

species lists indicate animals that either state-listed threatened or endangered, or appear on the Wildlife Action Plan's (WAP) list of Special Concern Species. The latter list of approximately 127 species includes both S1 (state endangered) and S2 (state threatened) species besides the ones that are of special concern. Many of the latter are actually ranked as S3 (rare or declining but not in imminent threat of demise), S4 (demonstrably secure but rare in parts of its natural range in New Hampshire, or even S5 (secure and widespread throughout the state). Whereas the rationale for including the special concern species is offered in the Plan, some of them were not tracked during this study because of their apparent abundance. Veery and wood thrush are two species that can be expected to regularly occur in Meredith, but have elicited some concern among conservation biologists.



Figure 13. Great Blue Heron nest and Panax ginseng

Left: unoccupied great blue heron nest in upper Blake Brook; Above: Panax ginseng at an undisclosed locale in Meredith. Both require special habitat conditions.

3. Rare & Endangered Species

Plants

A total of nine rare plant species were found in Meredith during the two-year survey. Only one of the eight previously recorded historic species was located, ram's-head lady's-slipper (*Cypripedium arietinum*). The others, mostly orchids, have not been seen for several decades or longer.⁸ The ram's-head is one of the rarest orchids in New Hampshire, and has just three extant records, two of which are from Meredith. Both populations consist of less than 20 individuals each, and the third population in the state (located in Moultonborough), has just 37 individuals.

⁸ Climbing fumitory (*Adlumia fungosa*), has not been seen since 1888.

The other seven species of rare plants were new records for the town. The findings are summarized in the table below as organized by date:

DATE	S RANK	SPECIES - Scientific	SPECIES - Common	LOCATION	NOTES
10/5/2002	S3	<i>Ceratophyllum echinatum</i>	Prickly Coontail	Hamlin Rec Area	1st recent record in state
10/5/2002	S3	<i>Utricularia minor</i>	Lesser Bladderwort	Hamlin Rec Area	in lower beaver pond
5/31/2005	S1	<i>Cypripedium arietinum</i>	Ram's-Head Lady's-Slipper	Meredith Neck	2 of 3 extant populations in state
6/14/2006	S2	<i>Panax quinquefolius</i>	American Ginseng	Hamlin Rec Area	large, robust population - new record
7/12/2006	S3S4	<i>Carex tuckermanii</i>	Tuckerman's Sedge	Leavitt Mtn	southernmost occurrence in central NH
7/12/2006	S3	<i>Utricularia radiata</i>	Floating bladderwort	Beaver Pond below (south of) Leavitt Mtn	in marshy moat at edge
1/11/2007	S3	<i>Castanea dentata</i>	American Chestnut	Page Pond west	4" diameter stem, no fruits
N.D.	S3	<i>Juglans cinerea</i>	Butternut	Moulton's farm	non-specific locations throughout town

Table 7. Rare & Endangered Plant Species found in Meredith 2006-2007

The "S RANK" refers to the rarity in the state as described on page 42. Note that the first two species were actually found as result of a field survey completed before the official NRI Phase II began. Both species were found again in the same locale two years later during a walk held for the Town, and therefore are included in the list. The ginseng was a new record for Meredith, although there are scattered populations known for the region as a whole. The Tuckerman's sedge and floating bladderwort were found during the field survey of Leavitt Mountain in the company of a private resident. Both are locally common but widely scattered throughout their regions of occurrence. Chestnut and butternut are two species of special concern that were far more common prior to the accidental introduction of a non-native, species-specific blight; chestnuts are quite rare as mature trees and butternuts, while common, are rapidly disappearing from both agricultural areas and naturally occurring semi-rich forests.

