

EXECUTIVE SUMMARY

During 2006-2007 Ecosystem Management Consultants (EMC) of Sandwich, New Hampshire completed Phase II of a natural resources inventory (NRI) after completing Phase I from 2003 – 2005 [<http://meredithnh.org/nri.php>]. The purpose of Phase II of the NRI was to: 1) conduct a field investigation of each of the high value co-occurrence areas identified during the Phase I inventory, 2) conduct a field-based wildlife habitat analysis of representative areas of the Town, and 3) perform a GPS-based field delineation of all prime wetland areas, as made accessible by private property permission.

The Meredith Conservation Commission, having assisted in Phase I of the NRI, helped coordinate the private property access requests and contributed valuable input on the scope of the project as a whole. The Meredith Planning Department, under its (then) Director of Planning John Edgar, provided essential support for the entire project and reviewed progress as the field-based NRI unfolded.

All 10 of the co-occurrence areas identified during NRI Phase I were visited on the ground. One of these areas, Hawkins Brook (#1), was determined to be significantly compromised by human activity and was not studied in great detail. The remainder were visited in the field at least once, with the majority being surveyed three to five times, particularly the six that contained prime wetlands. Approximately 350 property owners were contacted for permission to access a part of their property; of the 54% who responded, 82% of these gave permission. In areas without permission, roadside surveys were conducted.

Of the nine co-occurrence areas (CA) that were studied intensively, four of them were resized downward and five expanded. Total size for the revised co-occurrence areas changed from 5187 acres to 6041 acres, or an increase of 16%. Most of these changes were a result of field-based revisions to wetland areas as well as ridgeline areas of high quality wildlife habitat. The largest change among wetland areas took place at Page Pond (CA #3) where adjacent designated wetlands were deemed to be part of the overall prime wetland complex. The largest change in upland areas took place at Spectacle Pond (CA #8) and Leavitt Mountain (CA #9), where excellent upland habitat for wildlife was evident from abundant wildlife sign.

Wildlife habitat was assessed using three methods that enhanced the wildlife habitat data gathered during NRI Phase I: 1) roadside surveys of wildlife crossing areas, 2) off-road observation of wildlife and their sign, and 3) anecdotal reports of wildlife including records from the Meredith Conservation Commission, NH Audubon Society, and the NH Fish and Game Department. Roadside surveys were completed on 9 different days in winter and spring and covered 193 miles of roads (84% of the road area in Meredith). Most of these were completed during the period of winter snow in order to detect road-crossing routes of medium to large mammals. Sixteen road crossing sites were detected among 13 species of mammals. One roadside survey was completed in April, with 42 crossing sites recorded for short-migratory amphibians. Most of the latter were recorded on Meredith Neck, which, if extrapolated for the entire town, suggests at least 160 vernal amphibian crossing sites along Meredith town roads.

Off-road wildlife observations were mostly recorded during the field survey of prime wetlands and co-occurrence areas. A total of 20 off-road site visits were conducted equaling 87.9 km of travel that covered roughly 2336 acres (6.6% of Meredith, 9.2% of the land area). Seven wetland areas of town were focused on: a) Bartlett Brook, b) Page Pond and Page Brook, c) Hatch Brook, d) Forest Pond and Dolloff Brook, e) Blake Brook, f) Meredith Center and Chemung, and g) Pemigewasset Lake. As noted above, upland wildlife observations were also recorded at Spectacle Pond and Leavitt-Ladd Mountain. Observations included the following for the major groups of organisms:

Mammals	sightings, tracks, dens, fur & other sign
Birds	sightings, auditory records, nests, feathers, roosts
Fishes	sightings, scales, eggs
Reptiles	sightings, scat, shed skin, plastron/telson
Amphibians	sightings (adults), eggs, larvae, calls (frogs & toads)
Invertebrates	sightings (adults), exuviae (aquatic macros), larvae

A total of 35 mammals, 140 birds, 20 fishes, 6 reptiles, 12 amphibians, 140 aquatic macro-invertebrates, and 142 upland invertebrate species were recorded during the 23 field days of observation that covered approximately 9% of the land area of Meredith. In addition, 624 species of plants and 323 species of fungi were observed. Since this project emphasized vertebrate wildlife species, the lists of invertebrates, plants and fungi should be considered partial lists for the town.

