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"Nature is Pushing One Way and People are Pushing the Other": A Political Ecology of Forest Transitions in Western Montgomery County, PA

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Abstract

Forests in Southeastern Pennsylvania have been shaped by a number of anthropocentric factors over the past century, with many areas experiencing a recent trend towards forest recovery. Studies on forest dynamics have shown that most developed regions exhibit a *forest transition*, which begins when land is cleared for natural resource extraction (e.g., agriculture, forestry) during an early development stage. Then as a population grows and food production needs are met, rural peoples begin to migrate to the city, and a feeling of scarcity of trees develops that may lead to changes in land management attitudes, and many formerly deforested areas begin a process of forest recovery (Mather 1992, Rudel et al 2005). This process often occurs in conjunction with industrialization in nearby cities. Yet recent research also finds that many areas experience a different trajectory of forest change (Yeo and Huang 2013), or no noticeable transition (Acheson 2008). In such cases, questions arise about whether a forest management policy, rather than feelings of scarcity, promotes reforestation (Yeo and Huang 2013). In addition, the question of whether second home and amenity development—a increasing trend in residential development at the urban-rural fringe—is counteracting efforts to reforest in other areas arises (Acheson 2008).

My research investigated the trajectory of forest change in a historically rural agricultural landscape as it has transitioned over time to an amenity-oriented exurban residential area. This study also explores how current residents of this landscape are

altering the forest through their perspectives on land management and stewardship practices. My case study focuses on the historically rural Stone Hill Conservation Landscape, a largely agricultural productivist landscape in the mid-1900s, located just outside the Borough of Schwenskville in western Montgomery County, Pennsylvania. Drawing on grounded visualization approaches used in case studies of rural-to-urban transitions, I documented the interactions of exurbanites on forest transitions in the area. In order to better understand this migration and current stewardship practices in the area, I conducted semi structured interviews with eight residents living adjacent to one of the Conservation Landscape's preserves. These interviews focused on the resident's motivations for migrating, land management strategies regarding practices such as planting, cutting trees, removing weeds, and establishing lawn, and their views on development in Stone Hill. Their diverse perspectives placed them into three different categories; suburban idyll, pastoral/rural idyll, and nature/forest idyll. Then, using Google Earth aerial photo analysis, I documented the overall trend of reforestation in some of the study area while detailing reforestation and efforts by some exurbanites to minimize their impacts on forest loss. Results demonstrate that the attitudes and stewardship practices of exurban amenity migrants have a noticeable effect on the forest transition occurring in Stone Hill. It is important to understand this exurban forest transition because it contributes to the minimal existing literature on forest transitions in exurban landscapes of the Mid-Atlantic. Further it is important from a conservation perspective because these insights provide us with forest histories as well as a foreshadowing of possible clearing for further exurban development.

Introduction

Patterns of forest change and stewardship are important aspects to consider when analyzing the history of landscape changes in a region. By noting certain trajectories of forest clearing and reforestation, policy-makers and conservationists can better plan for conservation interventions, preservation efforts, and develop management plans that encourage responsible use of natural resources. Yet deforestation and forest recovery is a complex phenomenon, affected by changes in regional economic, demographic dynamics (Klepeis et al 2013). Previous studies have noted a mix of possible patterns of forest change in different specific areas (Mather 1992, Yeo & Huang 2013, Acheson 2008). The research presented in this thesis exemplifies the importance of studying forest transitions within a particular regional context and at a specific landscape scale. This perspective helps to better understand what is specifically occurring in a region and why it is happening.

One growing and popular land development pattern affecting forest clearing in many areas of the United States is exurbanization (Gosnell and Abrams 2011, Abrams et al. 2012). This low-density pattern of residential development involves land owners who want to enjoy the natural amenity of exurban landscapes which often provide trees and woodlands, open pasture and agriculturally-related landscape aesthetics, and large lots (Cadieux and Taylor 2013). Exurbanization, a particular type of amenity migration associated with urbanites and suburbanites relocating to nearby rural areas (Walker and Fortmann 2003, Cadieux and Hurley 2011), can have a negative effect on forest transitions; the building of homes in these areas can result in

new rounds deforestation, the introduction of new forest openings within already forested areas, or prevent processes of reforestation from occurring in abandoned agricultural fields (so-called "old fields"). Yet these same exurban residents often oppose further development that would threaten the natural amenities that drew them to a particular area in the first place. This presents the paradox of exurbia: Although these supposedly conservation-minded individuals may help protect against future growth, these same landowners may also negatively affect the natural landscapes they so greatly value (Gosnell et al. 2012, Theobald et al. 2004, Cadieux and Taylor 2013).

Beyond wider patterns of deforestation associated with large-scale residential development, the degree of environmental impacts associated with exurbanites is primarily driven by landowner attitudes and practices (Klepeis et al. 2008) Previous research has shown that as rural areas undergo a transition from agricultural to post-productivist economies, in-migrants with multiple different values and strategies settle in with older residents (Walker and Fortmann 2003, Gosnell and Travis 2005). This post productivist idea refers to the regional economic circumstances that no longer favor the dominance of agriculture (Gosnell and Abrams 2011). This economic and cultural transition results in an emerging diversity of land management strategies and a competition between consumption, production, and protection values (Gosnell and Travis 2005, Travis 2007, Holmes 2006). This research has demonstrated that emerging exurban landscapes are characterized by different "modes of occupance", or types of landowners who have diverse ways of using and valuing their land (Holmes 2006). For instance, long time farmers will work to maintain agricultural productivity, while other residents will focus on protecting the unique ecological

characteristics of the land. Still, new migrants will consume the land for its amenity value in ways similar to landowners in suburban areas. These modes, identified by Holmes (2006) as productivist agricultural, rural amenity, pluriactive, peri-metropolitan, marginalized agricultural, conservation and indigenous, employ simply one or a combination of these values to best describe residents of these changing landscapes. Further research points out that the characterization of these landowners may be best described on a continuum. Madsen (2003) developed a typology of residents by placing case study interviewees on a continuum from production-nature orientation to attachment to agriculture.

Additional studies suggest that individual landowners living around conservation areas may engage conflicting approaches to planting, plant removal, and spatial boundary setting (Head and Muir 2006 and Klepeis et al 2008). For instance, a case study of exurban Australia found a difference in invasive weed control when comparing long time landowners and recent amenity migrants, illustrating that new landowners were less inclined and/or informed about invasive serrated tussock removal to help successfully control it on their properties (Klepeis et al 2008). In addition, another Australian study investigated how residents made decisions about planting species and establishing boundaries between the adjacent conservation area and their back yards (Head and Muir 2006). This case noted a difference in types of gardeners—committed, general, and non-native—depending on their decisions and justifications for planting, as well as a difference in ways that residents do or do not draw physical or imaginary lines between the natural reserve and their back yard. Taken together, these studies point to a need to better conceptualize and understand

the land management strategies of exurbanites and their possible effects on the surrounding nature.

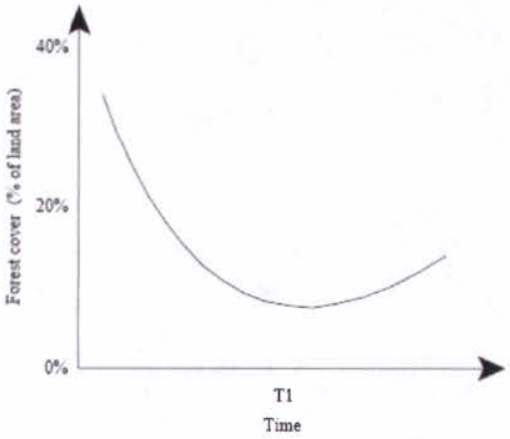
This study specifically explores the forest transition in a post-productivist exurban landscape in Southeastern Pennsylvania. The research examines the exurban transition, associate forest changes, and emerging stewardship practices of residents living in the Stone Hill conservation landscape (see Figure 1) in the townships of Lower Frederick and Limerick in western Montgomery County, Pennsylvania. By utilizing the methodological approach of grounded visualization, I investigated amenity migration and exurban development in relation to the forest transition of Stone Hill. To do this, I conducted semi-structured interviews with eight residents living adjacent to preserved land, asking about each resident's stewardship values and management decisions. Using this information, I began to determine the influence of resident's idylls—a mix of ways of seeing nature and determining what constitutes appropriate forms of stewardship—on management strategies and plant dynamics associated with forest transitions. Additionally, I analyzed aerial photos dating back to 1942 in order to better understand the trajectory of change within the forest canopy over the past 70 years. Overall, my project works to examine the forest transitions noted in historical air photos alongside the context of amenity resident interviews to understand how exurbanization influences forest dynamics. I found that there has been an uneven forest transition in which agricultural fields have partially recovered yet other areas of forest canopy have been cleared for new exurban development. The residents living here bring with them diverse views of nature that affect their stewardship practices and the surrounding understory. The dynamic relationship

between forest transitions in amenity rich landscapes like Stone Hill and resident ideologies is important to study as exurban development increases and threatens natural amenities.

Understanding Forest Transitions in Exurbia

Forest Transition Theory and its Implications for Exurbia

Throughout the history of development scholars have noted a series of patterns regarding the clearing of forest. Mather (1992) explained that there is a general global trend from shrinking to expanding forest area in his Forest Transition Theory (see Graph 1 below). As a nation or region starts to develop, it utilizes many natural resources and clears a significant amount of forest land for timber and agriculture to meet the demand of rising populations. After this initial population boom, the area transitions from a developing to developed stage, in which less resources are needed as the population levels out. The widespread clearing of forest results in a feeling of resource scarcity, which often encourages reforestation activities. Further research points out that economic growth initiates a transition of labor from farms to other sectors, which leaves agricultural fields to spontaneous regenerate, or in some cases be the site of active reforestation (Rudel et al. 2005).



Graph 1. Basic trajectory of the Forest Transition Theory described by Mather (1992). Graphic from Rudel et al. 2005.

Although this forest transition theory applies to many situations around the globe, it does not describe all histories of forest transitions. A case study of Mississippi found that the forest transition in this region was not a onetime event, but rather a repeated pattern of reforestation and deforestation (Yeo and Huang 2013). This research noted that the first forest transition was comparable to the situation in Mather's theory, as extensive clear cutting for timber lead to extensive reforestation efforts. However, the second transition's rates and levels of deforestation greatly varied in these reestablished forests, which could be explained by intense management that spurred from an increased state-wide concern for most economically viable and productive forest management policies. Therefore, these authors concluded that episodes of forest regeneration do not all necessarily occur as a result of the forest scarcity pathway as Mather previously noted, but these forest transitions should also be viewed in terms of a "forest management policy pathway," which could help understand and promote reforestation and sound forestry.

Acheson (2008) also points out that not all regions undergo this forest transition in the same way it is mapped out in theory. Besides pointing to the ongoing use of lands for timber extraction in some regions of the state where population decline has occurred, an analysis of a case study area in another part of Maine finds that the increase in second home amenity development and private timber sales is counterbalancing the reforestation of agricultural lands in other parts of the state. He also notes a decrease in the quality of the forests, as virtually all of the virgin stands have been cut and many forested areas are slowly regenerating. The lack of change in overall forest cover leads Acheson to conclude that there is not a forest transition occurring in Maine, and he emphasizes that policy makers should be aware that the forest transition is more complicated than it seems in theory.

Shifting the focus closer to the Mid-Atlantic region of the United States, research on forest recovery dynamics in New York State indicates two interconnected trends in the forest transition theory literature (Klepeis et al. 2013). The case study finds a simultaneous trend of forest recovery and forest decline on old fields. Although there is regeneration on some good agricultural soils, which could promote biodiversity in these habitats, they also note that drivers like amenity migration and the spread of invasive species, and other diverse land-uses are causing forest decline in abandoned agricultural fields. Klepeis' conclusion echoes similar research in that forest transitions must be studied at "specific spatiotemporal scales," as diverse land use histories are greatly dependent upon numerous divergent factors that do not always follow specific models.

In this research, I am studying how the forest transition theory can be applied to a historically rural landscape in South Eastern Pennsylvania, an area of the mid-Atlantic in which these forest transition dynamics have been understudied. I expect to see how the elements of topography, agricultural history, and residential development interact in patterns of deforestation and reforestation to produce the current landscape.

Exurbanization in the United States

Over the past few decades, exurbanization has become a driving force of landscape change in the United States, playing an important role in forest changes in many areas of the country (Theobald et al. 2005; Brown et al. 2005). Exurban properties are quantified as 2 to 45 acres per household, and this land development scheme is described as "a semi-rural region beyond the suburbs of a city, characterized by low density, large lot development" (Theobald 2004). Studies show that exurbanization rates have greatly risen in the past 60 years; in 1950 about 5% of land in the United states was considered exurban (1 unit per 1 acre and 40 acres) and rose to 25% in 2000 (Brown et al 2005). Many of these areas were previously supported by natural resource production, particularly agriculture, and the explanation for this shift is partially supported by research that found a 1% national decrease in active cropland from 1950 to 2000 (Brown et al 2005). More specifically in Eastern Temperate regions, this cropland was converted either to residential development or simply abandoned due to marginal reproduction (Brown et al 2005). Overall, the growing conversion of areas to exurban development has spurred a number of studies on the process of exurbanization, the overarching characteristics of exurbia, and its possible effect on nature and communities.

Exurbia can be viewed as a place, but also as a process (Cadieux and Hurley 2009), in that it is driven by diverse social, political, and economic causes with diverse consequences for the regions in which it occurs. The process focuses on the migration of people who are attracted to these exurban areas for a number of reasons, but primarily the aesthetic allure of living close to a particular natural amenity. Amenity migration, or "the movement of people based on the draw of natural and/or cultural amenities" (Gosnell and Abrams 2011) is becoming an increasingly popular trend. Many in-migrants value qualities or characteristics, such as quality of life, proximity to nature, escapism, peace and solitude, and economics. Like most amenity migrants, many exurbanites are affluent urbanites or suburbanites looking for a lower density living experience that is not too far away from their jobs and other basic services (Abrams et al. 2012). Rural or formerly rural areas, characterized by large lot sizes with minimal urban character, therefore, present the ideal exurban location for their homes.

Studies have shown that in addition to rural amenities, land developability can also play a role in the migration of residents to rural areas. For example, Chi and Marcouiller (2013) analyzed a rural area of Wisconsin, focusing on the variables of wetlands, public lands, water, distance to shorelines, and forest and their relationship to in-migration. They concluded that public lands and water proved statistically significant in attracting residents, and that natural amenities like forests and wetlands become more attractive when they are accessible through managed recreation areas. Moon and Farmer (2013) demonstrate that in addition to proximity to public lands, variables such as distance to urban areas, transportation infrastructure and topography

affect land clearing patterns in exurban landscapes. In particular, topography proved to be a significant factor in deforestation, and flatter land had a high probability of being developed. Other studies support this finding that regions with hilly terrain, ample lake front, and protected forests in close proximity to large metropolitan areas may become key sites of second home development (Halseth 1998) and other forms of residential development associated with exurbanization (Walker and Fortmann 2003) or amenity migration (Gosnell and Abrams 2011).

While much research points to an emphasis on natural amenities, not all migrants to amenity landscapes stress the importance of natural elements in drawing them to their current home. For example, Johnson (2008) found that amenity migrants in the U.S. Midwest explained their reason for moving to exurban landscapes was affordability, rather than citing the more common desire to be close to natural amenities, which exemplifies that not every exurban or amenity resident fits the mold commonly defined in the literature.