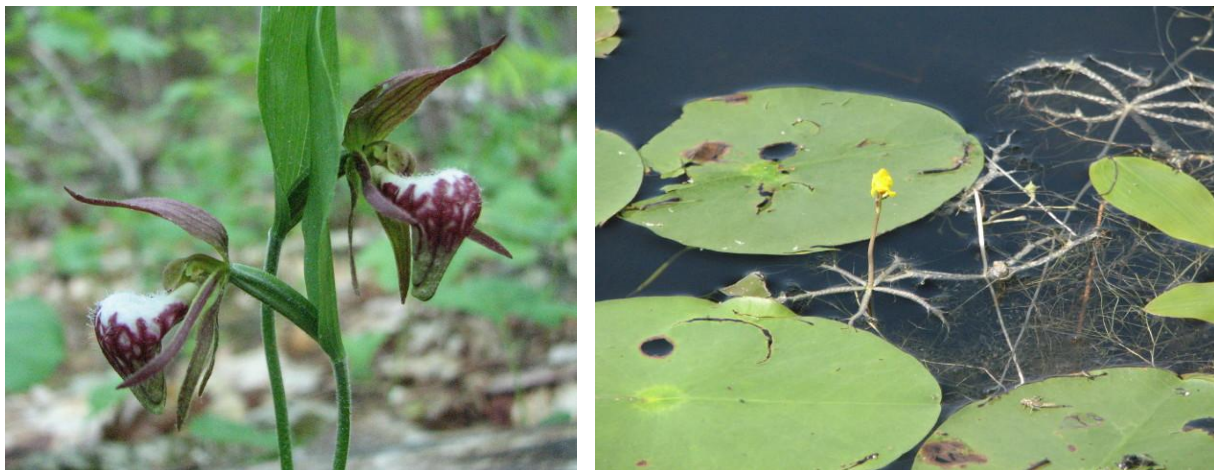


Figure 14. Ram's-head lady's-slipper & floating bladderwort
State-endangered Ram's-head lady's-slipper (L) and state-watch floating-leaved bladderwort (R).

Animals

Two different types of rare animal occurrences were recorded during 2006 – 2007: a) site specific and b) general location. A total of 45 site-specific rare animal observations were made during the Phase II NRI project. All but seven of these were personal records from the field. Two records, one for great blue heron and one for black duck, were personal records from the Hamlin Recreation Area survey in 2002. A single record for gyrfalcon came from Dave Merrill as seen at John Moulton's farm in 2006. The remaining four came from the NH Audubon Society, specifically two osprey nest records, one bald eagle nest record, and one loon nest record. The loon nesting data for the entire town was confirmed by the Loon Preservation Committee.

A total of 11 general location records of rare & endangered animals were documented, all of which were fish records supplied by NH Fish & Game Department. These included fyke net trapping observations of Atlantic salmon from Lake Winnepesaukee, Lake Winnisquam, and Lake Waukewan; sonar surveys and creel records of rainbow smelt in Lake Winnisquam and Lake Winnepesaukee; and Wildlife Action Plan (WAP) records of burbot, lake trout, lake whitefish, and round whitefish in Lake Winnepesaukee, and lake whitefish in Lake Winnisquam. There were also non site-specific records of slimy sculpin for Meredith in the WAP (2005).



Left: Bald eagles can be regularly seen in Meredith, although they are not yet nesting within the town boundary. Far more common yet still tracked by NH Fish & Game is the ruffed grouse (below), which is widespread in Meredith in open, brushy borders.



Figure 15. Bald eagle & ruffed grouse

Of the sixteen rare animals that were observed, the most commonly observed species were American black duck, bobcat, Canada warbler, common loon, great blue heron, osprey, purple finch, and ruffed grouse. At least four observations of each of these species were recorded. Black duck was seen throughout the town during migration and in more remote beaver marshes during the breeding season; bobcat was recorded from a wide variety of locales including Page Pond, Saddle Hill and Spectacle Pond; Canada warbler was seen in the Blake Brook Prime Wetland;

common loon was generally seen near nesting locales off Meredith Neck and at Lake Wicwas; great blue herons were widespread in town, although only three nesting locales were found in the Page Brook, Blake Brook, and Meredith Center CA's; osprey was mostly recorded in the Chemung District within range of the active nest site in Chemung State Forest; purple finch was seen only in late spring in the Chemung District; and ruffed grouse was observed in a wide variety of locales such as Hatch Brook, Page Pond, and Ladd Mountain. Details of each of these observations can be found in Appendix A.

Peregrine falcon was seen once over Chemung State Forest in May while harassing a nesting osprey pair. Peregrines are quite rare outside of migration in February – April and October – November



Figure 16. Peregrine falcon over Chemung State Forest

Appendix A also contains a list of hypothetical rare species in Meredith. These are broken out into three categories: **historic species** – which include bridle shiner, which has been recently recorded in Lake Winnisquam; wood turtle, whose extant range also makes this very likely species in Meredith; golden eagle, a raptor whose numbers are beginning to recover from the precipitous drop during the period of DDT application; grasshopper sparrow, whose populations basically vacated the region nearly 100 years ago after the demise of open land agriculture; and purple martin, whose numbers have continued to drop since agricultural days and is now nearly absent from the state; **probable species** – which includes those species that have been recorded in recent times in the region and which requires habitat types that are currently present in Meredith (bridle shiner, northern ribbon snake, smooth green snake, common nighthawk, Cooper's hawk, brown thrasher, northern goshawk, and merlin; and **possible species** – those species whose current range is outside of the region or whose numbers are extremely low in spite of the presence of adequate habitat (Blanding's turtle, northern leopard frog, spotted turtle, northern myotis, northern redbelly dace, tessellated darter, common moorhen, golden-winged warbler, pied-billed grebe, vesper sparrow, and whip-poor-will).⁹

⁹ Whip-poor-will has been undergoing a recent resurgence in the state, and it is likely that this species will be back in Meredith in a matter of one or two years time. The remainder is far less likely to recolonize suitable habitat in the near future.

