

Method for Inventorying and Evaluating Freshwater Wetlands In New Hampshire 2011



**NH
METHOD**

Method for Inventorying and Evaluating Freshwater Wetlands In New Hampshire (NH Method)

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A Note on the Revised NH Method

The *Method for the Comparative Evaluation of Nontidal Wetlands in New Hampshire* (NH Method), co-authored by Alan Ammann and Amanda Lindley Stone, was originally published in March, 1991. It was adapted from the *Method for the Evaluation of Inland Wetlands in Connecticut*, published in 1986 by the Connecticut Department of Environmental Protection and authored by Alan Ammann and others.

Over the past twenty years, the NH Method has been widely used by New Hampshire communities and environmental consultants. It appears to be the most frequently used wetland evaluation method for town-wide and watershed-based wetland assessments in the state, and has been demonstrated to be both useful and accurate. The NH Method continues to be used regularly by NH communities and natural resources professionals. The NH Method's ease of use, its educational value, and the overall objectivity of the resulting function evaluations have contributed to its popularity. Since 1991, the NH DES Wetlands Bureau Prime Wetlands Regulations have recommended the NH Method as the preferred method for evaluating wetlands for the purpose of Prime Wetlands designation.

However, since the NH Method's publication in 1991, new studies, technologies and data have become available, such as Buffers for Surface Waters and Wetlands (1995, 1997), Natural Communities of NH (2004), New Hampshire's Changing Landscape (2005), the GRANIT GIS database, and the NH Wildlife Action Plan (2005), to name a few. The original NH Method was published prior to the wide availability of Geographic Information Systems (GIS), in the early days of desktop computers, and prior to the availability of the internet. Eighteen years later, the NH Method was ripe for an update that included new information sources and technologies. In addition, past users of the NH Method have suggested changes that are now incorporated into this revision.

While much of the text has been revised for easier reading, the format and scientific basis of the NH Method remain the same. Table 1 provides details of the major revisions to the manual.

Acknowledgements

Revisions to the NH Method were conducted by the NH Method Work Group, which included representatives from the state and private organizations listed below. Many thanks are due to this group for the considerable hours they spent reviewing, revising and field testing the updated NH Method. Their contributions of expertise and experience were invaluable.

NH Method Work Group (2011 revised edition)

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Table 1: What Has Changed?

| 1991 Edition | 2011 Edition | What Changed? |
|---|---|---|
| Title: Method for the Comparative Evaluation of Nontidal Wetlands in New Hampshire | Title: Method for Inventorying and Evaluating Freshwater Wetlands in New Hampshire | The title change reflects a fundamental shift in the method. The 2010 revised edition allows both comparative and single wetland evaluation. The NH Method can be used to evaluate individual wetlands, as well as evaluating multiple wetlands in town or watershed (comparative evaluation). Note that the NH Method is not an impact assessment method. |
| 14 Functions | 12 Functions | The Historical Site Potential and Urban Quality of Life Functions have been dropped from the NH Method. Questions relating to historical/ archaeological significance and urban wetlands have been included in the revised Noteworthiness function. All Functions have been updated with current information and data, and a number of questions have been revised for clarity. |
| Ecological Integrity | Ecological Integrity | This function has been modified somewhat so that Ecological Integrity is evaluated in the context of human-induced stressors to the wetland system. Each question for this function addresses a stressor that could be impacting the system. Wetlands that are the least impacted by stressors will have a higher score for Ecological Integrity |
| Wildlife Habitat | Wetland-Dependent Wildlife Habitat | This function has been modified to better reflect the suite of species that depend on wetlands for all or part of their life cycle. |
| Educational Potential | Educational Potential | Minor edits to criteria on data sheets |
| Finfish Habitat | Fish & Aquatic Life Habitat | This function has been expanded to include aquatic life. In the original NH Method, fish were treated as a separate group of wildlife with strong affinities to wetlands, particularly those associated with perennial streams or lakes and ponds. However, the recognition of fish populations as a subset of wetland wildlife should also include recognition of all the habitat conditions & species that support their well-being, i.e. <i>aquatic life</i> . |
| Visual/Aesthetic Quality | Scenic Quality | The title of this function has been simplified. Minor edits to the scoring criteria on the data sheets. |
| Water-based Recreation | Wetland-based Recreation | This function was revised to be more inclusive of a range of recreation activities in and around wetlands, such as birding and hiking, as well as canoeing and fishing. |
| Flood Control | Flood Storage | The original Flood Control Function has been deleted, and replaced with Flood Storage, a new evaluation method that is considered to provide a more accurate assessment of the ability of a wetland to store floodwaters. |

