



## New Hampshire Natural Heritage Bureau

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### Documenting Wetlands with High Ecological Value to Inform Environmental Review, Mitigation, and Conservation



Final Report to  
U.S. Environmental Protection Agency

Submitted by  
NH Natural Heritage Bureau  
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## Overview of the NH Natural Heritage Bureau's Purpose and Policies

The Natural Heritage Bureau (NHB) is part of the Division of Forests and Lands in the NH Department of Natural and Cultural Resources. NHB provides information on New Hampshire's native plants and natural communities to landowners, land managers, State and Federal agencies, and non-profit organizations. NHB serves as a resource to help protect the State's biodiversity while meeting land-use needs.

NHB's mission, as mandated by the Native Plant Protection Act of 1987 (RSA 217-A) is to determine protection and conservation measures and requirements necessary for the survival of native plant species in the State, to investigate the condition and degree of rarity of plant species, and to distribute information regarding the condition and protection of these species and their habitats.

The ecologists and botanists in NHB collect and analyze data on the status, location, and distribution of native plant species and natural communities in NH. Using this data, NHB develops and implements measures for the protection, conservation, enhancement, and management of native New Hampshire plants.

NHB maintains a database with information on over 7,600 native plant, wildlife, and exemplary natural community records in New Hampshire.

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**Cover photo:** Newly described button sedge fen in Epping, NH (photo by Bill Nichols).

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## INTRODUCTION

This report documents NH Natural Heritage Bureau's (NHB) project activities and accomplishments. NHB has met or exceeded all of our anticipated outputs and outcomes. There were no cost overruns or high unit costs.

Since the establishment of NHB in the 1980s, over 730 exemplary<sup>1</sup> wetland natural community and system occurrences have been identified in the state. During recently completed projects funded by EPA (CD-96179201-0: Task 4; Nichols et al. 2015), NHB applied a Level 1<sup>2</sup> Ecological Integrity Assessment (EIA) to over 500 of these exemplary wetland records and identified more than 100 wetlands that require on-the-ground reevaluations to determine their current status (exemplary vs. non-exemplary). NHB surveyed 49 of these wetland systems<sup>3</sup> in the most recent project funded by EPA (CD-00A00292, Task 5; Nichols and Bowman 2022) and will survey additional wetlands during this project. Many of these wetland occurrences were documented in the 1980's and 1990's prior to the common use of GIS and GPS mapping technologies. The condition of many of these sites have also been impacted by changes in surrounding land use since they were first surveyed.

Many advances have recently been made in developing techniques for wetland assessment. These include the Level 2 EIA method developed by NatureServe and member Natural Heritage Programs (Faber-Langendoen et al. 2016; Nichols and Faber-Langendoen 2022), including NHB. The Level 2 EIA method was successfully tested in New Hampshire as part of previously completed projects under EPA grants (New Hampshire Natural Heritage Bureau 2011; Nichols 2013a; Nichols 2013b). EIA uses a suite of field metrics, guided by a conceptual ecological model, to assess "the degree to which, under current conditions, the structure, composition, processes, and connectivity of an ecosystem corresponds to reference conditions, and are within the bounds of natural or historical disturbance regimes" (adapted from Lindenmayer and Franklin 2002; Parrish et al. 2003).

Floristic Quality Assessment (FQA) is a method used to assess the condition of upland and wetland habitats. The New England Interstate Water Pollution Control Commission (NEIWPCC), with funding from EPA (WD 83418301), completed a project that assigned FQA Coefficient of Conservatism scores to the complete vascular flora of each New England state and New York (Bried et al. 2012; NEIWPCC 2013). FQA is then applied by calculating a mean Coefficient of Conservatism (Mean C), Cover Weighted Mean C (CWMeanC), or a Floristic Quality Index (FQI) from a list of plant species obtained from a particular site. A critical next step was to develop FQA benchmark thresholds for each wetland system type in New Hampshire based on minimally/least-impacted examples (CD-00A00014 Tasks 2 & 3 [Nichols 2018]; CD-00A00262 Tasks 3a & 3b [Nichols 2020]), advancing the use of FQA in the region. This project will, in part, refine these thresholds where the data allows, providing surveyors an improved ability to interpret

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<sup>1</sup> The NH Natural Heritage Bureau tracks "exemplary" natural community and system occurrences. To qualify as exemplary, a natural community or system in a given place must be a rare type or a relatively undisturbed occurrence of a common community in good condition. Exemplary natural communities and systems represent the best remaining examples of New Hampshire's biological diversity.

<sup>2</sup> The US Environmental Protection Agency identifies assessment methods as being Level 1 (desktop only), Level 2 (desktop plus rapid field survey), or Level 3 (in-depth field survey).

<sup>3</sup> Particular associations of natural communities repeatedly co-occurring in the landscape, linked by a common set of driving forces, such as landforms, flooding, soils, and nutrient regime.

FQA indices for any given wetland site, allowing the data to inform conservation more effectively as well as to develop specific performance criteria and to monitor mitigation progress. Specific performance criteria thresholds by system type, utilizing standard Level 2 sampling methods, would “allow FQA results to be universally comparable yet specific enough to meet many different application needs” (Bourdaghs 2012).

Other areas with recently improved methodologies are wetland rank specifications (Nichols 2015a); ecological delimitation guidelines (NatureServe 2014); updated conservation status ranks (Nichols 2015b); and improved vegetation classifications and keys (Sperduto and Nichols 2012; Sperduto 2011). Applying these improved methods and resources to records of wetland occurrences in New Hampshire is a high priority that will yield multiple benefits.

Accurate and well-documented records of exemplary wetland sites in NHB’s database are critical for conservation planning and environmental reviews. It is also important that the status of wetland sites not meeting current exemplary standards are changed in NHB’s database to avoid both decision making based on inaccurate information and unnecessary delays to permitted projects. Many programs that protect wetlands rely on NHB’s database to determine impacts and make recommendations as part of environmental reviews for the NH Department of Environmental Services (DES) permits, using the NHB DataCheck Tool. Landowners working with land trusts to protect special features on their land including exemplary wetlands and the plant and animal species that utilize that habitat also use this tool. In addition, organizations that apply for grants for wetland restoration or land conservation projects (e.g., the New Hampshire Aquatic Resource Mitigation [ARM] fund) submit an NHB DataCheck as part of their application that lists the special features (e.g., exemplary wetlands) found on the parcel that they are trying to restore or protect. The presence of these records can increase the score of the application in the competitive grant round.

**Connection to New Hampshire Wetland Program Plan:** Data collected and analyzed from the wetland systems surveyed during this project will directly or indirectly inform the following Core Elements and Actions in the New Hampshire Wetland Program Plan (Adams and Tilton 2018):

**Core Element #2: Restoration and Protection.**

Action A: Develop new and use existing tools and science to inform regulatory decisions.

7. Establish Ecological Integrity Assessment (EIA) as a regulatory tool to evaluate pre- and post- construction impacts to aquatic resources.

Action B: Continue development of ARM Fund Program to maximize efficiency of program/use of funds for ecologically sustainable projects.

1. Promote high quality protection / restoration projects through criteria development, prioritization, and dissemination of information to towns, land trusts, partners, etc.

Action D\*: Use data to inform regulatory decisions related to mitigation.

3. Develop new tools and database improvements to evaluate mitigation program, protection, and restoration potential and success.

\*Note: NHB added this Action because the “new tool” is modifying/updating the new Floristic Quality Assessment (FQA) system thresholds based on data collected from various systems during this project. In addition, by resurveying wetlands with outdated records in our database, NHB is making “database improvements” by updating those records that now can better “inform regulatory decisions” associated with “protection.”

Action F: Continue identification of wetlands and aquatic habitat of high ecological value.

1. Reassess and resurvey known exemplary natural communities and systems with

outdated records.

2. Identify and evaluate previously unsurveyed wetlands / aquatic habitats that have the potential to be high quality.

Action G: Develop metrics and field protocols for wetland restoration and protection.

2. Identify restoration opportunities and methods to monitor and review data pertaining to restoration projects.

3. Identify protocols reviewing recent science and climate change information.

### **Core Element #3: Data / Monitoring and Assessment / Water Quality Standards.**

Action B: Update natural resource map information.

2. Update wetland maps to assist decision making to include plant communities, aquatic resource corridors, habitat, fishery, flood storage, fluvial erosion hazard zones, public water supply, contamination sites, groundwater mapping information, and University and regional mapping initiatives.

Action C: Provide foundation for a wetland monitoring Level II assessment.

1. Test and implement the EIA and Floristic Quality Assessment (FQA) to develop a rapid FQA. Incorporate rapid FQA as an assessment tool or develop Index of Biological Integrity (IBI).

2. Use Level III methods to validate/calibrate Level II methods.

## **METHODS**

NHB is tasked to survey approximately 40 wetland systems that are either the highest priority exemplary wetlands with outdated records or new surveys in wetlands of high ecological value (Table 1). During the field surveys, ecologists will collect data using the L2 EIA Recon Form at locations (observation points) considered representative of the surrounding natural community, based on observations and interpretation of plant community composition and structure. Data collected at observations points, elsewhere in the wetland system, and/or in the surrounding landscape will include the following:

- Natural community system type (Sperduto 2011).
- Natural community type (Sperduto and Nichols 2012).
- Identification of all native and nonnative plant species.
- Percent coverage estimates for all plant species in each stratum.
- Other descriptive notes including information on soils and other physical site characteristics, evidence of human disturbance, size of the community, and evidence of wildlife.
- Diagnostic natural community and rare species photographs.
- Because FQA relies on accurate identification of plant species representing each wetland system sampled, specimens with uncertain identities in the field will be collected and preserved via pressing, then later identified by Bill Nichols, State Botanist at NHB.
- Global Positioning System (GPS) units will be used to document the location of sampling plots, rare plant populations, system boundaries, and other features (accuracy of the data collected by the GPS is expected to be within 15 meters).

At least two different strategies can be used to generate lists of species composition and cover for targeted systems:

1. Generate separate lists of species composition and cover in each physiognomic type (natural community) within the system. For example, the drainage marsh - shrub swamp system will often support from the upland border to the drainage channel the following physiognomic types: shrub thicket, meadow marsh, emergent marsh, and aquatic bed. See Nichols (2015a) for expected physiognomic types and characteristic species in each system type. The list of species composition and cover from each physiognomic type ideally is semi-comprehensive using one of two approaches:
  - a) Meandering approach within representative examples of each physiognomic type in the system.
  - b) Relevé plot-based approach. A handbook for collecting plot data using the relevé method can be downloaded at: [Relevé Method Handbook](#). The relevé method subjectively places a plot in one or more representative locations in each physiognomic type within the system, listing plant species and cover in each stratum present (i.e., herb, shrub, and/or tree layers) within the plot. Size of a relevé plot is considered adequate when if doubled, an increase in species composition is <10% (Mueller-Dombois and Ellenberg 1974). Species found in the physiognomic type outside the plot are also recorded accordingly (cover is typically <1% for these species).

Once completed, percent cover is estimated for each physiognomic type within the system. For both approaches described above (1a and 1b), an FQA calculator should be used that not only accounts for percent cover of plant species from each physiognomic type, but also the percent cover of each physiognomic type within the system when calculating FQA indices (e.g., EcoObs database, available with draft manual at NHB). Alternatively, the Universal FQA calculator (<https://universalfqa.org/>) can be used to separately calculate Cover Weighted Mean C (CWMeanC) for each physiognomic type within the system, then CWMeanC and percent cover for each physiognomic type is used to calculate the overall CWMeanC for the system.

2. Generate a single system wide list, adjusting species cover estimates as needed when going from one physiognomic type to another within the system. The Universal FQA calculator or EcoObs can then be used to generate a CWMeanC value for the sampled system.

The condition of these priority wetlands will be reevaluated using EIA (Faber-Langendoen et al. 2016; Nichols and Faber-Langendoen 2022) and FQA (Swink and Wilhelm 1994). NHB will then compare wetland system EIA and FQA scores; update wetland records, mapped extents, and ecological integrity ranks in our database; refine FQA performance criteria for applicable wetland types in New Hampshire; and report on all findings.

“Rank Specifications for Wetland Systems in New Hampshire” (Nichols 2015a) should be referenced for more information on NH’s system types and when applying Level 2 Ecological Integrity Assessment Method. This report provides information on expected natural communities/species composition and EIA metrics/stressors for each system type. See the following link to download the report:

- [Rank Specifications for Wetland Systems in New Hampshire](#)

**Table 1.** Description of project tasks and subtasks.

**Year 1 Tasks and Subtasks:**

**1. Write Quality Assurance Project Plan.**

- a) NHB will write an approved Quality Assurance Project Plan (QAPP).

- 2. Prepare for and visit approximately 40 sites to resurvey exemplary wetlands with outdated records and to conduct new surveys in wetlands of high ecological value.**
  - a) Conduct pre-field landscape analysis to locate new sites and to review all available site data for known exemplary wetlands with outdated records; create aerials and topo maps for use during field surveys.
  - b) Conduct landowner research and contact.
  - c) Survey approximately 40 critical wetlands either with outdated records or new wetlands of high ecological value.

**Year 2 Tasks and Subtasks:**

- 1. Post field data processing.**
  - a) Identify all collected plant specimens and process all diagnostic photographs.
  - b) Review field forms and complete all required fields including verification of natural community and system designations.
  - c) Remap or newly map in ArcMap 10.2.2 exemplary natural community and system boundaries using collected geo-referenced data and GIS data layers.
- 2. Evaluate condition with EIA.**
  - a) Assess EIA metrics and calculate overall EIA score for each wetland system in EcoObs.
- 3. Calculate FQA index.**
  - a) In EcoObs, create wetland system observations and enter all vegetation plot data.
  - b) Calculate FQA scores for each wetland system.
- 4. Compare each wetland's EIA and FQA scores.**
- 5. Refine FQA reference thresholds for under-sampled wetland system types.**
- 6. Update NHB database.**
- 7. Report on all findings.**

**RESULTS**

**Year 1**

**Task 1. Write Quality Assurance Project Plan:** NHB drafted the QAPP and responded to EPA comments during the approval process, which then led to QAPP approval by EPA.

**Task 2. Prepare for and Visit Approximately 40 Sites to Resurvey Exemplary Wetlands with Outdated Records and to Conduct New Surveys in Wetlands of High Ecological Value:** Out of the 149 exemplary wetlands with outdated records in our database, 50 were selected as potential survey sites after review in a Geographic Information System (GIS). In addition, for new survey sites in wetlands of high ecological value, NHB evaluated all wetlands not in our database that were larger than 250 ac (n = 92). After reviewing the 92 sites in a GIS, 30 were selected as potential survey sites (those most likely to be wetlands of high ecological value). NHB collected available site data, conducted landowner contact as needed, and created aerials and topo maps for use during field surveys. Of the 80 total potential survey sites, NHB was tasked to survey approximately 40 of these wetlands.

NHB ecologists surveyed 77 wetland systems (Table 2), collecting valuable information and analyzing data from 37 more wetlands than required (48% more), by leveraging additional match from NH's Conservation and Heritage Number Plate program. These surveys occurred in 21 of the 27 wetland system types occurring in New Hampshire (Table 3).



**Table 2.** Seventy-seven (77) wetland systems surveyed during the 2022-2023 field season that were either previously determined to be exemplary by NHB but had outdated records or were other wetlands of potentially high ecological value not previously surveyed by NHB.

Site	Town	System
Bailey Brook	Rye	Coastal conifer peat swamp system
Beaver Brook WMA	New Durham	Poor level fen/bog system
Bellamy River WMA1	Dover	Brackish riverbank marsh system
Bellamy River WMA2	Dover	Salt marsh system
Berry's Brook1	Rye	Drainage marsh - shrub swamp system
Berry's Brook2	Rye	Brackish riverbank marsh system
Berry's Brook3	Rye	Moderate-gradient sandy-cobbly riverbank system
Berry's Brook4	Rye	Salt marsh system
Berry's Brook5	Rye	Subtidal system
Betty Meadows1	Northwood	Medium level fen system
Betty Meadows2	Northwood	Drainage marsh - shrub swamp system
Betty Meadows3	Northwood	Temperate minerotrophic swamp system
Binney Pond	New Ipswich	Poor level fen/bog system
Black Pond	Windsor	Coastal conifer peat swamp system
Blackwater River	Salisbury	Temperate minor river floodplain system
Blake's Hill Bog1	Northwood	Temperate peat swamp system
Blake's Hill Bog2	Northwood	Poor level fen/bog system
Blueberry Swamp	Columbia	Montane/near-boreal minerotrophic peat swamp system
Bog Road	Concord	Poor level fen/bog system
Camp Sargent Road	Merrimack	Sand plain basin marsh system
Cedar Swamp Pond	Kingston	Coastal conifer peat swamp system
Clements Point	Dover	Salt marsh system
Cocheco River Narrows	Dover	Brackish riverbank marsh system
Country Pond NE1	Kingston	Poor level fen/bog system
Country Pond Swamp East	Newton	Coastal conifer peat swamp system
Exeter River1	Exeter	Temperate peat swamp system
Exeter River2	Brentwood	Temperate minor river floodplain system
Exeter River and Great Meadows1	Exeter	Temperate minor river floodplain system

Site	Town	System
Exeter River and Great Meadows2	Exeter	Low-gradient silty-sandy riverbank system
Fairhill Swamp	Rye	Coastal conifer peat swamp system
Garvin Brook	Dover	Brackish riverbank marsh system
Gordon Pond Brook	Woodstock	Moderate-gradient sandy-cobbly riverbank system
Hampton Harbor	Hampton, Hampton Falls, Seabrook	Salt marsh system
Hopkinton-Everett - Mud Pond	Henniker	Kettle hole bog system
Johns River	Whitefield	Black spruce peat swamp system
Lake Massasecum	Bradford	Sandy pond shore system
Lamprey River	Epping	Temperate minor river floodplain system
Lee Town Hall Bog	Lee	Poor level fen/bog system
Loon Lake	Freedom	Temperate minor river floodplain system
Loverens Mill Cedar Swamp	Antrim	Coastal conifer peat swamp system
Mast Road Natural Area1	Epping	Temperate peat swamp system
Mast Road Natural Area2	Epping	Temperate peat swamp system
Mast Road Natural Area3	Epping	Poor level fen/bog system
Mastin Brook	Effingham	Medium level fen system
Mollidgewock Brook1	Errol	Montane/near-boreal minerotrophic peat swamp system
Mollidgewock Brook2	Errol	Drainage marsh - shrub swamp system
Mt. Misery Peatland	Barrington	Poor level fen/bog system
Mt. Moosilauke	Benton	Alpine/subalpine bog system
Muchyedo Meander1	Canterbury	Major river silver maple floodplain system
Muchyedo Meander2	Canterbury	Major river silver maple floodplain system
Muchyedo Meander3	Canterbury	Low-gradient silty-sandy riverbank system
Newton-Kingston Cedar Swamp	Newton, Kingston	Coastal conifer peat swamp system
Northwood Meadows State Park	Northwood	Temperate peat swamp system
Odiorne Point State Park1	Rye	Salt marsh system
Odiorne Point State Park2	Rye	Coastal salt pond marsh system
Odiorne Point State Park3	Rye	Maritime rocky shore system

Site	Town	System
Ossipee Lake Beach1	Freedom	Medium level fen system
Ossipee Lake Beach2	Freedom	Sandy pond shore system
Ossipee River	Effingham	Sandy pond shore system
Philbrick-Cricenti Bog	New London	Kettle hole bog system
Powwow River East	Kingston	Coastal conifer peat swamp system
Red Hill Pond	Sandwich	Poor level fen/bog system
Rochester Heath Bog1	Rochester	Poor level fen/bog system
Rochester Heath Bog2	Rochester	Medium level fen system
Route 111 Swamp	Kingston	Temperate peat swamp system
Rye Harbor State Park	Rye	Salt marsh system
Sagamore Creek1	Portsmouth	Salt marsh system
Sagamore Creek2	Portsmouth	Maritime rocky shore system
Sharon Bog	Sharon	Kettle hole bog system
Spruce Hole Bog	Durham	Kettle hole bog system
Squamscott River Estuary	Stratham	Brackish riverbank marsh system
Trask Fen	Alton	Poor level fen/bog system
Tuttle Swamp1	Newmarket	Temperate minerotrophic swamp system
Tuttle Swamp2	Newmarket	Temperate minor river floodplain system
Tuttle Swamp3	Newmarket	Temperate minerotrophic swamp system
Wallis Sands Estuary	Rye	Salt marsh system
West Branch	Freedom	Temperate minor river floodplain system

**Table 3.** The distribution of the 77 surveys by wetland system type. NHB surveys collected data in 21 of the 27 wetland system types occurring in New Hampshire.