Still, the concept of exurban migration presents a great paradox. While the majority of amenity migrants want to be closer to nature, they are un-intentionally degrading the very natural elements they are seeking (Cadieux and Taylor 2013). Exurbia can also be seen as a type of "green sprawl" (Cadieux and Taylor 2013), as regions home to the phenomenon are essentially experiencing a very spread-out form of suburban sprawl, but in areas noted for their environmental qualities. Further, in many ways the process is not well controlled or regulated. As a result, there is a growing concern for the possibly serious ecological consequences that come from this expanding land pattern (Theobald et al. 2004, Brown et al. 2005). According to

Kondo (2012) exurban areas now occupy as much land as urban areas do nationally, yet there are few growth management plans keeping this type of expanding development in check. In turn, this leads to the development of more infrastructure, increases in impervious surface area, reduction of wildlife populations and decreased native biodiversity. Recent research has found that "decisive moments" in the development process for exurban parcels can make a difference in the extent of land cleared for an amenity home (Hiner 2012). For example, these moments depend upon the construction decisions of developers as well as management decisions of residents. Further, these results can be exasperated or mitigated depending on the kinds of residents occupying these exurban amenity landscapes.

This research seeks to discover the role that exurbanization plays in the forest transition pattern of Stone Hill. I determine how the desires of amenity migrants to be close to a forested area and the challenge of land developability along the forested ridge played a role in overall canopy cover changes. Additionally, my research incorporates residential interviews in order to analyze the influence of resident management strategies and idylls on forest transitions, particularly the way that land management might influence understory dynamics (or those species of herbaceous plants and shrubs that are potentially important habitat elements for wildlife).

Ideologies of exurban residents

The diverse ideologies of exurban residents can play a role in patterns of forest change. Their attitudes on land use and management can be influenced by their economic needs (Holmes 2006, Gosnell et al 2006), their perception of what

constitutes nature (Gosnell and Abrams 2011), and their ethic of stewardship. In most so-called "post-productivist" landscapes like exurbia, the consumption of land, or the passive use and appreciation of lands without directly extracting its resources, is the most dominant value of the people living there (Klepeis 2008). Klepeis studied a multifunctional exurban landscape in which an influx of new amenity migrants were not well educated about the necessary management of invasive serrated tussock, and their lack of skills and preparedness caused a huge problem in Australian pasture. Many times, residents have a glorified expectation of what it would be like to live in exurbia in that they expect to solely appreciate the land in a consumptive sense, yet are not prepared for the reality of its environmental dynamics (Klepeis 2008).

At the same time, exurban development has also been shown to lead to the protection of landscapes and increased demand for conservation. Since many of these residents value the amenities that surround them, they express sentiments against encroaching development and want to preserve natural areas surrounding their homes. Also known as "last settler syndrome," these amenity migrants take action to protect the landscape from further development (Gosnell and Abrams 2009), participating in local conservation/preservation organizations and their local governmental planning groups. While many may show strong support for land conservation and bring enthusiasm for stewardship practices, their values and goals may not completely match with the reality of their land management practices.

In order to better understand these anthropogenic changes to forests and ecosystems in exurbia, we need to analyze the differing ideologies of the residents inhabiting these areas and the effects their stewardship commitments might have on

material landscapes. The current exurban literature has attempted to categorize these ideologies in multiple ways. For example, research on amenity landowners has found that the relationship between their values of nature, stewardship, and land protection does not always coincide. When categorizing residents in an afforestation case study in Denmark, Madsen (2003) developed a continuum, placing protection-nature orientation on one end and attachment to agriculture on the other. He also categorized the landowners using five different identifications: agricultural producers, non-agricultural producers, soft farmers, countryside residents, amenity residents. After interviewing and analyzing these residents, Madsen concluded that there are a number of complex factors affecting each individual landowner, and therefore the relationship between landowner practices and values is not linear, and must be carefully analyzed for each individual.

Recognizing this complicated mix, Holmes (2006) explored how landowners have changed and adapted their management and stewardship strategies in transitioning rural and exurban landscapes in Australia. He describes six different "modes of occupance" that emerged in his study area, which focused on different combinations of three dominant land-use values: production, consumption, and protection. In the productivist agricultural mode residents highly value production or other forms of resource extraction that are tied to income from agricultural production, or elsewhere, forestry. In the rural amenity mode, consumption values of land amenity and recreation are high. Still, farming (or other forms of extraction, such as timber harvest) may be part of a resident lifestyle. In the small farm or pluriactive rural mode, land use is driven by a mix of production and consumption values.

Production, consumption, and protection values intensely compete in the peri-metropolitan mode, often occurring in areas closer to major metropolitan areas. The marginalized agricultural or pastoral mode is often located in remote areas, in which production and associated protection values are potentially integrated. With the conservation mode, land use values favor treating areas of pristine or near-pristine natural ecosystems as wilderness and minimizing human uses that would radically alter their ecological characteristics. Holmes also combined the conservation mode with a mode of indigenous occupance, where Australian indigenous populations and rights are protected. I draw upon the insights about land-use values these modes of occupance afford, while modifying their categorizations to better describe the exurban landscapes and dynamics in Southeastern Pennsylvania.

Moving beyond these modes of occupance that characterize relatively large areas of land, another Australian scholar has sought to examine the very specific ways that these values shape more localized practices of stewardship. Head and Muir (2006) investigated resident values and yard management practices in suburban areas where residents live adjacent to conservation areas (i.e. natural areas). These researchers focused on their management of plant species and the types of spatial boundary setting practices that characterized the interface of their yards and daily lives with the adjacent park. Three main gardener types were identified: Committed native gardener, general native gardener, and nonnative gardeners. These categories divide residents according to how many native and nonnative plants they have on their property and take into account resident's reasons for planting or supporting the growth of vegetation in their backyard. In addition, Head and Muir researched how

residents perceive and create boundaries between themselves and nature, focusing on how residents oriented boundaries such as fences and lawns. My study of Stone Hill residents asks these questions in order to see how residents living adjacent to a conservation area are working to either separate or be part of the woodland.

The concept of idyll stems from the perceptions, expectations, and appreciations people have for nature that have changed over the last half of the century (Rudd 2013). Since World War II, residential areas in the United States transformed into huge urban and suburban centers, and more Americans pushed to conserve natural parks as their residential surroundings became more artificial. As Rome points out, suburbia grew out of the hopes of Americans to combine country and city in a way that highlighted nature and created a better quality of life (2001). However, Robbins (2012) also demonstrates that while suburbia works to connect these natural elements, it also emphasizes the preponderance of well-maintained lawn and a sparse presence of trees. When talking about exurbia, people moving to this area carry idealized models of the natural landscapes, which have the potential to translate into diverse land management practices. In this case study, given that most residents are coming from a suburban area, I anticipate that they will also manage their properties to maintain a suburban quality around their homes. On the other hand, there seems to be a growing emergence of residents with a wilderness ethic and forest ideologies (Judd 2013). Given this commitment to the desire of natural amenities, we might also expect an enactment of some kind of stewardship. Furthermore, in my analysis, I will present three different conceptions emerging from

this research which I refer to as idylls, drawing on the imaginaries or ideals of nature that people carry to exurbia.

Examining the Political Ecology of Forest Transitions in Exurbia: A Case Study

This case study explores forest transition theory and exurban ideologies, as well as the relationship between these concepts, in an exurban conservation landscape in Southeastern Pennsylvania. In order to analyze these components, my methods draw upon grounded visualization, in which I analyze forest canopy changes using historical aerial photos as well as conducting semi-structured interviews with current residents. Basing the questions off of much of the amenity migration and exurban resident literature, these interviews shed light on the motivations of residents to move here, the views of nature and the way in which they practice land management. These factors can affect the surrounding landscape, and by employing framework from previous work with exurban residents, I categorize residents based on their responses and perspectives. To explore these theories and concepts, I am focusing my research specifically in the Stone Hill Conservation Landscape in Southeastern PA.

The Stone Hill Conservation Landscape, which is located just outside the Borough of Schwenksville in Western Montgomery County, Pennsylvania, gets its title of "Stone Hill" from the rocky diabase geology and many boulders along this ridgeline. The ridgeline, occupying the divide between Swamp Creek/Perkiomen Creek and the Schuylkill River Basin, runs from Schwenksville in the East to Pottsgrove in the West. This study focuses largely on the eastern end of the ridgeline,

concentrating on areas of the landscape found within Limerick and Lower Frederick townships. Considered a very rural area for a number of years, lands in and around Stone Hill were historically used for selective logging in the late 1800 and early 1900s (Interview[1]), mining and small scale-farming (Rhoads and Block 2007).

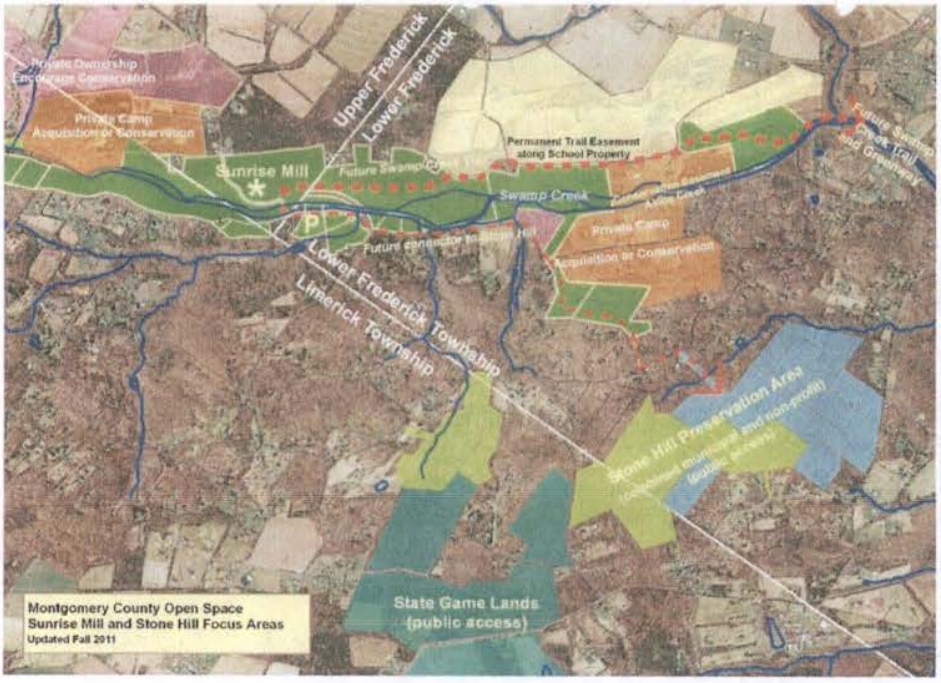


Figure 1. Montgomery County Open Space conserved areas. The Stone Hill Conservation Landscape is comprised of the State Game Lands (teal), Stone Hill Greenway (lime green), and the Eva Meng Wildlife Reserve and Bird Sanctuary (blue).

Throughout its history, Stone Hill managed to evade much development. On the one hand, large parts of the landscape were not conducive to farmland and subsequent higher levels of suburban development because of the rocky topography.

[1] Interview with conservation activist, Western Montgomery County, PA. May 30, 2012.

Still, many smaller areas on this ridgeline were converted to agricultural production during earlier eras of small-scale farming and large sections of the ridgeline were likely logged during the late 19th Century. Likewise, relatively small parcels in the study area were also apparently owned and managed for fuel wood harvest by residents living in Pottstown (Interview[2]). Selective logging appears to have also been a regular feature during several decades of the 20th century. Still, over the course of the 20th Century, reforestation became a rather prominent characteristic of the changing landscape (Rhoads and Block 2007).

The rural agricultural character paired with a large patch of woodland made this area an attractive place to live, and a few amenity residents migrated to Stone Hill even prior to 1970. In addition the natural amenities, the planning history, zoning regulations and general demographics of the Stone Hill region have long encouraged amenity migration and exurban development. Between the 1970s and 1990s, the townships of Limerick and Lower Frederick had established minimum lot sizes for residential zoning in the area that favored low-density residential settlement, with the R-1 minimum lot size set initially at 3 acres. Only in subsequent years, following court challenges elsewhere in Pennsylvania, did these townships upzone the areas, changing lot minimums from 3 acres to 2 acres. I note that, even though most exurban literature studies residential parcels that are greater in acreage, Stone Hill is still considered exurban. Theobald (2004) defines exurbia as a large range from two to 40 acres. In Stone Hill, due to some oddities of the way that zoning and development works in Pennsylvania (see e.g., Walker and Hurley 2011), there are a variety of

[2] Interview with conservation activist, Western Montgomery County, PA. May 30, 2012.

residential plot sizes, including some under the two-acre minimum, but when the gross density (the number of units divided by the acreage of the entire area of land; see PAS Quick Notes (2006)) is taken into account, the average acreage of this landscape is much larger than two acres. Moreover, the general feel of the area, together with the deliberate efforts by Limerick and Lower Frederick to minimize development in this particular area, create a stark contrast between nearby areas clearly characterized by more typical suburban development.

As more amenity residents arrived in Stone Hill in the past 20 years, more people began to take notice of the area's extensive tree canopy and high quality older, second-growth forest. Consequently, this ridgeline was recognized as an important conservation focus area, and therefore gained attention by residents and local governments who were concerned about preserving the area. Initial conservation efforts began in the early 1990s when long time Stone Hill resident Eva Meng passed away. She possessed 68.6 acres of land in the area, where she and her sister Edna had lived, farmed, and even operated a Girl Scout camp from 1920 to 1974. In her will, Eva indicated her land was to go to an unspecified non-profit conservation organization. With the help of concerned local residents, the Valley Forge Audubon Society became involved and created a wildlife preserve and bird sanctuary on the property in her name. Conservation efforts continued as Lower Frederick Township, Limerick Township, Montgomery County and Natural Lands Trust purchased parcels throughout the area, and all together these roughly 650 preserved acres of public accessible lands are part of twelve Montgomery County Conservation Priority Landscapes.

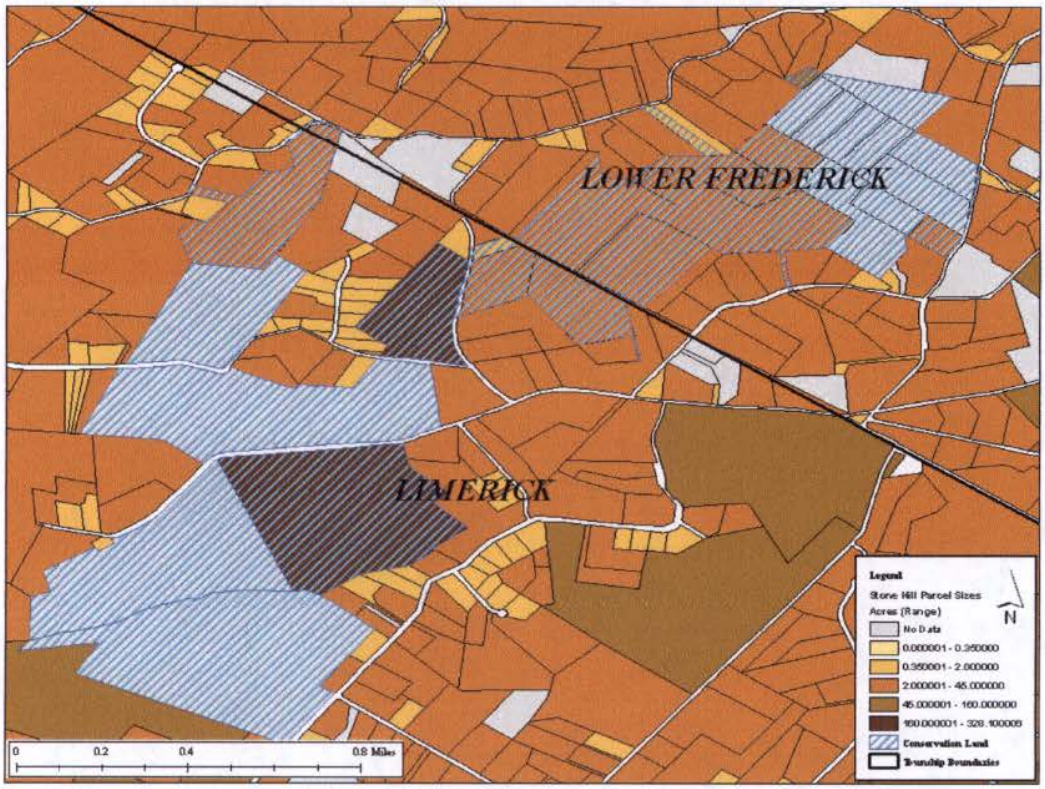


Figure 2. The majority of the case study area includes parcels on this exurban scale, as represented by the dark orange parcels (2 – 45 acres). Note that the majority of parcels around the conserved area, represented by the blue and white stripes, are part of this exurban density. (Created by Hurley 2012)

Methods

I employed the qualitative research method of grounded visualization for this study (Glaser and Strauss 1967, Strauss and Corbin 1990, Hurley et al. 2008). Grounded visualization utilizes both geographical map data for spatial insights about key phenomenon and ethnographic information in order to explain and synthesize various themes related to themes in the spatial analysis, which produces more integrated research answers, as well as more in-depth questions to ask residents (Hurley et al. 2008). With grounded visualization, either ethnographic methods or air

photo analysis may be undertaken first, but a key point is the interactive way in which the resulting information is used to compare results about spatial patterns or trajectories of change. For this study, I first took a preliminary look at the conservation area and its surrounding parcels with my Summer Fellows advisor (Dr. Hurley). In this quick examination of the area, we noticed a general trajectory of reforestation and the emergence of some new forest perforations when viewing air photos from various years dating back to 1942. I then used this general knowledge to help construct questions for residents living in the study area.

