

**Land Stewardship Plan  
for Graylag  
(Wallman Property)  
Pittsfield, New Hampshire**



Prepared for:  
Carl Wallman  
320 Clough Road  
Pittsfield, New Hampshire

Prepared by:  
Ellen J. Snyder  
Ibis Wildlife Consulting  
Newmarket, New Hampshire 03857

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# Graylag Land Stewardship Plan

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## Chapter 1 Property Description

### Location

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Graylag is located between Clough Road and Wild Goose Pond in the eastern corner of the Town of Pittsfield, New Hampshire. The Property is reached by taking 107 North (off Route 4 in Northwood) for 2.8 miles, bearing right on Jenness Pond Road when road forks, taking the first left onto Clough Road (which becomes a dirt road), and going 1.2 miles on Clough Road until you come to the Graylag sign on the right side of the road (Map 1).

The 132.75-acre Wallman Property, known as “Graylag,” comprises five contiguous lots (parcels) along the western shore of Wild Goose Pond. The tax map, lot numbers, and acreage of each parcel are as follows:

- Tax Map R-10 Lot 3 = 15 acres
- Tax Map R-10 Lot 10 = 11.49 acres
- Tax Map R-10 Lot 7 = 50.78 acres
- Tax Map R-10 Lot 5 = 4.90 acres
- Tax Map R-10 Lot 4 = 50.58 acres

These parcel numbers are taken from a survey recorded as 10356 at the Merrimack County Registry of Deeds. The survey titled “Subdivision of Land Graylag Property Lots 1 through 10” was prepared by Durgin/Schofield Associates and dated November 23, 1987 (see Appendix B for a copy of the survey).

Graylag includes 1,871+ feet on Wild Goose Pond and 964+ feet on Clough Road (Map 2). The abutters include large (15+ acres) rural residential house lots and associated woodlands. The Storer Scout Reservation, a 900+ acre active Boy Scout camp owned by the Boy Scouts of America Boston Council, abuts Graylag to the north. The scout camp encompasses Adams Pond and has extensive frontage on Wild Goose Pond. Graylag is entirely within the town of Pittsfield, however a town/county line bisects Wild Goose Pond with the Town and County of Strafford lying to the east. The Town of Barnstead lies a few miles north of Wild Goose Pond.

### Recent History of Graylag

#### Camp Graylag

(The following is from Graylag Cabins website: <http://www.graylagcabins.com>)

*In 1946, Jacob Geib and his sons Fred and Robert established Camp Graylag. They assembled 500 acres of undeveloped woodland and waterfront on Wild Goose Pond and created a summer retreat for boys age 7 to 14. Graylag began operations in the summer of 1949.*

*According to the 1950 Camp Graylag brochure, “Years ago, Europeans observed that the wild goose was the last bird to migrate south in autumn. Because it was gray and because it lagged behind the others, they called it the Graylag. The camp situated on the shores of Wild Goose Pond takes its name from the Continental term for this bird, which symbolizes the free spirit of the out-of-doors.”*

*In 1952, basketball legend Bob Cousy of the Boston Celtics became a partner in Camp Graylag. From that time, the camp specialized in basketball. It had the largest outdoor floodlit courts in New England, where Bob Cousy and other great players and coaches of the time instructed campers in fine points of the game.*

*After twenty-three successful years under the Geib and Cousy families, Camp Graylag closed in 1971. The property went out of camping use and was eventually subdivided. The present owner, Carl Wallman, purchased Graylag in 1994, and reassembled the 140-acre main camp area and renovated a number of the camp buildings for contemporary use while removing others. The three dwellings now available for vacation rental were created from original Camp Graylag structures.*

## **Graylag Cabins**

Graylag Cabins is an endeavor by the current landowner that takes advantage of the restored camps to offer people a rustic, but comfortable experience in a natural environment. Three cabins are available for rent; each is accessed along the main driveway that also leads to the owner's residence. At Graylag renters enjoy swimming, paddling, sailing, fishing, hiking, sitting around a campfire at the edge of Wild Goose Pond, and picking wild blueberries. Graylag does not offer powerboats, hot tubs, TV, or air conditioning, but does provide all bed, kitchen, and bath linens; beach towels; bath soap and shampoo; dish soap; toilet paper and paper towels; and insect repellent.

The following information on Graylag Cabins website shows the commitment to sustainable practices in lodging and in land stewardship.

