Maps can tell us so much: treasure maps, road maps, weather maps, topo maps; maps of tax districts, agricultural districts, zip codes, congressional districts. By giving us an overhead view of sorts, they help us know where we are. The maps and figures on the following pages offer a little bit of perspective on this county—where it has come from, where it is, and where it might be headed. Read all of these with a grain of salt. Any map is a simplification of reality. Rather than looking at these as precision aerial photographs of our landscape, look at them as paintings. When you fly over the country in an airplane, what you gain in perspective, you lose in intimacy: you may see patterns and guess at what they mean, but you have lost the personal connection that might be needed to really know where the patterns originate.

Maps aren’t answers; they’re questions. Ask yourself why certain patterns might have happened, how various patterns relate to one another, and what the story is of each.

Maps and graphs

WBS1990: The 1990 Census provided a survey of the state’s population and economy. The current census is based on 2000 data.

New York State Population Projection: This projection is based on a 2000 census of the state’s population, with adjustments for migration, mortality, and birth rates. The state’s population is projected to increase to 19.8 million by 2010.

New York State Economic Outlook: This projection is based on a 2000 census of the state’s economic activity, with adjustments for changes in the nation’s economy. The state’s GDP is projected to increase to $1.3 trillion by 2010.

New York State Employment: This projection is based on a 2000 census of the state’s employment, with adjustments for changes in the nation’s employment. The state’s employment is projected to increase to 6.5 million by 2010.

New York State Housing: This projection is based on a 2000 census of the state’s housing, with adjustments for changes in the nation’s housing. The state’s housing is projected to increase to 10.2 million by 2010.

New York State Income: This projection is based on a 2000 census of the state’s income, with adjustments for changes in the nation’s income. The state’s income is projected to increase to $5.2 trillion by 2010.

New York State Education: This projection is based on a 2000 census of the state’s education, with adjustments for changes in the nation’s education. The state’s education is projected to increase to 1.4 million by 2010.
**TRANSITION ZONE 1: OVERLAPPING FLORA**

Columbia County is in a region of overlap between northern species and southern species. Our warmer lands have plants and animals more typical of farther south, while our colder, higher parts have organisms more typical of farther north. This enhances the county’s biodiversity. While this pattern holds for animals, it is perhaps most clearly shown by plant distributions.

**DISTRIBUTION OF RED SPRUCE IN NORTHEASTERN USA**

*Map shows the distribution of one northern tree, Red Spruce, as it digs into Columbia County from the north. Other northern trees that also have part of their southern boundaries in or near Columbia County include several conifers (such as Balsam Fir, Black Spruce, Red Pine, Northern White Cedar) and a few deciduous trees (Paper Birch, Balsam Poplar, and Mountain Ash).*

**TRANSITION ZONE 2: OVERLAPPING CULTURES**

Columbia County was first colonized by Dutch and, soon after, Germans, who settled along the Hudson river. They spread eastward, but by the mid-18th century bumped up against Yankees coming in from the east. While the passing centuries have diluted the original ethnic patterns, people of Dutch and German ancestry still are most numerous in the western part of the county.

**ROLE OF DUTCH IN FIRST SETTLEMENT**

<table>
<thead>
<tr>
<th>Year of Colonial Settlement</th>
<th>Dutch Presence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prior to 1680</td>
<td>Dominant</td>
</tr>
<tr>
<td>1681–1715</td>
<td>Partial</td>
</tr>
<tr>
<td>After 1715</td>
<td>Little</td>
</tr>
</tbody>
</table>

**ROLE OF GERMAN IN FIRST SETTLEMENT**

<table>
<thead>
<tr>
<th>Year of Colonial Settlement</th>
<th>German Presence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prior to 1680</td>
<td>Dominant</td>
</tr>
<tr>
<td>1681–1715</td>
<td>Partial</td>
</tr>
<tr>
<td>After 1715</td>
<td>Little</td>
</tr>
</tbody>
</table>

**ROLE OF YANKEN/ENGLISH IN FIRST SETTLEMENT**

<table>
<thead>
<tr>
<th>Year of Colonial Settlement</th>
<th>Yankee Presence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prior to 1680</td>
<td>Dominant</td>
</tr>
<tr>
<td>1681–1715</td>
<td>Partial</td>
</tr>
<tr>
<td>After 1715</td>
<td>Little</td>
</tr>
</tbody>
</table>

**YEAR OF COLONIAL SETTLEMENT**

- 29 – 31%
- 25 – 28%
- 22 – 24%
- 18 – 21%
- 15 – 17%
- 10 – 14%
- After 1715

**% POPULATION OF DUTCH ANCESTRY (2000 CENSUS)**

- 35 – 40%
- 25 – 30%
- 15 – 18%
- 8 – 10%
- 7 – 8%
- 5 – 6%

**% POPULATION OF GERMAN ANCESTRY (2000 CENSUS)**

- 30 – 35%
- 25 – 30%
- 20 – 25%
- 15 – 20%
- 10 – 15%
- 5 – 10%
- After 1715

**% POPULATION OF DUTCHANCESTRY (2000 CENSUS)**

- 25 – 30%
- 20 – 25%
- 15 – 20%
- 10 – 15%
- 5 – 10%
- After 1715
HOW MANY OF US, THEN AND NOW?