Then, I began conducting semi-structured interviews with residents living directly adjacent, or in very close proximity, to the Stone Hill Greenway conservation area. Before each interview, I printed out an aerial view of the resident's home to hypothesize what kind of resident they might be and so the resident could point out different aspects of their yard during the interview. Once these interviews were underway, I used Google Earth and historic air photos to place information about land development history, forest change, and stewardship practices into context. In what follows, however, I first describe the methods for analyzing forest transition and then the ways I conducted interviews, since this order mirrors the presentation of results later in the thesis.

Aerial photo analysis of historical forest transitions

To visualize and analyze the changes in forest canopy cover, I utilized Google Earth and historic aerial photos. First, I drew outlined polygons of the forest canopy openings around the Eva Meng Preserve and Stone Hill Green. I attempted to outline these clearings so that they had no or very little canopy or clusters of trees in them. I

then downloaded the historical air photos for the years 1942, 1958, and 1971 from the Penn Pilot website, and overlaid these historical images as layers in Google Earth, rubbersheeting the images as close as possible to their contemporary locations as found on the data in the Google images. For the year 1992, I used the "historical imagery" feature in Google Earth, since these air photos have already been georeferenced. I then began to characterize the polygons according to the degree of forested canopy in each clearing (see table), changing the fill color for each polygon. I completed this for each time period to denote the changes over the years. I then analyzed individual areas of each subsequent time period going backwards in time, noting the increase of tree canopy as more 2011 polygon clearings lightened in color.

Color	Estimated percentage of forest in polygon
Red	0 – 25
Orange	25 – 50
Yellow	50 – 75
Tan	75 – 100

I also outlined all the forest clearings present in the 1942 aerial photo. I used a bright blue outline to indicate clearing of a parcel for agriculture or homes, but I used pink to indicate some kind of orchard or tree farm and red to indicate an area that appeared to be logged previously and was undergoing reforestation.

Figure 3. Extent of analysis: the dark yellow plots indicate the residential properties immediately adjacent to the conserved areas, and the lighter yellow show the second-tier adjacent properties. The aerial photo analysis of forest canopy openings is focused within the boundaries of the thin red line.

In-depth semi-structure interviews

To recruit residents to speak with me and my research advisor (Summer Fellows 2012), we sent 40 letters in May of 2012 to the individuals identified as owners of the land adjacent to the Stone Hill Greenway. Of these residents, all but three individuals lived on the parcel; two of these individuals lived in nearby towns and one lived out-of-state. Six residents replied to our initial invitation. In 2013 spring semester, I followed up with those six landowners we interviewed with the intent of gathering a snowball sample, asking for names and contacts of their neighbors. Once again in September 2013, I sent approximately 60 letters to

additional landowners throughout the wider study area, expanding this set to those living not directly adjacent or in the second tier parcels adjacent to the conservation area. I received a response from four interested residents, yet only two committed to an interview.

Conducting semi-structured in-depth interviews for research projects such as this greatly increases the variety and depth of information that can be received from residents (Johnson 2008). While each interview did not follow exactly the same progression of questions, I organized a list of questions to ask each resident, which included the following themes: migration/motivation history (amenity migration), house history (initial building/clearing land), land management (design and practice), and development and conservation efforts in the area/activism history (planning) (Appendix A). All residents were also asked three demographic questions, including age, degree of education, and ethnic background. I also included a question asking them to identify how they characterize the area in which they live. All interviews were recorded with the formal consent of the interviewee and then later transcribed in order to be analyzed according to a number of themes.

Results

Forest Transition in Stone Hill

Stone Hill began as a historically agricultural landscape

Analysis of the forest openings from 1942 shows a large amount of clearing in particular locations in the area for agriculture, while the core forest canopy on the ridge remains relatively intact (Figure 4). This air photo analysis also corresponds to

details I heard during interviews and read in planning documents about the area. Within the scope of our study area, almost all of the eastern and southern sides around the preserved areas—the Stone Hill Greenway area—are cleared with medium to relatively large-sized farm fields. Significantly more area has been cleared for agriculture than for houses, and all of the houses are clearly associated with a farm field. The core forest, which today makes up the preserved area, largely evades any clearing, minus some minor indications of logging, which are indicated in red. All agricultural land clearing is focused around this central forest area. Sixteen years later in 1958, no significant broad changes have occurred; only a few fields have been begun to reforest, yet more trees were growing around many of the edges of farm fields. In 1971, much of the agricultural fields remain on the east side, yet the canopy of trees dividing the fields is becoming thicker. I also noted that at this point, the orchards that were present in 1942 have been abandoned or cleared. In 1992, there is a noticeable decrease in the amount of land cleared, with some farm fields left to completely reforest, but most parcels allowing more trees to encroach from the field outlines and grow closer houses. Sixty years later, the majority of these cleared fields remain, but only about half remained cleared to the same extent as they were in 1942.

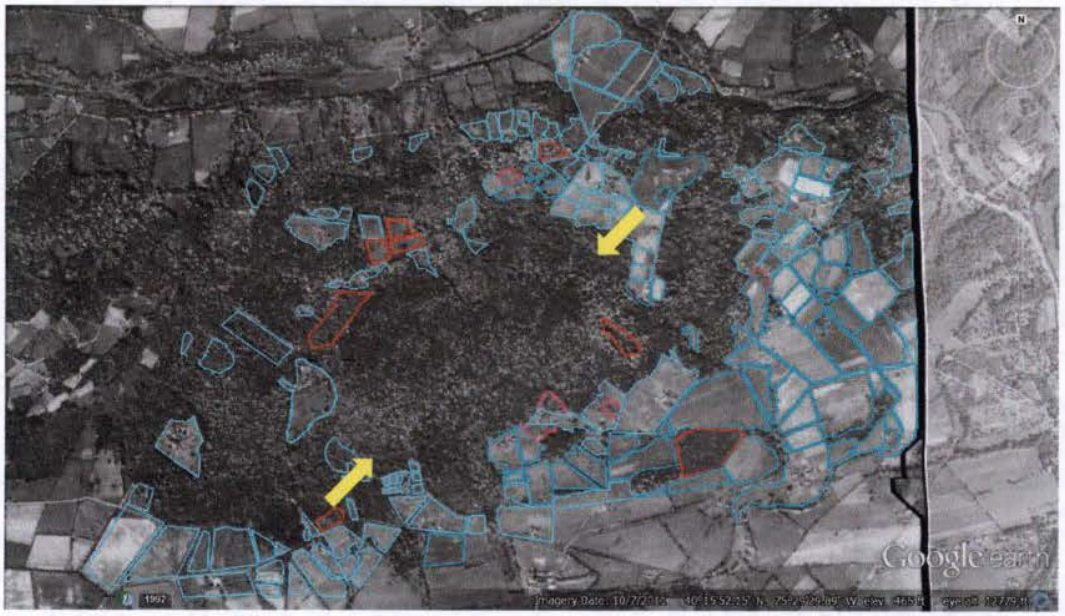


Figure 4. Clearings from 1942 in 1942. The yellow arrow indicates the core forest area of what is today the Stone Hill Greenway, a conservation area with portions owned by the Valley Forge Audubon Society as well as Limerick and Lower Frederick townships.

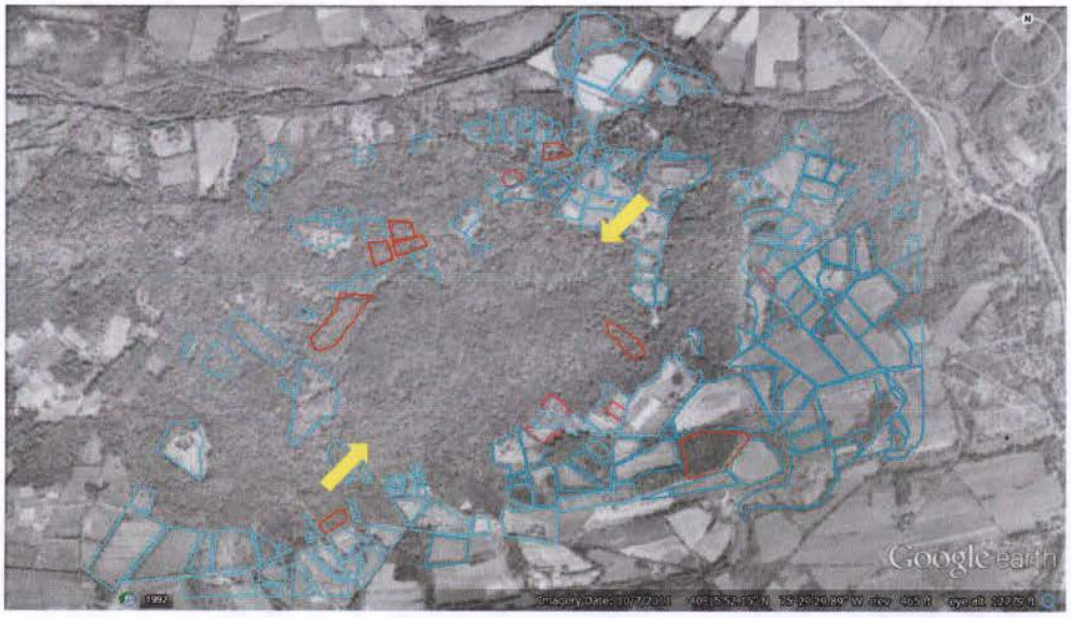


Figure 5. Clearings from 1942 in 1958.

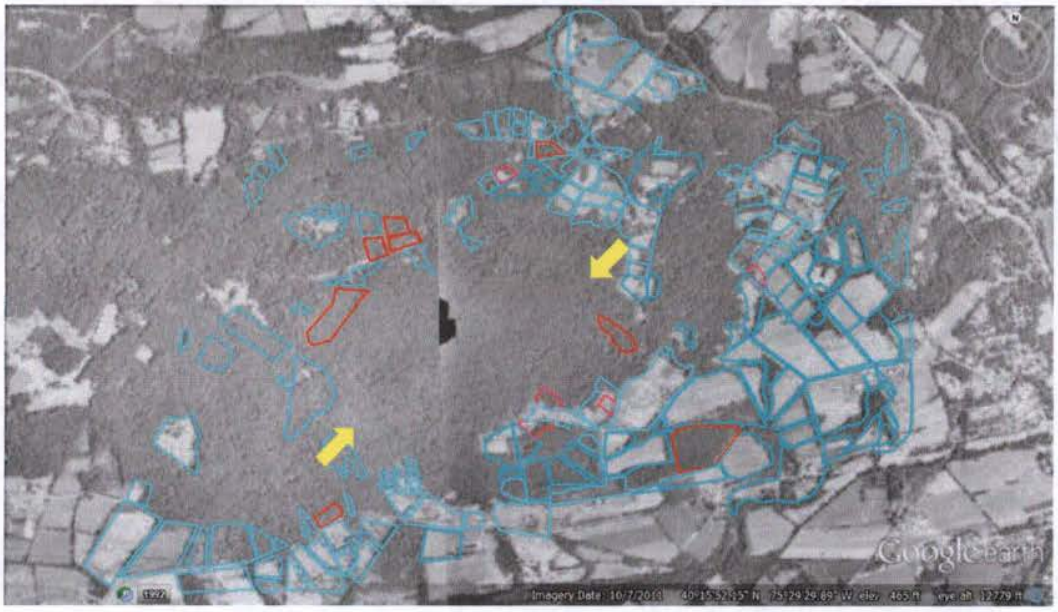


Figure 6. Clearings from 1942 in 1958.

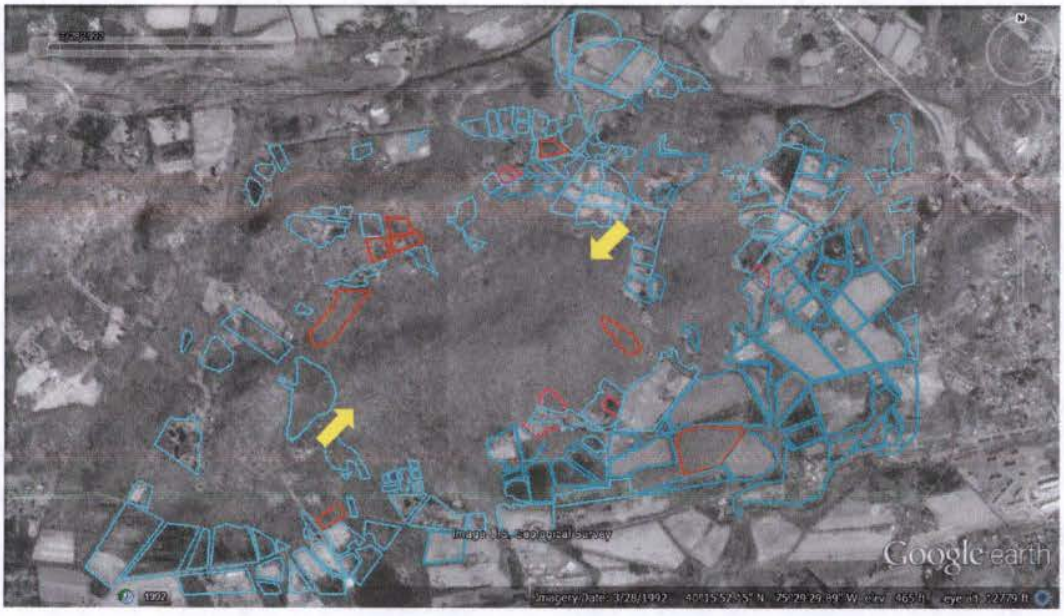


Figure 7. Clearings from 1942 in fall of 1992.

