

## Notes for Power Point: Introduction to Land Use Change

| Slide | Notes   | Additional Notes |
|-------|---|------------------|
| 1     | <p>Whether we think about it or not, we all benefit from and use land for a variety of purposes. The next few lessons explore some of those purposes, how land has been used in our area historically, and what types of impacts these uses have had.</p> <p><i>Computer Generated Image (top) by Markley Boyer, Photograph by Robert Clark. Originally published in National Geographic magazine.</i></p>  |                  |
| 2     | <p>Ask students: How do you use land? They' should come up with things like: food, water, recreation, housing, etc.<br/>Photo is of Beacon, NY. Image courtesy of Scenic Hudson, Inc.</p>   |                  |
| 3     | <p>*Discuss any land uses that they did not come up with and any that they thought of that aren't here represented.</p> <p><u>Travel</u>: We build roads, trains, bridges, boat through rivers and across lakes</p> <p><u>Recreation</u>: kayaking, swimming, hiking, bicycling, games like hide-and-seeK &amp; tag, outdoor bbq's, etc</p> <p><u>Food</u>: all of our food comes from land and waters</p> <p><u>Water</u>: Clean water for us to drink, healthy waters for our food sources, wildlife, and to swim in</p> <p><u>Wildlife habitat</u>: necessary for the insects that pollinate our crops, the birds that eat weed seeds and control mice, rat, and nuisance insect populations, and mammals that we eat and control other populations</p> <p><u>Business</u>: Necessary for our livelihood, culture, and entertainment</p> <p><u>Home</u>: we need a safe, healthy place to live</p> <p>*Explant that this is a human-centric, yet important question to ask, because the answers affect our health and livelihoods and those of future generations.</p> |                  |
| 4     | <p>Predict what you think happened to each of these components between 1936 and 2000.<br/>You can have students write down their predictions or write some up on the board for a before-after comparison.</p>   |                  |
| 5     | <p>Use the aerial photos of Dutchess and Westchester counties to determine how accurate your predictions were.</p> <p>1936 photos:<br/>Aerial Photographic Survey of Dutchess County New York - Made for Dutchess County Planning Board by Fairchild Aerial Surveys In, New York - Flown Spring 1936 - Scale 1 in = 1000 ft. Scanned by Dutchess County Real Property Tax Service Agency, 2004.</p>   |                  |
| 6     | <p>1936 photos:<br/>Aerial Photographic Survey of Dutchess County New York - Made for Dutchess County Planning Board by Fairchild Aerial Surveys In, New York - Flown Spring 1936 - Scale 1 in = 1000 ft. Scanned by Dutchess County Real Property Tax Service Agency, 2004.</p>  |                  |
| 7     | <p>2004 photos:<br/>Dutchess County 12-inch Resolution Natural Color Orthoimagery. NYS</p>  |                  |