- **We practice composting and recycling.** Vacation areas typically generate large amounts of waste, and we're trying to cut the volume generated at Graylag. We ask that you sort your cabin's trash and compost, and place it in the marked bins in the shed located near the Birches Family Lodge. This practice significantly reduces the waste stream going to landfills. And our cabins themselves are recycled! The three accommodations offered at Graylag Cabins are restored buildings from the original 1949 Camp Graylag.
- **We have the fresh look of a natural landscape.** You will find much natural beauty at Graylag, but our landscape is not "groomed," as a resort's would be. We have almost no lawn area, but there are lovingly tended gardens of native plants, as well as stands of wild blueberry and cranberry, and acres of forest with varied hardwoods and softwoods. The beach area has a section that is cleared for wading and swimming, while along the rest of the shore local water plants flourish in their natural state. In our woodlands, you will see some dead trees, both standing and fallen, which provide nutrients for the forest floor, and valuable habitats for a variety of wildlife. And at various points on the property, there are brush piles, which provide nesting and cover for creatures including songbirds and cottontail rabbits.
- **We use all-natural products.** At Graylag, we provide you with the most earth-friendly products available. The shampoos, soaps, and lotions you will find in your cabin are all-natural or organic, as are the products we used to clean your cabin. Also, all paper goods you'll find in the cabin are made from 100% recycled paper.
- **We love most of our little insects.**  
In our woods there are many insects that provide the important service of pollinating the flowers of plants and trees. Unfortunately, some of those insects wish to provide the same service by biting humans! We manage mosquitoes and other insects naturally, by keeping the areas around the guest

accommodations clear and dry. We also provide DEET-free insect repellent for your use, and you're welcome to bring your own.

- **We support local farmers.**

We stock all of our cabins with goat's milk soap made on a nearby farm from the milk of a local herd of 20 goats.

One of the lighted basketball courts that was part of the Cousy basketball camp was removed through the assistance of a Wildlife Habitat Incentive Program (WHIP) grant that helps landowners create, enhance, and restore habitat. Two basketball courts remain. These are recommended for removal in this Plan since the courts are close to the edge of Wild Goose Pond and adjacent to a unique cranberry bog/wet meadow.

## **Logging**

The previous owners heavily logged portions of the Property, removing much of the large trees and valuable timber. This is particularly evident in Lot 3, which has few large trees, low plant species diversity, and little coarse woody debris on the forest floor. As discussed below, a recent disturbance has further altered the plant structure on this lot and on Lot 4. Carl Wallman has not conducted any timber harvesting since he purchased Graylag. He has conducted some manual thinning to open up viewsheds of large trees (such as a big oak) and to release highbush and lowbush blueberries and other fruiting shrubs, and to create trails. Carl has “daylighted” the main gravel driveway into the Property to open views of large trees and to use the logs for firewood.

## **2008 Tornado**

In the midst of preparing this Land Stewardship Plan a sudden and dramatic windstorm (later confirmed as a tornado) moved rapidly through southeastern New Hampshire on July 24<sup>th</sup> leaving behind a 50-mile long narrow swath of snapped and downed trees and damaged houses. Graylag was in the path of this severe storm that impacted approximately 33 acres of the Property, although the impact was patchy within this swath (see Map 5). Almost all the standing trees in this swath were snapped off or flattened, many with roots still attached. This Plan provides broad guidance on stewardship principles to be followed when conducting salvage operations in the damaged area. Carl is working with a professional forester and logging company to prepare a plan for this operation. A forest management plan developed by a licensed professional forester is needed to guide future forestry activities on Graylag.

## **Ecological Setting**

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The forested landscape on Graylag and elsewhere in southeastern New Hampshire has experienced a variety of disturbance histories. Natural disturbances of these forests largely come from singletree wind throw, with occasional larger blow downs from hurricanes.<sup>1</sup> Beaver are also an important natural disturbance dynamic in wetland systems. These forests have evolved for thousands of years with these natural disturbances. More “recent” disturbances include farming and farm abandonment, human settlements, logging, recreation, and introduced forest pathogens. A new, and perhaps more insidious disturbance, involves climate change, that has yet to fully express itself in changes to forest and wetland ecosystems in this region. The recent tornado might be regarded as a natural disturbance similar to a hurricane, although on a much smaller scale.