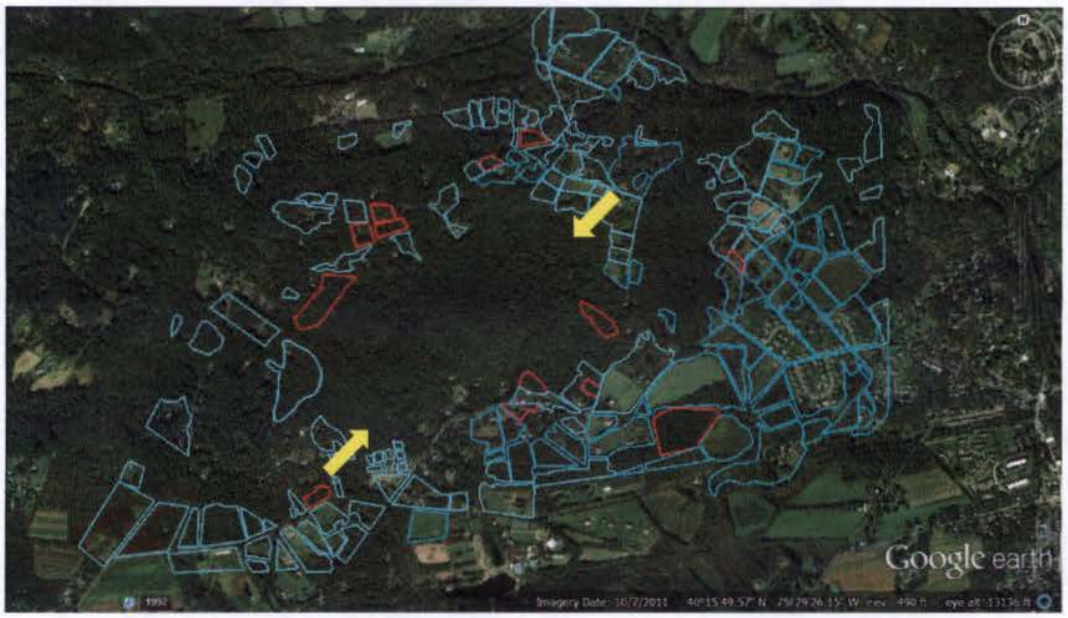


Figure 8. Clearings from 1942 on top of 2011 air photo.

From farm to forest and/or forest to exurban home site?

Today, more than half of the houses that make up this exurban landscape are located on previously cleared lands. Many of these home sites have an average 25% increase in the amount of forest cover on each historically agricultural clearing. In addition, these specific homes seem to maintain a rural/pastoral characteristic with the majority of their land parcel comprised of lawn or pastureland. By analyzing the current forest canopy openings and then working backwards to analyze how these opening have changed over time, I was able to observe how many clearings were present throughout recent history and how many occurred only in the last decade. This process of outlining the 2011 clearings and reversing the analysis to look back in time revealed that the majority of the exurban homes sitting adjacent to the Stone Hill conservation lands were forested areas that had been cleared within the last 25 years.

Figure 9. Air photo of Stone Hill in 2011. Red polygons represent a cleared area with 0-25 percent of forest cover.

Figure 10. Air photo in 2011 with polygon colors indicating the status of canopy coverage in 1992. Red indicates 0-25% of the land is forested, orange shows plots

with 25-50% tree coverage, yellow indicates 50-75% of the area is covered, and tan shows that 75-100% of the 2011 clearing is forested at that time.

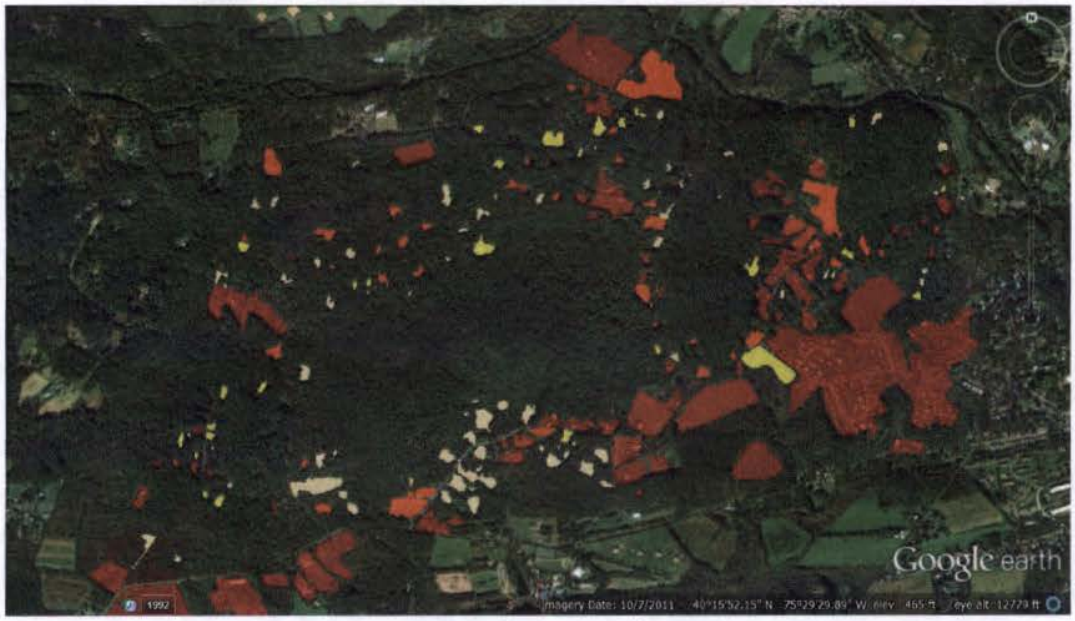


Figure 11. Air photo in 2011 with polygon colors indicating the status of canopy coverage in 1971 (see Figure 10 for color coding description).

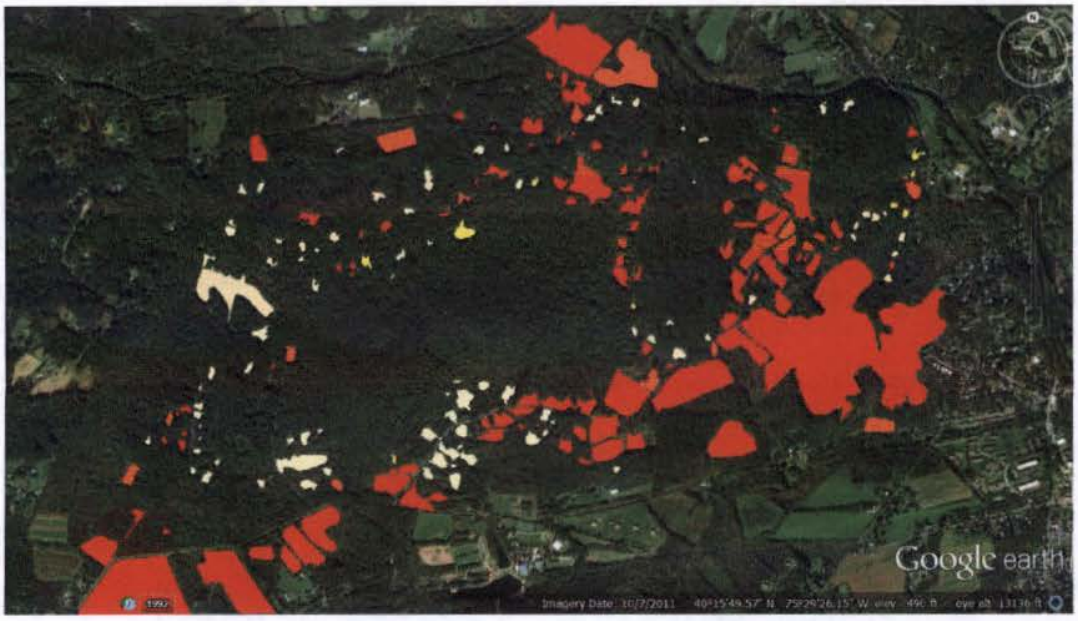


Figure 12. Air photo in 2012 with polygon colors indicating the status of canopy coverage in 1942 (see Figure 10 for color coding description).

Closer examination of particular small neighborhoods in Stone Hill demonstrates that the timeline for exurban development is clustered. For example, many exurban forest canopy openings that were present in 2011 were not apparent in the 1992 air photos (indicated in Figure 13 by the tan polygons). Although homes were present prior to 1992, the majority of the development and increase in forest perforation occurred within the past 20 years, which could have been made possible by the accessibility of the land through Meng Road.

Figure 13. Forest perforation due to exurban development. The tan polygons indicate forest coverage 75-100% in 1992. The red, orange, and yellow all indicate a previous level forest that was cleared (75-100%, 50-75%, and 25-50%, respectively).

This trend towards exurban development seemed to have occurred a few years earlier along Gerloff Road. The analysis of 1971 air photos show a number of the forest canopy openings along Gerloff road that were not present at that time, indicating that the increased levels of exurban development of the area did not begin until possibly the 1980s, and then more extensively in the 1990s.

Figure 14. Exurban development along Gerloff Road occurred after 1971, as indicated by the analysis here. Much of the forest canopy in this focus snapshot was intact prior to the 1970s.

Overall, by looking back on the changes in the current forest openings through time, the current largest deforested areas were once farm fields cleared since 1942. These large sized clearings have either maintained their rural character or were converted for development. For example, many large parcels remain fallow pasture land or are part of a characteristically pastoral home. In contrast, one of the largest

areas cleared was used to construct a suburban subdivision on the eastern side of the case study area. This subdivision was not constructed until after 1992, occurring somewhat simultaneously with increasing exurban development.

When analyzing the smaller forest canopy openings throughout the landscape, there are also two main trends that occur. About half of these smaller clearings were part of a historically larger canopy opening. However, as time progressed, more trees grew in these parcels, particularly along the property edges, increasing forest coverage around the original forest homestead. On the other hand, the other small perforations from new homes did not arrive until recently, indicating an increase in the amount of exurban development in the past ten to twenty years.

These patterns indicate two kinds of forest transitions: one in which deforestation surrounding the core conservation lands was primarily driven by agriculture in the mid-20th century, and a second pattern involving an increase of smaller perforations in the forest canopy directly surrounding the conservation area in the past 25 years, which initiated a transition from a rural landscape where forestry might have been practiced to an exurban one where it might no longer be practiced.

Other historical notes on Stone Hill and its development

When analyzing the landscape's forest transition, it is important to note information about the rural character of historic Stone Hill. Even though on first glance the forested core in the scope of our study appears to be relatively untouched, analysis of the air photos suggest that parts of it were selectively logged—or even clear-cut—in the prior to the 1940s. These areas are outlined in red, and the fact that

this cutting occurred in the area was confirmed in resident interviews. However, this selective logging did not only happen in the past. From personal on-the-ground observation of the area today, my research found that minimal selective timber harvesting still occurs today.

Figure 15. Area of focus from 1942 air photo. The plots outlined in red indicate forest that may have been re-growing after agricultural abandonment or selective or even possibly clear cut logging.

Interviews with residents also revealed quite a bit more about the rural character and history of the Stone Hill area. In a few cases, interviewees shared information about long-time residents with whom they had direct conversations and interactions. For example, residents who moved to the area in 1962 explained they had neighbors who had very simple farm lifestyles, not installing electricity or a phone line until the 1980s.

A1[3]*: They had no electricity. No running water, no telephone. So one of the little outbuildings had a great big kettle. And they would pump their water from a water pump outside and carry buckets over to put in the big kettle, make a fire underneath to heat the water. And that's how they would get hot water to do their laundry. Now she had a hand operated washing machine, which I tried to do because I visited a lot. And so she showed me how. It kind of went on an angle, and turn the agitator inside. So they would carry this hot water from this big kettle outside into the washing machine. It had a cold stove in the basement, and in the kitchen there was this old cook stove, which was coal, and you could also burn wood. So they had coal oil lamps. The wallpaper was all peeling off. So they held it up with white adhesive bandage tape.*

Further, they pointed out there were not many stores or amenities around, simply a basic grocery store around when they moved in.

Interviewer: So were there any kinds of amenities or conveniences around here when you moved? Any kinds of shops?

A1: There was a gas station on RT 29, and Kulps grocery store was right in Zieglersville. Now it's like a little antique store. He buys gold. But when we moved in, it was called Kulps, and they sold um, some groceries, milk, bread, eggs, butter, penny candy, big penny candy display. Lunchmeat, cheese, yarn, thread, sowing patterns…boots….

[3] Interview A, Western Montgomery County, PA. October 30, 2013.

A2: Anything you needed in a hurry. You knew everybody who came in there.

A1: Yeah, it was a cool store. When our children were born, I would take the dogs and the kids, and we'd walk to Kulps. It was there for many years.

A1: What else was there? The drug store was Haincox which was in Schwenksville, and it just looks like a house now.

A2: But there was not much here.

With more in-migrating residents came more amenities and shopping centers in relatively close proximity to the area. Residents who moved in 1999 noted that they were not sure if the cable company would set up a cable line in the area, but they did after a few more people settled in along Meng Road and the demands for this convenience grew.

B1[4]*: We were told that we wouldn't get cable up here, and that happened the following year.[chuckles]*

B2: Yeah, when we first moved in here there was no cable, nothing on the street.

B1: No, they're like, Comcast is never coming up Meng Road. Took 'em a year and they were here, so we had, you know.

These residents also recalled that very few conveniences and services were located near them at the time when they moved in, allowing the area to maintain its quiet rural character.

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[4] Interview B, Western Montgomery County, PA. June 11, 2012.

B1: There was nothing. All this development in Collegeville just happened, and the whole Target plaza, that's all new. When we came out here there was nothing out here. Not even a pizza shop. It was pretty, it was bad. Just one. One little divey bar, one little pizza shop, I mean that was about it, so, it wasn't what was here.

However, this has changed over the years as commercial development in the areas surrounding U.S. Route 422 and Pennsylvania Route 29 have increased. Now, newer residents express satisfaction about living in close proximity to shopping centers. Even though there are minimal services in the immediate area, residents are content with the services that have recently been developed in the region over the past five to ten years.

C1[5]*: Yeah, I feel like we can be out in the middle of nowhere, but close to King of Prussia, the Outlets, shopping, you know. Kids' schools still aren't that far. So it's nice, I love the location.*

The Role of Amenity in Residents' Migration Choice

Demographics

I noted demographic similarities between the people who participated in our in-depth interviews. The average age was 55, median age of interviewees was 53, with a range of 36 years. Eleven out of 15 residents have at least a bachelor's degree. Four out of the nine have a master's degree. One of the residents holds a degree in Geology and Natural Resource Management. All identified themselves as white.

[5] Interview C, Western Montgomery County, PA. December 3, 2012.

Historical Note about Early Amenity Uses

While the majority of the exurban development in Stone Hill has occurred in recent years, results from interviews indicate that recent residents are not the first amenity-migrants or amenity-oriented residents in the area. Stone Hill appears to have a long history of amenity use for which three specific examples emerged in the case study. Another research project on Stone Hill that focused on the steps to officially conserving the Stone Hill Landscape found that one of the earliest farming families in the area, the Meng family, began a legacy of conservation and land stewardship in the 1900s (Williams 2012). The two sisters, Eva and Edna Meng, were two very environmentally conscious community leaders who led a Girl Scout camp on their property beginning in the early 1920s (Interview[6]). One of the sisters, Eva, apparently moved away to New York in her later years and used the area as a summer home, indicating Stone Hill had homes with seasonal amenity residents (Interview D[7]). In addition, the Meng family was also comprised of active farmers during history, and therefore their property reflects a history of multiple land uses and values over the past century. But at the end of the day, their use of the land as a camp appears to have derived income from what then would have been seen as a recreational value of the land, or in today's parlance, a natural amenity.