Beginning with a few hundred individuals in 1700, the population of Columbia County rapidly increased to close to 40,000 by the end of the 1800s, rising to around 50,000 in the latter part of the nineteenth century, and is now at 62,000, an extraordinarily modest increase over the last two hundred years. Just for fun: if the population of Columbia County had expanded at the same rate from 1800 to 2000 as the nation as a whole, it would now be well over two million.

POPULATION OF COLUMBIA COUNTY 1700–2010

<table>
<thead>
<tr>
<th>Year</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1700</td>
<td>4,200</td>
</tr>
<tr>
<td>1800</td>
<td>10,000</td>
</tr>
<tr>
<td>1900</td>
<td>30,000</td>
</tr>
<tr>
<td>2000</td>
<td>62,000</td>
</tr>
</tbody>
</table>

ETHNIC COMPOSITION OF COLUMBIA COUNTY POPULATION 2000

- White: 95%
- African-American: 3%
- Hispanic: 2%
- Asian: 1%
- Native American: 1%

According to the 2000 Census, Columbia County is largely White, but there are pockets of greater diversity (such as Hudson), and portions of the population were probably not enumerated. In terms of self-proclaimed ancestry, the British Isles, Germany and Italy were the most common points of origin, making up 50%, 18% and 12% respectively of all reported ancestries.

The roots of our ethnic composition are varied. Certainly, early disease, war, and politics removed the Native Americans who originally lived here. The region was first settled by northern Europeans – Dutch, Germans and English. Slavery, although never particularly common here (about 6% of the population were slaves in 1790), accounted for the arrival of some African-Americans. Nineteenth and twentieth century migrations brought Irish, attracted in part by work on the railroads.

Most recently, agricultural work has attracted Latin Americans, and small Asian populations have become established around certain activities, notably Bangladeshis in Hudson.

SETTLEMENT DENSITY

Average lot size largely reflects the density of houses on the land, although not all lots have houses on them and some lots have multiple residences. Nonetheless, these figures are related to the settlement density that might be perceived during a drive through the given area. Not surprisingly, the City of Hudson and the villages of Valatie, Kinderhook, Chatham, Ghent and Philmont have the smallest average lots. While such average values are related to the ecological ramifications of land use, there is ample debate as to whether a few densely settled areas separated by relatively unsettled lands is better or worse, ecologically, than a relatively uniform medium density of settlement.

AVERAGE LOT SIZE 2010 (EST.)

- < 1.5 acres
- 1.5 – 4 acres
- 4.1 – 9 acres
- 9 – 13.5 acres
- 13.5 – 18 acres
- 18 – 22.5 acres

POPULATION DENSITY 2010 (EST.)

- < 50 / sq mi
- 51 – 100 / sq mi
- 101 – 500 / sq mi
- 501 – 1000 / sq mi
- 1001 – 1500 / sq mi
- > 1500 / sq mi
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**The Changing Face of Agriculture**

Columbia County agriculture has evolved over the past two hundred years, and the major products that farmers sold to market have varied. The following graphs show these changes as lines tracing variation in the harvest, production, or density of animals relative to maximum values recorded over this period. For example, in 1840, Columbia County had only about 26% of the sheep it had at the peak of the sheep boom around 1840. The hay harvest of 1840 was about 95% of the maximum, while it stood at only 40% in 1840.

**Relative Agricultural Production 1800-2010**

**Farmland Abandonment**

One of the main factors that has shaped the Columbia County landscape has been the abandonment of farmland. This came about not only because farmers went west to where land was cheaper and the soil richer, but also because agricultural practices changed.

For example, as grain-based dairy and fruit production became dominant, less cropland (much of the grain was shipped in from elsewhere), less pasture, and less hayfield were needed locally. The poorer lands were thus abandoned, even if the farm itself was not. Between 1875, (the approximate peak of agriculture in our county) and 1930, the eastern hill towns experienced the largest decline in improved acreage (that is, land being actively farmed). Those were some of the poorest soils in the county, and abandonment began thereon. Between 1930 and 2000, Germantown and Clmont (formerly centers of fruit production) recorded some of the highest rates of abandonment. Overall, it has been the northeastern and southwestern towns that have experienced the greatest amounts of farmland loss.