Exemplary Natural Communities

A total of 21 exemplary natural communities representing 334 acres were identified and mapped in Meredith. Only the Medium-depth Emergent Marsh community type was mapped multiple times. The remainder was represented by one example, although there may be other high quality examples in Meredith that were not recorded, particularly for Tall Graminoid Emergent Marsh, Deep Emergent Marsh, Hemlock-Cinnamon Fern Forest, and Semi-rich Mesic Sugar Maple Forest. These latter four types are fairly common statewide and therefore have many more examples of very high quality outside of Meredith. A synopsis of the 21 types, including their size, condition, and landscape context ranks, can be found in Appendix A.



Figure 17. Old growth natural communities – Saddle Hill & Ladd Mountain
Left: old growth talus community of Saddle Hill; Right: old growth sugar maple on Ladd Mountain

The rarest natural communities in Meredith were the Black Gum-Red Maple Basin Swamp (S1S2), Leatherleaf-Sheep Laurel Dwarf Shrub Bog (S1S3), Northern Hardwoods-Black Ash-Conifer Swamp (S2), and Rich Red Oak Rocky Woods (S2S3). The black gum swamp in the Hamlin Recreation Area was actually first identified in 2002, when it was shown to me by Peter Miller. Although fairly small, this swamp forest is in an undisturbed (old growth) condition. The leatherleaf-dominated dwarf shrub bog is also very small relative to what occurs in the region, but it is of very high quality and is the only known site in Meredith. The black ash-dominated

mixed conifer swamp was found within the Hatch Brook Prime Wetland. This seepage forest, while fairly rare south of the White Mountains, was found in excellent condition in spite of nearby development. The Rich Red Oak Rocky Woods was actually represented by two variants in Meredith, both of which occurred in the Leavitt-Ladd Mountain Co-Occurrence Area (CA #9). A dry rich variant on Saddle Hill was characterized by the largest and oldest red oaks in Meredith. A rich mesic variant on Ladd Mountain was characterized by late successional red oaks and sugar maples amidst a talus boulder and talus cliff community.

Most of the remaining exemplary natural communities are fairly common in the region, but were present in Meredith as exquisite examples of what is present. Eight of the remaining fifteen exemplary natural communities were found in prime wetlands, inclusive of the Leatherleaf-Black Spruce Bog at Chemung State Forest (bordering on Mud Pond), the Red Maple-Sensitive Fern Seepage swamp along a tributary of Blake Brook, and the Bog Rosemary-Sweet Gale-Sedge Fen at Page Pond. All three of these wetland communities were associated with rare animal species. Non-wetland communities of note included the Red Oak-Pine Rocky Ridge on Leavitt Mountain and the Appalachian Oak-Pine Rocky Ridge east of Page Pond. While similar in structure and fire origin, the former occurs at a much higher elevation (1400 feet) and consists of white pine while the latter sits at less than 800 feet and consists of pitch pine.

Although most of the exemplary natural communities have been assigned rarity ranks based on their size, condition, and landscape context, one natural community, the Northern Hardwood-Mountain Maple-Talus Boulder Woodland is not officially recognized as a natural community in New Hampshire and therefore has not been assigned a rank. This community, as depicted above, is in an old growth condition and appears to be quite stable. It contains scattered, 250-300 year old yellow birch, sugar maple, and red oak, with a thick understory of mountain maple and striped maple. The groundcover was composed of evergreen woodfern, marginal woodfern, red raspberry, red-berried elder, Dewey's sedge, dwarf enchanter's nightshade, and abundant mosses. The slope exceeded 30-35%, the soils were mesic, and large boulders covered >75% of the ground. This community appears to be transitional between Sugar Maple-Beech-Yellow Birch Forest and a Red Spruce-Birch-Mountain Maple Wooded Talus. Other examples in the region have been observed at Winona Lake (west slope), Castle-in-the-Clouds (Middle Mountain), and Red Hill (upper north slope).