|    |  |  |
|----|--|--|
|    | Digital Orthoimagery Program (NYSDOP), Spring 2004.  |  |
| 8  | Gravel quarry continues to expand. Continued increase in developed land (quarry, housing, business).<br>2009 photos:<br>2009 True Color Aerial Photo at .5 foot pixel size. Contact: Christopher Wren, Dutchess County OCIS.<br><a href="http://geoaccess.co.dutchess.ny.us/geoaccessv2/">http://geoaccess.co.dutchess.ny.us/geoaccessv2/</a>  |  |
| 9  | ~75 years ago: Primarily farmland.<br>1936 photos:<br>Aerial Photographic Survey of Dutchess County New York - Made for Dutchess County Planning Board by Fairchild Aerial Surveys In, New York - Flown Spring 1936 - Scale 1 in = 1000 ft. Scanned by Dutchess County Real Property Tax Service Agency, 2004.   |  |
| 10 | --Top of the quarry is not visible in 1936 photo. The quarry exists but was much smaller. The quarry is even larger now than it was in the 2004 photo (next).<br>--Golf course built on old farms and further fragments already fragmented forest.<br>--Neighborhoods built on old farms. The small, triangular-shaped forest in the center of the 1936 photo was clearly sold as a lot and developed for housing.<br>**Compare the location of forests in the prior photo to this one: Note that most present-day forested land is new growth on old agricultural land.**<br>2004 photos:<br>Dutchess County 12-inch Resolution Natural Color Orthoimagery. NYS Digital Orthoimagery Program (NYSDOP), Spring 2004. |  |
| 11 | 1936 photos:<br>Aerial Photographic Survey of Dutchess County New York - Made for Dutchess County Planning Board by Fairchild Aerial Surveys In, New York - Flown Spring 1936 - Scale 1 in = 1000 ft. Scanned by Dutchess County Real Property Tax Service Agency, 2004.   |  |
| 12 | 2004 photos:<br>Dutchess County 12-inch Resolution Natural Color Orthoimagery. NYS Digital Orthoimagery Program (NYSDOP), Spring 2004.   |  |
| 13 | 1798 map from:<br>Platt, Edmund. <i>The Eagle's History of Poughkeepsie: From the Earliest Settlements 1683-1905</i> . Poughkeepsie, NY: Platt & Platt, 1905.  |  |
| 14 | A map-visual version of the population growth from 1891 to present day.<br>(Numbers in 1891 map refer to streams)<br><i>1891 map created by the USGS, from:</i><br><i>Reynolds, Helen Wilkinson. Poughkeepsie: The Origin and Meaning of the Word, Volume 1. Poughkeepsie, NY: Collections of the Dutchess County Historical Society, 1924.</i>  |  |
| 15 | Dutchess County is circled, where population density increased ~10-fold over the last 200 years. This means that where there used to be 20 people living within one km <sup>2</sup> area, there are now 200 people living in that same area.   |  |
| 16 | Here we see the spatial distribution of farmland in our watershed (lower left image, upper right grey outline; lower left grey outline denotes Delaware watershed) & forest cover (upper right) through time.<br>Between 1850 (1 <sup>st</sup> panel) and 1880 (2 <sup>nd</sup> panel) farmland was  |  |

|    |   |  |
|----|---|--|
|    | <p>still increasing. But today (3<sup>rd</sup> panel), very little land is used for farming. Much of it has been replaced by young forests. Image is reproduction of Figure 3 from:<br/><i>Historical changes in the food and water supply systems of the New York City Metropolitan Area.</i> Swaney, Dennis P.; Santoro, Renee L.; Howarth, Robert W.; et al. REGIONAL ENVIRONMENTAL CHANGE Volume: 12 Issue: 2 Special Issue: SI Pages: 363-380 DOI: 10.1007/s10113-011-0266-1 Published: JUN 2012</p> |  |
| 17 | <p>We all use our land in lots of ways for many different purposes. Our land provides our shelter, food, water, business needs and recreation.<br/>**Encourage students to remember that we ‘use’ even undeveloped land, such as forested areas: Forests cool our communities, sequester CO2 and therefore affect the global climate, filter &amp; clean our water supplies, provide wildlife habitat, and mitigate floods by taking up a lot of water through transpiration.</p>                         |  |
| 18 | <p>--Discuss which land use components you saw increase or decrease in the aerial photos.<br/>--Brainstorm reasons they might have seen increases or decreases in these components when observing the aerial photos.<br/>***This can be used as a homework/research jigsaw activity<br/>Point out that we still have many of the same needs (food, clean water, healthy wildlife, etc). How do the changes they saw affect our ability to meet these needs?</p>   |  |
| 19 | <p>Discuss some of the reasons they might have seen increases or decreases in these components when observing the aerial photos.<br/>(This is not an exhaustive list.)<br/>Point out that we still have many of the same needs (food, clean water, healthy wildlife, etc). How do the changes they saw affect our ability to meet these needs?</p>  |  |