Nick Lovullo

Analyzing Environmental Math

Professor Little

New England’s Changing Landscape over the Last 250 Years

***Abstract:***

The New England landscape has seen a tremendous amount of change within the last 250 years. It all started with European settlers coming over to colonize this region and in doing so they change the culture of the landscape as it goes from being very natural to very unnatural very quickly. However, once they start to leave the region in the 19th-20th centuries, it gradually becomes more and more natural, up to the point today where some ecologists argue that it is even more natural than it was 250 years ago. In this paper, we look at how it changed over the years and how human disturbances, natural causes, and invasive species have affected the New England landscape over the past few centuries. Also, this paper looks at what specifically has been changing, as it goes into detail with statistics from graphs that notorious ecologists such as David Foster and Glenn Motzkin have computed. Overall, this paper shows how and why the New England landscape has changed over the past 250 years, and what parts of the landscape specifically have been changing.

***New England’s Changing Landscape***

 Since around the time of the 17th century, we have seen the New England landscape undergo quite a transformation. We see it go from a mostly forested region in the pre-colonial times, to what it currently is at today, a “modern forest landscape.” How did it come to be like this and why has this happened? To answer both of these questions, we must look at the dynamics of the landscape from pre-European settlement, examine how it changed and what changed it, and then compare that to what it is like today. Some of the reasons for this change are natural, and some of them have been influenced by outside factors, but overall, it underwent some serious changes over the last 250 years. First let us look at the natural landscape of New England in the 17th century, back when it had not been contacted by European settlers. As previously mentioned, the New England landscape was almost a completely forested region. There were trees and vegetation that were native to this region at the time, such as the iconic Chestnuts, and mature Elms. These towering trees symbolized this time period, as their physical size dominated the forests as well as the region as they were very abundant before Europeans started colonizing in the New England area. Besides the high number of indigenous trees and plants in pre-colonial New England, we also see other natural features of the landscape such as streams and rivers that flowed gently through the region.

It is important to note that there was some contact with humans in the this region, even before the European colonies started to appear in New England, as there were Native American Indians living in New England who had lived there for hundreds of years. The reason that this is important is because these Native Americans did not abuse the delicate landscape like the European settlers did. They only used what they needed from the resources that the New England region provided them with. This is important because we see that there can be a harmonic relationship between the land and the people, but this does not happen in the case of the European settlers in the 17th and 18th centuries. Once they start to arrive, that is when we see drastic changes occur for the worst.

 Aside from the human disturbances that were brought upon in the era of the European settlers, there were also some natural causes that caused shifts in how the New England landscape has been over the last 250 years. These are natural disturbances that the landscape and even the people who lived in New England had control over. This has played just as big of a role in the changing landscape as the human disturbances of the colonial settlers had. The last area that has affected the New England landscape in the last 250 years or so would be the increase of invasive species in the region. All three of these examples of change have caused a dramatic shift from how it was, to how it is today. Later in the paper, we will look at these three contributing factors more in depth, and examine the exact course of changes that the landscape has underwent over certain periods of time. We see it go from a natural landscape, one of which that was mostly a forested region, to the steady decline of forested areas once European settlers started to come over, then once they start to leave the region to populate the rest of the country we see a gradual incline of the same forested areas, and ultimately this leads to what it is today: arguably more natural than it was 250 years ago. How is this possible after all the change it underwent? That is what will be focused on later in this paper.