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<sup>1</sup> Sperduto, D.D., and W.F. Nichols. 2004. Natural Communities of New Hampshire. NH Natural Heritage Bureau, Concord, NH.

The current condition of Graylag is an expression of the inherent site capability as well as past and present natural and human disturbances. This is a snapshot in time. Natural plant succession along with disturbance will continue to create change in the forests and other habitats.

### **Ecological Region**

Graylag is located in south-central New Hampshire in the southern tier of the Lakes Region. The Property is about 20 miles east of Concord, 30 miles northeast of Manchester, 40 miles west of the New Hampshire seacoast, and 80 miles northwest of Boston.

The biological diversity of a region is a reflection of its physical environment expressed through geographic location, climate, geology, topography or landform, and soils. Variations in the physical environment and the distribution of plants and animals combine to form natural divisions across the state and country. These natural divisions, called “ecological regions” (or ecoregions) are helpful in understanding the patterns of biological diversity. Graylag sits at the southern edge of the Sebago-Ossipee Hills and Plain ecological region.

Compared to the Coastal Plain ecological regions to the southeast, the Sebago-Ossipee Hills and Plain subsection is characterized by more rugged, mountainous topography interspersed with lakes. Graylag is just into this ecoregion and therefore doesn’t contain the ruggedness of more northerly locations.

### **Broad Vegetation Zone**

Hemlock-hardwood-pine is the dominant or “matrix” forest type in this region that includes Graylag. Within matrix forests are found smaller “patch communities” such as marsh and shrub wetlands, ponds and vernal pools, and more specific forest types. Hemlock-hardwood-pine forest is the most widely distributed forest type in New Hampshire, covering nearly 50% of the state’s land area (approximately 15% is permanently protected). The State’s most extensive hemlock-hardwood-pine forests are located in Belknap and Merrimack Counties. The typical tree species in this matrix forest are Eastern hemlock, American beech, red oak, red maple, and white pine. The greatest threats to hemlock-hardwood-oak pine forest are human development, introduced species, and altered natural disturbance (NHFG 2006).

### **Wild Goose Pond**

The 118-acre Wild Goose Pond is in the upper reaches of the Merrimack River Watershed and within the Upper Suncook River subwatershed. The inlet and outlet to Wild Goose Pond are near each other in the northwest corner of the pond. Shinglemill Brook flows into Wild Goose Pond just north of Graylag. An upstream portion of this brook is within the Property. Wild Goose Pond is drained by Crooked Run, which flows north into Barnstead where it meets the Suncook River, a tributary to the Merrimack River. An emergent marsh-scrub shrub wetland is located at the mouth of the inlet and outlet and borders the streams as they enter and leave the pond.

Wild Goose Pond appears in healthy condition, perhaps as a result of the lack of public access and relatively few homes along the pond shore. The average depth of Wild Goose Pond is 14 feet with the maximum depth at 20 feet. According to New Hampshire Fish and Game Department, the major fish species in the pond are largemouth bass, brown bullhead, bluegill, and chain pickerel (see Appendix C).

## **Unfragmented Lands**

Unfragmented forest blocks are large areas of habitat with few or no roads, houses, or other development. In southeastern New Hampshire, blocks of 1,000 acres or more are considered regionally significant. A large unfragmented block of habitat typically has greater capacity to support interior forest species (e.g., scarlet tanager, wood thrush), greater ability to sustain natural processes, including resilience to natural disturbances, and often encompasses a diversity of habitats in close proximity to each other.

The New Hampshire Fish and Game Department (NHFG) identified development (residential, commercial, or industrial) as one of the most significant risk factors to the State's wildlife and habitats (NHFG 2006). Development causes the fragmentation of habitat into small, unconnected parcels. Songbirds, small mammals, and other wildlife species are more susceptible to mid-sized predators such as fox, raccoon, and skunk in small blocks of habitat. These "generalist" predators adapt better than other species to a fragmented landscape. Habitat blocks crisscrossed with residential roads and houses expose wildlife to high rates of road mortality, increase conflicts with humans and pets, result in increased contaminated runoff, and offer more opportunities for invasive plants to spread to natural areas.

Graylag lies within a several thousand-acre relatively unfragmented block of habitat. However, most of this is not permanently protected and is vulnerable to fragmentation through development. Retaining this large block of unfragmented habitat is critical to many wide-ranging species in the region such as northern goshawk, fisher, otter, black bear, moose, and bobcat.

