were mentioned by every single county conservation district interviewee as exemplars in locally-directed environmental problem remediation. In each micro-region, conservation leaders could identify current and past projects in tributary streams where significant remediation and reclamation efforts came about through volunteer associations. It is important to note the ephemeral nature of these groups, in that they dissolve once the problem has been alleviated.

Coalitions, for example the Upper Susquehanna Coalition, are associations created by local organizational leaders with fellow organizational leaders. These groups, which are fewer in number than the problem-focused associations, reflect efforts by conservation leaders to work on interconnected and longer term conservation and environmental remediation efforts. The same is true for the generation of tourism efforts and some local community development. These groups often have printed materials which highlight the existence of the coalition and list the noteworthy accomplishments.

Formal organizations, for example the heritage regions, represent a third type of association. These are incorporated non-profits, often incentivized by the state, that are tasked with working across organizational and categorical boundaries to achieve a broader goal. These groups work with the broadest diversity of organizational actors, including the most local groups to national level groups. Often, the main function they play is to direct financial and educational resources toward local actors.

By recognizing the role that informal and formalized associations are playing across the watershed, one can gain a helpful perspective on the ways that specific types of issues are being resolved. There is sophistication throughout the river counties for knowing what type of associational structure is needed to address a given type of problem.

Residents

Leaders in a wide range of organizational types are using volunteers to accomplish an impressive array of work within the river counties. Newer residents, specifically those who retire to select communities around the study area, were identified as a major resource, as they provide insights and experiences from outside of the area. Education levels are often higher among newer residents, and conservation professionals from foresters to directors of land conservancies mentioned in-migration as an asset.

College students, both as consumers of green infrastructure and as creators of local programs, were specifically highlighted by interviewees as an asset. It might be of use to generate a comprehensive map of the universities within a given distance (I would suggest 10-miles) from the river. By targeting these areas, and by creating more comprehensive relationships with students, multiple interviewees believe that river usage and river awareness will increase.

Education of children is being undertaken by nearly every organizational type I interviewed. These take place in a range of situations, from direct instruction in elementary school classes to booths at county fairs, and are rather ubiquitous. It might be that a more strategic educational effort, coordinated with the state level organizations, might be beneficial to the organizations and might increase awareness of selected and specific environmental topics. One quote, from a state forester, highlights the resource that is knowledge held by children: “A lot of the time, kids know more about the local forest than their parents.”

Plans

During a group interview in the northern section of the river I was told, “There are more than enough plans.” This was near the beginning of my interviews, and so I asked subsequent interviewees if they shared this view. Overwhelmingly, one hundred percent of individuals responded with a chuckle, smile, head nod and then said, “Oh, yeah, there are enough plans.” Taking this to heart, I began to view these as a major asset of intentions, as a source of data for identifying reasons why projects were not successful, and as a source of information for subsequent planning and organizing efforts. It led to a decision to have my student research assistant compile plans at the county, sub-region, region, and watershed levels. An inventory of the plans he gathered is provided in Appendix B. As stated in the introduction, these plans will be made

available for public access, as one of the key features of plans is the difficulty in accessing them in a comprehensive way. For now, plans are available through: placestudies.blogs.bucknell.edu.

The inclusion of the comprehensive plans means that this overview will not include examples of the projects being undertaken across the watershed by every type of organization represented by these interviews. I cannot stress this enough, there is a lot of impressive and creative work being done at every scale and this work should be both recognized and partnered with for river wide efforts such as Envision the Susquehanna.

Environmental Assets

River

The river is seen as an asset. This is new in some stretches of the river, specifically along the West Branch where in the past, Acid Mine Drainage meant a non-usage of the river. The same is true throughout the River towns region, where intentional efforts by groups like the Susquehanna Greenways and the state of PA have sought to shift the view residents have of the river to it being a strength. In many places, interviewees believed that this has been happening. Efforts in underutilized sections continue to gain traction. For example in Harford County, Maryland recent attempts through the Lower Susquehanna Greenways have sought to increase access and engagement with a section that is hard to reach because of geology and the presence of hydroelectric dams.

Protected Lands

Throughout the river counties, extensive areas of land are under some type of protection. What varies, rather significantly, are the holders of the land and the types of land access and usage that those holders in turn create. Databases and analyses of land types provide a more detailed and comprehensive overview of the types of protection. It is simply enough to note here that protected lands were consistently identified as an asset across the river counties.

Knowledge of Problem Remediation

One theme identified by interviewees is the comfort they expressed in the existence of precise and accurate scientific understandings of how to address many of the environmental problems facing the Susquehanna River. In particular, interviewees are confident in the science behind the nutrient management plans for farmers, and they expressed confidence in our ability to know how to resolve AMD. Some uncertainty was expressed about impacts of Marcellus, to be covered in the challenges section of this report, but that is all. Awareness of how to control sedimentation problems and to effectively manage the forests was also expressed.