For these maps, farmland loss was calculated as the change in each town’s actively farmed land over the given period. This change is expressed as a percent of the given town’s total area. For example, between 1875 and 1910, Ancram lost an estimated 3,490 acres. Because Ancram has a total surface area of about 27,390 acres, its change in cropland over this period can be expressed as slightly less than 12%. This farmland loss has had major cultural, economic and ecological consequences. New habitats have meant the decline of some creatures and the rise of others. New ways of earning a living have changed our connection to the land.
INDUSTRIAL ABANDONMENT

The Columbia County landscape has experienced not only an agricultural but also an industrial revolution. Understanding what people were doing helps us understand not only how land and water were used, but also how connected people’s livelihoods were to natural resources.

To illustrate the more industrial aspects of our county’s history, we’ve mapped the location of “manufacturing” of all different sizes for two time periods: for 1870-1890 and for the last decade. For each period, we assembled lists and locations of manufacturers from State and Federal census data, the Beers atlas of 1873, Sanborn Fire Insurance maps, county histories (particularly the works of Ellis and of Stotts), Child’s 1871 business gazetteer, and lists provided by the Chamber of Commerce and Columbia Hudson Partnership (whose collaboration we much appreciate).

Defining “manufacturing” is a bit tricky. Basically, we described it as the making of a salable item from raw materials. There are grey zones. While we tried to include gist mills, flour mills and breweries, we excluded bakeries and restaurants. While we included dressmakers and clothes makers, we excluded tailors (who may have focused on repair rather than manufacture of clothing). We included blacksmiths, barrel makers, tin shops, and shoe and hat makers, but excluded mines and house builders. We included saw mills, but not lumber yards unassociated with timber harvesting. These choices were guided partially by the criteria of making retail items, plus practical—house building, for example, may not have been a separate profession in the 19th, and most lumber was done in the home.

The map of manufacturers around 1880 shows their broad distribution. Most towns had at least a mill or two, plus at least one blacksmith, wagon maker, shomaker and the occasional dressmaker. Many larger towns had large-scale textile and paper mills, and some also had factories making agricultural implements or other specialized equipment. Finally, there was a smattering of smaller companies that focused on items like thermometers, pumps, or scales. We included streams in this map to emphasize the importance of water power in locating industry. Most of the larger factories relied upon hydropower, although, by 1885, some were going over to steam power.

By 2000, most of these manufacturers had disappeared, although a few large companies remained. We have no doubt missed some small manufacturers in both time periods (our apologies to any one who feels left out), but the change is clear: in the last quarter of the nineteenth century, Columbia County had widespread and diversified manufacturing; by the end of the twentieth century, manufacturing had dwindled substantially.

Industry had various effects upon the land. In the 1800s and earlier, only limited attention was paid to regulating environmental impacts, and damage followed. People were quick to bemoan the effects of damming on migratory fish, and we are still haunted by the industrial pollution of our waters and soils.

On the other hand, counties were more self-sufficient: woolen mills were fed, at least in part, by wool from local sheep; paper mills were surrounded by huge stacks of the locally-grown rye straw used in the paper; iron foundries were able to use local iron. While this use of local raw materials may have made the immediate impacts of manufacturing even more dramatic, it also meant that people lived with the environmental consequences of their own needs, rather than exporting those costs to distant counties.

HOUSE AFFORDABILITY INDEX

The map of manufacturers is a reminder of who can live here, both in terms of wild creatures and in terms of people. One factor that influences human distribution on the land is the price of housing relative to income. That ratio, house price to household salary, can be used to evaluate the affordability of houses. High house price relative to salary implies low affordability and—vice versa—low price relative to salary signifies high affordability.

In 1800 (the last year the necessary statistics were available), some of the more affordable houses were in the northeast corner of the county, where communities to the Capital District tended to earn relatively high salaries and where the market for expensive second homes was relatively small. Conversely, a strong second home market and relatively low residential salaries made for low affordability in Stillwater and Livingston. Given the recent down-turn in the housing market, house affordability may have changed somewhat, but it will have improved only if residents’ salaries have suffered less than house prices.
the changing face of our region has meant changing fates for the native plants and animals with which we share this land. The following graph illustrates an estimate of the relative abundance of some of these creatures over the past two centuries.

**WILDLIFE PATTERNS IN FLUX**

Forest organisms suffered steep declines in the 19th century as forest was converted to agriculture; they rebounded with the 20th century return of forest on former farmland. The more regular sightings of moose, fisher and bear exemplify the results of this reforestation. In much of the Northeast, however, such forest return has now switched to decline, this time due primarily to commercial and residential development rather than agriculture.

Wetland organisms suffered as their home habitat was drained for farming, an activity that became particularly intense late in the 19th century and during the first half of the 20th century. Some of those formerly drained wetlands have now reverted to their larger extents as the maintenance of agricultural drainage declined. Development continues to threaten smaller wetlands.