| 1991 Edition | 2011 Edition | What Changed? |
|-------------------------------|--|---|
| Groundwater Use Potential | Groundwater Recharge | The questions in this function have been revised to focus on wetlands that function for groundwater recharge. |
| Sediment Trapping | Sediment Trapping | This function has been revised to delete all the “opportunity” questions that looked at the potential for the watershed to produce sediments. Instead, this function now looks directly at the characteristics of the wetland that make it effective for sediment trapping. A number of questions in this function have been revised/added. |
| Nutrient Attenuation | Nutrient Trapping/Retention/Transformation | As with sediment trapping, this function has been revised to eliminate opportunity questions. Instead, this function now looks directly at the characteristics of the wetland that make it effective for nutrient trapping. A number of questions in this function have been revised/added. |
| Shoreline Anchoring | Shoreline Anchoring | Question 4 has been added to evaluate the roughness of the wetland substrate. |
| Noteworthiness | Noteworthiness | Several new questions have been added to this function. |
| Functional Value Index (FVI) | Average Score | The terminology has been simplified to “Average Score” Each question receives a score, and an Average Score is computed for each Function. Note that the values of the scores for multiple choice questions have been changed from 1.0, 0.5 and 0.1 to 10, 5 and 1 for easier computation. |
| Wetland Value Units (WVUs) | No Wetland Value Units | The original NH Method weighted the FVI scores by acreage. In the 2010 edition, acreage is no longer used as a weighting factor, but wetland size may be taken into consideration when analyzing evaluation results. |
| Wetland Base Map and Overlays | Wetland Maps | <p>Since the NH Method was published in 1991, Geographic Information Systems (GIS) and other computer technologies have greatly advanced. With the variety of data layers available through GRANIT, the statewide GIS database, a greater range of information is available to help complete NH Method evaluations. Wetland maps showing information needed to complete evaluations using the NH Method. Wetland Maps can now be generated using</p> <ol style="list-style-type: none"> 1. Desktop GIS software (e.g. ArcView/ArcGIS), which is primarily used by trained professionals and trained volunteers, or 2. The GRANIT Data Mapper web site, which is suitable for use by those who do not have professional GIS expertise. |

I. INTRODUCTION

Over the past several decades, understanding of the importance of freshwater wetlands to the quality and integrity of the environment has grown. Wetlands are an important part of the hydrologic system, and play a key role in maintaining high quality water supplies, reducing the amount and volume of stormwater runoff, and storing floodwaters, thereby preventing downstream property damage. Wetlands provide a high degree of biodiversity in the landscape, maintaining healthy and diverse aquatic and wetland-dependent wildlife populations. They provide scenic vistas, as well as hiking, canoeing, fishing and hunting opportunities.

Wetland evaluation is the process of determining the values of a wetland based on an assessment of the functions that it performs. The NH Method provides a wetland evaluation method for use by several **audiences**:

- Public officials and community volunteers,
- Professionals who have some familiarity with wetlands, but who are not necessarily wetland specialists, and
- Professional wetland scientists

The NH Method is intended to be used for the following **purposes**:

1. Educating members of conservation commissions, other town boards, non-wetland professionals and the public about wetland functions and values.
2. Evaluating one or more wetlands in a study area, such as a town or a watershed.
3. Evaluating Prime Wetlands (RSA 482-A:15)
4. Collecting baseline information about the wetlands in a study area.
5. Creating a database of the scores for the evaluated wetlands for a number of functions, as well as other data about the wetlands in a study area.
6. Supporting local planning and decision-making.