Economic Assets

Tourism

Incentive programs by both the PA DEP & CED agencies have enabled increased tourism infrastructure throughout the state. In NY, the same is true for the Cooperstown region, where a legacy of philanthropy and tourism continues to generate economic and symbolic value to the headwaters section of the river. Maryland contains less tourism industry related to the river, and yet local usage of the assets of the river, specifically in Hartford County, remains an important tool for generating economic growth and for preservation efforts. Across the river counties, the concept of local tourism, of the 'stay-cation,' represents a newer orientation that is reflective of both local and national economic trends.

The vast expanses of forest area in river counties has meant a rather extensive network of events, affinity user groups, and individual residents finding the assets of the central portion of the river within easy driving distance from the Eastern population centers. There is some speculation that development of the Northern Tier for Marcellus, an area that had received a lot of tourism-based promotional efforts in the ten years preceding Marcellus, has led to a spill-over effect for outdoor recreation in the non-drilling counties of the watershed. Rising gasoline prices have also been identified as factors for the localization of outdoor recreation efforts.

The hunting cabin culture of Pennsylvania, and southern New York, should not be overlooked as a potentially underutilized asset within the watershed. Large tracts of forested land are owned by non-profits, many of which are oriented around the conservation of land resources, even if decision making in these organizations is highly hierarchical and patriarchal. With an expected transfer of land resources over the next 20 years in Pennsylvania, there are potential opportunities for increased educational efforts with private forest land owners and hunting club owners about the benefits, both to them and to the region, for more thoughtful land management. Tourism that is generated through hunting clubs, or camps, is often the type of tourism that is local, in that a resident in one county would have a camp in the next county over.

The type of tourism being developed in each section of the river is directly related to the geology of the river and attitudes about the river. By connecting river-based tourism with heritage tourism, a wide range of actors throughout the river counties have been engaging in linked efforts to use tourism as an economic driver. One question I have is that tourism does not strike me as being a solution for every town and for every region of the river. There were some doubts expressed by local leaders as well, with a recognition that tourism will likely pool in specific areas of high-amenities. There is currently, and will likely continue to be, a disparity in assets across communities.

Educational Institutions

A number of interviewees believed that the presence of a university within a given community was the most stable economic driver. In addition to the resource flows brought about by universities, they bring new ideas and perspectives into somewhat remote sections of the river counties. University courses are integrated into local planning efforts, and in turn provide data that can be used by resource professionals for grant applications.

Natural Resources

The economic growth of the Marcellus extraction was on the mind of nearly every interviewee. Salience of Marcellus waned as one went south or north; specifically, it was irrelevant to the interviewees in Maryland. The southern section of PA is beginning to start a conversation about Marcellus, as a proposed pipeline through Lancaster County has generated a wave of community organizing and public awareness. The opportunities provided by Marcellus mean that there may be more financial resources in regions of the watershed that have been experiencing significant, economic stagnation for the past fifty years or more. The relevance of the natural gas development is in the awareness of all interviewees from New York state and they expressed an ambivalence about the nature of the development, highlighting how there are both potential risk and rewards.

Coal continues to be a part of the natural resource extraction base of Pennsylvania, as do shallow gas wells and dry gas wells. One legacy effect of the history of oil extraction in Pennsylvania, specifically throughout the Northern Tier, is that of continually leaking oil wells. One suggestion was to use the Collector App by ESRI to enable backcountry hikers and fishermen a way to identify uncapped well heads throughout the watershed.

Timber is also a major player in the natural resource economic base of the state. In particular, the West Branch drainage and the Game Land properties across the state are being managed to create wealth for both private land owners and the Game Commission. One note is that large timber holdings continue to exist along the West Branch and there are opportunities to collaborate with timber holding companies for continually improved management of the properties for increasing water quality. State Forests also reflect a shifting attitude about forest management, as leaders in multiple state forests informed me of a shift toward large-landscape thinking, where management decisions are shifting from being stand-based to being forest-scale.

Agriculture

The nutrient management regulations from the Chesapeake Bay Commission appear to have been very successful for decreasing nitrogen and phosphorous loading throughout the river counties. Conservation district officials are continually engaged in stream buffers, assistance to farmers with grant applications, and in particular manure management plans. A

few county conservation district officials remarked on having every farmer in the county in compliance with current regulations. A few counties, in areas where there are not a large number of very large farms, have reported having to shift nutrient management advising to small and hobby farms where a resident may own 5 horses. This struck the official as being a rather tedious and annoying effort, but one that indicated success in compliance across the county.

Mennonite and Amish farmers make up significant portions of many of the counties along the river. I was struck by the thoughtfulness of county conservation district officials, in particular, with the relationships they have built among and in these communities. Continuing to support these efforts, through non-regulation-based relationships, appears to be a rather effective strategy for helping to increase stream bank buffers, decreasing unhealthy nutrient loadings, and increasing communication across potential cultural divides.

Infrastructure

The gravel roads of the state forests of Pennsylvania, and in some of the more remote sections of the river counties, have been targeted for more thoughtful management. Many reported a decrease in sediment run off from these roadways and general recognition that attention to these areas has led to positive, environmental outcomes for tributaries across the watershed.

Green infrastructure, specifically river walks, boat launches, and bike paths, has been a major focus of multiple organizations throughout the river counties. A comprehensive understanding of these changes, and plans, can be found in the county-wide open space and comprehensive plans. Overwhelmingly, interviewees highlighted a level of contentment with current plans and expressed a need for increasing funding support for the implementation of these efforts.