System	Number Surveyed
Poor level fen/bog system	11
Coastal conifer peat swamp system	8
Salt marsh system	8
Temperate minor river floodplain system	7
Temperate peat swamp system	6
Brackish riverbank marsh system	5
Kettle hole bog system	4

<b>System</b>	<b>Number Surveyed</b>
Medium level fen system	4
Drainage marsh - shrub swamp system	3
Sandy pond shore system	3
Temperate minerotrophic swamp system	3
Low-gradient silty-sandy riverbank system	2
Major river silver maple floodplain system	2
Maritime rocky shore system	2
Moderate-gradient sandy-cobbly riverbank system	2
Montane/near-boreal minerotrophic peat swamp system	2
Alpine/subalpine bog system	1
Black spruce peat swamp system	1
Coastal salt pond marsh system	1
Sand plain basin marsh system	1
Subtidal system	1
<b>21 of 27 System Types in NH</b>	<b>77 Systems</b>

## **Year 2**

**Task 1. Post Field Data Processing:** Following each field season, NHB identified plant specimens collected in the field that required verification, processed diagnostic photographs, reviewed field forms and completed all required fields on the forms including verification of natural community and system designations, and remapped or newly mapped in ArcMap 10.2.2 exemplary natural community and system boundaries using GIS data layers and geo-referenced data collected in the field (Task 1a, b, c).

**Task 2. Evaluate Condition with EIA:** In the EcoObs database (developed and maintained by NatureServe for storing and analyzing vegetation plot data), NHB created records for the 49 wetland systems with comprehensive floristic data (the remaining 28 systems NHB surveyed lacked comprehensive floristic data and/or were not otherwise applicable for data analysis in EcoObs). For each of the 49 systems, NHB then created separate records in EcoObs for each natural community relevé plot collected in the system (n = 1 to 44 plots/system; total relevé plots collected = 283). Relevé plot data were then entered into EcoObs for each natural community (% cover of each species in each stratum present: supracanopy, canopy, subcanopy, tall shrub, medium shrub, short shrub, herbaceous, and nonvascular). Next, we evaluated the condition of each of the 49 wetland systems by means of the Ecological Integrity Assessment method (Faber-Langendoen et al. 2016; Nichols and Faber-Langendoen 2022), assessing EIA metrics and calculating overall EIA score for each wetland system in EcoObs (Task 2a). Appendix 3 provides comprehensive scorecard reports for the 49 wetland systems, with scores and ratings for overall Ecological Integrity (EO Rank), Primary Rank Factors, Major Ecological Factors, and Metrics.

**Task 3. Calculate FQA Index:** See Task 2 above for a description of the completion of Task 3a (create wetland system observations in EcoObs and enter all vegetation plot data). In addition to evaluating the condition of each of the 49 wetland systems with EIA, NHB also evaluated their condition with FQA, using the NH Coefficient of Conservatism (CoC) list (Bried et al. 2012; NEIWPC 2013) in the calculations. For each system (site), Cover Weighted Mean C (CWMeanC) was calculated for each plot (each plot represent a natural community) within the system based on percent cover values of each species in the plot. Plot CWMeanC scores were then rolled up into a single CWMeanC for the system based on the percent cover value each plot represented within the system. Cover Weighted Mean C scores for 49 of the 77 surveyed wetland systems are also provided in the comprehensive scorecard reports in Appendix 3.

**Task 4. Compare Each Wetland's EIA and FQA Scores:** NHB's application of the Ecological Integrity Assessment method (EIA) uses three Landscape Context metrics, two Size metrics, and seven Condition metrics (see scorecards in Appendix 3). Of the Condition metrics, those associated with Vegetation Condition (Invasive Nonnative Plant Species Cover, Native Plant Species Composition, and Vegetation Structure metrics) are most closely comparable to FQA. Because most of the other EIA metrics are conceptually less related to CWMeanC, the correlation between FQA and the overall EIA scores would be expected to be lower.

For each wetland system with comprehensive floristic data (49 of the 77 wetland systems surveyed), NHB performed simple linear regressions to evaluate how strong the relationship is between Vegetation Condition metric scores and Ecological Integrity scores (roll-up of Landscape Context and Condition metrics) compared to FQA CWMeanC scores. The R-Squared value ( $R^2$  or Coefficient of Determination) in the regression model will determine the proportion of variance in the dependent variable (EIA related scores) that can be explained by the independent variable (FQA CWMeanC scores).

The strongest  $R^2$  values ( $R^2 = 0.1392$ , Figure 1;  $R^2 = 0.1375$ , Figure 2), although without much explanatory significance, were associated with the average score of EIA Vegetation Condition metrics compared to FQA CWMeanC scores for 37 wetland systems (excludes salt marsh system, brackish riverbank marsh system, and coastal salt pond marsh system sites [ $n = 12$ ]). It stands to reason that the use of FQA to evaluate condition in estuarine systems is less effective compared to most/all other system types based on 1) the typically low number of vascular plant species in these marshes and 2) the inability of FQA to address the increased cover of the native smooth cordgrass (*Spartina alterniflora*) across the high salt marsh platform in response to anthropogenic related degradation (W. Nichols, pers. obs.), including historical farming infrastructure, mosquito ditching, and climate-change related sea level rise.

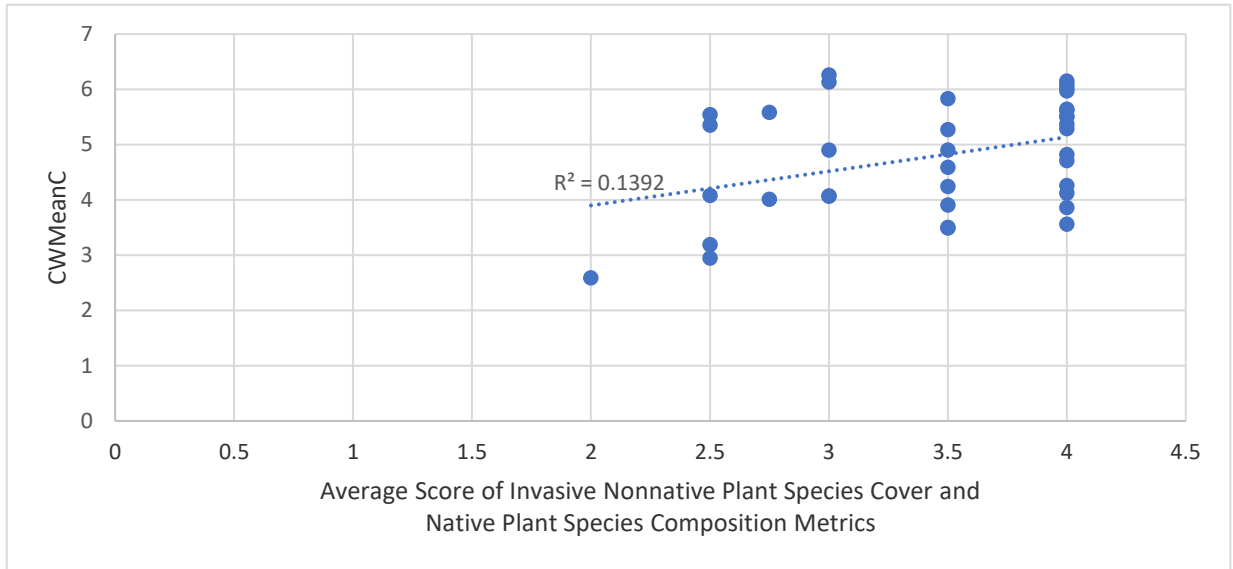


Figure 1. Average score of Invasive Nonnative Plant Species Cover and Native Plant Species Composition metrics compared to Cover Weighted Mean C (CWMeanC) scores for 37 wetland systems (excludes salt marsh, brackish riverbank marsh, and coastal salt pond marsh system sites [n = 12]).

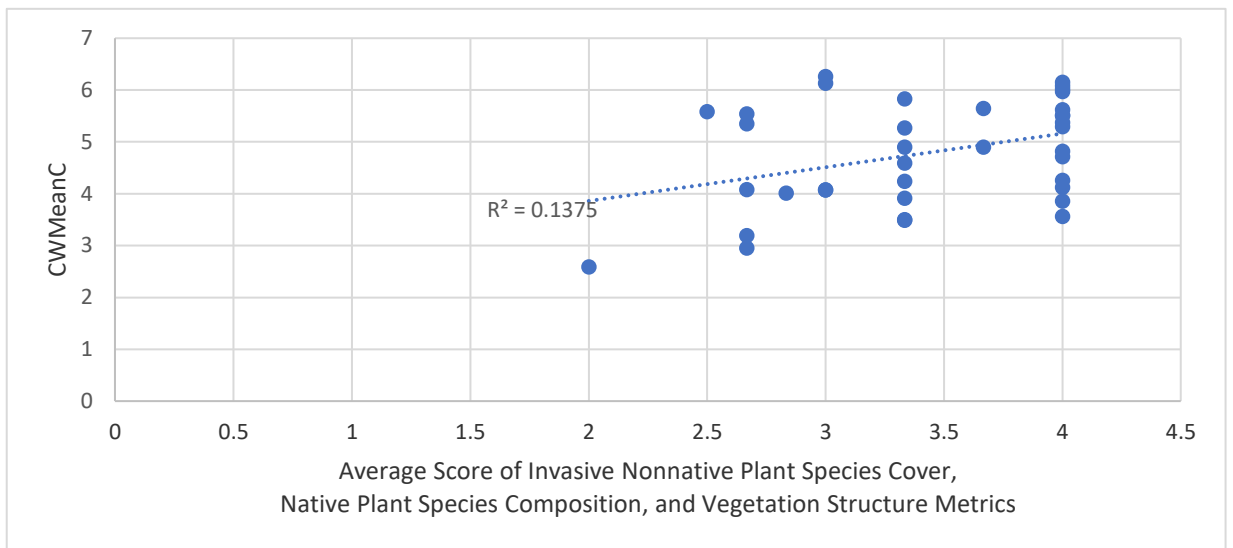


Figure 2. Average score of Invasive Nonnative Plant Species Cover, Native Plant Species Composition, and Vegetation Structure metrics compared to Cover Weighted Mean C (CWMeanC) scores for 37 wetland systems (excludes salt marsh, brackish riverbank marsh, and coastal salt pond marsh system sites [n = 12]).

The next highest  $R^2$  value ( $R^2 = 0.0869$ ) also excludes the 12 estuarine system sites: Ecological Integrity scores compared to Cover Weighted Mean C scores for 37 wetland systems.

Less significant were  $R^2$  values that included estuarine system sites (total sites = 49):

- 0.0322: Ecological Integrity scores (Primary Rank Factors: Landscape Context and Condition) compared to Cover Weighted Mean C scores.

- 0.0021: Average scores of Invasive Nonnative Plant Species Cover, Native Plant Species Composition, and Vegetation Structure metrics compared to Cover Weighted Mean C scores.
- 0.00008: Average scores of Invasive Nonnative Plant Species Cover and Native Plant Species Composition metrics compared to Cover Weighted Mean C scores.

The lack of a stronger correlation between different EIA “elements” and Cover Weighted Mean C may be in part the result of the limited number of wetlands that were surveyed during this project with degraded conditions (Ecological Integrity = C or D) across the range of wetland system types. For example, the relationship between Vegetation Condition metrics and Cover Weighted Mean C would be stronger at the lower end (more degraded) of the range. Within a wetland system, a high cover of invasive nonnative plant species and impaired native plant species composition (vegetation condition degradation that often significantly impacts vegetation structure as well) would on average more closely track with Cover Weighted Mean C compared to excellent to good vegetation conditions (A to B).

The relatively low R<sup>2</sup> values suggest that adding rapid FQA (to be developed by NHB under the new EPA WPDG) to EIA as a new Vegetation Condition metric will not be redundant with existing metrics and may add a meaningful condition measure not adequately addressed in EIA.

**Task 5. Refine FQA Reference Thresholds for Under-sampled Wetland System Types:** Vegetation plot data collected from high quality wetland systems (A to B+) were used to refine minimally-impacted CWMeanC thresholds for 10 system types. These 10 types (bold/green rows in Table 4) had data collected from one or more minimally-impacted wetland sites (21 sites; 80 plots).

**Table 4.** Minimally/least-impacted Cover Weighted Mean C (CWMeanC) thresholds for each wetland system type in NH (n = 27; excluding the sparsely vegetated intertidal system and subtidal system) sorted by “2024 CWMeanC.” Vegetation plot data collected from high quality wetland systems (A to B+; n = 10 system types [21 sites; 80 plots]) were used to refine minimally-impacted CWMeanC thresholds (bold/green rows). Surveyors should use the minimally/least-impacted CWMeanC thresholds in the “2024 CWMeanC” column to better interpret CWMeanC values calculated at their study sites. Note: Least-impacted system types (n = 5) are followed by ranks used in developing their thresholds from previous projects (EPA Grant CD-00A00014 Tasks 2 & 3; CD-00A00262 Tasks 3a & 3b) or from data collected during this project, to assist interpreting data collected in those system types.

Minimally/Least-Impacted Cover Weighted Mean C (CWMeanC) Thresholds by NH System Type							
System	Abbrev	Previous Sites*	New Sites*	Previous Plots	New Plots	Previous CWMeanC	2024 CWMeanC
Moderate-gradient sandy-cobbly riverbank system	MGSCR	7		39		3.21	3.21
<b>Drainage marsh - shrub swamp system</b>	<b>DMSS</b>	<b>5</b>	<b>1</b>	<b>18</b>	<b>3</b>	<b>3.59</b>	<b>3.58</b>
High-gradient rocky riverbank system	HGRR	7		24		3.61	3.61
Low-gradient silty-sandy riverbank system	LGSSR	4		21		3.66	3.66
<b>Temperate minor river floodplain system</b>	<b>TMRF</b>	<b>4</b>	<b>2</b>	<b>22</b>	<b>8</b>	<b>3.99</b>	<b>3.83</b>
Calcareous sloping fen system	CSF	1		1		3.97	3.97
Sand plain basin marsh system: lowland variant (B-)	SPBMLV	2		9		4.30	4.30
Coastal salt pond marsh system (B)	CSPM	1		3		4.34	4.34
<b>Temperate peat swamp system</b>	<b>TPS</b>	<b>8</b>	<b>1</b>	<b>29</b>	<b>2</b>	<b>4.40</b>	<b>4.37</b>
Sandy pond shore system: montane variant	SPSMV	1		1		4.43	4.43
Temperate minerotrophic swamp system	TMS	1		2		4.49	4.49
Forest seep/seepage forest system	FS/SF	5		11		4.58	4.58

Minimally/Least-Impacted Cover Weighted Mean C (CWMeanC) Thresholds by NH System Type							
System	Abbrev	Previous Sites*	New Sites*	Previous Plots	New Plots	Previous CWMeanC	2024 CWMeanC
<b>Black spruce peat swamp system</b>	<b>BSPS</b>	<b>3</b>	<b>1</b>	<b>8</b>	<b>3</b>	<b>4.71</b>	<b>4.59</b>
Montane/near-boreal floodplain system	M/NBF	4		13		4.59	4.59
Sand plain basin marsh system: montane variant	SPBMMV	4		11		4.76	4.76
Major river silver maple floodplain system	MRSMF	1		5		4.77	4.77
<b>Montane/near-boreal minerotrophic peat swamp sys.</b>	<b>M/NBMPS</b>	<b>8</b>	<b>1</b>	<b>10</b>	<b>1</b>	<b>4.71</b>	<b>4.81</b>
<b>Medium level fen system</b>	<b>MLF</b>	<b>13</b>	<b>2</b>	<b>60</b>	<b>10</b>	<b>5.01</b>	<b>4.93</b>
<b>Coastal conifer peat swamp system</b>	<b>CCPS</b>	<b>5</b>	<b>7</b>	<b>15</b>	<b>15</b>	<b>5.17</b>	<b>5.28</b>
Sandy pond shore system: lowland variant (B-)	SPSLV	1		6		5.51	5.51
Montane sloping fen system	MSF	4		14		5.64	5.64
<b>Kettle hole bog system</b>	<b>KHB</b>	<b>8</b>	<b>3</b>	<b>34</b>	<b>16</b>	<b>6.08</b>	<b>5.84</b>
Brackish riverbank marsh system (C)	BRM	4		17		5.95	5.95
<b>Poor level fen/bog system</b>	<b>PLF/B</b>	<b>8</b>	<b>2</b>	<b>29</b>	<b>20</b>	<b>6.17</b>	<b>6.08</b>
Patterned fen system	PF	3		8		6.37	6.37
Salt marsh system (C)	SM	3		14		6.51	6.51
<b>Alpine/subalpine bog system</b>	<b>A/SB</b>	<b>14</b>	<b>1</b>	<b>34</b>	<b>2</b>	<b>6.95</b>	<b>6.81</b>

\*The primary factors contributing to lower number of sites (and plots) for some of the system types are type rarity and/or limited number of minimally/least-impacted examples.

**Task 6. Update NHB Database:** Updates made in our Biotics database to the 77 wetland systems and their associated natural communities (both are broadly termed “ecosystems”) that NHB surveyed during this project include the following:

- Remapped ecosystem boundaries.
- Reclassified records that were misclassified.
- Down-ranked records considered non-exemplary.
- Added newly documented exemplary ecosystems.
- Improved descriptions of natural communities and dominant vegetation in the system, heterogeneity, successional stage/dynamics, unique aspects of the system, and rare or otherwise noteworthy plant and animal species.
- Improved description of the area where the system was located (i.e., the physical setting/context surrounding the wetland), including adjacent systems/natural communities and information on surrounding land use.
- Several other data fields.

A summary of other updates made in the Biotics database include the following:

- 37 State Endangered or Threatened plant species were documented.
- 21 State Watch or Indeterminate plant species were documented.
- 146 invasive plant populations were documented.
- 2 new natural communities were documented, described, and added to our database and natural community classification:
  - **Widgeon-grass bed** (S2S3; Imperiled to Vulnerable). See Appendix 1 for description.
  - **Button sedge fen** (S1; Critically Imperiled). See Appendix 2 for manuscript describing this new natural community type that was accepted for publication in the peer-reviewed botanical journal [Rhodora](#).
- After literature reviews, other research, and surveys in several salt marsh systems during the



project, NHB deleted two salt panne variants from our database and natural community classification and modified the names and descriptions of the remaining three salt pannes. NHB also elevated the classification rank of the remaining three salt pannes from variants to natural communities and reassessed their conservation status ranks (S-ranks).