Because development and growth often require towns to place relative priorities on the future use of natural resources, it is important that the towns have available a practical means of inventorying and evaluating their wetlands. The *Method for Inventorying and Evaluating Freshwater Wetlands in New Hampshire* (NH Method) was developed for that purpose. While the NH Method is designed to be relatively simple to use, its basis is scientifically defensible. It provides a consistent basis for evaluating wetlands across the state.

The NH Method was originally designed for use by town officials and volunteers. While a number of towns have conducted evaluations using volunteers, others have chosen to hire consultants to conduct wetland evaluation projects. Over the years, the NH Method has become a frequently used wetland evaluation method among trained wetland scientists. Training workshops in the use of the NH Method for all audiences are available through UNH Cooperative Extension. Even if a community decides to hire a

Definitions

Wetlands:

The definition of wetlands in the NH Method is the same as that used by The State of New Hampshire ([RSA 482-A:2, X](#)):
[A wetland is] “an area that is inundated or saturated by surface water or ground water at a frequency and duration sufficient to support, and that under normal conditions does support, a prevalence of vegetation typically adapted for life in saturated soil conditions.”
Wetlands include forested and shrub swamps, marshes, peatlands, wet meadows, and bordering vegetated shallows of streams, rivers, lakes and ponds.

Wetland Inventory:

A wetland inventory identifies and maps all the wetlands in the study area using available map and aerial photo resources (such as the National Wetland Inventory maps, satellite imagery, NRCS Soil Maps, color, black & white or infrared aerial photos).

Wetland Functions:

Wetland functions represent the practical, measurable values of wetlands.

Wetland Evaluation:

This is the process of determining the values of a wetland based on an assessment of the functions that it performs.

Wetland Delineation:

Wetland delineation determines the precise location of the wetland/upland boundary on the ground (and ultimately on a map) based on field indicators, such as vegetation, soils, and hydrology. Delineation requires specialized knowledge about wetlands and should be done by a Certified Wetland Scientist in New Hampshire.

professional to conduct the evaluation, it is helpful for community board members to attend a training session so they have an understanding of how the NH Method works and how to use the results.

Appropriate Uses of the NH Method

1. The NH Method is a valuable educational tool for increasing understanding about the functions and values of wetlands.
2. In New Hampshire, most land use decisions are local decisions. Evaluation of wetlands for different functions allows a town to tailor wetland protection for those values it views as most important. For example, a town may wish to protect wetlands with high scores for flood storage, or large wetland complexes that provide important wildlife habitat. (See sidebar for descriptions of wetland protection methods.)
3. The NH Method can be used to evaluate a single wetland or multiple wetlands:
 - **Multiple Wetlands:** Evaluation of a number of wetlands in a study area (e.g. prime wetlands) involves comparative evaluation. This is where the scores for a particular function, such as Ecological Integrity, are reviewed for all wetlands in the study area relative to one another. This helps to identify higher scoring wetlands in the study area for that function or for multiple functions.
 - **Single Wetlands:** The user may want to evaluate a single wetland to get descriptive information about its physical characteristics and functions. Note that single wetland evaluation using the NH Method is not a substitute for more detailed evaluation of specific functions. When communicating the results of a single wetland evaluation, be sure to inform local decision makers that the level of information provided is broad-brush rather than detailed.
4. Although the NH Method is not designed for impact analysis, the information collected for evaluation may provide a useful framework for a more detailed and thorough assessment of proposed wetland impacts. Each of the functions listed and described in this manual will likely be affected by a wetland impact. For example, an impact involving the placement of a culvert and roadway fill will likely alter how water flows through the wetland, as well as what types of wildlife can live there. By using the list of functions as a framework for in-depth study - i.e. that *defines* the change in hydrology or wildlife species, a wetland scientist can arrive at a reasonable assessment of the proposed alteration. The user can look at the results from the NH Method on a single wetland, and use those together with professional judgment to determine what other information may be needed for the actual impact assessment.