Attitudes

Cultural Attitudes

One question, and one that can be more properly addressed through a survey, is about the cultural differences across the watershed. Prior to interviewing leaders in the river counties, it was believed that a high degree of cultural variation existed across the watershed, and that this was reflected in homogenous geographical zones. For example, the northern tier would be more conservative, the west branch would be more independent, and the southern counties would be more liberal. Instead, I suggest that the zones of the river reflect different ratios of the same types of cultural groups and that the presence of many different types of cultural groups exist in every contiguous county.

Traditional farmers, both the Amish & Old Order Mennonites, as well as a group often called “natives,” are present in nearly every county. There is a lot of variation among the presence of Amish & Mennonites, and this variation should be accounted for in river access planning and land use planning. There is a view that native farmers, defined here as families who have been farming in a given location for more than two generations, are the most threatened and diminishing cultural group in the river counties. This reflects national trends on farm ownership structures.

Demographic predictions are for a significant increase of Latinos throughout many of the river counties. When asked about this cultural group, many interviewees reflected a critical view of the predictions, offering a diverse range of explanations about why rural areas of these counties do not appeal to members of these cultural groups. It will be important to integrate these views into plans for land conservation and outdoor usage for the near and long term future throughout the watershed.

Social Attitudes

Views of Organizations by other Organizations

Not surprisingly, interviewees held opinions about fellow land conservation organizations and the limitations and strengths of each. Overwhelmingly, interviewees expressed frustration with the political apparatus and leadership in each state. This was more pronounced in the Pennsylvania counties, as the township system of governance leads to the inclusion of more players, and the need for more coordination across diverse political players. One land trust director stated that it was necessary to attend every single township meeting when they are trying to purchase land, as it is the only way to avoid misinterpretations of the purposes of the group. Local governance capacity was frequently questioned and concerns about the ability of township supervisors to interact meaningfully with both the county and land management groups was a major theme of the interviews.

The PA Game Commission (GC) is viewed as an important actor that is able, through both the unique situation of the GC within the structure of the government and their ability to be self-funded, to not play along with key groups in situations when the goals of a land management decision do not align with the statutes of the GC. This is a unique situation to PA, as both the MD and NY game management decisions are made within the more integrated Departments of Fish and Wildlife. In general, attitudes toward the GC and the Departments of Fish and Wildlife were not negative, but simply recognized that they are a large land-holding entity that does not have the same incentives and needs for collaboration as the other actors.

Views of Residents by Leaders of Organizations

A lot of interviewees expressed, generally as side comments or as unsolicited observations, negative views toward the capacities of residents. They felt like they were, in general, uneducated on conservation issues, disengaged from local planning efforts and politics, and often acting as individuals rather than as members of a community or broader social-ecological system. They expressed frustration with illegal usage of land, specifically mentioning ATVs and the destruction of gates designed to remove access. Concern that long-term residents viewed outsiders with disdain, a large issue due to the number of absentee landowners, was also a common refrain.

Cohort effect, that is the changing value structures across generations, was another major theme. Interviewees believed that the older generations had a harder time accepting conservation interventions than did younger members of their communities. The tensions that exist on farms and in hunting clubs, where older members hold veto-style authority, and limit the integration of newer land management concepts and plans when new ideas are not connected to a regulatory structure.

Many of the volunteer associations being used by local conservation organizations are populated with individuals who move to a given area from somewhere else. This generated some concerns among interviewees, as the tensions across long-term/short-term residents might be exacerbated by organizational structures that create an ease of access to individuals with organizational skills and experiences with more heavily structured environments. One recommendation is to be more thoughtful about how to engage long-term residents, and less educated residents, into local land use planning. Many interviewees articulated a range of strategies for accomplishing this goal, and demonstrated a sincere interest in thinking about how the local land-use planning processes could become more inclusive and representative of community members.

One strategy, specifically mentioned by individuals working with private forest land owners, is to begin to shift land management discussions away from use-value orientations toward value orientations broadly. This means that rather than asking a land owner, “How do you want to use your forest?” they instead are asking, “What do you value about your forest?” Integration of a diverse range of value constructs, and the saliency of multiple types of values, will be further examined through the survey. One of the very basic impacts on water quality, and land-use decisions broadly, is through the aesthetic values of different residents. For example, we can ask survey respondents if they prefer stream banks that are free from undergrowth. In many situations, it was theorized by interviewees that the management action was less appealing to residents if it did not also meet the aesthetic values of the land owner.

An additional idea is to be more thoughtful about the cultural events which these types of residents tend to attend, and to bring the land use planning to the people. For example, county fairs provide a location of cultural saliency for rural, long-term, and less educated residents. If the conservancy were to work with local conservation organizations to do a cooperative planning exercise for priority lands, or for feedback on local planning efforts, I anticipate there being significantly increased participation from residents who are often not included in planning efforts. One could also target boat launches, contact hunting clubs, and local bait shops as a way to access recreational users of the environment.