One life-long resident noted his father commuted from their home in Stone Hill in the 1950s to his job as a well-known lawyer in Norristown. He explained how his father "didn't want to raise his children in the city, so he wanted to raise them out

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[6] Interview with conservation activist, Western Montgomery County, PA. May 5, 2012
[7] Interview D, Western Montgomery County, PA. June 19, 2012.

here" and "to be out off the beaten path" (Interview D). He said the family raised a number of small farm animals and maintained a vegetable garden, and this situation represents some of the earliest examples of amenity migrants to the Stone Hill area. Additionally, we interviewed landowners who have lived in their Stone Hill residence since 1962 intending to avoid living in suburbia. While the stories of these longtime residents proves that amenity migration has occurred prior to the 1970s, interestingly, many of the current residents are citing similar motivations for moving and have a diverse array of ideologies and land management practices.

Overview

Resident	Where did they move from and when?	Landscape features that attracted them	Amenities/conveniences/services considered
Interview A	Moved from Oaks; December 1962	Quiet, few people, heavily wooded	Very few amenities in the area at the time, not a big consideration
Interview B	Audubon PA – area was similar, backed up to Milgrove Park; Fall 1999	More acreage, beautiful area, backed up to open space, affordable	Was not convenient for traveling to, there were very few stores around, development started about 5 years after moving in, didn't even look into township services, happy area was part of an "above average school district"
Interview C	Boyertown area; 2004	Wanted a wooded land; Stone Hill Greenway; near forested area, privacy	Family is in the area, works in Pottstown, so access to main roads was convenient, happy with school district
Interview D	Schwenksville (Spring Mount town homes); around 1990	The area was "off the beaten path", doesn't like developments, excellent hunting area	Didn't have to worry about work, chose his office after moving

Interview E	Lower Gwynedd (for job); June 2002	Near open space, wooded area, privacy, small town community, land perked well	Not very important, kids had finished school by the time they moved
Interview F	Limerick; January 2009	Isolation, backing up to open space, having open space across the street, knowing it won't be developed	Wawa is close, near grocery stores Quicker drive to work, school district was not an issue because they didn't have kids
Interview G	Dublin, PA; 2005	House backs up to open space, privacy, access to walking trails, nice scenery, proximity to Perkiomen trails for running; Liked open space Was a farm kid, wanted a space for a garden and outdoor projects	Wanted to live closer to public transport, but didn't get that from house; Proximity to work was important for wife (Physician's Assistant at hospital); School district was important, looking for a small size school for kids
Interview H	Norristown: November 1990	"wanted to be in a natural area in the woods"	Commute was a consideration, but they didn't have children and described township services as "nonexistent"

All of the residents interviewed expressed that their principal attraction to Stone Hill was the natural landscape and the quality of life it offered. Although they may have been attracted to different specific aspects of the landscape – with some explaining that being close to the woods was important, others noted the importance of having a lot that backs up to open space – they all stressed that these natural features were crucial in their decision to move there. The isolation and solitude that came with living in a heavily wooded, low density settled area also greatly attracted these residents to Stone Hill. Overall, they stressed that other aspects like township

services and conveniences were low on their list of priorities when searching for a new home, and that if Stone Hill for some reason did not account for all of their needs, they would have continued to search for a home in an area that featured similar natural area characteristics.

> *E1*[8]*: I think being adjacent to a conserved space that we knew was never going to be developed into anything else probably was number one. Cause we probably were willing to pay a little bit more to be there. We could have bought a cheaper house elsewhere, but it wasn't close to the open space.*

The residents all noted that they loved the quiet and isolation that comes as a result of the low density development and woodlands in the area. One husband and wife explain the joy that comes from peace and quiet.

> *F1:*[9] *Just having, yeah, the forest and the land and the peace and the quiet.*
>
> *F2: Yeah, we kind of referenced this place here as birds and bees and boulders and trees [chuckles].*
>
> *F1: Birds and bees and boulders and trees.*
>
> *F2: It seems like everybody who lives out here, lives out here for the same reasons…to be out in the woods and be left alone.*

Another resident expressed how the feeling of solitude was his favorite part of living in Stone Hill.

> *D: I mean number one would be, uh, being off the beaten path, the solitude is by far number one. You know, I mean, where I am situated –when I get home,*

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[8] Interview E, Western Montgomery County, PA. June 12, 2012
[9] Interview F, Western Montgomery County, PA. June 13, 2012

I don't see another house, and that's exactly what I want, so you know, that in itself is by far the number one thing. You know, it's kind of like my own escape to nature, or whatever you want to call it [chuckles].

This long time resident emphasized how all these qualities "fit the bill."

A2: Very little people, very quiet, heavily wooded, wild, calm and peaceful. Not much traffic. The old house – we like early American historical things, and it seemed to fit the bill.

Two different residents expressed how their friends feel the isolation and quiet that comes with their exurban location.

C: I know even when we have people come over, I'm like, okay, you'll feel like you're going in the middle of nowhere, but our house is up there.

E2: Privacy. It's quiet. It's really quiet at night. People come to our house and say that it's like going to camp.

Another interviewee notes the perks of backing up to open space.

G[10]: Well the house backs up to the Meng/Audubon Preserve, and we were attracted by the house backing up to open space…because it gave us a good bit of privacy in the back of the house, gave us access to walking trails, and just really a nice scenery.

Many of the residents expressed how the property they had chosen in the Stone Hill area was their "ideal" or "dream home." They explained how being near nature was part of their childhood and something that they described as part of their

[10] Interview G, Western Montgomery County, June 11, 2012.

personal identity. The following six quotes represent these sentiments of feeling that Stone Hill is the ideal location that fits their personality and expectations.

B1: The wooded lot was the main draw. Um, we both grew up wanting to have a dream property like this, so, sucked us right in.

F1: We always wanted to live up towards this way. He's from [pointing to F2] Schwenksville, and we moved to Limerick. And when we moved to Limerick, at the time that we moved there, there was a lot of open space, like where the entrance to bypass for Louis Road was a stop sign. There was no auto mall, no hotel, no nothing. We wanted the open space, and then as the years went by, that clogged up. He wanted to move back here. We were looking up in Spring Mount, cause we're folk festers, you know, we wanted to be close to the Folk Fest and, when we saw the property, and we knew that we could have almost 4 acres and own across the street and there was no chance of development behind us.

G: I was a farm kid, so it was a desire to be in a place where we could have a garden, you know, we're heating our house with wood, where we would have an access to fuel for that, and I'm the type of person that needs a project, also, and the property was a project

A2: We've been avid walkers all our life. …We've been camping all over the US, we've been in Alaska, Nova Scotia, Minnesota, camping…We're outdoor people.

G1[11]*: We were backpackers before we bought this place, we wouldn't go messing up the woods!*

Overall, these exurban residents proved to be truly amenity migrants, given how much emphasis they placed on landscape features specific to Stone Hill above other services. When asked about other conveniences or township services that factored into their housing decisions, a few noted that the commute to work was important. In most cases, residents who moved either found jobs in the area soon after moving, and if they didn't and had a rough commute, they expressed that living in Stone Hill was worth it.

B1: It was worth the drive and it was painful. It was probably an hour on 422 to get to upper Merion. But we were willing to do it because we thought when will you ever have that opportunity again to have this kind of property.

Other residents with children noted that school district was also an important consideration; however, this was not a problem because many of the landowners who were parents felt this area's school district was rather strong.

In the process of searching for a home, only a few residents actually found their home with the help of a real estate agent. Out of the two residents who did use an agent, in only one of the cases did the agent help the landowners locate the property. The others either heard about it through advertisements online, in the newspaper, or from other connections (work and family). Two residents did not even

[11] Interview G, Western Montgomery County, June 15, 2012.

plan on moving – they simply stumbled upon their houses while out exploring the area one afternoon and fell in love with them.

> *B1: We weren't planning on moving, we just followed a sign that said 3 plus acre lots, and we looked, and that was it. Sold our house.*

> *A2: So we went for a walk one day and she passed this old house, "Oh, let's buy that."*

For the residents of this study, the next steps in the new homeowner process was either working with a developer or renovating their previously constructed house.

Decisive Moment: Special Requests to Developers while Development was in Process

Another aspect of the exurban development process I considered was whether or not homeowners purchased a property with a previously existing house or they bought the land from a developer. After buying an existing house, residents could make a number of changes and renovations to the property. On the other hand, residents who bought land from a developer could have a number of subsequent options, including working with or without the developer, deciding how much land to clear, house construction considerations, etc. The purpose of this questioning was to determine if these amenity migrants had specific environmental considerations in the clearing, building process, or possibly renovating process.

Another reason for this question was to compare the role of developers to the role of new migrants in creating more openings in the forest canopy. On the one hand, out of eight interviewees, five residents purchased properties with previously

constructed homes. Many of these homes were old—with one of them carrying the title of the second oldest house in Lower Frederick—and residents noted how these houses were in poor condition when they moved in and therefore required a lot of repairs. On the other hand, three out of the eight landowners bought their land from a developer whose lots had differing levels of forest clearing as a result of the developer. Only one of these landowners had the option to clear the plot themselves and take the plans for construction to another developer. The plans for their home included environmental considerations, such as solar panels, and the couple was very judicious in minimizing the amount of the land cleared for housing construction.

> *Interviewer: So I'm curious, why were you "crazy enough to clear the lot yourself," using your own words, why did you want to…?*
>
> *H2: Well, we're cheap, um, we were poor youngsters, um, I had a, I had a father who was willing to help and excellent with chain saws and we wanted to save the wood for the wood stove, and it just was fun for us, kind of like ownership…we're clearing our lot, we're gonna build our dream house, you know [chuckles]…*

The other two landowners did not have much input in the amount of forest cleared, because the developers had already prepared the land for building and the majority of the trees were gone.

> *Interviewer: When you were building the house, were there any environmental considerations that you asked either the architect or the engineer to take into*

account? Like, did you tell them you wanted to be able to see your backyard like here, or did they have a good plan that you approved?

B2: Don't take any trees down.

B1: Right, that's what we said. We don't want anything removed. Whatever is here, we want it to stay. And they did that. Except for the couple that they accidentally, you know, ruined some of the roots. But they really tried. When they maneuvered around they did their best.

B2: Yeah, but as far as, what the land looked like before the house was here, we were here too late. Because even though the house wasn't built yet, they planned for the lot. So the lot was already cleared, there was a giant pile of woodchips over there, so, you know, the trees had been cut down, and long before, like, I wanna say it had to have been at least 5 years before 1999, that they had these all logged off, all the major trees were already gone, they just left a few like they did it, I mean, they did it smart, they didn't like, strip it, um, and, you know, clearly they had already been in here with some back hose, or you know, dirt moving equipment, so, you know, I often wondered myself, what did this really look like before the house was here.

B1: Yeah, you could see some exposed roots or wherever they were moving around with the heavy equipment they could bump something, or scratch something, and they died, which was sad.

Sentiments against more development

Most residents explain how much they really appreciate the isolation and privacy that comes with living in a low density area like Stone Hill, and they express

concern about any new development in the area. One resident avidly expressed discontent towards development and frustration with living in a suburban setting, calling their first home in another area a "totally plastic place at vinyl village" (Interview F). These interviewed landowners moved to get away from busy, crowded developments and would be really disappointed if more people and houses disrupted the quiet and feeling of isolation. The following three quotes summarize key sentiments.

> *G: Um, I don't know if I'd wish for anymore [homes] back here in the preserve. It's, you know, for those of us that live near it, it's kind of nice that it's off the beaten path. I don't know that it's that well publicized because it keeps it quiet, you know, and we cannot feel like we're gonna bother people if we take our dogs up there for a walk. I guess we feel a little bit parochial about it, this is kind of this undiscovered gem in our backyard, and so I don't know that we're ....and I don't feel apt to want to wish for anything different there that would make it, you know, any more public or appealing.*

> *B1: I think the majority of our neighbors moved here because we knew that much else could happen on Meng road because of the boulders and because of the sanctuary behind us, you knew nothing else was gonna happen, um. We have friends that live a little ways down who are concerned cause there is a field beside them that if that farmer sells that field, there could be other homes, so. We wanted a property where nobody else was gonna be behind us. We would not, if that property were open, we would have not built there*

knowing that there would be a possibility. So, most are here cause they know some, nothing else could happen.

F1: Yeah, anything was better than Limerick Township because they just allowed so many people to come in and just build whatever, whenever. You know, it was just constant, every time we'd turn around they were putting something else in, something else in. They didn't have, they don't have the same ideals as keeping open space like Lower Frederick and some of the outlying townships do, where you can't build unless you have so many acres, and, so, that was actually a consideration, but then after being here in the township, I don't really have any problems, as far as that was concerned.

F2: And the fact that we know they're never be anything across the street or anything behind us.

F1: Yeah, that's reassuring. When we first moved in a lot of people came and said, "So, uh, what are you doing with that over there across," cause it's an acre and a quarter, "what are you gonna do with that over there?" We're like, "nothing." [laughs] We're not putting anything over there. I mean you're not gonna build a house.

F2: There's a builder back, he lives in the back of the point there, he's got a long driveway that goes down, he's like, um, "If you're ever gonna sell it, I'll buy it. I'm not gonna do anything with it, I just want the buffer from the road."

F1: So we're leaving the buffer. Everybody likes the buffer, so we're gonna leave the buffer. We didn't have any plans of putting anything over there anyway.

However, even the recent residents who appreciate the feeling of isolation and share anti-developmental sentiments experienced an uncomfortable encounter with someone who felt that resident was crowding the area. When this resident moved in about nine years ago, she was met with some hostility by a stranger in the area. This encounter indicated that either some of her new neighbors or, alternatively, visitors of the conservation areas felt that Stone Hill was over crowded in 2004.

C: Now I must say though, that when we were moving into this, there were people really throwing fits about this property being, having a house put in there. My parents were over one time just looking at the plot of land, and there was some lady on horseback that came by and was like yelling at them, saying "I can't believe you're ruining this land," you know, "what's going to come next, a whole development?" I don't know who it was, but then there was somebody else too, one of the neighbors across the street at the time had said they were throwing a fit about this piece of land being used.

Residents who have been living in Stone Hill for a longer period of time have felt the push of exurban development a little more than the migrants of the past decade. One longer-term resident even expressed how he feels that the area is now a lot more developed and the idea that people are moving out to a natural country-side is actually a misconception. Instead, this resident is suggesting that the area is no longer rural, and it's changing to have a much more suburban character. He regrets

that he no longer can enjoy the level of isolation he once knew, and he also laments how new migrant expectations of living in a scenic pastoral area will not be met as Stone Hill continues developing.

> *D: And you know, the 20, 22 years now that I've lived there, the um, the actual forest behind my house has been preserved, obviously, as you know, by Valley Forge Audubon and all the other parcels that have been picked up over the years, but, um, the area as a whole, I mean, you have, um, a lot of housing developments that are unfortunately – for my sake, unfortunate. Um, you know, it's fortunate for other people who may be coming from the city out this way. It's fortunate for them cause they think they're living in the country [said mockingly] but, again, it's just a development.*

Another resident supported this idea, and explained how there has been a great increase in traffic in the area, so it's no longer really as quiet as it once was. This residential couple also perceives the rural quality of the landscape differently from those who have not lived in the area for as long.

> *A2: I drive, I carpooled with another guy, he worked there also. It was no big inconvenience, it was all back country roads, I mean it wasn't like today, you know.*
>
> *A1: It went from a 20 minute drive, as the traffic increased over the years, it went to a 35 minute drive.*
>
> *A2: But you know, like as I said, if I was younger now, I would move out farther and start all over again.*

Interviewer: So why do you think the people that have now moved in around, why did they decide to move out here?

A1: Same reason as us.