Wetland Protection Mechanisms

- **Zoning and Subdivision Regulations** – Wetlands can be protected through zoning ordinances by implementing a Wetlands Conservation Overlay District. A model ordinance for this is provided in the 2008 NHDES publication [Innovative Land Use Planning Techniques](#). Setback requirements can be incorporated into subdivision regulations.
- **Comments to the New Hampshire Wetlands Bureau** – Although wetland permits are issued at the state level, there is opportunity for local input into land use decisions affecting wetlands. Municipal conservation commissions have the legal authority to comment on permit applications on behalf of the town. Individuals may also comment on these applications.
- **Comments to the U.S. Army Corps of Engineers** – Virtually all major wetland alterations require a Federal permit in addition to a state permit. The town and individual citizens can comment during the Federal permitting process.
- **Prime Wetland Designation** – Under the New Hampshire statute ([RSA 482-A](#)) for protecting wetlands from “despoliation and unregulated alteration”, municipalities are able to designate some of their high value wetlands as “Prime Wetlands” ([RSA 482-A:15](#)). Prime Wetlands are given special consideration by the Wetlands Bureau in permit application reviews. Appendix A of the NH Method provides web links for more information on Prime Wetlands.
- **Acquisition of wetlands** – Wetlands and their buffers can be acquired either through the purchase of development rights, gifts, or by securing conservation easements on lands encompassing wetlands.

5. Results from wetland evaluations using the NH Method may be used to identify potential wetland restoration sites. Wetlands scoring low for Ecological Integrity because of human disturbance might benefit from restoration to increase the capacity of the wetland to perform those functions.

Limitations of the NH Method

1. The NH Method is not designed for use as a specific method for impact analysis. It needs to be used along with professional judgment, and other methods of impact analysis, along with the best available data and information.
2. Low scores on one or more wetland functions should not be used to justify eliminating certain wetlands. Low scores may indicate opportunities for restoration. Low scores should be qualified based on the level of information provided at the time of the evaluation.
3. The NH Method is not a substitute for more detailed site-specific studies. Where these studies are required, e.g. a detailed wildlife study or wetland boundary delineation, other site specific methods should be used
4. While small wetlands may be less biologically diverse and may have limited value for several functions (meaning that they may score lower), they may stand out for a certain special value (e.g. a rare species) which could be captured under the Noteworthiness function. Noteworthiness ensures that important wetlands, which might rank low because of size or other factors, are given equal consideration.
5. The NH Method is not well suited for evaluating exceptionally large riverine or lacustrine systems such as the Connecticut River or Lake Winnepesaukee. Bordering vegetated (fringe) wetlands on large bodies of water are best evaluated as discrete units that may be influenced by localized watersheds, embayments, coves or shorelines. See **Section 2D** for guidance on how to break up large wetland systems into smaller, more manageable evaluation units. Note that very large wetland systems can be broken in to smaller units for purposes of evaluation, and then recombined to present the final results
6. The NH Method is designed to evaluate functions and values. It is not intended to be used for the jurisdictional delineation of wetland boundaries.
7. The NH Method provides a wetland evaluation procedure to rank and compare wetlands on a municipality-wide basis. When legal proceedings require detailed information about individual wetlands, additional detailed field data will be needed to supplement NH Method data. NH Method data alone would not be sufficient in this instance.
8. In the NH Method the Average Scores for each function **are not additive**. There is no single wetland score. Each wetland receives an average score for each of 12 functions. Adding the Average Function Scores to produce a single wetland score is a misuse of the NH Method.

Organization of the NH Method

The NH Method is organized into five sections and seven Appendices. Sections 1-5 describe how to use the NH Method and interpret the results. Appendices A through G provide additional instructions and supplementary materials that are referenced in Sections 1-4. Appendix A provides a list of wetland resources and references use in the NH Method, and useful for wetland evaluation projects.