- **Low salt marsh panne variant:** deleted from our database and natural community classification.
- **Salt marsh mosquito panne variant:** deleted from our database and natural community classification.
- **Forb panne variant:** name changed to “arrow-grass forb panne” with modified description and classification rank elevated to a natural community. New conservation status rank for this community is S2.
- **Smooth cordgrass (short form) panne variant:** name changed to “smooth cordgrass - glasswort panne” with modified description and classification rank elevated to a natural community. New conservation status rank for this community is S3.
- **Widgeon-grass - marsh minnow pool variant:** name changed to “widgeon-grass - marsh minnow pool” with modified description and classification rank elevated to a natural community. New conservation status rank for this community is S3.

**Task 7. Report on All Findings:** Completed in this report.

## DISCUSSION

This project has allowed NHB to make significant database updates to the records of all 77 wetland systems surveyed during this project, including increased accuracy in their mapped extent, classification, and status (improvements critical to better inform conservation planning and environmental reviews). NHB also documented new exemplary natural communities/systems and rare plant populations and down-ranked the status of wetlands that no longer meet current exemplary standards to avoid both unnecessary delays to permitted projects and decisions being made with inaccurate information.

Importantly, this project allowed us to survey and describe two new natural community types for the state of New Hampshire: button sedge fen (S1; Critically Imperiled) and widgeon-grass bed (S2S3; Imperiled to Vulnerable). Until natural communities are discovered, described, and their conservation status evaluated (S1 Critically Imperiled to S5 Secure), they are much less likely to be on the conservation “radar screen” and could be inadvertently impacted without better understanding their biodiversity value.

Table 4 provides Cover Weighted Mean C (CWMeanC) thresholds for each wetland system type in New Hampshire (n = 27; excluding sparsely vegetated intertidal system and subtidal system) based on minimally or least-impacted examples. The thresholds for 10 system types were improved with data collected during this project at minimally-impacted examples (21 wetland systems; 80 plots). These refined thresholds will allow surveyors to better interpret a CWMeanC value calculated from plant species composition and cover data collected from a wetland system site. The improved ability to interpret FQA results will more effectively inform conservation, enhance our ability to monitor mitigation progress, and allow for the development of specific performance criteria.

The minimally-impacted system types (n = 22) are defined by overall ranks between A and B+ and are considered benchmark examples. In the absence of A to B+ sites, least-impacted system thresholds (n =

5) were developed using data from sites with the next highest ranks below B+. The following are the least-impacted system types and the ranks used in their calculation: brackish riverbank marsh system (C); coastal salt pond marsh system (B); salt marsh system (C); sand plain basin marsh system: lowland variant (B-); sandy pond shore system: lowland variant (B-). The ranks used in developing thresholds for the five least-impacted system types must be kept in mind when interpreting CWMeanC values (i.e., the ranks used to develop the thresholds for these five system types are not from minimally-impacted, benchmark examples).

The sand plain basin marsh system and sandy pond shore system were each divided into montane and lowland variants due to some differences in species composition and degree of anthropogenic impact in the best remaining examples. The montane variant examples were minimally-impacted (A to B+); lowland variant examples were least-impacted (both B-).

NHB has more confidence in thresholds for systems with more sites and plot data, allowing for better representation of floristic diversity associated with these systems. These include the following system types with at least five sites and 15 plots (site and plot numbers follow system name in parentheses; also see Table 4):

- Alpine/subalpine bog system (15/36)
- Coastal conifer peat swamp system (12/30)
- Drainage marsh - shrub swamp system (6/21)
- High-gradient rocky riverbank system (7/24)
- Kettle hole bog system (11/50)
- Medium level fen system (15/70)
- Moderate-gradient sandy-cobbly riverbank system (7/39)
- Poor level fen/bog system (10/49)
- Temperate minor river floodplain system (6/30)
- Temperate peat swamp system (9/31)

NHB has less confidence in thresholds for systems with small sample sizes (with the likelihood that high quality examples remain in the state) including:

- Black spruce peat swamp system (4/11)
- Sandy pond shore system: montane variant (1/1)
- Temperate minerotrophic swamp system (1/2)

NHB should be contacted if new high-quality examples of these under-represented system types are found. Vegetation data can then be collected and used to improve threshold resolution for those system types.

The degree of confidence in thresholds for other system types with small sample sizes varies based on the following circumstances:

- Inability to increase the small number of plots used in threshold development because it is very likely that no other minimally/least-impacted examples occur in the state. Therefore, NHB has less confidence in the threshold and that status is unlikely to change. System types that fall into this category include:
  - Calcareous sloping fen system (1/1)
  - Sandy pond shore system: lowland variant (1/6)
- Plot data has been collected in all known examples and there is a high certainty no other examples occur in the state. Therefore, confidence is high in existing threshold given that plot

data from all examples in the state are reflected in the threshold. System types that fall into this category include:

- Coastal salt pond marsh system (1/3)
- Patterned fen system (3/8)

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## APPENDIX 1.

Description of the widgeon-grass bed, a newly described natural community type for New Hampshire, surveyed and documented as a result of this project. This rare natural community type (S2S3; Imperiled to Vulnerable) has been formally added to NHB's natural community classification.

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- Widgeon-grass bed (S2S3)

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**GENERAL DESCRIPTION:** This brackish subtidal community is dominated by *Ruppia maritima* (widgeon-grass) and can occur in small patches within brackish tidal creeks to large beds in estuarine bays. Substrates are muck, sand, and/or cobble. Widgeon-grass beds typically occur in habitats that are continuously flooded by brackish water, though water levels and salinity can fluctuate with daily tides and certain areas may rarely be exposed at extremely low tides. Water depth is generally less than 2 m at low tide. As salinity decreases, widgeon-grass becomes less prominent, and the community grades into fresh/brackish subtidal associations. A similar community, the widgeon-grass - marsh minnow pool, occurs in permanently or semi-permanently flooded pannes, pools, and ditches within the high salt marsh.

**CHARACTERISTIC VEGETATION:** Widgeon-grass is strongly dominant in this community and, with a wide range of salinity tolerance, can overlap with other species, although generally not in the same locations. Associates can include *Zannichellia palustris* (horned-pondweed)\*, *Stuckenia pectinata* (Sago false pondweed)\*, and *Potamogeton perfoliatus* (clasping-leaved pondweed) in fresh/brackish to brackish water. As water gets deeper and more saline, it may be associated with *Zostera marina* (eelgrass) and grade into the eelgrass bed community. There can also be a diverse array of macroalgae.

**CLASSIFICATION CONFIDENCE:** 2

**DISTRIBUTION:** Great Bay estuarine complex and tidal creeks in the coastal zone. Good examples occur in certain shallow subtidal areas of Great Bay.

**SOURCES:** NHB field surveys (2022, 2023); NatureServe Explorer (2024), North Atlantic coast widgeongrass bed.

NEW ENGLAND NOTE

Button sedge fen: a newly described natural community  
in three peatlands in New Hampshire

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New Hampshire's 46 wetland and upland ecological systems are each defined by particular associations of natural communities that repeatedly co-occur in the landscape and are linked by a common set of driving forces, such as landforms, flooding, soils, and nutrient regime (Sperduto 2011a). The poor level fen/bog is one of 27 wetland system types known from New Hampshire and is one of three types of open, oligotrophic peatland systems in the state. This system occurs in poorly drained depressions on extensive sandplains and closed or stagnant headwater basins with limited drainage. Poorly decomposed peat, well-developed hummock–hollow topography, and a pH generally less than or equal to 4.1 are typical. Previously, five natural communities were indicative of poor level fen/bog systems: 1) highbush blueberry–mountain holly wooded fen, 2) leatherleaf–black spruce bog, 3) leatherleaf–sheep laurel shrub bog, 4) montane level fen/bog, and 5) *Sphagnum rubellum*–small cranberry moss carpet (Sperduto 2011a; Sperduto and Nichols 2012). Here we newly describe a sixth type of natural community diagnostic of the poor level fen/bog system: the button sedge fen. Vascular plant taxonomy follows the Tracheophyte Checklist of New England (Haines 2019). *Sphagnum* L. nomenclature follows Anderson (1990).

The button sedge fen was originally described as a provisional type by the first author (Sperduto 2011b). New Hampshire Natural Heritage Bureau conducted additional surveys at the state's three known locations (i.e., Concord, Epping, and Rochester) and subsequently adopted the button sedge fen as a new natural community type with an assigned state conservation status rank of S1/Critically Imperiled (New Hampshire Natural Heritage Bureau 2023). Although the button sedge fen has some parallels to the leatherleaf–sheep laurel shrub bog and other fens with sedges (Sperduto and Nichols 2012), the rarity of the type, dominant and colonial aspect of *Carex bullata* Schkuhr ex Willd. (button sedge), and similar floristic and environmental patterns in all eight basin sites at the three known locations, including other coastal plain floristic affinities, collectively support this fen being classified as its own community type. In addition, these wetlands are underlain by outwash material, and most have a history of fire either in situ, on adjacent pine plains,

or both. All occur in extensive sandplain systems, with groundwater near the surface in slight depressional areas. These depressions effectively receive little to no runoff from the surrounding landscape; therefore, water table fluctuations are driven largely by the balance of precipitation and evapotranspiration. Soils vary from mostly shallow histic epipedons to occasionally deeper peat over sand. Soil water pH ranges from 3.07 to 3.87 with an average of 3.53 ( $n = 9$ ).

Three expressions of the new fen type were observed. In lower, wetter areas, *Carex bullata* typically exceeded *Chamaedaphne calyculata* (L.) Moench in abundance (Figure 1). *Sphagnum fallax* (H. Klinggr.) H. Klinggr. and/or *S. cuspidatum* Ehrh. ex Hoffm. formed a dense mat beneath the vascular plants. These areas had 50–70 cm of peat over sand and more than 70 cm peat accumulation in deeper floating mat settings in kettle-like depressions. The second expression occurred where *Chamaedaphne calyculata* dominated or exceeded *Carex bullata* in abundance (Figure 2), typically in slightly more elevated peat mats around the sedge-dominated areas and closer to transitions to tall shrub and forested basin swamp communities. There, *S. fallax* was the primary peat moss. In both expressions, there was a relatively low diversity of vascular plants present. Scattered associates included *Carex atlantica* L.H. Bailey var. *atlantica*; *C. echinata* Murray; *Eriophorum virginicum* L.; *Hypericum virginicum* L.; *Lysimachia terrestris* Britton, Sterns & Poggenb.; *Thelypteris palustris* Schott; and medium-to-tall shrubs *Ilex mucronata* (L.) M. Powell, Savol. & S. Andrews; *Kalmia angustifolia* L.; *Lyonia ligustrina* (L.) DC.; *Rhododendron canadense* (L.) Torr.; and *Vaccinium corymbosum* L. These two expressions of the button sedge fen occurred at the sites in Epping and Rochester.

A third expression (Concord; Figure 3) was also dominated by *Carex bullata*, but without *Chamaedaphne calyculata*, was more floristically diverse, and had moderately shallow (mostly 25–50 cm) peat and muck over sand. *Carex comosa* Boott, *Dulichium arundinaceum* (L.) Britton, *Juncus canadensis* J. Gay ex Laharpe, *Limniris versicolor* (L.) Rodion., *Scirpus cyperinus* (L.) Kunth, *Spiraea alba* Du Roi var. *latifolia* (Aiton) H.E. Ahles, *S. tomentosa* L., and *Symphotrichum novi-belgii* (L.) G.L. Nesom were common, in addition to most of the associates listed previously for the other two expressions.

Other communities that were documented in or around one or more of the three peatland systems with button sedge fens included the large cranberry–short sedge moss lawn, highbush blueberry–mountain holly wooded fen, and red maple–*Sphagnum* basin swamp, all of which contained low to moderate amounts of *Carex bullata*. The large cranberry–short sedge moss lawn occurred on thin floating mats in *Sphagnum*-dominated pools and hollows. *Sphagnum cuspidatum* and other peat mosses dominated beneath a sparse cover of *C. bullata*, *C. canescens* L., *Drosera intermedia* Hayne, *Eriophorum virginicum*, *Juncus pelocarpus* E. Mey., *Nuphar variegata* Engelm. ex Durand, *Rhynchospora alba* (L.) Vahl, *Sarracenia purpurea* L., *Vaccinium oxycoccos* L., and dwarf woody stems of *Chamaedaphne calyculata* and *Kalmia angustifolia*.

The highbush blueberry–mountain holly wooded fen typically occurs on slightly higher ground that surrounds the more open fen communities. The wooded fen was characterized by shrubs and sapling- to pole-sized trees growing on hummocks, including *Acer rubrum* L., *Aronia melanocarpa* (Michx.) Elliott, *Betula populifolia* Marshall,





**Figure 1.** Expression of button sedge fen where *Carex bullata* exceeds *Chamaedaphne calyculata* in cover in lower, wetter areas (Epping, New Hampshire).



**Figure 2.** Expression of button sedge fen where *Chamaedaphne calyculata* codominated or exceeded *Carex bullata* in abundance, typically in slightly more elevated peat mats around the sedge-dominated areas (Epping, New Hampshire).



**Figure 3.** Button sedge fen, Concord, New Hampshire. This expression of the fen is dominated by *Carex bullata* and lacks *Chamaedaphne calyculata*, a heath shrub commonly found in the other two expressions occurring in Epping and Rochester, New Hampshire.

*Chamaedaphne calyculata*, *Gaylussacia baccata* (Wangenh.) K. Koch, *G. frondosa* (L.) Torr. & A. Gray, *Ilex laevigata* (Pursh) A. Gray, *I. mucronata*, *I. verticillata* (L.) A. Gray, *Kalmia angustifolia*, *Lyonia ligustrina*, *Nyssa sylvatica* Marshall, *Pinus rigida* Mill., *P. strobus* L., *Rhododendron canadense*, and *Vaccinium corymbosum*. Shaded hollows were characterized by a low cover of *Carex bullata*, *C. folliculata* L., *C. trisperma* Dewey, *Osmundastrum cinnamomeum* (L.) C. Presl, *Thelypteris palustris*, *Hypericum virginicum*, and *Woodwardia virginica* (L.) Sm. *Sphagnum* spp. carpeted the hollow bottoms.

Red maple–*Sphagnum* basin swamps surrounded most of the poor level fen/bog systems supporting button sedge fens. The basin swamps were similar to the highbush blueberry–mountain holly wooded fens but with more than 25% tree cover, including *Acer rubrum*, *Pinus strobus*, and *Nyssa sylvatica*, and with a lower cover of tall shrubs (typically less than 15%).

A final aspect of similarity among the sites were the species with coastal plain affinities occurring in the larger peatland systems and often within the button sedge communities. These included *Carex atlantica* var. *atlantica*, *C. bullata*, *Gaylussacia bigeloviana* (Fernald) Sorrie & Weakley, *Ilex laevigata*, *Lyonia ligustrina*, *Scirpus longii* Fernald, and *Woodwardia virginica*. Many of these species are also known from other sandplain pondshore and basin wetlands in New Hampshire (Sperduto 2000).

An unusual characteristic of this fen is its dominance by a rare plant species, the state endangered *Carex bullata* (Figure 4). Besides populations in the three fens, *C. bullata* is



**Figure 4.** *Carex bullata* from the button sedge fen in Concord, New Hampshire.

known elsewhere in the state from just one other site in Pelham (New Hampshire Natural Heritage Bureau 2023). Across its range, *C. bullata* is a pioneer species that occurs in the acidic soil of fens, bogs, open swamps, swales, and meadows, primarily on the Coastal Plain from Mississippi and Arkansas to Florida and north into southern New Hampshire, Maine, and Nova Scotia (NatureServe Explorer 2023). *Carex bullata* is colonial, spreading by rhizomes and forming dense patches. Superficially, it looks like *C. lurida* Wahlenb., *C. tuckermanii* Dewey, and *C. utriculata* Boott, but is distinguished from the first two by rhizomatous versus clumped growth form, and from all three species by scattered scabrules on perigynia beaks, among other characters. *Carex bullata* responds to light to moderate disturbances that maintain open conditions, such as periodic fire, multi-year

drawdown and inundation cycles, and/or anthropogenic disturbances (e.g., disturbances associated with roadside swales). *Carex bullata* co-occurs with one of only two known locations of the globally rare *Scirpus longii* in New Hampshire, and, like *S. longii* (Rawinski 2001), *C. bullata* may be a pyrophyte, a species capable of withstanding or even gaining a competitive advantage from periodic fire.

The button sedge fen is most related to NatureServe's Coastal Plain sedge fen, previously known from the northeastern United States in Connecticut, New Jersey, New York, and Rhode Island (NatureServe 2023). The Coastal Plain sedge fen, also overlying sand and gravel deposits, is conceptually broader than the button sedge fen. The patchy to codominant shrub layer is characterized by *Chamaedaphne calyculata* and/or *Myrica gale* L. Other shrubs include *Gaylussacia bigeloviana*, *Spiraea alba* var. *latifolia*, *S. tomentosa*, and sometimes *Alnus incana* (L.) Moench subsp. *rugosa* (Du Roi) R. T. Clausen, or *Decodon verticillatus* (L.) Elliott. The herbaceous layer is well developed and dominated by sedges, including *Carex bullata*, *C. exilis* Dewey, *C. lasiocarpa* Ehrh. subsp. *americana* (Fernald) D. Löve & J.-P. Bernard, *C. striata* Michx., *C. utriculata*, *Cladium mariscoides* Torr., *Eriophorum virginicum*, *Rhynchospora alba*, *R. capitellata* (Michx.) Vahl, *R. fusca* (L.) W. T. Aiton, and occasionally *Scirpus longii*. *Sphagnum* mosses are abundant.