Environmental Attitudes

Susquehanna River

The river is, obviously, viewed differently by different people. This variation is in part due to differences in attitudinal structures, in part because of distance from the river, and in part due to connectivity with the river. These points of variation were offered by interviewees as explanations for the salience of river issues in the lives of residents. The significance of the river is also influenced by the proximity it has to other, more desirable in some way, waterways, specifically regarding the question of recreational usage. The SR in MD, for example, provides less recreational opportunity to residents than does the Chesapeake Bay. Along the West Branch, the Susquehanna is contrasted with the Clarion and the Allegheny rivers when a resident is making a canoe trip decision. The same is true in Eastern Pennsylvania, but in this case it is the Delaware River.

Tributaries were of significance mainly for fishing, but not as much for boating. Near Lock Haven, there was some discussion about residents using and needing boat launches for the larger tributaries during the late spring for kayaking. There was concern about the health of the tributaries throughout the regions, and reflects an opportunity for conservation practices, especially if there are key stream banks that might need higher degrees of protection or better management.

The River also functions as an attitude object demonstrating political tensions across state lines. The SRBC is the most obvious example of the cross-state negotiations that take place along the Susquehanna, but so too do variations in green

infrastructure funding programs on the PA/NY border, as well as nutrient management efforts by farmers in MD. In each of these situations, residents of a given state view the other states as the creators of problems. To be more precise, residents of NY and MD view PA as the problem state. The consistent view of the river in NY State was that it is pristine and free of contamination before it crosses into PA. MD views the river as a source of pollution for the Bay. PA residents view the river in ways that corresponded in part with the sub-region in which they lived, and the associated environmental risks and challenges present in the sub-region.

Chesapeake Bay

Outside of the state of Maryland, the Chesapeake Bay was presented as a source of regulations. I am very curious to see if residents hold a similar view of the Bay, as my hypothesis is that it actually carries very little relevance to non-professionals. Land owners, specifically farmers who have needed to adjust management practices to align with Bay protecting regulations, were presented by the interviewees as being annoyed at the regulations unless they were presented in a way that increased financial productivity of the farm. Otherwise, the Bay is viewed simply as a thing that limits their abilities to make independent management decisions. These are almost entirely from farmers, not landowners in general, a probable outcome from the farm-focused regulations.

Floods

Flooding, and the saliency of the issue, was highly correlated with the specific geographic location of the river county. Flooding along the West Branch has been largely controlled by the Curwensville dam, flooding ravages the towns and cities throughout the Main Stem and Confluence region as well as in Southern New York on an almost yearly basis, and flooding is again rather controlled in the Lower Section by the series of hydroelectric dams. The flood insurance increase was present in the minds of many interviewees, a problem for which they did not have a solid answer. Explaining and responding to the challenges presented financially and psychologically by floods represent a major policy and river management question for many in the river counties.

Marcellus Shale

As mentioned above, the development of the natural gas fields of Northern Pennsylvania was an almost ubiquitous response when I asked interviewees to state the most significant environmental risks in the region. Attitudes about Marcellus development, however, were much more nuanced as respondents reflected on the risks and rewards that the financial development might provide. As I moved away from the counties in the northern tier, Marcellus was mentioned by interviewees with less personal experience and more as a looming threat to the river. Almost all respondents expressed a high degree of uncertainty about the risk of Marcellus, focusing in particular on ground water and the unknowns for how it might at some point impact the Susquehanna.

Acid Mine Drainage

As an attitude object, AMD was only mentioned along the West Branch. I had expected that the environmental and water quality impacts of this issue would have also been identified by professionals in other regions of the watershed, even if the source was distant. One interviewee in Luzerne county mentioned that they have some continued impacts from coal, but it was not central as an environmental issue.

Wildlife

Concern for wildlife, unless it is threatened, was not a major theme in the interviews. Concerns for non-game species, in particular those listed in the Pennsylvania Natural Diversity Index (PNDI), especially those on the Federal Endangered Species list were often mentioned during interviews. These species function as attitude objects during times of development, where a permit must be issued and development cannot threaten the federally endangered species habitat or breeding areas. The PNDI is not, however, a regulatory system and adherence by developers are only by choice. That is, it is possible that animals and plants on the natural diversity index can be harmed, and the habitat destroyed, if a developer is unwilling or uninterested in making concessions. The Indiana and Long-eared bats are the current hot-button species of concern for land managers, the Game Commission, and professionals throughout the state. In the event that the Long-

eared Bat is placed on the federal endangered species list, very dramatic impacts will occur for land development throughout the state of PA, MD, and NY.

Federal incentive programs, specifically related to the Golden winged Warbler and the American chestnut tree, are two programs that many interviewees highlighted as being areas of current focus. It is important to recognize, and a topic to include in the surveys, that these incentive programs are likely generating interest not because of the affinity residents have for either species, but instead because of the financial incentives associated with program participation via habitat restoration. Finally, the barn owl is a species of concern and many actors across land management types have focused on helping to increase populations.