A2: Yeah, I think so. They all think they're getting out into the wilderness. She has friends, they're retired, and her husband came one day, and he got out of the car and said, "oh my gosh, you people are really out in the wilds here!" And I said, "Come on!" You know. But a lot of people come out here because it's countrified, and the back roads, and they like the back roads, and um, I don't like the weekends because many people hunt these up and they come for rides on cars, motorcycles, trucks.

While some longtime residents may feel that the area is losing its rural character, most of them still see this rural quality when describing Stone Hill. I asked residents to categorize the type of area in which they lived with the options of urban, suburban, rural, or other. Almost all of the residents struggled with this question, noting that the housing density was not quite at the rural level, yet their homes did not feel like they were in suburban developments. As a result, mostly through process of elimination, they chose the option of "other," using words like "sur-rural," "semi-suburban." One of the residents was even aware of the concept of exurbia, answering "ex-urban." Here are some of the ways they expressed their thoughts.

A2: I don't know, I've never thought about it. It's somewhere between suburban and rural.

A1: Sur-rural.

H2: Well, we're not urban, absolutely not. We're semi-suburban, on the edge of a rural kind of setting. So we're kind of a rural plot set in the middle of a suburban area, so, it's kind of somewhere in the middle there.

H1:I personally feel we live somewhere on the continuum between rural and suburban.

C: Um, maybe other, that would probably be best. I mean I'm thinking suburban like location wise everything. But, we could be other, cause I don't feel we're quite rural, we're not quite suburban. So, yeah, let's do that category.

A2: I don't think it's rural any longer. (laughs)

A1: With us, we'd probably think it's suburban.

A2: Yeah, but we're zoned residential now.

A1: We're semi-suburban.

Exurban types of ideologies

From a dual analysis of interviews and aerial photo analysis, three main types of residential idylls emerged: nature/forest, pastoral/rural, and suburban. The primary characteristics of these residents' landscape idylls were analyzed according to the following topics: percentage of property cleared of forest (as viewed from the aerial photo), land maintenance strategies and priorities (following Walker et al. 2003, Klepeis et al. 2008), spatial boundary making practices relative to adjacent areas of

forest (following Head and Muir 2006), the types of planting strategies employed (following Head and Muir 2006), observations and discussions of wildlife interaction, and other uses of the property (following Holmes 2006, Walker et al. 2003).

Nature/forest Idyll

Overall, out of all the residents in Stone Hill, residents enacting a "nature/forest" idyll in the area cause the most minimal effect on the areas of woodland on their parcels—and likely have the least effect on other dimensions of the surrounding forest ecosystem. Their stewardship ideals and land management strategies are parallel for the most part, and they exhibit a serious consciousness and respect for the forest and land around them. The majority of their properties are forested, and these landowners explain they will only cut trees when absolutely necessary. "Nature/forest" residents enjoy interactions with wildlife and have a pretty extensive understanding of forest ecology and ecologically sound land management. They also work to rid their properties of invasive plants and focus their plantings on native species. Two residents in Stone Hill fit this natural forest category, and their characteristics are described in greater detail and in their own words below.

Clearing Size

Natural forest residents have cleared only about 10-25% of the forest canopy on their properties for the siting of their houses and surrounding yard or garden. One of these residents moved into previously constructed houses, and explained the house needed serious repairs when they moved in, yet they did not do much to the extensively wooded areas besides clear out some trash and cut down dead trees that

were threatening to fall on the house. The other couple explained that they were able to clear the land themselves before their contractor built the home and, therefore, were able choose to make the most minimally invasive hole in the forest canopy. These residents also were the only ones to take environmental considerations in their construction plans by positing the house with a southern exposure and installing solar panels. Overall, these homeowners do not do much to the woodland surrounding their homes in regards to planting or clearing, and seem to have a hands-off approach when it comes to actively maintaining the woodlands.

Figure 16. Air photo from 2011 of "nature/forest" idyll resident property. The boundaries of the landowner's parcel is in red, and the forest canopy opening for their house is outlined in yellow.

Figure 17. Air photo from 2011 of "nature/forest" idyll resident property.

Land Use Strategies and Maintenance

These "natural forest" residents described their philosophies on living in an area as leaving a very minimal footprint. These residents are well versed in environmental issues, and have academic backgrounds in the environmental field and currently have careers in conservation/environmental protection. Therefore, they very concerned about their impacts that their settlement near a conservation area could possibly have on the surrounding environment. When talking about their home in Stone Hill, they stress that they decided to live in the woods for that very reason, and therefore they do not want to clear more land than they have to.

> *E2: And philosophically, we didn't do it, but somebody punched a hole in the interior forest here. This is actually, if you look at where the Stone Hill forest*

is from Google Earth map and pan out, you're kind of almost at the center of the greenway. Somebody punched a hole in the forest. Now I don't want to further fragment what's there. I want to live within the woods instead of creating a big suburban lot that is the antithesis of what this is.

E1: Yeah, we see that a lot. We see where somebody buys a building lot out in the middle of the countryside, or in the woods, or surrounded by this beautiful landscape and then they cut everything down and plop a standard suburban McMansion, and it's like, why'd you move here? You didn't like what you saw, so you changed it all, so why'd you move here in the first place.

These residents also feel that they should not do much to change their property, and therefore do not plant a lot of things.

Interviewer: But in the woods, have you planted any new trees, shrubs or…?

H2: No, no, just in the beds right around the house.

Interviewer: Sort of just left it alone?

H1: Yeah, yeah. We were backpackers before we bought this place, we wouldn't go messing up the woods!

H2: We have, we have one, we have one old cedar that's really nice that's like on the edge of our yard and we, you know, trimmed around it so it would get good light, and you know, try to support it, cause it's like the only evergreen that we have here [chuckles]. But, you know, maintaining it, but that's just, you know, clearing out around it, making sure there's nothing getting on it, giving it light, just opening it up so it could get a little bit of light, poor thing. Um, but no, we don't ….

The other natural forest residents note how the most they focus on in regards to maintenance is removing invasives because of their negative effects.

> *E2: Almost all the clearing we did was invasive species. I tried to keep the good stuff and get rid of what was the bad stuff. So, you know, the elderberry, that was in the middle of the multiflora rose I tried to keep, but I got rid of the Atlantis, the multiflora rose, um, Japanese honeysuckle, whatever the species was that was the stuff that encroached in the old garden areas.*

Spatial boundary Making

These residents not do much land management around their home, and therefore they do not construct specific boundaries between themselves and woodlands. However, these landowners admit that they have a small lawn "envelope" around their house which they explain is a necessary compromise, but still it does not construct a spatial boundary between them and nature.

> *E1: So mostly it was just a matter of kind of cleaning up, opening up the envelope around the house. We removed a number of pretty substantial trees after we had one of them fall on our house. So, that was kind of a compromise between maintaining the natural environment and maintaining our house.*

> *E2: But the envelope around our house was pretty small compared to most suburban lots.*

> *E1: Yeah, and fairly natural, all things considered.*

> *E2: And the edge is all natural, yeah, so.*

Interview: Can you explain what you mean by envelope? I have a general understanding, but they may not.

E1: So the house sits in the middle of the parcel basically and all the, everything had grown up to it before, and we have just slowly opened up an area around the house with a little patchy yard and a garden and just clearing out some underbrush.

The other nature/forest idyll residents describe a similar situation of clearing a minimal amount of land around the house and letting natural weeds and mosses grow, encouraging the idea of continuum of forest from their back door to the forest.

E2: It's kind to call it a yard. [laughs] We did just do some regarding cause of drainage to the house. Just pitched it away from the house a little bit. We should have raised the house like one block height higher.

E1: We have, uh, limited yard around the house, um. We're not into mowing and things, um.

E2: I mean, but you have some area that requires some degree of mowing?

E1: Yeah. We have primarily around the um, on the north side, garage side, and around the west side, is most of our yard. The rest of it is just pretty much in, in, in beds, you know, fern beds or hosta beds and things…and a little bit in the back yard. But I'd say the back yard down to the wall is probably [GR: About 40 feet] about 40 feet max at the longest place, and most of that is beds around the house and then, the pond and beds next to the wall, so it's like a swath of grass.

E2: I don't think we have a quarter acre cleared, it's really, there's not much of a yard at all. It's a fairly narrow strip of grass, of kind of grass…

E1: Yeah, moss, grass, weeds…

E2: Well you're surrounded by forest, I mean, it's not gonna be a golf course, and if that's want you want, you should live in a golf course, but you know, you cut it now and then.

COMMITTED NATIVE GARDENERS

Residents who managed their lands according to the natural forest idyll are also very wary of the types of plants they have on their properties, considering carefully what is or should be planted and what should be removed. These landowners very judicially make decisions about what species they plant on their properties and try to avoid planting invasive species. Exceptions largely appear to center of food-related species or just a few prized ornamentals. One couple has developed a system in which the wife has an enclosed flower bed near the home where she can plant nonnative species, but her husband does not allow her to plant these near the woodland.

E2: We have lots of small flowering trees around the edge of the understory. The dogwoods, and witch hazels, and flowering red buds. I haven't planted anything big. I have lots of big [laughs]

Interviewer: So, are there any trees or shrubs that you planted that aren't native?

*E2: Not that **I** have. She has.*

E1: We have kind of a deal that anything inside my garden doesn't have to be native. I can plant annual flowers and do whatever I want there. If it's around the outside,

E2: Adjoining the woodland,

E1: Adjoining the woodland, then it's a native plant.

E2: It's our continuum of conservation. It goes from nonnative to native. And the more you get to the edge, the more native it has to be.

E1: So if I have any questions, I say, Drew, can I plant this? No, okay. [Chuckle]

Interviewer: And are there things he's vetoed?

E1: Yeah. Um, I had this one plant that I don't know what it's called. It's like a indestructible bush, with very kind of waxy leaves and it gets like a daisy flower on it. It's impossible to kill and it grows like crazy, and I keep thinking that would be a great edge plant because you don't have to do anything to it, but he's like, "no, not native. Can't go there." So I have to keep it in my garden.

Interviewer: And do you know whether it's invasive or not?

E2: It's not necessarily invasive, it's just, it's not native.

Interviewer: Okay, so you're not even willing to risk it.

E2: Well I have a pretty narrow definition of native.

E1: He sets a high standard [laughs] for his native.

E2: I've got to practice what I preach, so, I'm trying…I'm in the business in part of telling people how to manage their natural areas, and I'm really…the

more I read about why natives are wonderful, the more that I'm convinced that we have to stay relatively close to the definition. But try finding like plants that are for a water garden, that can be wet and dry and native in part shade, resistant, and vertically free. I've got a very small pallette to work with. [laughs]

Interviewer: So would you say that's the number 1 reason why you keep to the strict, only native plants, or?

E2: Hopefully the idea is that native plants not only will be beauty – I try to do big, beautiful and attractive, but I do think that it will increase the wildlife value. I have one area set aside for butterflies. I have a rain garden. I have different functioning things and I try to manage for different species, but hopefully attract more insects, attract more wildlife.

E1: And I think we do kind of buy into the idea that native habitat, well how do I want to say this? Not that nonnative species are bad. If you've got a formal garden and you've got stuff from all over the world, that's your little arboretum, that's great. But, for us, we both have been in the business of trying to promote conservation and preservation and trying to do things as naturally as possible to your landscape and I have to agree with Drew. I think the native plants overall, survive better. You don't have to worry about them, you know, different hot, dry, wet, conditions. They're already adapted to the landscape, and generally the deer don't eat them as much, so, all things considered, yeah, except for vegetables, and a couple pretty flowers or whatever, I agree, that native is better.

The other natural idyll resident does not have as detailed of a system, but that landowner notes that planting natives and noninvasive species is important to him.

> *H2: They kind of come up naturally in most of the places, but I've re-, I've moved some around, um, but, um, you know, tried to stay with things that were pretty much native, native species or non invasives, and...*

Rural/Pastoral Idyll

The defining characteristic of residents enacting a "rural/pastoral" idyll is that in addition to consuming the land for its amenity value, these landowners also value their land for its productive value. It's important to note that they do not use this extraction for their primary source of income, but rather they utilize any income earned from extraction for a small supplemental income (logging), food source (extensive garden or non-timber forest products), or recreation (hunting). The rural/pastoral residents in our study own more land than the other types of residents, and therefore may have a greater opportunity to utilize the land for productive purposes. The mix of consumption, production, and conservation values of these residents makes them more diverse than the other two landowner categories.

Clearing Size

All of these parcels were historically cleared for farming, and all but one of the properties currently supports this rural quality. For example, one of the rural/pastoral residents continues to grow food on a small scale in her garden on the parcel which was all previously farmed. On the other hand, another resident parcel in this category experienced a great amount of reforestation since 1942, and therefore

the residents living in this home do not maintain an extensive garden, but rather, the production aspect of their resident profile includes edible plant gathering. Nonetheless, all three rural/pastoral properties experienced some degree of reforestation since 1942.

Figure 18. Air photo from 1942 showing the how this parcel was previously utilized for agriculture.

Figure 19. Air photo from 2011 of "rural/pastoral" property. This indicates the change in tree cover over the years. This resident owns 3.85 acres.

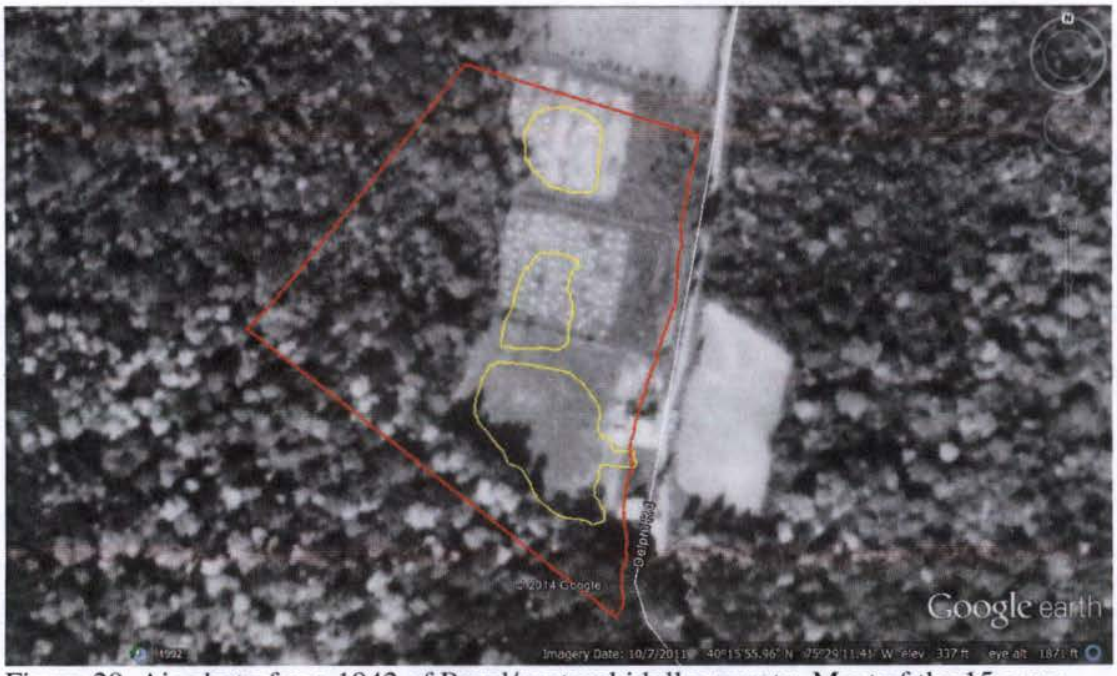

Figure 20. Air photo from 1942 of Rural/pastoral idyll property. Most of the 15 acres here were cleared for agriculture and possibly grazing land, yet some remained forested.

Figure 21. Air photo from 2011 of rural pastoral property in Figure 20.