## **Chapter 2 Ecological Features**

### **Topography and Soils**

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#### **Topography**

As shown on the topographic map the highest point on Graylag is approximately 840-feet at the Property's northwest corner with Clough Road (Map 3). From there, the land slopes toward Wild Goose Pond to an elevation of 620 feet at the water's edge. The southeast corner of Graylag rises steeply from the edge of Wild Goose Pond up to 800+ feet along the Property's southeastern boundary. This highpoint coincides with the borrow pit located along the gravel access road.

#### **Soils**

The factors that most determine the soil types found in southeastern New Hampshire are parent material and slope or topography. Soils on Graylag are either very stony or are wetland soils and are formed from glacial till, glacial outwash, or organic parent material (see Table 1 and Map 4).

Whitman muck (49) underlies the shrub wetland on the southern border of the Property. Greenwood mucky peat (295) underlies the wet meadow, shrub and emergent marsh wetland adjacent to Wild Goose Pond. These muck soils are very poorly drained and are not suited to wheeled vehicle traffic unless on frozen ground. The Walpole very fine sandy loam (547B) is poorly drained and underlies a vernal pool and stream drainage that is north of the driveway leading into Graylag.

The upland soils are well drained to moderately well drained and include the Chatfield-Hollis-Montauk complex (varying slopes from 3 to 60%), Henniker fine sandy loam (8-15% slope), and Scituate-Newfields complex (3-15% slopes). These tend to be productive forest soils, except for those on steeper slopes. Beech and other hardwoods may out compete softwoods on some of these soils. The upland soils that are less than 15% slope are also considered farmland soils of local importance.

**Table 1. Soils for Graylag (from Merrimack-Belknap Soil Survey)**

| <b>Soil Code</b> | <b>Soil Name</b>  | <b>Drainage</b>         |
|------------------|---|-------------------------|
| 47C              | Henniker fine sandy loam 8-15% slope, very stony, farmland of local importance    | Well drained            |
| 49               | Whitman muck, very stony  | Very poorly drained     |
| 250B             | Chatfield-Hollis-Montauk complex, 3-8% slope, farmland of local importance        | Well drained            |
| 250C             | Chatfield-Hollis-Montauk complex, 8-15% slope, farmland of local importance       | Well drained            |
| 250D             | Chatfield-Hollis-Montauk complex, 15-35% slope                                    | Well drained            |
| 250E             | Chatfield-Hollis-Montauk complex, 35-60% slope                                    | Well drained            |
| 295              | Greenwood mucky peat  | Very poorly drained     |
| 447B             | Scituate-Newfields complex, 3-8% slope, very stony, farmland of local importance  | Moderately well drained |
| 447C             | Scituate-Newfields complex, 8-15% slope, very stony, farmland of local importance | Moderately well drained |
| 547B             | Walpole very fine sandy loam 3-8%, very stony                                     | Poorly drained          |

## **Habitats and Associated Plants and Animals**

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Graylag has a series of vernal pools, headwater streams, and wet meadow/shrub wetlands embedded within a hemlock-hardwood-pine forest nestled on the shores of Wild Goose Pond. The various wetlands on Graylag support a rich biological diversity. The upland forests by contrast, are less rich biologically, in part because of past land uses that include logging and land disturbance. However, these forests still offer myriad values that can be further enhanced through land stewardship.

### ***Freshwater Wetlands and Water Bodies***

Freshwater wetlands are grouped into several general categories in New Hampshire: open water-emergent wetlands, scrub-shrub wetlands, forested wetlands, peatlands, and vernal pools. Emergent wetlands are marshes with a mix of open water, floating-leaved vegetation, and herbaceous growth in standing water. Shrubs such as highbush blueberry, maleberry, speckled alder, winterberry, and nannyberry, and a few saplings of red maple or other trees typically dominate scrub-shrub wetlands. Forested wetlands are often associated with slow-moving streams and beaver flowages and support trees, particularly red maple. Peatlands are a wetland type with low nutrient content and higher acidity caused by limited groundwater input and surface runoff. Vernal pools are ephemeral wetlands that dry up sometime during the year.