Deer

The white-tail is present as a rather complicated issue from the frame of land-use planning and recreation. In the river counties with growing populations, specifically those in southeastern PA and Maryland, the deer were presented as a nuisance that needed to be managed by professional hunters and game removal services. The Valley Forge National Park was singled out as a protected area in need of a more effective management structure. However, deer also function as a driver of tourism, contain a cultural saliency among hunters throughout the state, provide financial resources for the Game Commission in the way of license fees (currently 39% of the Game Commission budget), and are viewed throughout many counties as being too few in number for game purposes.

Large-Landscapes

A central question I had prior to these interviews, and one that remains, is the relevance of large-landscape conservation in the American East. In speaking with interviewees, the concept of large-landscape conservation is varied. One group chuckled at the phrase, having never heard it before, while others had sophisticated understandings of the limitations of the language in the public domain, as they had been using it consistently within their organizational materials. The idea of ecosystem services, and the usage of this as a mechanism for valuing large landscapes, was also a non-starter for many interviewees.

However, linked landscapes and thinking in a broader and interconnected fashion across boundary lines for land management and stewardship practices that would more effectively create the types of forests, rivers, and streams needed by both human and non-human species, is a major thrust of the work being undertaken by most of the organizations represented in these interviews. Most, if not all, interviewees responded to the question about large-landscape conservation by focusing on the attempts they have been making to limit fragmentation of the landscape by prioritize corridors and filling in the gaps near proximate protected areas. One key area of forest fragmentation is that of the proposed and currently being implemented pipelines for the transmission of natural gas. Multiple respondents stated this as a concern, and felt like their concerns were not concerns being publically recognized as an issue.

Economic Attitudes

The major topics related to the economic impacts of natural resources, land management and recreation mentioned by interviewees include: the viability of farming, tourism, green infrastructure as a driver of downtown redevelopment, and Marcellus Shale. As attitude objects, each of these carried with them mixed emotions as interviewees tried to strike a balance between romanticism of the rural mystique and a realistic evaluation of the financial needs of residents. There is a lot of variation in economic drivers across the river counties, as the various regions also include a range of manufacturing, universities, hospitals, and transportation corridors as key economic drivers.

The most-referenced economic driver across the river counties was electricity production. It might come in the form of coal or hydroelectric, natural gas, wind, or nuclear, but in all cases the river was being used as a key cog in electricity production for the Eastern seaboard. I found it interesting that proximity to the major population centers also reflected an awareness of the river as an electricity generating tool, and that this electricity is being used by non-local residents. The

transmission infrastructure of the grid, and the land-use and land fragmentation impacts it has, were frequently mentioned as unseen and major impacts on the landscape.

Challenges

Cultural Challenges

Involvement from the different cultural groups throughout the river counties is a significant challenge. The solutions for increasing inclusion are dependent upon the type of cultural sub-group one is trying to include and, as mentioned above, the concentrations of these groups vary across the sub-regions of the river. Moreover, the difficulty of balancing the different priority structures of these groups, to the end of creating an integrated land management plan, is exacerbated by the political structures of Pennsylvania, and of the cross-state differences when management decisions are taking place near or on state borders.

One significant, and particular challenge, is the integration of perspectives from cultural sub-groups often overlooked or not included in the political processes of Pennsylvania. In particular, interviewees mentioned and I highlight the need to be thoughtful about how to include the perspectives from Native Americans, Hispanics, and traditional farming cultures.

Environmental Challenges

There are a wide range of environmental risks throughout the river counties. There are both legacy effects from prior eras of extraction, in particular AMD and sediment run-off from clear-cut forest areas, and new environmental pressures from development, again sediment run-off, and concerns about Marcellus. In towns and communities throughout the watershed, flooding in both the Susquehanna and tributary streams present ubiquitous dangers and concerns to residents, but there are generally not clear solutions in place. There are CAFOs across the watershed, and in particular the poultry farms of southern PA continue to challenge the regulatory environment and to threaten both local air and water quality. Shipping of manure from these facilities, along with the shipping of waste products from Marcellus, and of solid waste for landfills, creates potentially non-point source, but localized spillage catastrophes. Concerns were expressed about the adequacy of the sewage treatment facilities dotting the river banks, even though regulations are requiring the upgrading of many of these facilities.

Social Challenges

Two interconnected social challenges were frequently mentioned. One, organizational priority structures vary enough to create difficulties when like-minded, but constitutionally divergent organizational actors attempt to collaborate. Second, the political boundaries, be that at the township level or at the state level, reflect a similar set of at times divergent value structures, which in turn make collaboration and problem solving more difficult. Third, the funding structures and needs of different types of land management entities create differences in the need to collaborate, sources of funding, and time spent on acquiring funding for project implementation. I was struck by the sophistication that organizations have developed at being able to use non-profit agencies as arms of the government in situations where government limitations and restrictions on spending will make the achievement of a specific project or land acquisition impossible.

Within this complex situation of environmental risks and potential dangers, there are concerns about the adequacy of the regulatory system. These concerns come from professionals who work with translating and implementing these regulations on a daily basis. In general, there is a tension between the limits that regulations place on localized control and the need for enough regulation to protect communities, both human and natural, from undue risks. The CREP program, the Endangered Species program and the PA NDI, and a lack of zoning were mentioned most frequently as problem area regulations. Marcellus regulation was secondary, as this was more of a statement about the political nature of the state of PA rather than a commentary on specific regulatory policies. In each case, some interviewees viewed the programs as being too restrictive, feeling like they were representing the views of farmers, or land developers, while other interviewees suggested that the regulations were too lax, thereby being overly oriented toward change and development. I anticipate a

similar distribution of views among residents and an increase in the number of residents who are not familiar with the given program.