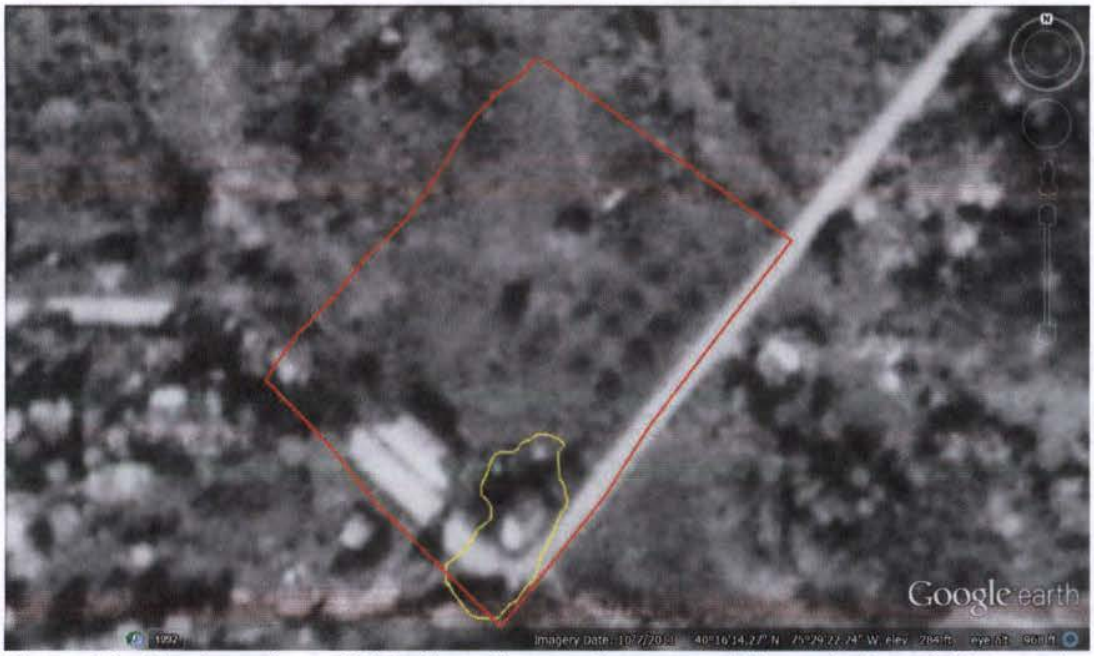

Figure 22. Air photo from 1942 of rural/pastoral property. The majority of this parcel was historically cleared and utilized for agriculture.

Figure 23. Air photo from 2011 of the same rural/pastoral property. Interestingly, three quarters of the parcel reforested as agriculture was not continued on this parcel.

LAND USE STRATEGIES AND MAINTENANCE

One of the rural/pastoral residents we interviewed is actually reviving the agricultural characteristics of the land, as much of their property was farmed extensively in the past. They are very enthusiastic about the many possibilities for growing their own food and supporting themselves from their land.

> *F1: Gonna put two cows across the street, a couple pigs in the barn, we're getting chickens going, we got the pond with the fish, and we've got our gardens. You know, it's like, almost like a self-sustainability sort of thing without going like completely Armageddon about it, yeah.*

F2: Tomatillos, tomatoes, peppers, a lot of varieties of each. We have the whole row of tomatoes just sauce. It's a red sweet plum. We got like 27 quarts of sauce last year.

F1: Squash, zucchini, melons, musk melon, cantaloupe, cucumbers, radishes...when some of that goes, when the summer stuff is done, then we'll plant the fall stuff like broccoli, cauliflower, brussel sprouts, for the fall stuff.

Interviewer: So how much would you say of your annual vegetable consumption is produced here?

F1: Um, we're still on a learning curve. We did freeze a lot of beans last year. We didn't get as many tomatoes as we would have liked.

F2: A lot of tomatillos.

F2: Just put in a strawberry bed. Got one strawberry [laughs] Could be better next year.

They also have big ideas for an aquaculture pond they would like to install where they have an in-ground pool on their property that they don't use, and then maybe even offer tours to schools to teach others about it. It is interesting to note that this particular property was previously owned by the Mengs, and this current resident hopes she can educate others about environmental topics like aquaculture, just as the Mengs provided young girls the opportunity to learn about nature with their Girl Scout camp.

F1: We could get a grant to get it going, um, ironically enough I thought it would be really great to hook up with maybe a school? And have that be like a learning outlet, a teaching source of how to do a sustainable, like…we could do trout, we could do catfish, we could do tilapia, we could do coy, for just the money of it I suppose. But I mean it's big enough of a hole that if you landscaped it properly so that it was, oh how do you, like a biodiverse environment that you could raise fish that are indigenous to the area and be able to grow them in there. Especially the whole idea with the greenhouse where you're, you're running the water through the greenhouse, filtering the water and then pneumatically pumping it back into the pool, kind like a, with a little solar system action going out there. I'd love to get a little…we thought maybe a wind turbine across the street [laughs].

The other rural resident greatly enjoys the ability to hunt on his large property with his family.

D: To say the least, so. And then, coincidentally, um, I have 3 sons who all hunt as well, so, that's certainly something appealing. Instead of having to get in your car and drive an hour or 2 hours, 3 hours away, I can walk right out my backyard and do the same thing [laughs].

In addition, he also inherited a Christmas tree farm.

D: Um, my father in law, had uh, actually, right before his passing, he had purchased like, I guess it's about 25 to 30 um, pine trees for the whole concept or idea was for Christmas trees, you know, so that he could just go

and cut one down every year. But when I moved in, uh, where he had them, I thought it would be nicer to just let them grow, so there's this patch of Christmas trees that are huge now. I don't know how ever, it's a pretty fast growing tree, and over the 20 years that they're now huge. Um, but that's something he did and I just, you know, inherited that.

The third "rural/pastoral residents explain that they gather edible fruits, berries, and nuts. He also has experience with making maple syrup. Although he did not tap maple trees on his own property, he tapped trees on a friend's property with his permission.

A2: Yeah, I used to make maple syrup up here. The grove of maple I had, I no longer had used there. So I go up to Berks county with my daughter and make it there. Tap the tree.

Interviewer: So you when you say the grove of maple trees you no longer have access to, is that here?

A2: Right down the road there's a Camp Hope. And I knew the caretaker well there. And I used to help him, and I wouldn't take pay. I would just say let me do my natural stuff here and that's fine.

Interviewer: So you would tap trees on the camp?

A2: I have an evaporator back.

A2: I have walnuts out there, ready to bring boxes of them, I gather them, drying.

Both property owners explain that they spend a lot of time outdoors maintaining their properties

Interviewer: So about how much time do you guys spend on working outdoors here?

F1 and F2: A lot.

F1: that's our weekend.

F2: Spend more time outside than inside. Even in the winter, it's like, I'm doing probably at least an hour, hour and a half of firewood every year cause we, it's like, 60% of our heat during winter.

Interviewer: You mentioned lawn a little bit, you mentioned maintenance. How much do you have to do mowing?

A2: I have a gas powered walk behind mower. I do it to keep my legs good. Not to the point where I have a riding mower yet …friends of mine, they know I love to split and cut wood. But they ask, "Do you have a log splitter?" Which I don't. I said "I have two – a right hand and a left hand." I don't want one. I don't want a riding mower yet.

One resident even expressed how he had decided to stop keeping chickens.

D: Yeah, so, it just got to be too much, so. I mean, trust me, as you get older, you'll realize that there's priorities and animals isn't one of them.

These residents also explain that they do not actively manage the wooded parts of the property.

> *Interviewer: When you said that you would think about thinning or removing trees to help other trees grow…*
>
> *F1: Right.*
>
> *F2: There's a lot of young oak trees back there which, we had the problem with the oak trees dying. There are young ones coming back in that I would like to see and let them get bigger, maybe thinning out the poplar here and there. Cause it's like a canopy, it's like 10 degrees up there if you go in the woods in the middle of the summer.*
>
> *Interviewer: So is your interest in creating a forest that you can hang out in cause it's cool…? [F2: Yeah] Cause you're sort of interested in preserving oak trees, or…?*
>
> *F1: We have other avenues of getting firewood that, it's a perk that we can take the dead out of the back, and use it, you know, and be able to use it and maybe get some out of the sanctuary, but, there's other venues of getting firewood. I wouldn't just grow trees out back for that.*

The "rural/pastoral" idylls also expressed a strong philosophy and of protection and connection with the land and their property.

> *F1: Weed by hands. We don't spray anything, we don't, you know, any of the, any herbicides that we do use have to be approved through me before we put*

them up because our friend Eric will come over and spray for the deer and the rabbits. It has to be at least clean cause we do have a water system here that we have to keep clean. I wouldn't say environmentalists, maybe, [F2: In touch we our environment] conscientious of my surroundings,

F2: In touch with the environment cause if you get out of touch with your immediate surroundings,...like over in Limerick, it's like, alright, we're putting this up here, let's come in and dragged all the land clean and build a building, and it's just, when you get out here you see, like, I have a hard time cutting down certain trees that are in my way, you know, just to try and preserve what's here cause you go outside of this area, there ain't much left.

F1: If we're not gonna take care of it, who else is gonna take care of it?

One resident also expressed a personal connection with nature.

Interviewer: Back to the trees, you said when you moved in, about 2/3rds of your property was forested. Has that changed at all?

A2: No. I try to keep it. If I had it my way, I'd have it right up to the house. I love the deep woods and, it's just born in me I guess.

BOUNDARY MAKING

With so many different activities occurring on these rural/pastoral properties, most of the residents seem to set up spatial boundaries to separate the space for each particular activity.

D: The property's in 2 separate parcels. The one side of the road is um, 8 acres which has the house and there's a barn and by the way, it's the 2nd oldest home in Lower Frederick Township. It was built in 1723, so it's an old, old house, old farm house. And a barn, and then there's a pond, and then there's, um, a barn, and then it's mainly open fields and at one time I'm assuming that they were crop fields because it is a farm house, and um, so I would say of that one side of the road of the 8 acres it's probably 5 acres of open land, you know, grass, weeds, fields kind of, and then there's about 3 acres of woods dense woods. Across the street is, um, 6 and a half, 7 acres and um, that's almost all wooded, with the exception of a small little open spot field, again it's just fields.

These residents explain where they conceptualize boundaries between themselves and nature. They explain the fence that is set up around their property, which interestingly serves the purpose as a barrier for wildlife, but they do not want this physical boundary to conceptually divide or block them from the surrounding woodland.

F1: It's along the perimeter where the sunlight can hit where the woods and the cleared areas meet along the fence out back. That's pretty much where it's building up.

F2: Like across the street, we're actually leaving, like a 30 foot barrier of just the pickers and anything all the way down the fencing line just to create a natural barrier. There is still a fence there. There's a stone wall and cedar post and barbed wire fence but it's not in great condition. So if we leave the

pickers and stuff off, the cows won't go through it. Don't have to replace all the fencing.

F1: We keep cutting it out, it keeps growing back, we keep cutting it, it keeps growing back.

F1: Not too much. Eventually, I would like to, um, along the fence line that's out here, that I, for the life of me, I just need to get it down cause it's just –

F2: It's too close to the yard and it collects nothing but weeds.

F1: It collects nothing but vines and pickers and it doesn't look nice and it completely cuts me off from seeing this beautiful, glen of trees in the back because when we first cleared, we did a little bit of clearing out by the pool on the other side of the fence, this year it was nothing but the daffodils just – they were everywhere. They were everywhere. That and the sweet rocket that came up. It was like you gave them the sunlight and all the stuff was already there. And with the lack of sunlight it didn't have a chance, and the minute you brought it back, it all came back again. It was really pretty. So I'm gonna rip out the fence.

F2: Gonna put the fence further up in the woods so it doesn't get any light so nothing will grow on it.

F1: Deer fence. Cedar post deer fence. Kind of like the garden over here. Something with a little natural feel to it.

This resident also expresses how he does not set up a physical or conceptual boundary, welcoming the natural weeds and woodlands to grow onto his property.

D: So, um, so no, it, you know, over that 10 year period it has gotten significant. It's almost like the woods are impeding onto the property, which I personally like. I don't want to maintain it. I mean more than that, other than immediately around the house.

General Native Gardeners

Residents within the rural/pastoral idyll category are mainly general native gardeners. Because these residents are planting a myriad of fruits and vegetables for their own consumption as well as ornamentals for their enjoyment, they tend to plant a mix of native and nonnative plants.

Suburban Idyll

Clearing Size

Residents employing a suburban idyll have a larger envelope around their homes cleared than most of the other residents. In the cases of these two landowners, the land was previously cleared by either the previous owners or the developers, and the landowners themselves did not initially choose to clear that amount of land. However, the way in which they maintain and manage this cleared area places them into the suburban idyll category. These residents stress the importance of having a little backyard patio and some open grassy area for their family to enjoy.

C: yeah. And what I actually liked about it was that there's about 3 quarters to an acre of land open. Cause I was glad the house wasn't just completely surrounded by the trees. Like I like the sunshine to come in.

This "suburban idyll" resident explains he actually has very little woodland on his property.

Interviewer: How far does your property extend back? I forget.

G: Not very far into the woods. Actually, if you see this fence right here, if you follow that kind of on a diagonal line up to – there's a stone wall right here, so if you could draw an imaginary from this line to this line, we're just about this far into the woods right here (referencing the map).

Interviewer: So maybe 5 or 10%, 5% of your property is forested.

G: Yeah, right. Not much.

Figure 24. Air photo from 2011 of suburban idyll property. This resident owns a total of 3 acres. Note that how this resident's neighbor illustrates a more extreme example of a largely cleared suburban idyll property.

Figure 25. Air photo from 2011 of suburban idyll property. This parcel is 2.1 acres.

Figure 26. Air photo from 2011 of suburban idyll property. This property is about 90% cleared, yet most of this is due to its previous historical clearing.

Boundary Making

Compared with the residents who enact a natural forest idyll, the "suburban idyll" residents do not embody a philosophy that seeks "minimal impact" on the land through forest, lawn, and planting elements of their land management activities. These residents carry their view of a suburban lawn aesthetic with them and work to enact it in the rural, low population density area of Stone Hill. For example, one resident explains how his family uses the open space area for his kids to play on the grass and on the swing set he built, and for his family to enjoy time out on the patio. Another resident explains that her lawn is where the "kids play, dogs run around, yep. Baseball in the back yard. Most of the balls are over the fence in the woods and lost, but yeah" (Interview C). These residents assign specific uses and values to different parts of their yard, and this encourages the idea of spatial boundary making. Suburban idyll residents create physical and imaginary boundaries between themselves and nature, either through fences or through their assignments of purpose to an area in their yard. Moreover, this boundary making is most exemplary when analyzing their attitudes towards weeds.

"Suburban idyll" residents feel a great stress from the weeds and plants that grow and encroach upon the yard areas they established. Because of this landscaped area, these residents express how difficult it is for them to keep up with maintenance because of the aggressively growing weeds and plants encroaching from the surrounding woodlands.

G: The worst is probably the Japanese knotweed. That stuff is…I mean I don't know how to kill that stuff. It's unbelievable. So it's, you know, in a way,…I was talking with one of the neighbors the other day, she lives on this side of the road, but, you know, just about how much work it takes, you know, if you want to maintain a…a maintained landscape in this area, especially along the edges because we feel like we're – this is a horrible thing to say – but we feel like we're constantly fighting back nature because the woods areas are just constantly…it's not the trees, but all of the multiflora rose, the Japanese knotweed, everything is constantly trying to encroach on the property and you're just constantly pushing it back, and I know one neighbor up here sprays a lot. I don't like to use a lot of herbicide. And so, I tend to try to cut it back myself or something, but it's just constant, it's constant pushing either way.