***Human Disturbances***

 Human disturbances, such as how humans have used the region of New England over the last few centuries, have probably had the biggest influence on the landscapes transformation over that period of time. According to the article *Land-Use History as Long-Term Broad-Scale Disturbances: Regional Forest Dynamics in Central New England* by David Foster and Glenn Motzkin, human disturbances differ from natural disturbance processes, and significantly disrupts existing environmental ecosystems. As mentioned before, this process began with the European settlers who arrived here to colonize this region of the New World in the 17th century. Once these settlers arrived, they began to transform the landscape in order to suit their needs at the time, which was basically to survive. They needed to find ways to protect them from the wilderness, and find ways to feed their entire population. According to Foster and Motzkin in a different article titled: *Ecology and Conservation in the Cultural Landscape of New England: Lessons From Nature’s History,* their first order of business was to create shelter. In order to do this they deforested much of the region, and farmed and logged the rest of it. In some cases they even grazed or burned the spare forest areas that they were not using at the time. We slowly see them transform this region which started as a “natural” landscape, to a “domesticated rural” landscape. Overall, the influence that humans settling in New England had on the landscape was detrimental. Later on in the paper, we will examine more in depth how these humans have shaped what the landscape of the region is like today, as the results may come as a bit of a surprise.

***Natural Causes***

 The next area that has impacted the region over the last 250 years or so would be natural causes. New England has been notorious for its variation of seasons throughout the year. They are very extreme as it experiences very hot, humid weather in the summer, and freezing cold temperatures in the winter, with frequent snow storms. This makes it incredibly hard on the people who live here year round, and it also makes it hard on the trees and plants that are native to this region as well. However, just like humans have adapted to these conditions, the landscape has adapted as well. Unfortunately, in more recent years, there has been a significant change in the climate due to the effects of global warming, as we see the temperature increase in some of the seasons. This ultimately results in the landscape adapting to these changes, which means that it has been and will be changing in the future. Other areas that can affect the region of New England would be hurricanes and wind storms, as well as forest fires. Both of these rare but important natural causes can influence how the landscape of New England has changed within the last 250 years, and can keep changing it in the near future. In conclusion, this area, along with human causes, has greatly affected the New England landscape over the past few centuries, and is still impacting the landscape to this day with its unpredictable and uncontrollable phenomena.

***Invasive Species***

 The last of the areas that have created change in the New England landscape in the past 250 years would be the impact of invasive species. Invasive species are new species of plants and animals that are brought to the New England region, as they are not native to the area. They can be brought here a number of different ways by a number of different carriers. The most common way they have been brought over has been by once again European settlers, both on accident and on purpose. Another way it can come to this region is by animals, as they can carry the seeds from one area to another, introducing the new area to that certain type of species. Once they get to these new areas, how do they affect the already functioning ecosystem of that certain region? To start off, they compete for the resources that are necessary for survival, and in some cases they actually take these resources away from the native species. This can have tremendous implications on the native species, as it can cause them to die off as they now have to compete for limited resources that were once all theirs. In some cases, invasive species can even wipe out entire populations of indigenous species, and even displace them from their local regions. An example of this would be the declining population of the once iconic Chestnut tree of the pre-colonial times. This symbolic tree was unfortunately killed off by invasive species of fungus that were brought to the New England region called *Cryphonectria parasitica.* It was thought to have been brought here by either birds or insects. According to www.landscapeimagery.com, once it entered the region, it would attach itself to trees such as the Chestnut, and it started to destroy them by physically entering through cracks in the tree’s bark, or by wounds in the tree caused by other animals. This is just one example of many invasive species that have caused change in the New England landscape over the past 250 years.

***Numbers Behind the Change***

 As previously mentioned in the paper, we know that there has been significant change in New England throughout the last 250 years or so, but what exactly has been changing? According to Foster and Motzkin, there have been numerous species of trees that either increased in population, or decreased in population since the colonial period. We see the same Chestnut tree go from a mean abundance percentage of 7.7 in the colonial period to just a 0.6 mean abundance percentage in the modern period. The Elm tree that was also an iconic tree of the colonial time period also has decreased, going from a 1.0 mean abundance percentage to just a minuscule 0.1 mean abundance percentage today. Those are a few of the examples that have decreased over the past 250 years, now let us look at some of the trees that have increased in that same time period. The biggest increase that they talk about is the Maple tree, which goes from a 7.6 mean abundance percentage in the New England region in the colonial era, to an astonishing 24.8 mean abundance percentage in the modern period. A possible reason for this would be an invasive species that has been brought to this region and has taken over much of the resources required to grow, and has increased more than three times what it was in the colonial period. This invasive species is known as the Norway Maple, and as previously mentioned, it is a big reason as to why the Maple species as a whole has increased in the last 250 years. According to www.massaudubon.org, it got to the New England region by having its seeds dispersed by animals such as birds and insects, and once it got here it immediately started to compete for resources with the native trees and plants. The one advantage it has over other trees was that it was much taller than the rest, so it could absorb more sun and in the process denied other trees and shrubs from attaining the necessary amount of sunlight needed, and quickly wiped most of them away. The Norway Maple is one example of an invasive species and an example of a tree that increased from the colonial period to the modern period. Another example of a tree that showed an increase over the last 250 years would be the Birch species. It went from a 3.7 mean abundance percentage in the colonial New England region to a 12.7 mean abundance percentage in the modern New England region. These are just a few of some examples that show what exactly what was changing about the New England landscape over the last 250 years.