Economic Challenges

The challenges faced by communities throughout the river counties are challenges being faced by communities across the country. As they try to balance the generation of economic opportunities with preservation of natural and cultural resources in a complex, globalized economic system, interviewees echo non-unique concerns about the state of the local business, the small farmer, and the natural resource extraction industries. One challenge that is not ubiquitous is the legacy impacts of infrastructure built during the 1950s, and the ways that coal-fired power plants and manufacturing based upon cheap resources may need to access large amounts of capital to come into compliance with new regulations.

Opportunities

Cultural Opportunities

Throughout my interviews, and while driving around the watershed, I was struck by how connected residents in the river counties are with the river. They simply tend to be connected in ways that are often overlooked. For example, passively recreating next to or in the river while drinking a beer was mentioned by nearly half of the interviewees as a way they see residents enjoying and using the river. Follow-up questions on the survey will illuminate the nature of this type of passive recreation, but I anticipate that this is an important aspect of how residents engage with both the Susquehanna and the tributaries across the watershed.

Demographic changes are present throughout the watershed, specifically with increases in Hispanic and Latino populations in Southeastern PA and along the north branch. During the next 15 years, significant portions of the land owned by PA residents will be passed on to heirs or sold to new land owners. In both of these changes, opportunities exist for integration of new types of land usage and new types of relating with both recreational and conservation opportunities. They both, however, also require an increased effort on the part of land managers and natural resource professionals to learn about how these new land owners and citizens think about and use outdoor spaces.

Environmental Opportunities

The story of AMD remediation along the West Branch is a story that can and needs to be told more broadly and widely. The same is true of stream quality restoration through watershed associations in every river county. Residents of each region have returned, according to interviewees in a given section, to the river and have begun to integrate it into the ways that they recreate and use the expansive outdoor opportunities in that section of the state. New York state, and in particular the rural counties between Binghamton and Cooperstown, contain an often driven-through area that could support an increased tourism base, as they present their section of the river as being pristine. Continued locating, identifying, and protecting of key farm land throughout the river counties, and a linkage with the farming heritage of these counties, provides an opportunity for both land conservation and heritage conservation. Funding from the national sources could be a boon to land conservancies throughout the watershed, many of which work with limited resources.

There is an opportunity, with some coordinated work, to increase the visibility of the state forest system in Pennsylvania as a major recreation area. As of now, camping in the state forests must fall under a “dispersed use” regulation. Shifting this regulation in key areas, specifically those adjacent to waterways, could increase access to camping, which would enable multi-day trips and could increase environmental connectivity. Associated with this goal, is to create a system for lands owned by Game Commission to also receive camping exemptions when they are located next to potentially, heavily used recreation areas.

Social Opportunities

There is a strong sense, among almost all interviewees, that collaboration across types of groups has increased and improved over the past ten years. The potential boom in resources that might come from Marcellus taxation, should the political situation in either PA or NY shift, might lead to increased capacity for given state agencies. In this context, a need for collaboration might decrease. Protecting the relationships that professionals have built across agency types by continuing to produce financial incentive programs oriented around collaboration, strikes me as a way to potentially avoid such an outcome.

Economic Opportunities

Economic opportunities identified over the course of the interviews mainly had to do with mechanisms needed to increase access to recreational opportunities. Specifically, more widespread distribution of maps of access points and campsites

was stated by a few respondents. There is recognition that river towns are not fully integrated into the recreation infrastructure of paddlers on the Susquehanna and that there needs to be more thoughtful connections being made for economic development to really be spurred by river-based access to downtowns.

Next steps and Conclusion

Survey Plan Overview

During the fall of 2014, contingent upon funding support, a phone survey of approximately 10 minutes will be completed throughout the river counties. Sampling will be based upon the goal of being able to make statistical comparisons across the sub-regions. A sub-contractor will be identified to complete the interviews, and the data will be analyzed in concert with the major themes identified through the key informant interviews. In particular, the draft survey includes modules on:

- Background information about respondents
- Attitudes Toward and Trust in Conservation Organizations & Political Leaders
- Perceptions of environmental risks
- Attitudes about Native Americans and Native American History
- Willingness to pay for environmental protection and Alternative valuation models
- Recreation needs and green infrastructure usage (recognizing, the recreation assessment by PSU provides a lot of this information)
- Environmental Connectivity

By undertaking a survey, the project can provide perspectives about watershed wide areas of concern. These results can be shared with a diverse range of possible partners and stakeholders throughout the watershed, thereby supporting work that is already being undertaken by associations, organizations, and individuals. A full mixed-methods research program is then complete, as the interviews, strategic plans, and survey results provide a comprehensive overview of a large and diverse socio-ecological system in a way that preserves regional variation and local nuances.