#### ACKNOWLEDGMENTS

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# Appendix 3: EcoObs Scorecards for 49 Wetland Systems

State/Prov: NH Site: Newton - Kingston Cedar Swamp

ObsArea Code: NH719

ObsArea Name: Newton - Kingston Cedar Swamp: Coastal conifer peat sw ObsDate: 2022/08/18

Project: NH-EPA2022 WPDG County:

Observers:

Macrogroup:

Classifications:

General Type:

HGM:

Cowardin:

## Floristic Quality Index (FQI) Scor

N: 19

MeanC: 4.26

CWMeanC: 5.17

FQI: 18.58

Protocol: New Hampshire Wetlands 2018

	Field Wt	Field Rating	Field Pts	Calc Pts	Calc Rating
<b>ECOLOGICAL INTEGRITY</b>				3.14	B+
<b>ECOLOGICAL INTEGRITY + SIZE (EO Rank)</b>				<b>3.59</b>	<b>A-</b>
<b>Rank Factor: LANDSCAPE CONTEXT</b>	0.25			2.53	B-
<b>MEF: LANDSCAPE</b>	0.66			2.50	C+
LAN2. Land Use Index	1	B-	2.5		
<b>MEF: EDGE</b>	0.33			2.60	B-
BUF1. Perimeter with Natural Buffer	n/a	B	3		
BUF2. Width of Natural Buffer	n/a	C+	2.25		
<b>Rank Factor: SIZE</b>	0.15				
<b>MEF: SIZE</b>	1				
SIZ1. Comparative Size	n/a	B+			
SIZ2. Change in Size	n/a				
<b>Rank Factor: CONDITION</b>	0.6			3.40	B+
<b>MEF: VEGETATION</b>	0.9			3.33	B+
VEG2. Invasive Nonnative Plant Species Cover	1	A	4		
VEG3. Native Plant Species Composition	1	B	3		
VEG4. Vegetation Structure	1	B	3		
<b>MEF: HYDROLOGY</b>	n/a			3.33	B+
HYD1. Water Source	1	B	3		
HYD2. Hydroperiod	1	A	4		
HYD3. Hydrologic Connectivity	1	B	3		
<b>MEF: SOIL</b>	0.1			4.00	A+
SOI1. Soil Condition	1	A	4		

State/Prov: NH Site: Northwood Meadows State Park

ObsArea Code: NH721

ObsArea Name: Northwood Meadows State Park: Temperate peat swamp ObsDate: 2022/09/07

Project: NH-EPA2022 WPDG County:

Observers:

Macrogroup:

Classifications:

General Type:

HGM:

Cowardin:

Floristic Quality Index (FQI) Scor

N: 16

MeanC: 4.35

CWMeanC: 3.79

FQI: 17.34

Protocol: New Hampshire Wetlands 2018

	Wt	Field Rating	Field Pts	Calc Pts	Calc Rating
<b>ECOLOGICAL INTEGRITY</b>				3.38	B+
<b>ECOLOGICAL INTEGRITY + SIZE (EO Rank)</b>				<b>3.04</b>	<b>B</b>
<b>Rank Factor: LANDSCAPE CONTEXT</b>	0.25			3.33	B+
<b>MEF: LANDSCAPE</b>	0.66			3.00	B-
LAN2. Land Use Index	1	B	3		
<b>MEF: EDGE</b>	0.33			4.00	A+
BUF1. Perimeter with Natural Buffer	n/a	A	4		
BUF2. Width of Natural Buffer	n/a	A	4		
<b>Rank Factor: SIZE</b>	0.15				
<b>MEF: SIZE</b>	1				
SIZ1. Comparative Size	n/a	C			
SIZ2. Change in Size	n/a				
<b>Rank Factor: CONDITION</b>	0.6			3.40	B+
<b>MEF: VEGETATION</b>	0.9			3.33	B+
VEG2. Invasive Nonnative Plant Species Cover	1	A	4		
VEG3. Native Plant Species Composition	1	B	3		
VEG4. Vegetation Structure	1	B	3		
<b>MEF: HYDROLOGY</b>	n/a			3.67	A-
HYD1. Water Source	1	B	3		
HYD2. Hydroperiod	1	A	4		
HYD3. Hydrologic Connectivity	1	A	4		
<b>MEF: SOIL</b>	0.1			4.00	A+
SOI1. Soil Condition	1	A	4		

State/Prov: NH Site: Wallis Sands Estuary  
 ObsArea Name: Wallis Sands Estuary: Salt marsh system  
 Project: NH-EPA2022 WPDG County:  
 Observers:

ObsArea Code: NH724  
 ObsDate: 2022/08/10

Macrogroup:  
 Classifications:  
 General Type:  
 HGM:  
 Cowardin:

**Floristic Quality Index (FQI) Scor**

N: 5.91 MeanC: 5.42 CWMeanC: 6.17 FQI: 13.49

Protocol: New Hampshire Wetlands 2018

	Wt	Field Rating	Field Pts	Calc Pts	Calc Rating
<b>ECOLOGICAL INTEGRITY</b>				2.00	C-
<b>ECOLOGICAL INTEGRITY + SIZE (EO Rank)</b>				<b>1.55</b>	<b>D+</b>
<b>Rank Factor: LANDSCAPE CONTEXT</b>	0.25			2.00	C+
<b>MEF: LANDSCAPE</b>	0.66			2.00	C-
LAN2. Land Use Index	1	C	2		
<b>MEF: EDGE</b>	0.33			2.00	C-
BUF1. Perimeter with Natural Buffer	n/a	C	2		
BUF2. Width of Natural Buffer	n/a	C	2		
<b>Rank Factor: SIZE</b>	0.15				
<b>MEF: SIZE</b>	1				
SIZ1. Comparative Size	n/a	C-			
SIZ2. Change in Size	n/a				
<b>Rank Factor: CONDITION</b>	0.6			2.00	C-
<b>MEF: VEGETATION</b>	0.9			2.00	C-
VEG2. Invasive Nonnative Plant Species Cover	1	C	2		
VEG3. Native Plant Species Composition	1	C	2		
VEG4. Vegetation Structure	1	C	2		
<b>MEF: HYDROLOGY</b>	n/a			1.67	C-
HYD1. Water Source	1	C	2		
HYD2. Hydroperiod	1	D	1		
HYD3. Hydrologic Connectivity	1	C	2		
<b>MEF: SOIL</b>	0.1			2.00	C-
SOI1. Soil Condition	1	C	2		

State/Prov: NH Site: Garvin Brook

ObsArea Code: NH733

ObsArea Name: Garvin Brook: Brackish riverbank marsh system

ObsDate: 2022/08/01

Project: NH-EPA2022 WPDG County:

Observers:

Macrogroup:

Classifications:

General Type:

HGM:

Cowardin:

Floristic Quality Index (FQI) Scor

N: 3.62

MeanC: 6.43

CWMeanC: 6.92

FQI: 12.1

Protocol: New Hampshire Wetlands 2018

	Wt	Field Rating	Field Pts	Calc Pts	Calc Rating
<b>ECOLOGICAL INTEGRITY</b>				2.57	B-
<b>ECOLOGICAL INTEGRITY + SIZE (EO Rank)</b>				<b>1.90</b>	<b>C</b>
<b>Rank Factor: LANDSCAPE CONTEXT</b>	0.25			2.50	B-
<b>MEF: LANDSCAPE</b>	0.66			2.25	C+
LAN2. Land Use Index	1	C+	2.25		
<b>MEF: EDGE</b>	0.33			3.00	B-
BUF1. Perimeter with Natural Buffer	n/a	B	3		
BUF2. Width of Natural Buffer	n/a	B	3		
<b>Rank Factor: SIZE</b>	0.15				
<b>MEF: SIZE</b>	1				
SIZ1. Comparative Size	n/a	D			
SIZ2. Change in Size	n/a				
<b>Rank Factor: CONDITION</b>	0.6			2.60	B-
<b>MEF: VEGETATION</b>	0.9			2.67	B-
VEG2. Invasive Nonnative Plant Species Cover	1	B	3		
VEG3. Native Plant Species Composition	1	B	3		
VEG4. Vegetation Structure	1	C	2		
<b>MEF: HYDROLOGY</b>	n/a			2.67	B-
HYD1. Water Source	1	B	3		
HYD2. Hydroperiod	1	C	2		
HYD3. Hydrologic Connectivity	1	B	3		
<b>MEF: SOIL</b>	0.1			2.00	C-
SOI1. Soil Condition	1	C	2		



State/Prov: NH Site: Sagamore Creek1  
 ObsArea Name: Sagamore Creek1: Salt marsh system  
 Project: NH-EPA2022 WPDG County:  
 Observers:

ObsArea Code: NH743  
 ObsDate: 2022/08/02

Macrogroup:  
 Classifications:  
 General Type:  
 HGM:  
 Cowardin:

**Floristic Quality Index (FQI) Scor**

N: 7.47 MeanC: 5.05 CWMeanC: 5.35 FQI: 14.68

Protocol: New Hampshire Wetlands 2018

	Wt	Field Rating	Field Pts	Calc Pts	Calc Rating
<b>ECOLOGICAL INTEGRITY</b>				2.05	C+
<b>ECOLOGICAL INTEGRITY + SIZE (EO Rank)</b>				<b>1.60</b>	<b>C-</b>
<b>Rank Factor: LANDSCAPE CONTEXT</b>	0.25			2.17	C+
<b>MEF: LANDSCAPE</b>	0.66			2.00	C-
LAN2. Land Use Index	1	C	2		
<b>MEF: EDGE</b>	0.33			2.50	C+
BUF1. Perimeter with Natural Buffer	n/a	B-	2.5		
BUF2. Width of Natural Buffer	n/a	B-	2.5		
<b>Rank Factor: SIZE</b>	0.15				
<b>MEF: SIZE</b>	1				
SIZ1. Comparative Size	n/a	C-			
SIZ2. Change in Size	n/a				
<b>Rank Factor: CONDITION</b>	0.6			2.00	C-
<b>MEF: VEGETATION</b>	0.9			2.00	C-
VEG2. Invasive Nonnative Plant Species Cover	1	C	2		
VEG3. Native Plant Species Composition	1	C	2		
VEG4. Vegetation Structure	1	C	2		
<b>MEF: HYDROLOGY</b>	n/a			1.67	C-
HYD1. Water Source	1	C	2		
HYD2. Hydroperiod	1	D	1		
HYD3. Hydrologic Connectivity	1	C	2		
<b>MEF: SOIL</b>	0.1			2.00	C-
SOI1. Soil Condition	1	C	2		

State/Prov: NH Site: Bellamy River WMA1

ObsArea Code: NH753

ObsArea Name: Bellamy River WMA1: Brackish riverbank marsh system

ObsDate: 2022/08/25

Project: NH-EPA2022 WPDG County:

Observers:

Macrogroup:

Classifications:

General Type:

HGM:

Cowardin:

Floristic Quality Index (FQI) Scor

N: 6.07

MeanC: 5.08

CWMeanC: 5.48

FQI: 12.31

Protocol: New Hampshire Wetlands 2018

	Wt	Field Rating	Field Pts	Calc Pts	Calc Rating
<b>ECOLOGICAL INTEGRITY</b>				2.99	B-
<b>ECOLOGICAL INTEGRITY + SIZE (EO Rank)</b>				<b>2.32</b>	<b>C</b>
<b>Rank Factor: LANDSCAPE CONTEXT</b>	0.25			2.49	C+
<b>MEF: LANDSCAPE</b>	0.66			2.00	C-
LAN2. Land Use Index	1	C	2		
<b>MEF: EDGE</b>	0.33			3.46	B+
BUF1. Perimeter with Natural Buffer	n/a	A	4		
BUF2. Width of Natural Buffer	n/a	B	3		
<b>Rank Factor: SIZE</b>	0.15				
<b>MEF: SIZE</b>	1				
SIZ1. Comparative Size	n/a	D			
SIZ2. Change in Size	n/a				
<b>Rank Factor: CONDITION</b>	0.6			3.20	B+
<b>MEF: VEGETATION</b>	0.9			3.33	B+
VEG2. Invasive Nonnative Plant Species Cover	1	A	4		
VEG3. Native Plant Species Composition	1	B	3		
VEG4. Vegetation Structure	1	B	3		
<b>MEF: HYDROLOGY</b>	n/a			3.00	B-
HYD1. Water Source	1	B	3		
HYD2. Hydroperiod	1	C	2		
HYD3. Hydrologic Connectivity	1	A	4		
<b>MEF: SOIL</b>	0.1			2.00	C-
SOI1. Soil Condition	1	C	2		

State/Prov: NH Site: Mast Road Natural Area3

ObsArea Code: NH767

ObsArea Name: Mast Road Natural Area3: Poor level fen/bog system

ObsDate: 2022/10/06

Project: NH-EPA2022 WPDG County:

Observers:

Macrogroup:

Classifications:

General Type:

HGM:

Cowardin:

**Floristic Quality Index (FQI) Scor**

N: 7.94

MeanC: 5.28

CWMeanC: 5.37

FQI: 14.8

Protocol: New Hampshire Wetlands 2018

	Wt	Field Rating	Field Pts	Calc Pts	Calc Rating
<b>ECOLOGICAL INTEGRITY</b>				3.61	A-
<b>ECOLOGICAL INTEGRITY + SIZE (EO Rank)</b>				<b>2.94</b>	<b>B</b>
<b>Rank Factor: LANDSCAPE CONTEXT</b>	0.25			2.67	B-
<b>MEF: LANDSCAPE</b>	0.66			2.50	C+
LAN2. Land Use Index	1	B-	2.5		
<b>MEF: EDGE</b>	0.33			3.00	B-
BUF1. Perimeter with Natural Buffer	n/a	B	3		
BUF2. Width of Natural Buffer	n/a	B	3		
<b>Rank Factor: SIZE</b>	0.15				
<b>MEF: SIZE</b>	1				
SIZ1. Comparative Size	n/a	D			
SIZ2. Change in Size	n/a				
<b>Rank Factor: CONDITION</b>	0.6			4.00	A-
<b>MEF: VEGETATION</b>	0.9			4.00	A+
VEG2. Invasive Nonnative Plant Species Cover	1	A	4		
VEG3. Native Plant Species Composition	1	A	4		
VEG4. Vegetation Structure	1	A	4		
<b>MEF: HYDROLOGY</b>	n/a			3.67	A-
HYD1. Water Source	1	B	3		
HYD2. Hydroperiod	1	A	4		
HYD3. Hydrologic Connectivity	1	A	4		
<b>MEF: SOIL</b>	0.1			4.00	A+
SOI1. Soil Condition	1	A	4		

State/Prov: NH Site: Betty Meadows1

ObsArea Code: NH777

ObsArea Name: Betty Meadows1: Medium level fen system

ObsDate: 2022/09/01

Project: NH-EPA2022 WPDG County:

Observers:

Macrogroup:

Classifications:

General Type:

HGM:

Cowardin:

**Floristic Quality Index (FQI) Scor**

N: 9.05

MeanC: 3.97

CWMeanC: 4.58

FQI: 11.68

Protocol: New Hampshire Wetlands 2018

	Field Wt	Field Rating	Field Pts	Calc Pts	Calc Rating
<b>ECOLOGICAL INTEGRITY</b>				3.38	B+
<b>ECOLOGICAL INTEGRITY + SIZE (EO Rank)</b>				<b>3.72</b>	<b>A-</b>
<b>Rank Factor: LANDSCAPE CONTEXT</b>	0.25			3.33	B+
<b>MEF: LANDSCAPE</b>	0.66			3.00	B-
LAN2. Land Use Index	1	B	3		
<b>MEF: EDGE</b>	0.33			4.00	A+
BUF1. Perimeter with Natural Buffer	n/a	A	4		
BUF2. Width of Natural Buffer	n/a	A	4		
<b>Rank Factor: SIZE</b>	0.15				
<b>MEF: SIZE</b>	1				
SIZ1. Comparative Size	n/a	B			
SIZ2. Change in Size	n/a				
<b>Rank Factor: CONDITION</b>	0.6			3.40	B+
<b>MEF: VEGETATION</b>	0.9			3.33	B+
VEG2. Invasive Nonnative Plant Species Cover	1	A	4		
VEG3. Native Plant Species Composition	1	B	3		
VEG4. Vegetation Structure	1	B	3		
<b>MEF: HYDROLOGY</b>	n/a			3.33	B+
HYD1. Water Source	1	B	3		
HYD2. Hydroperiod	1	B	3		
HYD3. Hydrologic Connectivity	1	A	4		
<b>MEF: SOIL</b>	0.1			4.00	A+
SOI1. Soil Condition	1	A	4		

State/Prov: NH Site: Beaver Brook WMA  
 ObsArea Name: Beaver Brook WMA: Poor level fen/bog system  
 Project: NH-EPA2022 WPDG County:  
 Observers:

ObsArea Code: NH786  
 ObsDate: 2022/07/26

Macrogroup:  
 Classifications:  
 General Type:  
 HGM:  
 Cowardin:

**Floristic Quality Index (FQI) Scor**

N: 8.31 MeanC: 4.61 CWMeanC: 5.51 FQI: 12.86

Protocol: New Hampshire Wetlands 2018

	Wt	Field Rating	Field Pts	Calc Pts	Calc Rating
<b>ECOLOGICAL INTEGRITY</b>				3.85	A-
<b>ECOLOGICAL INTEGRITY + SIZE (EO Rank)</b>				<b>4.19</b>	<b>A</b>
<b>Rank Factor: LANDSCAPE CONTEXT</b>	0.25			3.50	A-
<b>MEF: LANDSCAPE</b>	0.66			3.25	B+
LAN2. Land Use Index	1	B+	3.25		
<b>MEF: EDGE</b>	0.33			4.00	A+
BUF1. Perimeter with Natural Buffer	n/a	A	4		
BUF2. Width of Natural Buffer	n/a	A	4		
<b>Rank Factor: SIZE</b>	0.15				
<b>MEF: SIZE</b>	1				
SIZ1. Comparative Size	n/a	B			
SIZ2. Change in Size	n/a				
<b>Rank Factor: CONDITION</b>	0.6			4.00	A-
<b>MEF: VEGETATION</b>	0.9			4.00	A+
VEG2. Invasive Nonnative Plant Species Cover	1	A	4		
VEG3. Native Plant Species Composition	1	A	4		
VEG4. Vegetation Structure	1	A	4		
<b>MEF: HYDROLOGY</b>	n/a			4.00	A+
HYD1. Water Source	1	A	4		
HYD2. Hydroperiod	1	A	4		
HYD3. Hydrologic Connectivity	1	A	4		
<b>MEF: SOIL</b>	0.1			4.00	A+
SOI1. Soil Condition	1	A	4		

State/Prov: NH Site: Mastin Brook  
 ObsArea Name: Mastin Brook: Medium level fen system  
 Project: NH-EPA2022 WPDG County:  
 Observers:

ObsArea Code: NH796  
 ObsDate: 2022/07/28

Macrogroup:  
 Classifications:  
 General Type:  
 HGM:  
 Cowardin:

**Floristic Quality Index (FQI) Scor**

N: 22.68 MeanC: 4.37 CWMeanC: 4.26 FQI: 20.8

Protocol: New Hampshire Wetlands 2018

	Wt	Field Rating	Field Pts	Calc Pts	Calc Rating
<b>ECOLOGICAL INTEGRITY</b>				3.90	A-
<b>ECOLOGICAL INTEGRITY + SIZE (EO Rank)</b>				<b>3.56</b>	<b>A-</b>
<b>Rank Factor: LANDSCAPE CONTEXT</b>	0.25			3.67	A-
<b>MEF: LANDSCAPE</b>	0.66			3.50	B+
LAN2. Land Use Index	1	A-	3.5		
<b>MEF: EDGE</b>	0.33			4.00	A+
BUF1. Perimeter with Natural Buffer	n/a	A	4		
BUF2. Width of Natural Buffer	n/a	A	4		
<b>Rank Factor: SIZE</b>	0.15				
<b>MEF: SIZE</b>	1				
SIZ1. Comparative Size	n/a	C			
SIZ2. Change in Size	n/a				
<b>Rank Factor: CONDITION</b>	0.6			4.00	A-
<b>MEF: VEGETATION</b>	0.9			4.00	A+
VEG2. Invasive Nonnative Plant Species Cover	1	A	4		
VEG3. Native Plant Species Composition	1	A	4		
VEG4. Vegetation Structure	1	A	4		
<b>MEF: HYDROLOGY</b>	n/a			3.33	B+
HYD1. Water Source	1	B	3		
HYD2. Hydroperiod	1	B	3		
HYD3. Hydrologic Connectivity	1	A	4		
<b>MEF: SOIL</b>	0.1			4.00	A+
SOI1. Soil Condition	1	A	4		

State/Prov: NH Site: Ossipee River  
 ObsArea Name: Ossipee River: Sandy pond shore system  
 Project: NH-EPA2022 WPDG County:  
 Observers:

ObsArea Code: NH801  
 ObsDate: 2022/07/28

Macrogroup:  
 Classifications:  
 General Type:  
 HGM:  
 Cowardin:

**Floristic Quality Index (FQI) Scor**

N: 5 MeanC: 4.8 CWMeanC: 6.08 FQI: 10.73

Protocol: New Hampshire Wetlands 2018

	Field Wt	Field Rating	Field Pts	Calc Pts	Calc Rating
<b>ECOLOGICAL INTEGRITY</b>				3.60	A-
<b>ECOLOGICAL INTEGRITY + SIZE (EO Rank)</b>				<b>3.60</b>	<b>A-</b>
<b>Rank Factor: LANDSCAPE CONTEXT</b>	0.25			2.87	B-
<b>MEF: LANDSCAPE</b>	0.66			3.00	B-
LAN2. Land Use Index	1	B	3		
<b>MEF: EDGE</b>	0.33			2.60	B-
BUF1. Perimeter with Natural Buffer	n/a	B	3		
BUF2. Width of Natural Buffer	n/a	C+	2.25		
<b>Rank Factor: SIZE</b>	0.15				
<b>MEF: SIZE</b>	1				
SIZ1. Comparative Size	n/a	B-			
SIZ2. Change in Size	n/a				
<b>Rank Factor: CONDITION</b>	0.6			3.90	A-
<b>MEF: VEGETATION</b>	0.9			4.00	A+
VEG2. Invasive Nonnative Plant Species Cover	1	A	4		
VEG3. Native Plant Species Composition	1	A	4		
VEG4. Vegetation Structure	1	A	4		
<b>MEF: HYDROLOGY</b>	n/a			2.67	B-
HYD1. Water Source	1	B	3		
HYD2. Hydroperiod	1	C	2		
HYD3. Hydrologic Connectivity	1	B	3		
<b>MEF: SOIL</b>	0.1			3.00	B-
SOI1. Soil Condition	1	B	3		