Grassland birds probably had their heyday during the second quarter of the 1800s, as hay fields expanded but before earth day caring became the norm. Most baby grassland birds have left the nest by mid-July. By this stage we have a report from the county that having begun around the same time. It thus probably had little impact on these birds. By the end of that century, however, progressive farmers were recommending cutting in June. Since then, technology has allowed that cut to become ever earlier. Today when, with the advent of “baling” (essentially, hay that are fermented in plastic wrap) and full mechanization of the harvest, many fields are first cut in May and may be re-cut at least two·times thereafter. Such modernization together with an overall decline in

open fields has severely reduced the habitat available to these animals. The organisms of hill pastures and shrublands show somewhat parallel fates; as hill pastures continued to be grazed, their soils often became more exhausted. This resulted in better ground for native plants, which had been unable to outcompete the non-native forages on good soils. When such pastures were abandoned, grassland species lost habitat, but, as woody plants began to take over, shrubland species gained land. Finally, as the brush grew into the forests we see around us today, shrubland organisms were replaced by woodland species.

It is important to consider these changes at the continental scale as well as at the county scale. For example, many of our grassland birds originally had their geographic heartland in the prairies of the Midwest. The last 19th century decline of good grassland habitat in the Northeast coincided with the conversion of much Tallgrass prairie to industrial agriculture and so these birds a one-two punch.

**RELATIVE ABUNDANCE OF WILDLIFE SPECIES 1800–2010**

- **Forest organisms**
- **Wetland organisms**
- **Grassland birds**
- **Hill pasture plants/butterflies**
- **Shrubland birds**
GLOBAL AND REGIONAL CLIMATE CHANGE

Many scientists attribute the recent changes in global weather patterns primarily to human-induced emissions of greenhouse gases (GHG) such as carbon dioxide, methane and nitrous oxide, that have occurred since the Industrial Revolution. GHG emissions predominantly come from the burning of fossil fuels, agricultural practices, and land use changes such as forest clearing. The graph below charts the global rise of carbon dioxide concentration in the atmosphere, as parts per million (PPM), over the last two centuries. Researchers have estimated that 350 PPM is the safe upper limit for carbon dioxide, and warn that higher concentrations are unsustainable, and may lead to devastating and irreversible climatic impacts.

While many are aware that the United States and China are the largest GHG emitters, the significant role that regions within the USA play in GHG emissions is less well-known. New York State, for example, is responsible for 1% of global GHG emissions (while having 0.3% of the world’s population). A 2001 graph shows that if the northeastern USA were a country, it would be ranked 9th in the world for highest annual GHG emissions.

GLOBAL CO₂ CONCENTRATIONS IN PARTS PER MILLION BY VOLUME

REGIONAL CONTRIBUTIONS TO CLIMATE CHANGE

ANNUAL EMISSIONS IN 2001 (EKTONS OF CARBON DIOXIDE)

UNITED STATES
CHINA
RUSSIA
JAPAN
INDIA
GERMANY
NORTHEASTERN USA
CANADA
UNITED KINGDOM
ITALY
SOUTH KOREA
FRANCE

0 1 2 3 4 5 6

HUDSON NY: MEAN AVERAGE TEMPERATURE (°F) 1957–2008

56 54 52 50 48 46 44 42 40 38 36 34 32 30 26 20 18 16 14 12 10 0

1800 1850 1900 1950 2000

LOCAL IMPACT OF CLIMATE CHANGE?

What are the recent patterns in local weather? The graphs below show changes in temperature and precipitation in Hudson over the last half century; the longest consistent weather records in the county. Over this 51 year period, the mean average temperature in Hudson increased by slightly over 4 degrees Fahrenheit, and the mean average precipitation increased by more than 15 inches.

Such changes dramatically impact agricultural activity. The bottom graph shows the change in the average length of the growing season over this 51 year period. The average annual number of growing days increased by 30 days. Despite the longer growing season that these new conditions would seem to promise, it is difficult for farmers to plan for long term trends when there is so much inherent variability in the year-to-year weather.

It is important to keep in mind that these graphs are drawn only from a small window of time. Such short, sometimes incomplete, local data sets cannot prove or disprove climate change, let alone elucidate its causes. Still, the apparent local trends do reflect the overall trends that scientists have identified in the Northeast using more complete data sets: warmer, wetter conditions. (Trend lines in color.)

HUDSON NY: MEAN AVERAGE PRECIPITATION (INCHES) 1957–2008

60 50 40 30 20 10 0

1800 1850 1900 1950 2000

HUDSON NY: GROWING DAYS 1957–2008

220 200 180 160 140 120 100

1850 1900 1950 2000

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