I also anticipate working with the Conservancy and affiliated organizations to complete public engagement activities oriented around highlighting and integrating perspectives and voices often absent from land use planning decision making. By focusing on an analysis of the strategic plans, plans which already have integrated a wide range of community voices, first, we can avoid redundancy in effort and fatigue on the part of community members.

Conclusion

The goal of this report has been to provide an overview of the content we learned from respondents across the river counties. Additional analysis, specifically through the survey and analysis of strategic and comprehensive plans, will give a more comprehensive view of the perceptions, attitudes, values, challenges, and opportunities that exist throughout this large landscape. This region, one of varied landscapes, cultural groups, natural resources, and built infrastructure, is one to understand carefully and slowly, as it is all too easy to see it as a homogeneous collection of small towns and farms. My hope is that through this descriptive report, subsequent work in the watershed is able to be more engaged with this cultural richness.

Appendix A: Key Informant Interview Guide

1. What is your name and what is your position?
2. How long have you worked in your current position and how long have you been a resident of the region?
3. In your current position, how does land conservation fit into your work? That is, are you both thinking about it, and, if you are actively engaged in creating and/or managing land that has been conserved how often is this a responsibility you have in your job?
4. Do you feel like you have a good understanding of the opinions and attitudes residents in your region have of the environment and the range of management efforts underway?
 - a. So, how do they feel? Specifically about land conservation by: the state, local land conservancies and regional or large-scale land conservancies? Who do you think they trust the most to manage land? Do you think they know who the different actors are?
 - b. If no, why not? Do you think this matters/is necessary for effective conservation planning?
5. Are there factors which residents care about a lot when it comes to conservation? For example, if a farm is placed in a conservation easement and allows hunting access are residents more likely to support the conservation efforts? Is the same true for other types of recreation – fishing, boating, hiking, etc. Other considerations?
 - a. In your region, do you find that there are a lot of different types of stakeholders? If so, who are they and how do they vary?
 - b. Different attitudes toward different types of conservation activities like easements, restoration or the creation of new parks and/or boat launches?
6. Do you find that residents are pretty actively interacting with the natural environment? When they are, do they tend to recreate on private or public lands? What are the most popular activities?
7. What role does preservation of history play in your area? Specifically, how is Native American history thought about and do residents seem to be interested in this history?
8. Do you find there is much recreation tourism in your region? If so, what do folks come here to do? Recreation, Historic/Cultural assets, natural assets? Is there interest in expanding the efforts? Who would take the lead on doing so?
9. What are the most significant environmental risks in your area? How often do you hear people talking about environmental dangers/risks? When you do, what do they talk about? In your evaluation, how accurately do you think people understand environmental issues?
10. Do you have a large Amish population in the county? If so, how do they interact with your organization?
11. Can you identify organizations that are actively working to conserve land and waterways in the area? Can you identify local organizations that are actively working to educate the public about the environment?
12. What kinds of environmental/conservation initiatives have already been done in this community? Have they been well received? If so, why? If not, what were some of the challenges?
13. Have you noticed any shifting attitudes about the river over the past ten to fifteen years? If so, how do you explain these changing ideas?
14. What are the largest barriers to more effective land and water conservation in your region?
15. What role does the local government play in environmental issues and land conservation in particular?
16. If you could put a question on the survey, what would it be?
17. Who else do you think I should talk with?
18. Any other thoughts/things I didn't ask you that I should know?

Appendix B: Overview of Comprehensive Plan Inventory

Plan Index

1. From all counties
 - Comprehensive plans-Planning offices
 - Open space plans-DCNR
 - Strategic conservation plans-Conservation districts

2. Heritage area plans
 - Susquehanna Gateway Heritage Area
 - Delaware and Lehigh National Heritage Area
 - Lackawanna Heritage Valley
 - Endless Mountain Heritage Region
 - Pennsylvania Route 6 Heritage Corridor

3. Organization Comprehensive Plans
 - DCNR
 - PA Game Commission
 - Department of Community and Economic Development
 - Susquehanna Greenways (Regional)

4. Misc.
 - Water Management Plan-SRBC
 - Pennsylvania Natural Diversity Index
 - Transportation Plan-Pennsylvania Department of Transportation
 - Regional growth management plan-Tri-county regional planning commission

Appendix C: The Lower Susquehanna by Buck Doyle

Introduction

Conservation in Pennsylvania is surrounded by a complex network of organizations that serve various purposes and operate on different scales. These actors include nonprofits, private corporations to a lesser extent, and government—municipal, county, state, and federal. The organizational perspective is diverse; providing insight into practice and process, community interests, political realities, and funding structure. This paper gives an overview of important themes in conservation planning for the lower Susquehanna. To this end, information was gathered from county strategic plans and interviews. Those interviewed were employees of conservancies, conservation districts, and planning offices. The structure of this section is ordered into four broad categories: culture, society, economics, and environment.

Findings

Society & Culture

The categorization of formal and informal groups, society, and the description of their inherent characteristics, culture, is crucial for understanding the context around conservation in the Lower Susquehanna. This section outlines societal distinctions and subsequent cultural behavior, as described by conservation experts. These concepts are important because they directly influence conservation planning and decision making.