State/Prov: NH Site: Loon Lake

ObsArea Code: NH803

ObsArea Name: Loon Lake: Temperate minor river floodplain system

ObsDate: 2022/07/28

Project: NH-EPA2022 WPDG County:

Observers:

Macrogroup:

Classifications:

General Type:

HGM:

Cowardin:

**Floristic Quality Index (FQI) Scor**

N: 16

MeanC: 3.69

CWMeanC: 3.86

FQI: 14.75

Protocol: New Hampshire Wetlands 2018

	Wt	Field Rating	Field Pts	Calc Pts	Calc Rating
<b>ECOLOGICAL INTEGRITY</b>				3.62	A-
<b>ECOLOGICAL INTEGRITY + SIZE (EO Rank)</b>				<b>3.17</b>	<b>B</b>
<b>Rank Factor: LANDSCAPE CONTEXT</b>	0.25			2.95	B-
<b>MEF: LANDSCAPE</b>	0.66			3.00	B-
LAN2. Land Use Index	1	B	3		
<b>MEF: EDGE</b>	0.33			2.85	B-
BUF1. Perimeter with Natural Buffer	n/a	B+	3.25		
BUF2. Width of Natural Buffer	n/a	B-	2.5		
<b>Rank Factor: SIZE</b>	0.15				
<b>MEF: SIZE</b>	1				
SIZ1. Comparative Size	n/a	C-			
SIZ2. Change in Size	n/a				
<b>Rank Factor: CONDITION</b>	0.6			3.90	A-
<b>MEF: VEGETATION</b>	0.9			4.00	A+
VEG2. Invasive Nonnative Plant Species Cover	1	A	4		
VEG3. Native Plant Species Composition	1	A	4		
VEG4. Vegetation Structure	1	A	4		
<b>MEF: HYDROLOGY</b>	n/a			3.00	B-
HYD1. Water Source	1	B	3		
HYD2. Hydroperiod	1	B	3		
HYD3. Hydrologic Connectivity	1	B	3		
<b>MEF: SOIL</b>	0.1			3.00	B-
SOI1. Soil Condition	1	B	3		



State/Prov: NH Site: Hopkinton-Everett - Mud Pond

ObsArea Code: NH810

ObsArea Name: Hopkinton-Everett - Mud Pond: Kettle hole bog system

ObsDate: 2022/08/04

Project: NH-EPA2022 WPDG County:

Observers:

Macrogroup:

Classifications:

General Type:

HGM:

Cowardin:

**Floristic Quality Index (FQI) Scor**

N: 8.29

MeanC: 5.14

CWMeanC: 4.68

FQI: 14.69

Protocol: New Hampshire Wetlands 2018

	Field Wt	Field Rating	Field Pts	Calc Pts	Calc Rating
<b>ECOLOGICAL INTEGRITY</b>				3.61	A-
<b>ECOLOGICAL INTEGRITY + SIZE (EO Rank)</b>				<b>3.27</b>	<b>B+</b>
<b>Rank Factor: LANDSCAPE CONTEXT</b>	0.25			2.67	B-
<b>MEF: LANDSCAPE</b>	0.66			3.00	B-
LAN2. Land Use Index	1	B	3		
<b>MEF: EDGE</b>	0.33			2.00	C-
BUF1. Perimeter with Natural Buffer	n/a	C	2		
BUF2. Width of Natural Buffer	n/a	C	2		
<b>Rank Factor: SIZE</b>	0.15				
<b>MEF: SIZE</b>	1				
SIZ1. Comparative Size	n/a	C			
SIZ2. Change in Size	n/a				
<b>Rank Factor: CONDITION</b>	0.6			4.00	A-
<b>MEF: VEGETATION</b>	0.9			4.00	A+
VEG2. Invasive Nonnative Plant Species Cover	1	A	4		
VEG3. Native Plant Species Composition	1	A	4		
VEG4. Vegetation Structure	1	A	4		
<b>MEF: HYDROLOGY</b>	n/a			3.33	B+
HYD1. Water Source	1	B	3		
HYD2. Hydroperiod	1	A	4		
HYD3. Hydrologic Connectivity	1	B	3		
<b>MEF: SOIL</b>	0.1			4.00	A+
SOI1. Soil Condition	1	A	4		

State/Prov: NH Site: Loverens Mill Cedar Swamp

ObsArea Code: NH817

ObsArea Name: Loverens Mill Cedar Swamp: Coastal conifer peat swamp

ObsDate: 2022/08/05

Project: NH-EPA2022 WPDG County:

Observers:

Macrogroup:

Classifications:

General Type:

HGM:

Cowardin:

Floristic Quality Index (FQI) Scor

N: 19.34

MeanC: 4.62

CWMeanC: 5.51

FQI: 20.25

Protocol: New Hampshire Wetlands 2018

	Wt	Field Rating	Field Pts	Calc Pts	Calc Rating
<b>ECOLOGICAL INTEGRITY</b>				3.80	A-
<b>ECOLOGICAL INTEGRITY + SIZE (EO Rank)</b>				<b>4.14</b>	<b>A</b>
<b>Rank Factor: LANDSCAPE CONTEXT</b>	0.25			3.33	B+
<b>MEF: LANDSCAPE</b>	0.66			3.00	B-
LAN2. Land Use Index	1	B	3		
<b>MEF: EDGE</b>	0.33			4.00	A+
BUF1. Perimeter with Natural Buffer	n/a	A	4		
BUF2. Width of Natural Buffer	n/a	A	4		
<b>Rank Factor: SIZE</b>	0.15				
<b>MEF: SIZE</b>	1				
SIZ1. Comparative Size	n/a	B			
SIZ2. Change in Size	n/a				
<b>Rank Factor: CONDITION</b>	0.6			4.00	A-
<b>MEF: VEGETATION</b>	0.9			4.00	A+
VEG2. Invasive Nonnative Plant Species Cover	1	A	4		
VEG3. Native Plant Species Composition	1	A	4		
VEG4. Vegetation Structure	1	A	4		
<b>MEF: HYDROLOGY</b>	n/a			4.00	A+
HYD1. Water Source	1	A	4		
HYD2. Hydroperiod	1	A	4		
HYD3. Hydrologic Connectivity	1	A	4		
<b>MEF: SOIL</b>	0.1			4.00	A+
SOI1. Soil Condition	1	A	4		

State/Prov: NH Site: Sharon Bog

ObsArea Code: NH824

ObsArea Name: Sharon Bog: Kettle hole bog system

ObsDate: 2022/07/13

Project: NH-EPA2022 WPDG County:

Observers:

Macrogroup:

Classifications:

General Type:

HGM:

Cowardin:

**Floristic Quality Index (FQI) Scor**

N: 9.27

MeanC: 5.93

CWMeanC: 5.69

FQI: 18.04

Protocol: New Hampshire Wetlands 2018

	Field Wt	Field Rating	Field Pts	Calc Pts	Calc Rating
<b>ECOLOGICAL INTEGRITY</b>				3.85	A-
<b>ECOLOGICAL INTEGRITY + SIZE (EO Rank)</b>				<b>3.85</b>	<b>A-</b>
<b>Rank Factor: LANDSCAPE CONTEXT</b>	0.25			3.50	A-
<b>MEF: LANDSCAPE</b>	0.66			3.25	B+
LAN2. Land Use Index	1	B+	3.25		
<b>MEF: EDGE</b>	0.33			4.00	A+
BUF1. Perimeter with Natural Buffer	n/a	A	4		
BUF2. Width of Natural Buffer	n/a	A	4		
<b>Rank Factor: SIZE</b>	0.15				
<b>MEF: SIZE</b>	1				
SIZ1. Comparative Size	n/a	B-			
SIZ2. Change in Size	n/a				
<b>Rank Factor: CONDITION</b>	0.6			4.00	A-
<b>MEF: VEGETATION</b>	0.9			4.00	A+
VEG2. Invasive Nonnative Plant Species Cover	1	A	4		
VEG3. Native Plant Species Composition	1	A	4		
VEG4. Vegetation Structure	1	A	4		
<b>MEF: HYDROLOGY</b>	n/a			4.00	A+
HYD1. Water Source	1	A	4		
HYD2. Hydroperiod	1	A	4		
HYD3. Hydrologic Connectivity	1	A	4		
<b>MEF: SOIL</b>	0.1			4.00	A+
SOI1. Soil Condition	1	A	4		

State/Prov: NH Site: Red Hill Pond  
 ObsArea Name: Red Hill Pond: Poor level fen/bog system  
 Project: NH-EPA2022 WPDG County:  
 Observers:

ObsArea Code: NH829  
 ObsDate: 2022/08/09

Macrogroup:  
 Classifications:  
 General Type:  
 HGM:  
 Cowardin:

**Floristic Quality Index (FQI) Scor**

N: 11.75 MeanC: 5.43 CWMeanC: 5.96 FQI: 17.97

Protocol: New Hampshire Wetlands 2018

	Wt	Field Rating	Field Pts	Calc Pts	Calc Rating
<b>ECOLOGICAL INTEGRITY</b>				3.80	A-
<b>ECOLOGICAL INTEGRITY + SIZE (EO Rank)</b>				<b>4.25</b>	<b>A</b>
<b>Rank Factor: LANDSCAPE CONTEXT</b>	0.25			3.33	B+
<b>MEF: LANDSCAPE</b>	0.66			3.00	B-
LAN2. Land Use Index	1	B	3		
<b>MEF: EDGE</b>	0.33			4.00	A+
BUF1. Perimeter with Natural Buffer	n/a	A	4		
BUF2. Width of Natural Buffer	n/a	A	4		
<b>Rank Factor: SIZE</b>	0.15				
<b>MEF: SIZE</b>	1				
SIZ1. Comparative Size	n/a	B+			
SIZ2. Change in Size	n/a				
<b>Rank Factor: CONDITION</b>	0.6			4.00	A-
<b>MEF: VEGETATION</b>	0.9			4.00	A+
VEG2. Invasive Nonnative Plant Species Cover	1	A	4		
VEG3. Native Plant Species Composition	1	A	4		
VEG4. Vegetation Structure	1	A	4		
<b>MEF: HYDROLOGY</b>	n/a			4.00	A+
HYD1. Water Source	1	A	4		
HYD2. Hydroperiod	1	A	4		
HYD3. Hydrologic Connectivity	1	A	4		
<b>MEF: SOIL</b>	0.1			4.00	A+
SOI1. Soil Condition	1	A	4		

State/Prov: NH Site: West Branch

ObsArea Code: NH841

ObsArea Name: West Branch: Temperate minor river floodplain system

ObsDate: 2022/08/10

Project: NH-EPA2022 WPDG County:

Observers:

Macrogroup:

Classifications:

General Type:

HGM:

Cowardin:

**Floristic Quality Index (FQI) Scor**

N: 25.45

MeanC: 3.83

CWMeanC: 3.49

FQI: 19.26

Protocol: New Hampshire Wetlands 2018

	Field Wt	Field Rating	Field Pts	Calc Pts	Calc Rating
<b>ECOLOGICAL INTEGRITY</b>				3.24	B+
<b>ECOLOGICAL INTEGRITY + SIZE (EO Rank)</b>				<b>3.58</b>	<b>A-</b>
<b>Rank Factor: LANDSCAPE CONTEXT</b>	0.25			3.08	B+
<b>MEF: LANDSCAPE</b>	0.66			3.00	B-
LAN2. Land Use Index	1	B	3		
<b>MEF: EDGE</b>	0.33			3.25	B+
BUF1. Perimeter with Natural Buffer	n/a	B+	3.25		
BUF2. Width of Natural Buffer	n/a	B+	3.25		
<b>Rank Factor: SIZE</b>	0.15				
<b>MEF: SIZE</b>	1				
SIZ1. Comparative Size	n/a	B			
SIZ2. Change in Size	n/a				
<b>Rank Factor: CONDITION</b>	0.6			3.30	B+
<b>MEF: VEGETATION</b>	0.9			3.33	B+
VEG2. Invasive Nonnative Plant Species Cover	1	B	3		
VEG3. Native Plant Species Composition	1	A	4		
VEG4. Vegetation Structure	1	B	3		
<b>MEF: HYDROLOGY</b>	n/a			3.67	A-
HYD1. Water Source	1	B	3		
HYD2. Hydroperiod	1	A	4		
HYD3. Hydrologic Connectivity	1	A	4		
<b>MEF: SOIL</b>	0.1			3.00	B-
SOI1. Soil Condition	1	B	3		

State/Prov: NH Site: Mollidgewock Brook

ObsArea Code: NH851

ObsArea Name: Mollidgewock Brook: Drainage marsh - shrub swamp syst ObsDate: 2022/08/18

Project: NH-EPA2022 WPDG County:

Observers:

Macrogroup:

Classifications:

General Type:

HGM:

Cowardin:

Floristic Quality Index (FQI) Scor

N: 12.3

MeanC: 3.41

CWMeanC: 3.55

FQI: 12.04

Protocol: New Hampshire Wetlands 2018

	Wt	Field Rating	Field Pts	Calc Pts	Calc Rating
<b>ECOLOGICAL INTEGRITY</b>				3.79	A-
<b>ECOLOGICAL INTEGRITY + SIZE (EO Rank)</b>				<b>4.35</b>	<b>A</b>
<b>Rank Factor: LANDSCAPE CONTEXT</b>	0.25			3.54	A-
<b>MEF: LANDSCAPE</b>	0.66			3.50	B+
LAN2. Land Use Index	1	A-	3.5		
<b>MEF: EDGE</b>	0.33			3.61	A-
BUF1. Perimeter with Natural Buffer	n/a	B+	3.25		
BUF2. Width of Natural Buffer	n/a	A	4		
<b>Rank Factor: SIZE</b>	0.15				
<b>MEF: SIZE</b>	1				
SIZ1. Comparative Size	n/a	A-			
SIZ2. Change in Size	n/a				
<b>Rank Factor: CONDITION</b>	0.6			3.90	A-
<b>MEF: VEGETATION</b>	0.9			4.00	A+
VEG2. Invasive Nonnative Plant Species Cover	1	A	4		
VEG3. Native Plant Species Composition	1	A	4		
VEG4. Vegetation Structure	1	A	4		
<b>MEF: HYDROLOGY</b>	n/a			3.33	B+
HYD1. Water Source	1	B	3		
HYD2. Hydroperiod	1	A	4		
HYD3. Hydrologic Connectivity	1	B	3		
<b>MEF: SOIL</b>	0.1			3.00	B-
SOI1. Soil Condition	1	B	3		

State/Prov: NH Site: Mollidgewock Brook

ObsArea Code: NH855

ObsArea Name: Mollidgewock Brook: Montane/near-boreal minerotrophi ObsDate: 2022/08/18

Project: NH-EPA2022 WPDG County:

Observers:

Macrogroup:

Classifications:

General Type:

HGM:

Cowardin:

Floristic Quality Index (FQI) Scor

N: 18

MeanC: 4.5

CWMeanC: 5.49

FQI: 19.09

Protocol: New Hampshire Wetlands 2018

	Wt	Field Rating	Field Pts	Calc Pts	Calc Rating
<b>ECOLOGICAL INTEGRITY</b>				3.68	A-
<b>ECOLOGICAL INTEGRITY + SIZE (EO Rank)</b>				<b>4.35</b>	<b>A</b>
<b>Rank Factor: LANDSCAPE CONTEXT</b>	0.25			3.87	A-
<b>MEF: LANDSCAPE</b>	0.66			4.00	A+
LAN2. Land Use Index	1	A	4		
<b>MEF: EDGE</b>	0.33			3.61	A-
BUF1. Perimeter with Natural Buffer	n/a	B+	3.25		
BUF2. Width of Natural Buffer	n/a	A	4		
<b>Rank Factor: SIZE</b>	0.15				
<b>MEF: SIZE</b>	1				
SIZ1. Comparative Size	n/a	A			
SIZ2. Change in Size	n/a				
<b>Rank Factor: CONDITION</b>	0.6			3.60	A-
<b>MEF: VEGETATION</b>	0.9			3.67	A-
VEG2. Invasive Nonnative Plant Species Cover	1	A	4		
VEG3. Native Plant Species Composition	1	A	4		
VEG4. Vegetation Structure	1	B	3		
<b>MEF: HYDROLOGY</b>	n/a			3.67	A-
HYD1. Water Source	1	A	4		
HYD2. Hydroperiod	1	A	4		
HYD3. Hydrologic Connectivity	1	B	3		
<b>MEF: SOIL</b>	0.1			3.00	B-
SOI1. Soil Condition	1	B	3		

State/Prov: NH Site: Johns River

ObsArea Code: NH857

ObsArea Name: Johns River: Black spruce peat swamp system

ObsDate: 2022/08/19

Project: NH-EPA2022 WPDG County:

Observers:

Macrogroup:

Classifications:

General Type:

HGM:

Cowardin:

Floristic Quality Index (FQI) Scor

N: 14

MeanC: 5.33

CWMeanC: 4.3

FQI: 19.55

Protocol: New Hampshire Wetlands 2018

	Wt	Field Rating	Field Pts	Calc Pts	Calc Rating
<b>ECOLOGICAL INTEGRITY</b>				3.58	A-
<b>ECOLOGICAL INTEGRITY + SIZE (EO Rank)</b>				<b>4.03</b>	<b>A</b>
<b>Rank Factor: LANDSCAPE CONTEXT</b>	0.25			4.00	A+
<b>MEF: LANDSCAPE</b>	0.66			4.00	A+
LAN2. Land Use Index	1	A	4		
<b>MEF: EDGE</b>	0.33			4.00	A+
BUF1. Perimeter with Natural Buffer	n/a	A	4		
BUF2. Width of Natural Buffer	n/a	A	4		
<b>Rank Factor: SIZE</b>	0.15				
<b>MEF: SIZE</b>	1				
SIZ1. Comparative Size	n/a	B+			
SIZ2. Change in Size	n/a				
<b>Rank Factor: CONDITION</b>	0.6			3.40	B+
<b>MEF: VEGETATION</b>	0.9			3.33	B+
VEG2. Invasive Nonnative Plant Species Cover	1	B	3		
VEG3. Native Plant Species Composition	1	A	4		
VEG4. Vegetation Structure	1	B	3		
<b>MEF: HYDROLOGY</b>	n/a			4.00	A+
HYD1. Water Source	1	A	4		
HYD2. Hydroperiod	1	A	4		
HYD3. Hydrologic Connectivity	1	A	4		
<b>MEF: SOIL</b>	0.1			4.00	A+
SOI1. Soil Condition	1	A	4		



State/Prov: NH Site: Mt. Moosilauke  
 ObsArea Name: Mt. Moosilauke: Alpine/subalpine bog system  
 Project: NH-EPA2022 WPDG County:  
 Observers:

ObsArea Code: NH861  
 ObsDate: 2022/08/24

Macrogroup:  
 Classifications:  
 General Type:  
 HGM:  
 Cowardin:

**Floristic Quality Index (FQI) Scor**

N: 13 MeanC: 5.88 CWMeanC: 4.92 FQI: 21.2

Protocol: New Hampshire Wetlands 2018

	Wt	Field Rating	Field Pts	Calc Pts	Calc Rating
<b>ECOLOGICAL INTEGRITY</b>				4.00	A-
<b>ECOLOGICAL INTEGRITY + SIZE (EO Rank)</b>				<b>3.66</b>	<b>B+</b>
<b>Rank Factor: LANDSCAPE CONTEXT</b>	0.25			4.00	A+
<b>MEF: LANDSCAPE</b>	0.66			4.00	A+
LAN2. Land Use Index	1	A	4		
<b>MEF: EDGE</b>	0.33			4.00	A+
BUF1. Perimeter with Natural Buffer	n/a	A	4		
BUF2. Width of Natural Buffer	n/a	A	4		
<b>Rank Factor: SIZE</b>	0.15				
<b>MEF: SIZE</b>	1				
SIZ1. Comparative Size	n/a	C			
SIZ2. Change in Size	n/a				
<b>Rank Factor: CONDITION</b>	0.6			4.00	A-
<b>MEF: VEGETATION</b>	0.9			4.00	A+
VEG2. Invasive Nonnative Plant Species Cover	1	A	4		
VEG3. Native Plant Species Composition	1	A	4		
VEG4. Vegetation Structure	1	A	4		
<b>MEF: HYDROLOGY</b>	n/a			4.00	A+
HYD1. Water Source	1	A	4		
HYD2. Hydroperiod	1	A	4		
HYD3. Hydrologic Connectivity	1	A	4		
<b>MEF: SOIL</b>	0.1			4.00	A+
SOI1. Soil Condition	1	A	4		

State/Prov: NH Site: Blackwater River

ObsArea Code: NH864

ObsArea Name: Blackwater River: Temperate minor river floodplain system ObsDate: 2022/09/08

Project: NH-EPA2022 WPDG County:

Observers:

Macrogroup:

Classifications:

General Type:

HGM:

Cowardin:

**Floristic Quality Index (FQI) Score**

N: 27.76

MeanC: 4.04

CWMeanC: 3.51

FQI: 21.22

Protocol: New Hampshire Wetlands 2018

	Wt	Field Rating	Field Pts	Calc Pts	Calc Rating
<b>ECOLOGICAL INTEGRITY</b>				3.27	B+
<b>ECOLOGICAL INTEGRITY + SIZE (EO Rank)</b>				<b>3.61</b>	<b>A-</b>
<b>Rank Factor: LANDSCAPE CONTEXT</b>	0.25			3.21	B+
<b>MEF: LANDSCAPE</b>	0.66			3.25	B+
LAN2. Land Use Index	1	B+	3.25		
<b>MEF: EDGE</b>	0.33			3.12	B+
BUF1. Perimeter with Natural Buffer	n/a	B+	3.25		
BUF2. Width of Natural Buffer	n/a	B	3		
<b>Rank Factor: SIZE</b>	0.15				
<b>MEF: SIZE</b>	1				
SIZ1. Comparative Size	n/a	B			
SIZ2. Change in Size	n/a				
<b>Rank Factor: CONDITION</b>	0.6			3.30	B+
<b>MEF: VEGETATION</b>	0.9			3.33	B+
VEG2. Invasive Nonnative Plant Species Cover	1	B	3		
VEG3. Native Plant Species Composition	1	A	4		
VEG4. Vegetation Structure	1	B	3		
<b>MEF: HYDROLOGY</b>	n/a			4.00	A+
HYD1. Water Source	1	A	4		
HYD2. Hydroperiod	1	A	4		
HYD3. Hydrologic Connectivity	1	A	4		
<b>MEF: SOIL</b>	0.1			3.00	B-
SOI1. Soil Condition	1	B	3		

State/Prov: NH Site: Black Pond

ObsArea Code: NH869

ObsArea Name: Black Pond: Coastal conifer peat swamp system

ObsDate: 2022/09/21

Project: NH-EPA2022 WPDG County:

Observers:

Macrogroup:

Classifications:

General Type:

HGM:

Cowardin:

Floristic Quality Index (FQI) Scor

N: 28.71

MeanC: 4.83

CWMeanC: 6.13

FQI: 25.85

Protocol: New Hampshire Wetlands 2018

	Field Wt	Field Rating	Field Pts	Calc Pts	Calc Rating
<b>ECOLOGICAL INTEGRITY</b>				3.93	A-
<b>ECOLOGICAL INTEGRITY + SIZE (EO Rank)</b>				<b>4.38</b>	<b>A</b>
<b>Rank Factor: LANDSCAPE CONTEXT</b>	0.25			3.75	A-
<b>MEF: LANDSCAPE</b>	0.66			4.00	A+
LAN2. Land Use Index	1	A	4		
<b>MEF: EDGE</b>	0.33			3.25	B+
BUF1. Perimeter with Natural Buffer	n/a	B+	3.25		
BUF2. Width of Natural Buffer	n/a	B+	3.25		
<b>Rank Factor: SIZE</b>	0.15				
<b>MEF: SIZE</b>	1				
SIZ1. Comparative Size	n/a	B+			
SIZ2. Change in Size	n/a				
<b>Rank Factor: CONDITION</b>	0.6			4.00	A-
<b>MEF: VEGETATION</b>	0.9			4.00	A+
VEG2. Invasive Nonnative Plant Species Cover	1	A	4		
VEG3. Native Plant Species Composition	1	A	4		
VEG4. Vegetation Structure	1	A	4		
<b>MEF: HYDROLOGY</b>	n/a			3.67	A-
HYD1. Water Source	1	A	4		
HYD2. Hydroperiod	1	B	3		
HYD3. Hydrologic Connectivity	1	A	4		
<b>MEF: SOIL</b>	0.1			4.00	A+
SOI1. Soil Condition	1	A	4		

State/Prov: NH Site: Cochecho River Narrows

ObsArea Code: NH873

ObsArea Name: Cochecho River Narrows: Brackish riverbank marsh system ObsDate: 2022/08/01

Project: NH-EPA2022 WPDG County:

Observers:

Macrogroup:

Classifications:

General Type:

HGM:

Cowardin:

Floristic Quality Index (FQI) Scor

N: 5.6

MeanC: 5.1

CWMeanC: 5.62

FQI: 11.69

Protocol: New Hampshire Wetlands 2018

	Wt	Field Rating	Field Pts	Calc Pts	Calc Rating
<b>ECOLOGICAL INTEGRITY</b>				2.06	C+
<b>ECOLOGICAL INTEGRITY + SIZE (EO Rank)</b>				<b>1.39</b>	<b>D+</b>
<b>Rank Factor: LANDSCAPE CONTEXT</b>	0.25			1.50	C-
<b>MEF: LANDSCAPE</b>	0.66			1.00	D
LAN2. Land Use Index	1	D	1		
<b>MEF: EDGE</b>	0.33			2.50	C+
BUF1. Perimeter with Natural Buffer	n/a	B-	2.5		
BUF2. Width of Natural Buffer	n/a	B-	2.5		
<b>Rank Factor: SIZE</b>	0.15				
<b>MEF: SIZE</b>	1				
SIZ1. Comparative Size	n/a	D			
SIZ2. Change in Size	n/a				
<b>Rank Factor: CONDITION</b>	0.6			2.30	C+
<b>MEF: VEGETATION</b>	0.9			2.33	C+
VEG2. Invasive Nonnative Plant Species Cover	1	B	3		
VEG3. Native Plant Species Composition	1	C	2		
VEG4. Vegetation Structure	1	C	2		
<b>MEF: HYDROLOGY</b>	n/a			2.67	B-
HYD1. Water Source	1	B	3		
HYD2. Hydroperiod	1	C	2		
HYD3. Hydrologic Connectivity	1	B	3		
<b>MEF: SOIL</b>	0.1			2.00	C-
SOI1. Soil Condition	1	C	2		

State/Prov: NH Site: Fairhill Swamp  
 ObsArea Name: Fairhill Swamp: Coastal conifer peat swamp system  
 Project: NH-EPA2022 WPDG County:  
 Observers:

ObsArea Code: NH876  
 ObsDate: 2022/08/15

Macrogroup:  
 Classifications:  
 General Type:  
 HGM:  
 Cowardin:

**Floristic Quality Index (FQI) Scor**

N: 17 MeanC: 3.82 CWMeanC: 5.09 FQI: 15.76

Protocol: New Hampshire Wetlands 2018

	Field Wt	Field Rating	Field Pts	Calc Pts	Calc Rating
<b>ECOLOGICAL INTEGRITY</b>				2.68	B-
<b>ECOLOGICAL INTEGRITY + SIZE (EO Rank)</b>				<b>2.34</b>	<b>C+</b>
<b>Rank Factor: LANDSCAPE CONTEXT</b>	0.25			2.39	C+
<b>MEF: LANDSCAPE</b>	0.66			2.00	C-
LAN2. Land Use Index	1	C	2		
<b>MEF: EDGE</b>	0.33			3.16	B+
BUF1. Perimeter with Natural Buffer	n/a	A	4		
BUF2. Width of Natural Buffer	n/a	B-	2.5		
<b>Rank Factor: SIZE</b>	0.15				
<b>MEF: SIZE</b>	1				
SIZ1. Comparative Size	n/a	C			
SIZ2. Change in Size	n/a				
<b>Rank Factor: CONDITION</b>	0.6			2.80	B-
<b>MEF: VEGETATION</b>	0.9			2.67	B-
VEG2. Invasive Nonnative Plant Species Cover	1	C	2		
VEG3. Native Plant Species Composition	1	B	3		
VEG4. Vegetation Structure	1	B	3		
<b>MEF: HYDROLOGY</b>	n/a			3.33	B+
HYD1. Water Source	1	B	3		
HYD2. Hydroperiod	1	A	4		
HYD3. Hydrologic Connectivity	1	B	3		
<b>MEF: SOIL</b>	0.1			4.00	A+
SOI1. Soil Condition	1	A	4		

State/Prov: NH Site: Rochester Heath Bog1

ObsArea Code: NH882

ObsArea Name: Rochester Heath Bog1: Poor level fen/bog system

ObsDate: 2022/10/07

Project: NH-EPA2022 WPDG County:

Observers:

Macrogroup:

Classifications:

General Type:

HGM:

Cowardin:

Floristic Quality Index (FQI) Scor

N: 9

MeanC: 4.67

CWMeanC: 5.59

FQI: 14

Protocol: New Hampshire Wetlands 2018

	Wt	Field Rating	Field Pts	Calc Pts	Calc Rating
<b>ECOLOGICAL INTEGRITY</b>				2.19	C+
<b>ECOLOGICAL INTEGRITY + SIZE (EO Rank)</b>				<b>1.85</b>	<b>C</b>
<b>Rank Factor: LANDSCAPE CONTEXT</b>	0.25			1.33	D
<b>MEF: LANDSCAPE</b>	0.66			1.00	D
LAN2. Land Use Index	1	D	1		
<b>MEF: EDGE</b>	0.33			2.00	C-
BUF1. Perimeter with Natural Buffer	n/a	C	2		
BUF2. Width of Natural Buffer	n/a	C	2		
<b>Rank Factor: SIZE</b>	0.15				
<b>MEF: SIZE</b>	1				
SIZ1. Comparative Size	n/a	C			
SIZ2. Change in Size	n/a				
<b>Rank Factor: CONDITION</b>	0.6			2.55	B-
<b>MEF: VEGETATION</b>	0.9			2.50	C+
VEG2. Invasive Nonnative Plant Species Cover	1	B	3		
VEG3. Native Plant Species Composition	1	B-	2.5		
VEG4. Vegetation Structure	1	C	2		
<b>MEF: HYDROLOGY</b>	n/a			2.33	C+
HYD1. Water Source	1	C	2		
HYD2. Hydroperiod	1	B	3		
HYD3. Hydrologic Connectivity	1	C	2		
<b>MEF: SOIL</b>	0.1			3.00	B-
SOI1. Soil Condition	1	B	3		

State/Prov: NH Site: Odiorne Point State Park1  
 ObsArea Name: Odiorne Point State Park1: Salt marsh system  
 Project: NH-EPA2022 WPDG County:  
 Observers:

ObsArea Code: NH885  
 ObsDate: 2022/08/03

Macrogroup:  
 Classifications:  
 General Type:  
 HGM:  
 Cowardin:

**Floristic Quality Index (FQI) Scor**

N: 7.58 MeanC: 6.58 CWMeanC: 6.69 FQI: 16.83

Protocol: New Hampshire Wetlands 2018

	Wt	Field Rating	Field Pts	Calc Pts	Calc Rating
<b>ECOLOGICAL INTEGRITY</b>				3.35	B+
<b>ECOLOGICAL INTEGRITY + SIZE (EO Rank)</b>				<b>3.01</b>	<b>B</b>
<b>Rank Factor: LANDSCAPE CONTEXT</b>	0.25			3.00	B+
<b>MEF: LANDSCAPE</b>	0.66			2.50	C+
LAN2. Land Use Index	1	B-	2.5		
<b>MEF: EDGE</b>	0.33			4.00	A+
BUF1. Perimeter with Natural Buffer	n/a	A	4		
BUF2. Width of Natural Buffer	n/a	A	4		
<b>Rank Factor: SIZE</b>	0.15				
<b>MEF: SIZE</b>	1				
SIZ1. Comparative Size	n/a	C			
SIZ2. Change in Size	n/a				
<b>Rank Factor: CONDITION</b>	0.6			3.50	B+
<b>MEF: VEGETATION</b>	0.9			3.67	A-
VEG2. Invasive Nonnative Plant Species Cover	1	A	4		
VEG3. Native Plant Species Composition	1	B	3		
VEG4. Vegetation Structure	1	A	4		
<b>MEF: HYDROLOGY</b>	n/a			3.33	B+
HYD1. Water Source	1	A	4		
HYD2. Hydroperiod	1	C	2		
HYD3. Hydrologic Connectivity	1	A	4		
<b>MEF: SOIL</b>	0.1			2.00	C-
SOI1. Soil Condition	1	C	2		

State/Prov: NH Site: Odiorne Point State Park3

ObsArea Code: NH890

ObsArea Name: Odiorne Point State Park3: Maritime rocky shore system

ObsDate: 2022/08/03

Project: NH-EPA2022 WPDG County:

Observers:

Macrogroup:

Classifications:

General Type:

HGM:

Cowardin:

Floristic Quality Index (FQI) Scor

N: 6.8

MeanC: 2.3

CWMeanC: 2.79

FQI: 5.98

Protocol: New Hampshire Wetlands 2018

	Wt	Field Rating	Field Pts	Calc Pts	Calc Rating
<b>ECOLOGICAL INTEGRITY</b>				2.39	C+
<b>ECOLOGICAL INTEGRITY + SIZE (EO Rank)</b>				<b>1.94</b>	<b>C</b>
<b>Rank Factor: LANDSCAPE CONTEXT</b>	0.25			3.33	B+
<b>MEF: LANDSCAPE</b>	0.66			3.00	B-
LAN2. Land Use Index	1	B	3		
<b>MEF: EDGE</b>	0.33			4.00	A+
BUF1. Perimeter with Natural Buffer	n/a	A	4		
BUF2. Width of Natural Buffer	n/a	A	4		
<b>Rank Factor: SIZE</b>	0.15				
<b>MEF: SIZE</b>	1				
SIZ1. Comparative Size	n/a	C-			
SIZ2. Change in Size	n/a				
<b>Rank Factor: CONDITION</b>	0.6			2.00	C-
<b>MEF: VEGETATION</b>	0.9			2.00	C-
VEG2. Invasive Nonnative Plant Species Cover	1	C	2		
VEG3. Native Plant Species Composition	1	C	2		
VEG4. Vegetation Structure	1	C	2		
<b>MEF: HYDROLOGY</b>	n/a			4.00	A+
HYD1. Water Source	1	A	4		
HYD2. Hydroperiod	1	A	4		
HYD3. Hydrologic Connectivity	1	A	4		
<b>MEF: SOIL</b>	0.1			2.00	C-
SOI1. Soil Condition	1	C	2		



State/Prov: NH Site: Clements Point  
 ObsArea Name: Clements Point: Salt marsh system  
 Project: NH-EPA2022 WPDG County:  
 Observers:

ObsArea Code: NH894  
 ObsDate: 2022/08/25

Macrogroup:  
 Classifications:  
 General Type:  
 HGM:  
 Cowardin:

**Floristic Quality Index (FQI) Scor**

N: 6.8 MeanC: 4.45 CWMeanC: 4.66 FQI: 11.45

Protocol: New Hampshire Wetlands 2018

	Wt	Field Rating	Field Pts	Calc Pts	Calc Rating
<b>ECOLOGICAL INTEGRITY</b>				2.67	B-
<b>ECOLOGICAL INTEGRITY + SIZE (EO Rank)</b>				<b>2.00</b>	<b>C</b>
<b>Rank Factor: LANDSCAPE CONTEXT</b>	0.25			2.49	C+
<b>MEF: LANDSCAPE</b>	0.66			2.00	C-
LAN2. Land Use Index	1	C	2		
<b>MEF: EDGE</b>	0.33			3.46	B+
BUF1. Perimeter with Natural Buffer	n/a	A	4		
BUF2. Width of Natural Buffer	n/a	B	3		
<b>Rank Factor: SIZE</b>	0.15				
<b>MEF: SIZE</b>	1				
SIZ1. Comparative Size	n/a	D			
SIZ2. Change in Size	n/a				
<b>Rank Factor: CONDITION</b>	0.6			2.75	B-
<b>MEF: VEGETATION</b>	0.9			2.83	B-
VEG2. Invasive Nonnative Plant Species Cover	1	B-	2.5		
VEG3. Native Plant Species Composition	1	B	3		
VEG4. Vegetation Structure	1	B	3		
<b>MEF: HYDROLOGY</b>	n/a			3.00	B-
HYD1. Water Source	1	B	3		
HYD2. Hydroperiod	1	C	2		
HYD3. Hydrologic Connectivity	1	A	4		
<b>MEF: SOIL</b>	0.1			2.00	C-
SOI1. Soil Condition	1	C	2		

State/Prov: NH Site: Rye Harbor State Park  
 ObsArea Name: Rye Harbor State Park: Salt marsh system  
 Project: NH-EPA2022 WPDG County:  
 Observers:

ObsArea Code: NH899  
 ObsDate: 2022/08/24

Macrogroup:  
 Classifications:  
 General Type:  
 HGM:  
 Cowardin:

**Floristic Quality Index (FQI) Scor**

N: 5.56 MeanC: 6.12 CWMeanC: 6.13 FQI: 14.77

Protocol: New Hampshire Wetlands 2018

	Wt	Field Rating	Field Pts	Calc Pts	Calc Rating
<b>ECOLOGICAL INTEGRITY</b>				2.00	C-
<b>ECOLOGICAL INTEGRITY + SIZE (EO Rank)</b>				<b>1.66</b>	<b>C-</b>
<b>Rank Factor: LANDSCAPE CONTEXT</b>	0.25			2.00	C+
<b>MEF: LANDSCAPE</b>	0.66			2.00	C-
LAN2. Land Use Index	1	C	2		
<b>MEF: EDGE</b>	0.33			2.00	C-
BUF1. Perimeter with Natural Buffer	n/a	C	2		
BUF2. Width of Natural Buffer	n/a	C	2		
<b>Rank Factor: SIZE</b>	0.15				
<b>MEF: SIZE</b>	1				
SIZ1. Comparative Size	n/a	C			
SIZ2. Change in Size	n/a				
<b>Rank Factor: CONDITION</b>	0.6			2.00	C-
<b>MEF: VEGETATION</b>	0.9			2.00	C-
VEG2. Invasive Nonnative Plant Species Cover	1	C	2		
VEG3. Native Plant Species Composition	1	C	2		
VEG4. Vegetation Structure	1	C	2		
<b>MEF: HYDROLOGY</b>	n/a			2.00	C-
HYD1. Water Source	1	B	3		
HYD2. Hydroperiod	1	D	1		
HYD3. Hydrologic Connectivity	1	C	2		
<b>MEF: SOIL</b>	0.1			2.00	C-
SOI1. Soil Condition	1	C	2		