This resident also feels the anxiety of encroaching weeds and spends a good amount of her time weeding.

G: Well… I could probably do a couple hours every day really with the weeds and stuff. And trying to keep it off of the stones that we have. Everything's just creeping in. So yeah, probably just a couple hours every day, a couple hours on the weekends. So, trying to mulch, like our whole side, we didn't mulch for a year, and literally. We went away in the beginning of the summer is what happened for a couple weeks. And when we got home, and it was raining so much, like there was weeds like everywhere, but um. Yeah, like I was cleaning

in the spring, it looked great, and then like two weeks I felt like it just went to hell. But I don't mind, I enjoy doing outside work, so I'm okay with that.

On the one hand, this concern over weeds might suggest a desire to help maintain and eliminate pervasive invasive species. On the other hand, it might lead some to use toxic herbicides. Yet this recognition of problematic invasive species does not seem to translate to an avoidance of non-native plantings among all residents in this category.

Land Use Strategies and Maintenance

Suburban residents also do not seem to pursue avid gardens on their properties. Most of residents explained in their interviews that they started a garden at one point, and they let it go because of the difficulty of keeping up with the maintenance.

B1: It's tough to keep up with. You have a vision when you first move in, like the garden and we can't keep up with the garden. And we're having a hard time keeping up with the stream bed. Can never have time to weed-whack…I mean, things will take over, and the landscapers told us that. "don't do too much, because you can't…" You just can't keep up.

It's also interesting to note that one couple we interviewed slightly disagreed on how they should approach the management of their back yard, which shows that the differences in values and stewardship are not just on a property level, but even within the households that manage the land.

B1: Well, that, well, honeysuckle will eventually take over the yard if you don't keep pushing it back. The grasses are already taking over if you don't pull them back. I like them this way, but if we get water in the basement, it won't be such a good thing. So it's just tough keeping up that way. I wouldn't move anywhere else, ever. Um, but it's, I thought we could have kept up, and we're just, it's just tough to keep up with landscaping so you kind of let it over grow and live with it. Don't get too upset.

B2: We'll it's supposed to overgrow, right? The only thing you really need to take care of is the stuff that's right around the house to make the house look nice and cut the lawn. All the stuff that's around the perimeter, I don't know think we need to keep pushing that stuff back. I mean, it's there, it's gonna stay there, but that's the wild part of the property. Let it be. Don't worry about that stuff.

Interviewer: And so, can I ask, what is it about, why don't you worry about that? Like, what, for you, what advantage does it have for you personally?

B2: So here's what I mean by that. Um, see those grasses there, okay. Well, you don't want those there, we take those grasses away. Well, whatever's behind it is gonna grow, and you're gonna say, well, you know, I don't want that stuff there. Then you take that away. Well, I don't want to landscape all three point whatever acres are here. Uh, it's not realistic. I'd rather just leave it wild the way it is, whatever grows there, let grow there, cause it's supposed to be there, and we'll make the shrubs around the house look nice and leave it

at that. That's all meant by that. It's just that, you know, whatever's beyond where I cut the grass, that's the way it is, that's the way it is. And no matter what happens over there, it's not gonna make water come in our basement, don't worry. That won't affect it.

Overall, these residents express a feeling of being overwhelmed with the prospect of maintaining some aspects of their landscapes on a daily basis. Because these residents spend so much time intensely managing the lawn envelopes directly surrounding their homes, the "suburban idyll" residents do not do much too specifically manage or alter the wooded parts of their properties.

B1: I think with the front of the house I hate when things look totally out of control right around the base of the house. That's it. Yeah. So just keeping up with trimming things back there. I don't freak out about what's back here [in the forested area], I don't care. But in the front, you just want it to look neat, that's all.

Nonnative Gardeners

Even though these residents have very strong views on managing nature and keeping it out, they do not have strict rules about what they plant. Put another way, these residents follow what Head and Muir call a "non-native gardener" planting strategy. Most residents explained their reasoning for planting something was for an aesthetic or ornamental effect.

G: So along there, I wanted a row of trees along the road, and I love sugar maples because of their, you know, texture and fall color, and had to have

them along the road... I know [I planted] a lot, a lot English ivy along the wall.... Hydrangea...

One resident relocated trees for their sentimental value.

B2: We put in some, uh, weeping willows, you know, a few other types of trees, some apple trees, and a couple catalpas some, you know, just trees that friends and family gave us. I took a couple of, um, horse chestnut trees from the house I grew up in.

However our most extreme example of a nonnative gardener is one resident who planted invasive bamboo in order to diminish the presence of another weed she did not find aesthetically pleasing. Therefore, the suburban residents' choices for planting do not parallel any ecologically sound planting principles

C: That bamboo is actually back in here [pointing to air photo during interview].

Interviewer: When did you plant that?

C: Maybe 6, 7 years ago.

Interviewer: For any aesthetic reasons?

C: Yeah, it was looking nice. And the picker bushes, we were getting so many weeds, and I knew that would choke everything out. Cause everybody's like "oh my god, I can't believe you planted bamboo. It's going to take over everything." I'm like, "yeah, I'm hoping it takes out all the picker bushes. Because everything other than what they cleared out after we were there a couple years, everything started just like, getting crazy with all the weeds.

C: Yeah just to kinda control some of that coming into the yard and stuff, and it's done pretty well.

Interviewer: And you said that the area along the driveway was landscaped. So was the bamboo the..?

C: No, that was on – we landscaped down the driveway, the bamboo's kind of behind the house area.

Other defining Characteristics

Another characteristic of "suburban idyll" residents that could also affect the forest is their pets. All three of these property owners have more than one dog, one has some cats and frogs as well. Besides dogs and cats, one couple even has pigmy goats, which is somewhat common for amenity landowners. These landowners also have a very interesting relationship with the wildlife, and explain how they feel some type of ownership of these species and how they may directly feed them in order start some kind of interaction.

C: Um, we used to – when we first moved in – we used to feed the deer corn out back. But then, I kinda stopped because they do hunt around the area, so I didn't want them killing my deer…

Another resident notes their interaction with flying squirrels.

B2: They were also at our place in Audubon as well where I had one of those squirrel feeders that you stick a ear of corn on top of, and uh, I just got in the habit. Once we have an old thing of peanut butter and I use it up by putting it on there. And one night I went out there, and I saw the thing run up the tree,

you know, and I didn't know for sure what it was, but, I mean they're not, they're not really that afraid of people because, uh, it was a routine every time I came home from work I would go out there with a knife and peanut butter and put it on the ear of corn for them, and, if I went out late enough, I would actually get to see them, so I got in the habit of going out there later and later, and it got to the point where they would come down to take the peanut butter off my knife before I could get it on the corn [all chuckle]. So I haven't done that for years out here, but when we first moved in, I was doing that and they came here as well. But I haven't done it for the past couple years, but I'm sure they're still out there in the woods.

Discussion

Factors Influencing the Forest transition of the Stone Hill Conservation Landscape

Analysis of the Stone Hill Conservation landscape over the past 60 years indicates that a forest transition has occurred in much, but not all, of the area. Yet this transition has proceeded in a rather complex way through two different land uses: agriculture and exurban development. Looking back to the mid-1900s, Stone Hill was a primarily productivist landscape (apart from the central main forest canopy area that evaded clearing due to its rocky diabase formation and poor farming soils). Agricultural fields outlined the majority of the landscape, only separated by hedgerows. As agriculture disappeared as a main source of income for Stone Hill families, the area began the transition into a post-productivist landscape. As a result,

the number of trees in hedgerows separating old farm fields and properties began to significantly increase, thickening the amount of canopy coverage.

The trajectory of this forest recovery is a result of the decrease in agricultural production in the area, and consequently, the combination of a reforesting post-productivist landscape and the ways that the wooded amenity of forested areas, including those presently conserved, attracted urban in-migrants from nearby suburban and urban areas. Some of these in-migrants settled in houses that were previously built, and in this case, these exurbanites are only continuing a historical land clearing trajectory. On the other hand, some exurbanites bought properties from developers setting out to clear lands in the forest canopy, introducing a new scenario of deforestation in the region. Stone Hill's transition from a landscape characterized primarily by production-oriented land-uses to one where land-use and modes of occupance center primarily consumptive dimensions may have increased overall tree cover. Still, the consumption-oriented land-use of exurban properties has increased the total number of small openings in forest canopy. Stewardship practices and their implications on the ecological landscape

In addition to increasing the number of small forest clearing in the landscape, exurbanization presents the possibility for further ecological forms of degradation, depending on the stewardship practices of the residents. While the exurbanites of Stone Hill are natural amenity migrants, clearly expressing their desire to be close to forest for its natural value and isolation, some of these residents may be actually putting the forest they so greatly value at risk. This problem, the great paradox of exurbia, is exacerbated by residents who value and want to protect nature, but who enact management strategies that match particular idylls that are, to a lesser or greater extent, at odds with the conservation goals of an area recognized for its ecological

importance (Rhodes and Block 2007). The residents interviewed in this study could be placed on a continuum of stewardship, with conservation values coinciding with sound stewardship practices on one end and consumptive values suburban land management strategies on the other. Drawing upon the examples of Madsen (2003), Head & Muir (2006), and Holmes (2006), the residents interviewed for this study could be divided into three specific categories according to the amount of land that was cleared for their properties and their stewardship practices. Some people seek to recreate a "suburban idyll" with suburban lawn and associated nonnative or ornamental plantings. Other "rural pastoral idyll" residents work to create a balance between forest canopy opening, lawn, and associated nonnative or ornamental plantings.

On one end of a possible "stewardship spectrum" that could be constructed (Madsen 2003), the "natural forest" residents appear to truly understand they are living in a small hole in the overall forest canopy and want to do their best to keep that area minimal, while on the other end, suburban residents did not keep that consideration as a number one priority and place the consumptive value of the land over the conservation value of it. The "rural/pastoral" residents would fit somewhere in the middle of this continuum, as their practices and priorities are a mix of the other two categories. Although these residents have complete freedom over their current land management decisions, it is important to acknowledge two issues: the first is that some residents did not have control over the size of the forest opening when purchasing the property. Secondly, some parcels included lands that had not

reforested since 1942. Both of these circumstances could very much affect the landowner's current stewardship practices.

Another theme from regional political ecology that this project explores is whose labor creates the forest transition; to what extent is this clearing the role of the landowners, the developers, or simply the history of the parcel? As stated in the results section, all plots except for one was initially developed by an outside party, not the interviewees themselves; five had homes previously constructed, three were lots bought from a developer, one of which was not cleared prior to purchase, another one attempted to strongly suggest minimal clearing. In the future, it would be interesting to further investigate the role of the developer in shaping new forest openings. For example, for this project, it would have been helpful to interview the developers of the exurban parcels in Stone Hill, asking them to explain their role in the clearing process, their means of marketing to potential buyers, and their interaction with buyers in the clearing and building process.

In addition to development considerations and the history of the parcel, when analyzing the influences of residents' environmental management choices, one can look to the differing idylls and the corresponding means and management and planting strategies. The idylls clearly determine the characteristics and features of their property to a large extent. It is their perspectives on nature and how they perceive the surrounding landscape that shapes their consequent management choices and environmental effects.

When considering the ecological impacts of exurbia, examination of these interviews suggests that there may be certain types of residents in exurbia whose land

management "idylls" are better suited than others. It's crucial that people who live near conservation areas manage their property in ways that will not amplify existing ecological management challenges. While the "nature/forest idyll" residents understand the uniqueness of their forested properties and that every decision they make can have some kind of impact, the "suburban idyll" residents have not quite made the connections between their actions and the possible ecological harm to the area that extends beyond their yard. Interestingly enough, all residents explain and embody some sense of pride in their role as a land steward. They feel that they are doing their best to make sure they are taking good care of their land. This leads to the issue of how to encourage behavior change in poor management practices if the resident truly feels they're already doing a good job.

One way to possibly enact change in weak stewardship habits in exurban areas could be the implementation of regulation or zoning. For example, the "nature/forest idylls" already have set up rules and codes for their properties without being asked to, and possible local township regulations would make people realize the importance of their land-use and its effect on local environments. Currently, the government in this case study does not play a large role in influencing resident's management choices. There are no planting regulations and not clear mechanism in place for planning in either Lower Frederick or Limerick townships.

Klepeis (2008) discusses the possibility of increased regulation, more severe penalties and strict compliance measures with the removal of a highly invasive weed. That case study also suggests that enhancing the public awareness of the problem could increase resident efforts to manage the weeds. The explanations of interviews

suggest that some residents here could benefit from more education about sound land management practices. Since all these interviewees seem genuinely invested in their properties and do sincerely care about being good stewards, they would most likely be very open to learning about land management strategies.

These regulations could possibly focus on planting invasive species. When trying to identify whether residents were committed native gardeners, general native gardeners, or nonnative gardens, my results show that we have one resident sitting strongly at the committed native end of the continuum and one on the opposite nonnative side. Despite their categorization of nature/forest, rural/pastoral, or suburban, most of the remaining residents fall somewhere in the middle range with general native gardeners. The committed native gardener expresses how important it is to "practice what he preaches," as he works for a conservation organization, and he also truly believes planting only natives is what is best for the surrounding area. The nonnative gardener who actively planted an invasive species of bamboo felt she was making her lawn more attractive because the bamboo was meant to outgrow what she felt was a really "ugly" weed. Understanding how residents prioritize native versus nonnative species can also help conservation organizations and other horticultural societies in planning educational strategies for homeowners. If there are certain characteristics of invasives that entice residents to plant them, these conservationists can better prepare suggestions of native plants that have similar qualities and consequently, are much better for the surrounding ecosystem. Therefore, insights from studies like this one can prove very helpful when promoting best management

practices, which will be crucial in attempts at supporting the ecological integrity of exurban landscapes.

Conclusion

After conducting this research in the Stone Hill Conservation Landscape, I am led to conclude that a forest transition has occurred in two different ways. The first is a general reforestation of previously cleared agricultural lands. The rural productivist landscape of the mid 1950s faded away as agriculture became a less prominent source of income for people living in the area. Then, as this reforestation occurred, new migrants began to value Stone Hill for its dense forested woodlands on its rocky ridgeline, and this in turn encouraged decisive moments of minor deforestation, as lands were cleared for homes to serve the needs of exurban migrants seeking natural amenity. Overall, these forest canopy openings did not cause as much deforestation as the clearing for agriculture in the past, but they did increase the overall number of punctuations in the forest canopy. This complex story of large scale deforestation, then minor reforestation, to more minor deforestation, is a new interesting concept forest transition studies.

In addition, I found that integrating resident ideologies and management strategies can help explain understory stewardship as well as overarching changes in the forest transition. When it comes to clearing, some residents are committed to maintaining a densely forested property, yet other have brought the suburban qualities of a manicured lawn and orderly yard areas. Differences in gardening practices show that not all residents are actively committed to maintaining the ecological integrity of

their landscape. In addition, the idea of "boundary-making" is an important aspect to study with the forest transition because it provides an understanding of what elements of the surrounding forests people will allow back onto their properties. Exurban development represents a new movement of small scale deforestation, and analyzing how residents construct these boundaries will help predict whether exurban parcels are more permanent forest canopy perforations or opening that will soon recover. Taken together with resident management practices, these factors explain the resident idyll categories, which aid in explaining and describing the diverse types and perspectives of people living in exurbia. Despite these differences, all the residents were attracted to the area for its natural amenity and consider themselves to be good stewards of the land. Hopefully my findings on this conservation area in Southeastern Pennsylvania will add to the literature on exurbanization and forest transitions, offering an integrative perspective on how these dynamics can be used together to better explain forest change trajectories in areas highly influenced by exurban development.

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