Given the value of rare and endangered species and exemplary natural communities,¹ a thorough investigation of these elements was completed. Records of state-listed species were researched through the NH Natural Heritage Bureau, the NH Audubon Society and the NH Fish and Game Department. A total of eight state-listed rare plant species were located in eight locales, one of which was historic (i.e. > 20 years old). Sixteen species of rare animals were located among 45 sites, seven of which were from existing NH Fish & Game records. These include nine species that are not threatened or endangered but appear on the Wildlife Action Plan Special Concern list. Twenty-one exemplary natural communities were identified totaling 335 acres of land, or roughly 15% of the survey area. These included eight upland and nine wetland types, most notably, the black gum-red maple swamp at Hamlin Recreation Area, the northern hardwood-mountain maple talus slope on Saddle Hill, and the mixed, tall grass-like emergent marsh along lower Hatch Brook.

All seven prime wetlands were investigated for their size and general quality. After researching the Hawkins Brook prime wetland during NRI Phase I, it was recommended that this wetland be declassified as a prime wetland owing to the degree of fragmentation and degradation. The remaining six prime wetlands were visited during the snow-free seasons of 2006 and 2007. Roughly 47% of the six prime wetlands were field-delineated using GPS, or roughly 87% the area that had written property access permission. Nearly complete coverage was achieved at

¹ "Exemplary natural communities" refers to regularly occurring collections of plants and animals in their natural habitat that is either rare in the region or state, or common and widespread but of very high quality.

Hatch Brook and lower Blake Brook; the remainder contained property permissions on less than 45% of the prime wetland area.

Based on the field and map-based delineation, the following changes occurred among the six prime wetlands:

ID	Acres - 1984	Acres - NRI I	Acres - NRI II	% Similar NRI I vs NRI II
Dolloff Brook	155.8	171.7	192.2	87.7
Blake Brook	124.0	171.7	143.2	88.3
Hatch Brook	44.6	195.7	213.0	80.6
Mill Brook	200.8	126.3	132.9	90.2
Page Brook	189.5	265.5	281.4	89.0
Stoney Brook	224.1	217.3	207.2	97.0
Total		1148.2	1169.9	88.8

Table 1. Prime wetland comparison.

Note that the “% Similar” values include both additions and deletions and therefore represents a net gain or loss.

The above acreages compare favorably with the prime wetlands aerial photo interpretation (API) that was completed during NRI Phase.² With the exception of the above-noted Hawkins Brook prime wetlands, all of the prime wetlands exhibited a remarkably pristine nature in spite of the proximity to roads; it was no surprise that all of these prime wetlands were contained within high-value co-occurrence areas.

Suggested conservation measures that might help protect the high-value co-occurrence areas of Meredith in the future include:

- Establishing larger water resource setbacks within these areas (150 feet)
- Placing greater restrictions on permitted uses within these areas
- Requiring ecological assessments for development projects
- Providing conservation subdivision incentives
- Securing conservation easements
- Passing municipal bond measures to purchase conservation land
- Assigning volunteer monitors to stewards these areas

The following report contains a detailed discussion of the revised co-occurrence and prime wetlands mapping, as well as a description of the significant wildlife habitat areas in Meredith. Natural resource and land conservation measures are also outlined for these areas.

² It should be noted that the overlap between the 1984 wetland delineation of prime wetlands and the NRI Phase II delineation of prime wetlands was 54%.

The author would like to acknowledge John C. Edgar of the Meredith Community Development Department and Jacquie Colburn of the Meredith Conservation Commission for their support and the pivotal role they played in coordinating this project; Michelle Therrien, Meredith GIS Specialist, for her assistance in producing the GIS maps and tables; and the Town of Meredith Conservation Commission members for their assistance in obtaining private property permissions, contributions of wildlife records, and their support in sponsoring periodic presentations of the findings.



Cow Moose on Saddle Hill