***Then Compared to Now***

 Over the course of this paper, we have examined what has caused the change of the New England landscape over the course of the last 250 years. We have looked at human disturbances, natural causes, and invasive species to see how things have changed, and we also looked at some of the statistics of what exactly has been changing in the region. However, in order to examine the overall changes over the last 250 years, we must look at how the region started out at, and how currently is at this time in history. It undergoes a very interesting cycle throughout these last 250 years, as it started out as almost a completely forested landscape. Once European settlers begin to arrive we see the forest size decrease as the settlers cut down massive amounts of the forests to use them for shelter and to build farms to feed their population. However, this is where it gets interesting, as once we get to about the time of the 18th and especially the 19th centuries, we see these same settlers start to leave the New England region as they started to settle around the rest of the country. People started to find land with more fertile soil to plant crops such as the Midwest, as well as a major event like the Gold Rush in Northern California attracted huge crowds of people that left New England behind in the 18th-19th centuries. According to www.harvardforest.fas.harvard.edu, this time period which started in the mid 1800’s became known as the Farm Abandonment period. This time period continued for more than a century, and the result of this was abandoned pastures and fields that were used for farming before quickly developed back into forests, almost exactly what they were like before the European settlers arrived in the 17th century. As more and more people left to explore the rest of the country, we see a gradual increase in the area and size of forests in New England. It has increased so much, that some ecologists even argue that it is in more natural of a state today than it was in 250 years ago. According to graphical analysis of this area done by Foster and Motzkin, in 1801 which was a few decades after the European settlers came to New England, more than half of the entire region was classified as a pasture. The forested area accounted for about one quarter of the entire region, which was significantly less than it was pre European settler era. However, in 1985 the same areas were measured, and the breakdown had changed significantly. About 95% of the entire region is now classified as a forest region, while the other 5% is made up by pastures, which was the dominant group in the early 1800’s. We know that before the European settlers arrived in the 17th century, the region was considered to be an almost completely forested region. Well, through all the transformations the landscape underwent, we see through evidence such as graphical analysis done by Foster and Motzkin that the landscape of New England has ended up as an almost completely forested region. That is why ecologists such as Foster and Motzkin say that the New England region is arguably more natural at this point in time than it was 250 years ago.

 In conclusion, the England landscape has undergone a serious transformation throughout the last 250 years. We see it start out as mostly a forested landscape, and thanks to external forces such as human disturbances, natural causes, and invasive species that mostly forested landscape gradually declines until the mid-1800’s. However, once we start to see these same settlers who caused the decrease of the forest begin to leave this region; we see an increase of the forested area. It increased so much to the point that today it is back to being considered a mostly forested region, and some ecologists such as Foster and Motzkin even argue that it is in more of a natural state than it was 250 years ago. All in all, New England underwent a tremendous transformation, but it ended up almost identical to how it started, as there are still signs of the pre-colonial era evident in the current New England landscape, as it is still defined by the same luscious forests and resilient plants that made it up more than 250 years ago. It is still one of the most beautiful landscapes in the entire world, and looking into the future, it is only going to get more natural and more beautiful.

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