Government

From a lateral standpoint, contention is rife between government bodies. Some of this has to do with methodology. This is present between county conservation districts (CCDs) and DEP/EPA. CCDs, which operate largely with voluntary action, are being delegated new regulatory responsibility from the DEP. The CCDs struggle with this because the voluntary approach is the root of their success, and the reason why they are entrenched in their respective farming communities. Shifting towards a regulatory stance has the potential to erode the long standing relationship many CCDs have with their farming communities. A top-down methodology is being translated down to the CCDs. Though, it is important to make the distinction between rural and urban CCDs. Rural CCDs tend to be voluntary leaning because of the higher farming population. Urban CCDs tend to be regulatory leaning because of higher rates of development. Still, the top-down approach of the DEP and EPA has caused operational issues for CCDs. At times, state and federal agendas have forced CCDs to take action that neglects their local on the ground knowledge. CCDs have the impression that the DEP and EPA do not understand the way smaller government bodies operate.

However, conflict between counties and municipalities is often caused by an overlap in responsibilities. Relating to development, both CCDs and municipalities have regulatory authority, and they both have their own ordinance. Consequently, inspections are redundant and developers are forced to neglect one set of ordinance for the other. Generally speaking, CCD ordinances differ in that they take environmental quality into consideration.

Physical Characterizations

The distinction urban, suburban, and rural is an effective frame for describing willingness of preservation and sustainable development. Rural and urban areas tend to be more favorable to conservation through compact development, which focuses on developing in already developed areas and is contra to conventional sprawling

development. Suburban areas, however, have been very opposed to compact development. Rural areas see compact development as a way to preserve their rural environment. Urban areas are already developed and view compact development as an improvement. Sub-urban areas see compact development as a threat to property values. In spite of the benefits, very few municipalities, if any, are incorporating compact development practices.

It is important to consider that across the US, there is a very negative connotation to density. Density is, inaccurately, associated crime and deterioration. This bias has been played a large role in the resistance to compact development and is tied to the mentality of the baby boomer generation. The general development mentality has been described as being “stuck in 1970s,” with rapid sprawling growth and an economy that supported it. Baby boomers are both financially and ideologically invested in this approach. They are also rooted in the suburbs, which accounts for the resistance to compact development mentioned earlier. Opposite to baby boomers, the millennial generation is equally dedicated to compact development and urban living. Despite millennial support, the baby boomer generation is still too institutionally entrenched to make compact development the status quo.

Population Characterizations

Two groups among the general population are natives and non-natives. The non-natives often come from more rural areas. It is typically this demographic that participates in public aspects of plan development. In contrast, the natives are more laid back and aren't really interested in changing things. Moreover, they prefer things not to change. The non-natives tend to be more educated, beyond high school, and tend to be more proactive in showing up to meetings and providing ideas such as with the open space recreational plan: where to place a trail, a ball park, rail trails, or which areas to preserve as forest heritage sites. Natives will usually only get involved if someone proposes something they don't want to deal with. An example of this would be a burn barrel ban.

For farmers, it is important to make the distinction between hobby and professional farmers. CCDs work almost entirely with professional farmers. But land management and best management practices are still important for hobby farmers as well. Poor land management by a hobby farmer can be a detriment to both neighboring properties and the environment. A CCD employee mentioned that “off a 20 acre farm that is managed poorly, you might get as much erosion as a 200 acre farm that is managed well.”

Economics

The economics for CCDs is fairly consistent. Some funding comes from the county and fees, but a large majority comes from the DEP. In the past, funding from DEP was relatively stable. But within the past few years, the DEP has lost funding. Because of this, the DEP is delegating its regulatory responsibility to the CCDs. Some CCDs are more open to this change than others. The CCDs that are opposed to this shift face a serious dilemma. One CCD employee described the decision as taking the regulatory stance or lose funding for half of the office's employees. If the regulatory stance is taken, the same employee stated that it was “inevitable” for the office to lose its excellent report with the farming community.

As funding for conservation by public and non-profits is sparse, many organizations are reaching to collaboration as a way to be economically efficient and even access new funds. The York CCD based a collaborative around storm water. It has gotten buy in from 42 municipalities because tackling this issue in the form of a collaborative will provide cost savings compared to handling the issue on their own. The goal of the collaborative is to gather \$5million over 5 years and use that to do projects. Collaboration between conservancies and other non-profits created new opportunities for funding. Partner organizations provide a strong voice and more cache. One conservancy mentioned how it received funding for outreach because of the

weight carried by partner organizations. According to the conservancy employee, funding for outreach is rarely given because the priority is on tangible results through projects.

Conclusion

The milieu of conservation in the lower Susquehanna is shifting in funding, practice, and ideology. For government bodies like the CCDs, funding pressure from the top is imposing ideology, and mandating a change in organizational practice. To overcome funding pressure, NGOs and government bodies alike are using partnerships as an effective way to save money and better compete for funding. As for development, the change in ideology and practice will likely take hold as the millennial generation replaces baby boomers in positions of power. In the face of detrimental development practices and drastic environmental change, the capacity for implementing sustainable practices that will benefit society at large is limited by willingness, not capacity or ability.