State/Prov: NH Site: Blakes Hill Bog1

ObsArea Code: NH911

ObsArea Name: Blakes Hill Bog1: Temperate peat swamp system

ObsDate: 2022/09/07

Project: NH-EPA2022 WPDG County:

Observers:

Macrogroup:

Classifications:

General Type:

HGM:

Cowardin:

Floristic Quality Index (FQI) Scor

N: 25

MeanC: 4.41

CWMeanC: 3.77

FQI: 22.05

Protocol: New Hampshire Wetlands 2018

	Wt	Field Rating	Field Pts	Calc Pts	Calc Rating
<b>ECOLOGICAL INTEGRITY</b>				3.71	A-
<b>ECOLOGICAL INTEGRITY + SIZE (EO Rank)</b>				<b>3.71</b>	<b>A-</b>
<b>Rank Factor: LANDSCAPE CONTEXT</b>	0.25			3.00	B+
<b>MEF: LANDSCAPE</b>	0.66			3.00	B-
LAN2. Land Use Index	1	B	3		
<b>MEF: EDGE</b>	0.33			3.00	B-
BUF1. Perimeter with Natural Buffer	n/a	B	3		
BUF2. Width of Natural Buffer	n/a	B	3		
<b>Rank Factor: SIZE</b>	0.15				
<b>MEF: SIZE</b>	1				
SIZ1. Comparative Size	n/a	B-			
SIZ2. Change in Size	n/a				
<b>Rank Factor: CONDITION</b>	0.6			4.00	A-
<b>MEF: VEGETATION</b>	0.9			4.00	A+
VEG2. Invasive Nonnative Plant Species Cover	1	A	4		
VEG3. Native Plant Species Composition	1	A	4		
VEG4. Vegetation Structure	1	A	4		
<b>MEF: HYDROLOGY</b>	n/a			3.67	A-
HYD1. Water Source	1	B	3		
HYD2. Hydroperiod	1	A	4		
HYD3. Hydrologic Connectivity	1	A	4		
<b>MEF: SOIL</b>	0.1			4.00	A+
SOI1. Soil Condition	1	A	4		

State/Prov: NH Site: Blakes Hill Bog2  
 ObsArea Name: Blakes Hill Bog2: Poor level fen/bog system  
 Project: NH-EPA2022 WPDG County:  
 Observers:

ObsArea Code: NH914  
 ObsDate: 2022/09/02

Macrogroup:  
 Classifications:  
 General Type:  
 HGM:  
 Cowardin:

**Floristic Quality Index (FQI) Scor**

N: 13.22 MeanC: 5.53 CWMeanC: 5.98 FQJ: 18.98

Protocol: New Hampshire Wetlands 2018

	Wt	Field Rating	Field Pts	Calc Pts	Calc Rating
<b>ECOLOGICAL INTEGRITY</b>				3.75	A-
<b>ECOLOGICAL INTEGRITY + SIZE (EO Rank)</b>				<b>3.08</b>	<b>B</b>
<b>Rank Factor: LANDSCAPE CONTEXT</b>	0.25			3.15	B+
<b>MEF: LANDSCAPE</b>	0.66			3.00	B-
LAN2. Land Use Index	1	B	3		
<b>MEF: EDGE</b>	0.33			3.46	B+
BUF1. Perimeter with Natural Buffer	n/a	A	4		
BUF2. Width of Natural Buffer	n/a	B	3		
<b>Rank Factor: SIZE</b>	0.15				
<b>MEF: SIZE</b>	1				
SIZ1. Comparative Size	n/a	D			
SIZ2. Change in Size	n/a				
<b>Rank Factor: CONDITION</b>	0.6			4.00	A-
<b>MEF: VEGETATION</b>	0.9			4.00	A+
VEG2. Invasive Nonnative Plant Species Cover	1	A	4		
VEG3. Native Plant Species Composition	1	A	4		
VEG4. Vegetation Structure	1	A	4		
<b>MEF: HYDROLOGY</b>	n/a			3.67	A-
HYD1. Water Source	1	B	3		
HYD2. Hydroperiod	1	A	4		
HYD3. Hydrologic Connectivity	1	A	4		
<b>MEF: SOIL</b>	0.1			4.00	A+
SOI1. Soil Condition	1	A	4		

State/Prov: NH Site: Bog Road

ObsArea Code: NH921

ObsArea Name: Bog Road: Poor level fen/bog system

ObsDate: 2022/10/07

Project: NH-EPA2022 WPDG County:

Observers:

Macrogroup:

Classifications:

General Type:

HGM:

Cowardin:

Floristic Quality Index (FQI) Scor

N: 12.47

MeanC: 3.94

CWMeanC: 5.53

FQI: 13.76

Protocol: New Hampshire Wetlands 2018

	Wt	Field Rating	Field Pts	Calc Pts	Calc Rating
<b>ECOLOGICAL INTEGRITY</b>				2.56	B-
<b>ECOLOGICAL INTEGRITY + SIZE (EO Rank)</b>				<b>1.89</b>	<b>C</b>
<b>Rank Factor: LANDSCAPE CONTEXT</b>	0.25			2.00	C+
<b>MEF: LANDSCAPE</b>	0.66			2.00	C-
LAN2. Land Use Index	1	C	2		
<b>MEF: EDGE</b>	0.33			2.00	C-
BUF1. Perimeter with Natural Buffer	n/a	C	2		
BUF2. Width of Natural Buffer	n/a	C	2		
<b>Rank Factor: SIZE</b>	0.15				
<b>MEF: SIZE</b>	1				
SIZ1. Comparative Size	n/a	D			
SIZ2. Change in Size	n/a				
<b>Rank Factor: CONDITION</b>	0.6			2.80	B-
<b>MEF: VEGETATION</b>	0.9			2.67	B-
VEG2. Invasive Nonnative Plant Species Cover	1	C	2		
VEG3. Native Plant Species Composition	1	B	3		
VEG4. Vegetation Structure	1	B	3		
<b>MEF: HYDROLOGY</b>	n/a			3.00	B-
HYD1. Water Source	1	B	3		
HYD2. Hydroperiod	1	B	3		
HYD3. Hydrologic Connectivity	1	B	3		
<b>MEF: SOIL</b>	0.1			4.00	A+
SOI1. Soil Condition	1	A	4		

State/Prov: NH Site: Country Pond NE1  
 ObsArea Name: Country Pond NE1: Poor level fen/bog system  
 Project: NH-EPA2022 WPDG County:  
 Observers:

ObsArea Code: NH931  
 ObsDate: 2022/08/19

Macrogroup:  
 Classifications:  
 General Type:  
 HGM:  
 Cowardin:

**Floristic Quality Index (FQI) Scor**

N: 9.07 MeanC: 4.83 CWMeanC: 5.83 FQI: 14.49

Protocol: New Hampshire Wetlands 2018

	Field Wt	Field Rating	Field Pts	Calc Pts	Calc Rating
<b>ECOLOGICAL INTEGRITY</b>				3.18	B+
<b>ECOLOGICAL INTEGRITY + SIZE (EO Rank)</b>				<b>2.84</b>	<b>B</b>
<b>Rank Factor: LANDSCAPE CONTEXT</b>	0.25			2.67	B-
<b>MEF: LANDSCAPE</b>	0.66			3.00	B-
LAN2. Land Use Index	1	B	3		
<b>MEF: EDGE</b>	0.33			2.00	C-
BUF1. Perimeter with Natural Buffer	n/a	C	2		
BUF2. Width of Natural Buffer	n/a	C	2		
<b>Rank Factor: SIZE</b>	0.15				
<b>MEF: SIZE</b>	1				
SIZ1. Comparative Size	n/a	C			
SIZ2. Change in Size	n/a				
<b>Rank Factor: CONDITION</b>	0.6			3.40	B+
<b>MEF: VEGETATION</b>	0.9			3.33	B+
VEG2. Invasive Nonnative Plant Species Cover	1	A	4		
VEG3. Native Plant Species Composition	1	B	3		
VEG4. Vegetation Structure	1	B	3		
<b>MEF: HYDROLOGY</b>	n/a			3.33	B+
HYD1. Water Source	1	B	3		
HYD2. Hydroperiod	1	B	3		
HYD3. Hydrologic Connectivity	1	A	4		
<b>MEF: SOIL</b>	0.1			4.00	A+
SOI1. Soil Condition	1	A	4		

State/Prov: NH Site: Cedar Swamp Pond

ObsArea Code: NH937

ObsArea Name: Cedar Swamp Pond: Coastal conifer peat swamp system

ObsDate: 2022/08/19

Project: NH-EPA2022 WPDG County:

Observers:

Macrogroup:

Classifications:

General Type:

HGM:

Cowardin:

**Floristic Quality Index (FQI) Scor**

N: 11.76

MeanC: 5.14

CWMeanC: 6.26

FQI: 17.82

Protocol: New Hampshire Wetlands 2018

	Wt	Field Rating	Field Pts	Calc Pts	Calc Rating
<b>ECOLOGICAL INTEGRITY</b>				3.07	B+
<b>ECOLOGICAL INTEGRITY + SIZE (EO Rank)</b>				<b>3.74</b>	<b>A-</b>
<b>Rank Factor: LANDSCAPE CONTEXT</b>	0.25			3.00	B+
<b>MEF: LANDSCAPE</b>	0.66			3.00	B-
LAN2. Land Use Index	1	B	3		
<b>MEF: EDGE</b>	0.33			3.00	B-
BUF1. Perimeter with Natural Buffer	n/a	B	3		
BUF2. Width of Natural Buffer	n/a	B	3		
<b>Rank Factor: SIZE</b>	0.15				
<b>MEF: SIZE</b>	1				
SIZ1. Comparative Size	n/a	A			
SIZ2. Change in Size	n/a				
<b>Rank Factor: CONDITION</b>	0.6			3.10	B+
<b>MEF: VEGETATION</b>	0.9			3.00	B-
VEG2. Invasive Nonnative Plant Species Cover	1	B	3		
VEG3. Native Plant Species Composition	1	B	3		
VEG4. Vegetation Structure	1	B	3		
<b>MEF: HYDROLOGY</b>	n/a			3.33	B+
HYD1. Water Source	1	B	3		
HYD2. Hydroperiod	1	A	4		
HYD3. Hydrologic Connectivity	1	B	3		
<b>MEF: SOIL</b>	0.1			4.00	A+
SOI1. Soil Condition	1	A	4		

State/Prov: NH Site: Berrys Brook2

ObsArea Code: NH940

ObsArea Name: Berrys Brook2: Brackish riverbank marsh system

ObsDate: 2022/08/16

Project: NH-EPA2022 WPDG County:

Observers:

Macrogroup:

Classifications:

General Type:

HGM:

Cowardin:

Floristic Quality Index (FQI) Scor

N: 9.29

MeanC: 5.11

CWMeanC: 5.27

FQI: 14.76

Protocol: New Hampshire Wetlands 2018

	Wt	Field Rating	Field Pts	Calc Pts	Calc Rating
<b>ECOLOGICAL INTEGRITY</b>				2.30	C+
<b>ECOLOGICAL INTEGRITY + SIZE (EO Rank)</b>				<b>1.63</b>	<b>C-</b>
<b>Rank Factor: LANDSCAPE CONTEXT</b>	0.25			2.67	B-
<b>MEF: LANDSCAPE</b>	0.66			2.00	C-
LAN2. Land Use Index	1	C	2		
<b>MEF: EDGE</b>	0.33			4.00	A+
BUF1. Perimeter with Natural Buffer	n/a	A	4		
BUF2. Width of Natural Buffer	n/a	A	4		
<b>Rank Factor: SIZE</b>	0.15				
<b>MEF: SIZE</b>	1				
SIZ1. Comparative Size	n/a	D			
SIZ2. Change in Size	n/a				
<b>Rank Factor: CONDITION</b>	0.6			2.15	C+
<b>MEF: VEGETATION</b>	0.9			2.17	C+
VEG2. Invasive Nonnative Plant Species Cover	1	B-	2.5		
VEG3. Native Plant Species Composition	1	C	2		
VEG4. Vegetation Structure	1	C	2		
<b>MEF: HYDROLOGY</b>	n/a			2.67	B-
HYD1. Water Source	1	B	3		
HYD2. Hydroperiod	1	D	1		
HYD3. Hydrologic Connectivity	1	A	4		
<b>MEF: SOIL</b>	0.1			2.00	C-
SOI1. Soil Condition	1	C	2		



State/Prov: NH Site: Berrys Brook3

ObsArea Code: NH946

ObsArea Name: Berrys Brook3: Moderate-gradient sandy-cobbly riverban ObsDate: 2022/08/16

Project: NH-EPA2022 WPDG County:

Observers:

Macrogroup:

Classifications:

General Type:

HGM:

Cowardin:

Floristic Quality Index (FQI) Scor

N: 23.3

MeanC: 3.34

CWMeanC: 4.02

FQI: 16.17

Protocol: New Hampshire Wetlands 2018

	Wt	Field Rating	Field Pts	Calc Pts	Calc Rating
<b>ECOLOGICAL INTEGRITY</b>				2.81	B-
<b>ECOLOGICAL INTEGRITY + SIZE (EO Rank)</b>				<b>2.14</b>	<b>C</b>
<b>Rank Factor: LANDSCAPE CONTEXT</b>	0.25			2.49	C+
<b>MEF: LANDSCAPE</b>	0.66			2.00	C-
LAN2. Land Use Index	1	C	2		
<b>MEF: EDGE</b>	0.33			3.46	B+
BUF1. Perimeter with Natural Buffer	n/a	A	4		
BUF2. Width of Natural Buffer	n/a	B	3		
<b>Rank Factor: SIZE</b>	0.15				
<b>MEF: SIZE</b>	1				
SIZ1. Comparative Size	n/a	D			
SIZ2. Change in Size	n/a				
<b>Rank Factor: CONDITION</b>	0.6			2.95	B-
<b>MEF: VEGETATION</b>	0.9			2.83	B-
VEG2. Invasive Nonnative Plant Species Cover	1	B-	2.5		
VEG3. Native Plant Species Composition	1	B	3		
VEG4. Vegetation Structure	1	B	3		
<b>MEF: HYDROLOGY</b>	n/a			3.67	A-
HYD1. Water Source	1	B	3		
HYD2. Hydroperiod	1	A	4		
HYD3. Hydrologic Connectivity	1	A	4		
<b>MEF: SOIL</b>	0.1			4.00	A+
SOI1. Soil Condition	1	A	4		

State/Prov: NH Site: Berrys Brook4  
 ObsArea Name: Berrys Brook4: Salt marsh system  
 Project: NH-EPA2022 WPDG County:  
 Observers:

ObsArea Code: NH950  
 ObsDate: 2022/09/09

Macrogroup:  
 Classifications:  
 General Type:  
 HGM:  
 Cowardin:

**Floristic Quality Index (FQI) Scor**

N: 5.82 MeanC: 6.1 CWMeanC: 6.21 FQI: 14.16

Protocol: New Hampshire Wetlands 2018

	Wt	Field Rating	Field Pts	Calc Pts	Calc Rating
<b>ECOLOGICAL INTEGRITY</b>				2.15	C+
<b>ECOLOGICAL INTEGRITY + SIZE (EO Rank)</b>				<b>1.70</b>	<b>C-</b>
<b>Rank Factor: LANDSCAPE CONTEXT</b>	0.25			2.50	B-
<b>MEF: LANDSCAPE</b>	0.66			2.50	C+
LAN2. Land Use Index	1	B-	2.5		
<b>MEF: EDGE</b>	0.33			2.50	C+
BUF1. Perimeter with Natural Buffer	n/a	B-	2.5		
BUF2. Width of Natural Buffer	n/a	B-	2.5		
<b>Rank Factor: SIZE</b>	0.15				
<b>MEF: SIZE</b>	1				
SIZ1. Comparative Size	n/a	C-			
SIZ2. Change in Size	n/a				
<b>Rank Factor: CONDITION</b>	0.6			2.00	C-
<b>MEF: VEGETATION</b>	0.9			2.00	C-
VEG2. Invasive Nonnative Plant Species Cover	1	C	2		
VEG3. Native Plant Species Composition	1	C	2		
VEG4. Vegetation Structure	1	C	2		
<b>MEF: HYDROLOGY</b>	n/a			2.33	C+
HYD1. Water Source	1	B	3		
HYD2. Hydroperiod	1	D	1		
HYD3. Hydrologic Connectivity	1	B	3		
<b>MEF: SOIL</b>	0.1			2.00	C-
SOI1. Soil Condition	1	C	2		

State/Prov: NH Site: Hampton Harbor  
 ObsArea Name: Hampton Harbor: Salt marsh system  
 Project: NH-EPA2022 WPDG County:  
 Observers:

ObsArea Code: NH966  
 ObsDate: 2022/09/29

Macrogroup:  
 Classifications:  
 General Type:  
 HGM:  
 Cowardin:

**Floristic Quality Index (FQI) Scor**

N: 5.16 MeanC: 5.93 CWMeanC: 6.12 FQI: 13.67

Protocol: New Hampshire Wetlands 2018

	Wt	Field Rating	Field Pts	Calc Pts	Calc Rating
<b>ECOLOGICAL INTEGRITY</b>				2.00	C-
<b>ECOLOGICAL INTEGRITY + SIZE (EO Rank)</b>				<b>2.56</b>	<b>C</b>
<b>Rank Factor: LANDSCAPE CONTEXT</b>	0.25			2.00	C+
<b>MEF: LANDSCAPE</b>	0.66			2.00	C-
LAN2. Land Use Index	1	C	2		
<b>MEF: EDGE</b>	0.33			2.00	C-
BUF1. Perimeter with Natural Buffer	n/a	C	2		
BUF2. Width of Natural Buffer	n/a	C	2		
<b>Rank Factor: SIZE</b>	0.15				
<b>MEF: SIZE</b>	1				
SIZ1. Comparative Size	n/a	A-			
SIZ2. Change in Size	n/a				
<b>Rank Factor: CONDITION</b>	0.6			2.00	C-
<b>MEF: VEGETATION</b>	0.9			2.00	C-
VEG2. Invasive Nonnative Plant Species Cover	1	C	2		
VEG3. Native Plant Species Composition	1	C	2		
VEG4. Vegetation Structure	1	C	2		
<b>MEF: HYDROLOGY</b>	n/a			1.67	C-
HYD1. Water Source	1	C	2		
HYD2. Hydroperiod	1	D	1		
HYD3. Hydrologic Connectivity	1	C	2		
<b>MEF: SOIL</b>	0.1			2.00	C-
SOI1. Soil Condition	1	C	2		

State/Prov: NH Site: Country Pond Swamp East

ObsArea Code: NH1013

ObsArea Name: Country Pond Swamp East: Coastal conifer peat swamp s

ObsDate: 2022/07/20

Project: NH-EPA2022 WPDG County:

Observers:

Macrogroup:

Classifications:

General Type:

HGM:

Cowardin:

Floristic Quality Index (FQI) Scor

N: 26

MeanC: 3.54

CWMeanC: 4.02

FQI: 18.04

Protocol: New Hampshire Wetlands 2018

	Wt	Field Rating	Field Pts	Calc Pts	Calc Rating
<b>ECOLOGICAL INTEGRITY</b>				2.84	B-
<b>ECOLOGICAL INTEGRITY + SIZE (EO Rank)</b>				<b>3.18</b>	<b>B+</b>
<b>Rank Factor: LANDSCAPE CONTEXT</b>	0.25			2.20	C+
<b>MEF: LANDSCAPE</b>	0.66			2.00	C-
LAN2. Land Use Index	1	C	2		
<b>MEF: EDGE</b>	0.33			2.60	B-
BUF1. Perimeter with Natural Buffer	n/a	B	3		
BUF2. Width of Natural Buffer	n/a	C+	2.25		
<b>Rank Factor: SIZE</b>	0.15				
<b>MEF: SIZE</b>	1				
SIZ1. Comparative Size	n/a	B			
SIZ2. Change in Size	n/a				
<b>Rank Factor: CONDITION</b>	0.6			3.10	B+
<b>MEF: VEGETATION</b>	0.9			3.00	B-
VEG2. Invasive Nonnative Plant Species Cover	1	B	3		
VEG3. Native Plant Species Composition	1	B	3		
VEG4. Vegetation Structure	1	B	3		
<b>MEF: HYDROLOGY</b>	n/a			3.00	B-
HYD1. Water Source	1	B	3		
HYD2. Hydroperiod	1	B	3		
HYD3. Hydrologic Connectivity	1	B	3		
<b>MEF: SOIL</b>	0.1			4.00	A+
SOI1. Soil Condition	1	A	4		

State/Prov: NH Site: Exeter River2

ObsArea Code: NH1015

ObsArea Name: Exeter River2: Temperate minor river floodplain system

ObsDate: 2022/07/18

Project: NH-EPA2022 WPDG County:

Observers:

Macrogroup:

Classifications:

General Type:

HGM:

Cowardin:

Floristic Quality Index (FQI) Scor

N: 43

MeanC: 3.21

CWMeanC: 2.96

FQI: 21.04

Protocol: New Hampshire Wetlands 2018

	Wt	Field Rating	Field Pts	Calc Pts	Calc Rating
<b>ECOLOGICAL INTEGRITY</b>				2.79	B-
<b>ECOLOGICAL INTEGRITY + SIZE (EO Rank)</b>				<b>2.34</b>	<b>C+</b>
<b>Rank Factor: LANDSCAPE CONTEXT</b>	0.25			3.00	B+
<b>MEF: LANDSCAPE</b>	0.66			3.00	B-
LAN2. Land Use Index	1	B	3		
<b>MEF: EDGE</b>	0.33			3.00	B-
BUF1. Perimeter with Natural Buffer	n/a	B	3		
BUF2. Width of Natural Buffer	n/a	B	3		
<b>Rank Factor: SIZE</b>	0.15				
<b>MEF: SIZE</b>	1				
SIZ1. Comparative Size	n/a	C-			
SIZ2. Change in Size	n/a				
<b>Rank Factor: CONDITION</b>	0.6			2.70	B-
<b>MEF: VEGETATION</b>	0.9			2.67	B-
VEG2. Invasive Nonnative Plant Species Cover	1	C	2		
VEG3. Native Plant Species Composition	1	B	3		
VEG4. Vegetation Structure	1	B	3		
<b>MEF: HYDROLOGY</b>	n/a			3.00	B-
HYD1. Water Source	1	B	3		
HYD2. Hydroperiod	1	B	3		
HYD3. Hydrologic Connectivity	1	B	3		
<b>MEF: SOIL</b>	0.1			3.00	B-
SOI1. Soil Condition	1	B	3		

State/Prov: NH Site: Exeter River and Great Meadows1

ObsArea Code: NH1017

ObsArea Name: Exeter River and Great Meadows1: Temperate minor river ObsDate: 2022/07/07

Project: NH-EPA2022 WPDG County:

Observers:

Macrogroup:

Classifications:

General Type:

HGM:

Cowardin:

Floristic Quality Index (FQI) Scor

N: 24

MeanC: 3.12

CWMeanC: 4.07

FQI: 15.31

Protocol: New Hampshire Wetlands 2018

	Wt	Field Rating	Field Pts	Calc Pts	Calc Rating
<b>ECOLOGICAL INTEGRITY</b>				2.76	B-
<b>ECOLOGICAL INTEGRITY + SIZE (EO Rank)</b>				<b>2.42</b>	<b>C+</b>
<b>Rank Factor: LANDSCAPE CONTEXT</b>	0.25			2.67	B-
<b>MEF: LANDSCAPE</b>	0.66			2.50	C+
LAN2. Land Use Index	1	B-	2.5		
<b>MEF: EDGE</b>	0.33			3.00	B-
BUF1. Perimeter with Natural Buffer	n/a	B	3		
BUF2. Width of Natural Buffer	n/a	B	3		
<b>Rank Factor: SIZE</b>	0.15				
<b>MEF: SIZE</b>	1				
SIZ1. Comparative Size	n/a	C			
SIZ2. Change in Size	n/a				
<b>Rank Factor: CONDITION</b>	0.6			2.80	B-
<b>MEF: VEGETATION</b>	0.9			2.67	B-
VEG2. Invasive Nonnative Plant Species Cover	1	C	2		
VEG3. Native Plant Species Composition	1	B	3		
VEG4. Vegetation Structure	1	B	3		
<b>MEF: HYDROLOGY</b>	n/a			3.00	B-
HYD1. Water Source	1	B	3		
HYD2. Hydroperiod	1	B	3		
HYD3. Hydrologic Connectivity	1	B	3		
<b>MEF: SOIL</b>	0.1			4.00	A+
SOI1. Soil Condition	1	A	4		

State/Prov: NH Site: Lamprey River

ObsArea Code: NH1019

ObsArea Name: Lamprey River: Temperate minor river floodplain system

ObsDate: 2022/07/14

Project: NH-EPA2022 WPDG County:

Observers:

Macrogroup:

Classifications:

General Type:

HGM:

Cowardin:

Floristic Quality Index (FQI) Scor

N: 28.2

MeanC: 3.25

CWMeanC: 3.21

FQI: 17.15

Protocol: New Hampshire Wetlands 2018

	Field Wt	Field Rating	Field Pts	Calc Pts	Calc Rating
<b>ECOLOGICAL INTEGRITY</b>				2.66	B-
<b>ECOLOGICAL INTEGRITY + SIZE (EO Rank)</b>				<b>2.66</b>	<b>B-</b>
<b>Rank Factor: LANDSCAPE CONTEXT</b>	0.25			2.33	C+
<b>MEF: LANDSCAPE</b>	0.66			2.00	C-
LAN2. Land Use Index	1	C	2		
<b>MEF: EDGE</b>	0.33			3.00	B-
BUF1. Perimeter with Natural Buffer	n/a	B	3		
BUF2. Width of Natural Buffer	n/a	B	3		
<b>Rank Factor: SIZE</b>	0.15				
<b>MEF: SIZE</b>	1				
SIZ1. Comparative Size	n/a	B-			
SIZ2. Change in Size	n/a				
<b>Rank Factor: CONDITION</b>	0.6			2.80	B-
<b>MEF: VEGETATION</b>	0.9			2.67	B-
VEG2. Invasive Nonnative Plant Species Cover	1	C	2		
VEG3. Native Plant Species Composition	1	B	3		
VEG4. Vegetation Structure	1	B	3		
<b>MEF: HYDROLOGY</b>	n/a			3.00	B-
HYD1. Water Source	1	B	3		
HYD2. Hydroperiod	1	B	3		
HYD3. Hydrologic Connectivity	1	B	3		
<b>MEF: SOIL</b>	0.1			4.00	A+
SOI1. Soil Condition	1	A	4		

State/Prov: NH Site: Lee Town Hall Bog  
 ObsArea Name: Lee Town Hall Bog: Poor level fen/bog system  
 Project: NH-EPA2022 WPDG County:  
 Observers:

ObsArea Code: NH1023  
 ObsDate: 2022/07/28

Macrogroup:  
 Classifications:  
 General Type:  
 HGM:  
 Cowardin:

**Floristic Quality Index (FQI) Scor**

N: 9.51 MeanC: 5.01 CWMeanC: 4.91 FQI: 16.27

Protocol: New Hampshire Wetlands 2018

	Wt	Field Rating	Field Pts	Calc Pts	Calc Rating
<b>ECOLOGICAL INTEGRITY</b>				3.02	B+
<b>ECOLOGICAL INTEGRITY + SIZE (EO Rank)</b>				<b>2.57</b>	<b>B-</b>
<b>Rank Factor: LANDSCAPE CONTEXT</b>	0.25			2.12	C+
<b>MEF: LANDSCAPE</b>	0.66			2.00	C-
LAN2. Land Use Index	1	C	2		
<b>MEF: EDGE</b>	0.33			2.37	C+
BUF1. Perimeter with Natural Buffer	n/a	B-	2.5		
BUF2. Width of Natural Buffer	n/a	C+	2.25		
<b>Rank Factor: SIZE</b>	0.15				
<b>MEF: SIZE</b>	1				
SIZ1. Comparative Size	n/a	C-			
SIZ2. Change in Size	n/a				
<b>Rank Factor: CONDITION</b>	0.6			3.40	B+
<b>MEF: VEGETATION</b>	0.9			3.33	B+
VEG2. Invasive Nonnative Plant Species Cover	1	A	4		
VEG3. Native Plant Species Composition	1	B	3		
VEG4. Vegetation Structure	1	B	3		
<b>MEF: HYDROLOGY</b>	n/a			3.33	B+
HYD1. Water Source	1	B	3		
HYD2. Hydroperiod	1	A	4		
HYD3. Hydrologic Connectivity	1	B	3		
<b>MEF: SOIL</b>	0.1			4.00	A+
SOI1. Soil Condition	1	A	4		



State/Prov: NH Site: Bailey Brook

ObsArea Code: NH1028

ObsArea Name: Bailey Brook: Coastal conifer peat swamp system

ObsDate: 2022/08/11

Project: NH-EPA2022 WPDG County:

Observers:

Macrogroup:

Classifications:

General Type:

HGM:

Cowardin:

**Floristic Quality Index (FQI) Scor**

N: 36.35

MeanC: 3.8

CWMeanC: 4.8

FQI: 22.56

Protocol: New Hampshire Wetlands 2018

	Field Wt	Field Rating	Field Pts	Calc Pts	Calc Rating
<b>ECOLOGICAL INTEGRITY</b>				2.87	B-
<b>ECOLOGICAL INTEGRITY + SIZE (EO Rank)</b>				<b>2.64</b>	<b>B-</b>
<b>Rank Factor: LANDSCAPE CONTEXT</b>	0.25			2.33	C+
<b>MEF: LANDSCAPE</b>	0.66			2.00	C-
LAN2. Land Use Index	1	C	2		
<b>MEF: EDGE</b>	0.33			3.00	B-
BUF1. Perimeter with Natural Buffer	n/a	B	3		
BUF2. Width of Natural Buffer	n/a	B	3		
<b>Rank Factor: SIZE</b>	0.15				
<b>MEF: SIZE</b>	1				
SIZ1. Comparative Size	n/a	C+			
SIZ2. Change in Size	n/a				
<b>Rank Factor: CONDITION</b>	0.6			3.10	B+
<b>MEF: VEGETATION</b>	0.9			3.00	B-
VEG2. Invasive Nonnative Plant Species Cover	1	B	3		
VEG3. Native Plant Species Composition	1	B	3		
VEG4. Vegetation Structure	1	B	3		
<b>MEF: HYDROLOGY</b>	n/a			3.67	A-
HYD1. Water Source	1	B	3		
HYD2. Hydroperiod	1	A	4		
HYD3. Hydrologic Connectivity	1	A	4		
<b>MEF: SOIL</b>	0.1			4.00	A+
SOI1. Soil Condition	1	A	4		

State/Prov: NH Site: Odiorne Point State Park2

ObsArea Code: NH1033

ObsArea Name: Odiorne Point State Park2: Coastal salt pond marsh system ObsDate: 2022/08/03

Project: NH-EPA2022 WPDG County:

Observers:

Macrogroup:

Classifications:

General Type:

HGM:

Cowardin:

Floristic Quality Index (FQI) Score

N: 6

MeanC: 3.17

CWMeanC: 3.01

FQI: 7.76

Protocol: New Hampshire Wetlands 2018

	Wt	Field Rating	Field Pts	Calc Pts	Calc Rating
<b>ECOLOGICAL INTEGRITY</b>				3.59	A-
<b>ECOLOGICAL INTEGRITY + SIZE (EO Rank)</b>				<b>3.25</b>	<b>B</b>
<b>Rank Factor: LANDSCAPE CONTEXT</b>	0.25			3.33	B+
<b>MEF: LANDSCAPE</b>	0.66			3.00	B-
LAN2. Land Use Index	1	B	3		
<b>MEF: EDGE</b>	0.33			4.00	A+
BUF1. Perimeter with Natural Buffer	n/a	A	4		
BUF2. Width of Natural Buffer	n/a	A	4		
<b>Rank Factor: SIZE</b>	0.15				
<b>MEF: SIZE</b>	1				
SIZ1. Comparative Size	n/a	C			
SIZ2. Change in Size	n/a				
<b>Rank Factor: CONDITION</b>	0.6			3.70	A-
<b>MEF: VEGETATION</b>	0.9			3.67	A-
VEG2. Invasive Nonnative Plant Species Cover	1	B	3		
VEG3. Native Plant Species Composition	1	A	4		
VEG4. Vegetation Structure	1	A	4		
<b>MEF: HYDROLOGY</b>	n/a			3.67	A-
HYD1. Water Source	1	B	3		
HYD2. Hydroperiod	1	A	4		
HYD3. Hydrologic Connectivity	1	A	4		
<b>MEF: SOIL</b>	0.1			4.00	A+
SOI1. Soil Condition	1	A	4		

State/Prov: NH Site: Powwow River East

ObsArea Code: NH1035

ObsArea Name: Powwow River East: Coastal conifer peat swamp system

ObsDate: 2022/07/07

Project: NH-EPA2022 WPDG County:

Observers:

Macrogroup:

Classifications:

General Type:

HGM:

Cowardin:

Floristic Quality Index (FQI) Scor

N: 10

MeanC: 4.43

CWMeanC: 6.06

FQI: 13.84

Protocol: New Hampshire Wetlands 2018

	Wt	Field Rating	Field Pts	Calc Pts	Calc Rating
<b>ECOLOGICAL INTEGRITY</b>				2.97	B-
<b>ECOLOGICAL INTEGRITY + SIZE (EO Rank)</b>				<b>3.31</b>	<b>B+</b>
<b>Rank Factor: LANDSCAPE CONTEXT</b>	0.25			2.67	B-
<b>MEF: LANDSCAPE</b>	0.66			2.50	C+
LAN2. Land Use Index	1	B-	2.5		
<b>MEF: EDGE</b>	0.33			3.00	B-
BUF1. Perimeter with Natural Buffer	n/a	B	3		
BUF2. Width of Natural Buffer	n/a	B	3		
<b>Rank Factor: SIZE</b>	0.15				
<b>MEF: SIZE</b>	1				
SIZ1. Comparative Size	n/a	B			
SIZ2. Change in Size	n/a				
<b>Rank Factor: CONDITION</b>	0.6			3.10	B+
<b>MEF: VEGETATION</b>	0.9			3.00	B-
VEG2. Invasive Nonnative Plant Species Cover	1	B	3		
VEG3. Native Plant Species Composition	1	B	3		
VEG4. Vegetation Structure	1	B	3		
<b>MEF: HYDROLOGY</b>	n/a			3.33	B+
HYD1. Water Source	1	B	3		
HYD2. Hydroperiod	1	A	4		
HYD3. Hydrologic Connectivity	1	B	3		
<b>MEF: SOIL</b>	0.1			4.00	A+
SOI1. Soil Condition	1	A	4		

State/Prov: NH Site: Route 111 Swamp  
 ObsArea Name: Route 111 Swamp: Temperate peat swamp system  
 Project: NH-EPA2022 WPDG County:  
 Observers:

ObsArea Code: NH1039  
 ObsDate: 2022/07/11

Macrogroup:  
 Classifications:  
 General Type:  
 HGM:  
 Cowardin:

**Floristic Quality Index (FQI) Scor**

N: 21 MeanC: 4.19 CWMeanC: 4.04 FQI: 19.2

Protocol: New Hampshire Wetlands 2018

	Wt	Field Rating	Field Pts	Calc Pts	Calc Rating
<b>ECOLOGICAL INTEGRITY</b>				2.87	B-
<b>ECOLOGICAL INTEGRITY + SIZE (EO Rank)</b>				<b>3.21</b>	<b>B+</b>
<b>Rank Factor: LANDSCAPE CONTEXT</b>	0.25			2.33	C+
<b>MEF: LANDSCAPE</b>	0.66			2.00	C-
LAN2. Land Use Index	1	C	2		
<b>MEF: EDGE</b>	0.33			3.00	B-
BUF1. Perimeter with Natural Buffer	n/a	B	3		
BUF2. Width of Natural Buffer	n/a	B	3		
<b>Rank Factor: SIZE</b>	0.15				
<b>MEF: SIZE</b>	1				
SIZ1. Comparative Size	n/a	B			
SIZ2. Change in Size	n/a				
<b>Rank Factor: CONDITION</b>	0.6			3.10	B+
<b>MEF: VEGETATION</b>	0.9			3.00	B-
VEG2. Invasive Nonnative Plant Species Cover	1	B	3		
VEG3. Native Plant Species Composition	1	B	3		
VEG4. Vegetation Structure	1	B	3		
<b>MEF: HYDROLOGY</b>	n/a			3.67	A-
HYD1. Water Source	1	B	3		
HYD2. Hydroperiod	1	A	4		
HYD3. Hydrologic Connectivity	1	A	4		
<b>MEF: SOIL</b>	0.1			4.00	A+
SOI1. Soil Condition	1	A	4		

State/Prov: NH Site: Spruce Hole Bog  
 ObsArea Name: Spruce Hole Bog: Kettle hole bog system  
 Project: NH-EPA2022 WPDG County:  
 Observers:

ObsArea Code: NH1041  
 ObsDate: 2022/07/27

Macrogroup:  
 Classifications:  
 General Type:  
 HGM:  
 Cowardin:

**Floristic Quality Index (FQI) Scor**

N: 14.01 MeanC: 5.11 CWMeanC: 5.28 FQI: 19

Protocol: New Hampshire Wetlands 2018

	Wt	Field Rating	Field Pts	Calc Pts	Calc Rating
<b>ECOLOGICAL INTEGRITY</b>				3.61	A-
<b>ECOLOGICAL INTEGRITY + SIZE (EO Rank)</b>				<b>3.27</b>	<b>B+</b>
<b>Rank Factor: LANDSCAPE CONTEXT</b>	0.25			2.67	B-
<b>MEF: LANDSCAPE</b>	0.66			2.00	C-
LAN2. Land Use Index	1	C	2		
<b>MEF: EDGE</b>	0.33			4.00	A+
BUF1. Perimeter with Natural Buffer	n/a	A	4		
BUF2. Width of Natural Buffer	n/a	A	4		
<b>Rank Factor: SIZE</b>	0.15				
<b>MEF: SIZE</b>	1				
SIZ1. Comparative Size	n/a	C			
SIZ2. Change in Size	n/a				
<b>Rank Factor: CONDITION</b>	0.6			4.00	A-
<b>MEF: VEGETATION</b>	0.9			4.00	A+
VEG2. Invasive Nonnative Plant Species Cover	1	A	4		
VEG3. Native Plant Species Composition	1	A	4		
VEG4. Vegetation Structure	1	A	4		
<b>MEF: HYDROLOGY</b>	n/a			4.00	A+
HYD1. Water Source	1	A	4		
HYD2. Hydroperiod	1	A	4		
HYD3. Hydrologic Connectivity	1	A	4		
<b>MEF: SOIL</b>	0.1			4.00	A+
SOI1. Soil Condition	1	A	4		