

Rhinebeck Regular Board Meeting Monday, April 8, 2024

Presentation

Rhinebeck Habitats Update

Christopher Graham, a biologist from Hudsonia Ltd., conducted a presentation on the study, “Changes Over a Seventeen-Year Period to Significant Habitats in the Town of Rhinebeck.” Below is a summary of the main information from this report. To view the entire report, including maps and charts, visit the town’s main web page at <https://www.rhinebeckny.gov>. On the right side of the page, scroll down to 2024 Significant Habitats – Hudsonia Report and the 2024 Habitat Map – Hudsonia Report.

Changes Over a Seventeen-Year Period to Significant Habitats in the Town of Rhinebeck¹

It has been seventeen years since Hudsonia conducted its study of significant habitats in the Town of Rhinebeck. This report is an update of the 2007 town-wide mapping of ecologically significant habitats. It reflects both natural and human-caused changes to habitats throughout the town.

Among the major, recent findings are:

- Ecologically significant habitats covered 84% of the town in 2021, down from 85.5% in 2004.
- Forest (upland and swamp) covered nearly half of the town, down 313 acres since 2004.
- Developed areas increased by 10% (367 acres) and continued to show a pattern of development extending deep into large, interior forests. A total of 206 acres of forest (lands) were developed.
- Interior forests (forests located inland from roads and developed areas) diminished by 6% (319 acres), due to long driveways and (tree) clearing.
- Upland shrubland, a declining and important habitat in the Northeast, declined by 15% (133 acres).
- A total of 137 acres (3.7%) of non-tidal wetlands were lost to development (23 acres), upland habitats (26 acres), and water habitats (88 acres).
- The town still harbors 138 intermittent woodland pools and 59 pool-like swamps, 8 kettle shrub pools, and 13 buttonbush pools.
- Conifer-dominated forests declined dramatically, due to dieback caused by the hemlock wooly adelgid, a non-native invasive insect.

¹ “Changes Over a Seventeen-Year Period to Significant Habitats in the Town of Rhinebeck,” by Christopher Graham and Gretchen Stevens, Hudsonia, Ltd., 2024.

The report focused on these habitats found on p. 4:

- Wetlands
- Upland conifer and upland mixed forests
- Shrubland versus forests
- Intermittent woodland pools and pool-like swamps
- Cultural (small lawn areas)
- Tidal habitats

The report lists 35 types of ecologically significant habitats: 13 upland, 14 non-tidal wetlands and 8 Hudson River types (tidal and supratidal) habitats. (See chart on p. 6.) A full explanation of the mapped significant habitats is found on pp. 6, 9, 12, 13, 15, 17, 18, 21, 22, 26, 28–31 and 33.

The report contains the following updated maps:

- Ecologically significant habitats (p. 7)
- Contiguous habitat (p. 8)
- Core forest blocks, 2004 (p. 10)
- Core forest blocks, 2021 (p. 11)
- Meadows (p. 14)
- Wetlands and water (p. 16)
- Woodland pools (p. 19)
- Buttonbush pools (20)
- Streams (p. 23)
- Major habitat changes (24)
- Development (p. 25)
- Forest loss (p. 27)
- Ecological succession (p. 32)
- Conifer forests (p. 34)

Changes

Overview

- Habitat changes fell into two very broad categories: those that occurred naturally and those caused directly by humans.
- Common natural changes included ecological succession (the mix of species and habitats in an area change over time), flooding of wetland by beavers, and changes in tidal habits caused by storms, sediment accumulation and other natural drivers.
- Prominent changes caused by humans were the conversion of ecologically significant habitats to developed uses (driveways, buildings, paved areas, lawns, etc.) and clearing and replacement of upland forests or forested swamps by upland meadows, wet meadow, or culture habitat (large lawns).

Development

- The pattern of new development (single and small cluster dwellings and driveways) throughout the town between 2004 and 2021 was responsible for the loss of 319 acres of large forests and three large meadows.

- Developed acreage increased by 10% (367 acres) from 3,630 acres in 2004 to 3,998 acres in 2021.
- An additional 1.5% of the town was developed during those years.
- Twenty-three acres of the town's wetlands were developed into roads, driveways, buildings, lawn, and other paved areas.

Forest loss

- 206 acres of forest (including upland and non-tidal swamp forests) were lost due to development and became open, non-forested habitats for a total forest loss of 678 acres.
- Most of the upland hardwood forest to meadow or shrubland transitions were likely human caused.

Wetland loss

- Rhinebeck lost a net 3.7% (137 acres) of its non-tidal wetlands due to development, conversion to upland habitats, and impoundment (a body of water confined within an enclosure).
- Forty-four acres of marsh were lost due to development, uplands, or water.
- Sixty-two acres of swamps were lost due to development, open water, or upland meadows growth.

Succession

- Ecological succession refers to the transition of species and composition and structure of a community of organisms over time due to natural causes.
- 511 acres of upland habitat underwent succession to a different type of habitat during the study period.

Conifer loss

- Large areas of forest canopy dominated or co-dominated by conifers (eastern white pine, eastern hemlock, eastern red cedar) in 2004 lost many or most of their conifers during the study period, much of which was caused by the non-native insect, hemlock wooly adelgid (HWA).

Conclusions

- Approximately 2,581 acres or 19% of the town experienced some type of change in habitat.
- The most extensive types of change were due to ecological succession, conversion of forests, meadows, and other habitats to developed uses, forest clearing, conifer loss and flooding of swamps to marsh or open water.

The information found in this study should help the citizens and municipal agencies (Town Board, Planning Board, Conservation Advisory Board, and Comprehensive Plan Committee) to engage in proactive land-use and conservation planning to ensure that future land development occurs in locations, quantities, and configurations that best protect the town's remaining significant habitats.