Graylag supports vernal pools, scrub-shrub wetlands, wet meadow, and open water-emergent wetlands. In addition to these wetlands, the Property supports perennial and intermittent streams that flow into Wild Goose Pond (Map 5). These wetlands and water bodies are the least disturbed natural communities on Graylag and should be considered as areas sensitive to disturbance.

## **Wild Goose Pond and Shoreland**

Graylag has more than one-quarter mile of frontage along Wild Goose Pond. A relatively small area in the central portion of this frontage includes a beach, canoe/kayak storage, and dock used by the owner and visitors to the Graylag Cabins. The pond frontage to the northwest of the beach is in a relatively natural condition and includes emergent plants such as pickerelweed, yellow pond lily, white water lily, water shield, and pondweed. Shoreland vegetation includes red maple, speckled alder, winterberry, arrowwood, royal fern, and buttonbush. To the south of the beach the land rises steeply to a hemlock-hardwood forest.

The open water habitat of Wild Goose Pond supports common loon, mallard, Canada goose, great-blue heron, beaver, otter, largemouth bass, chain pickerel, brown bullhead, bluegill, green frog, red-spotted newt, among other species. In summer, the vegetated riparian area along the pond shore supports song sparrow, swamp sparrow, cedar waxwing, American goldfinch, common yellowthroat, yellow warbler, Baltimore oriole, red-winged blackbird, tree swallow, Eastern kingbird, Eastern phoebe, and common grackle.

Carl has transplanted some wetland plants, including pitcher plant, to an area near the beach. The resident's home and driveway, several cabins, and two basketball courts are located near the beach area. Woodland perennial beds and shrub plantings by the landowner surround the resident's home.

## **Wet Meadow/Cranberry Bog**

A unique wet meadow community is located near the shores of Wild Goose Pond to the north of the developed beach/cabin area. This plant community is part of the larger wetland complex that forms the inlet and outlet to the Pond. Carl Wallman noted that the wet meadow was used as a baseball field when Camp Graylag owned the Property. Considering how wet the area is today it is difficult to understand how the fields were kept dry and mowed. The nearby stream that flows into Shinglemill Brook appears channeled near the edge of the wet meadow so perhaps they used some drainage system to dry out the "field."

Two lighted basketball courts are located at the edge of the wet meadow; Carl removed a third court using a WHIP grant. He also mowed the wet meadow in 2007, which appears to have left some depressions. He has a burn pile in the southwest corner of the wet meadow.

Highbush blueberry shrubs are growing in around the edges of and scattered throughout the wet meadow. Small cranberry, sedges, rushes, mosses, and other plants are found within this meadow. With time and lack of further disturbance this wet meadow may recover to a more diverse and unique plant community. Wet meadows, along with marsh and shrub wetlands, are considered critical habitats in the New Hampshire Wildlife Action Plan (NHFG 2006).

## **Scrub-Shrub Wetland**

A diverse mixed tall graminoid-scrub shrub marsh is located in the southwest corner of Graylag (Map 5). The wetland plant community includes red maple, gray birch, highbush blueberry, winterberry, maleberry, Spirea, royal fern, cinnamon fern, pitcher plant, buttonbush, speckled alder, sphagnum, among other plants. The vegetation in the uplands along the marsh edge is also diverse and includes highbush blueberry, lowbush blueberry, bracken, sheep laurel, bunchberry, Canada mayflower, partridgeberry, trailing arbutus, starflower, lichens, mosses as well as red maple, white pine, hemlock, and red oak. The forest rises steeply along the northeast boundary of the marsh and supports a hemlock-white pine forest with some red spruce.

## Vernal Pools

Vernal pools are ephemeral wetlands that fill in spring from rainfall, snowmelt, or rising groundwater.<sup>2,3</sup> Some pools also fill in the fall after autumnal rains. These pools are typically small in size, ranging from less than 1/10<sup>th</sup> acre to more than 2 acres. Size, however, is not always an indicator of the quality or productivity of a vernal pool. Most vernal pools completely dry out by the end of summer and therefore can not support fish populations, which makes these pools safe for breeding amphibians.

The length of time that a pool retains water is known as its “hydroperiod.” Most vernal pool breeders need about four months to complete their reproductive cycle. Pools that retain water for longer periods are also important, especially in drought years, when some pools may dry up too soon. Vernal pools vary in the animals that are present, yet most are characterized by the presence of at least one “indicator” species, one that depends on vernal pool habitat for successful reproduction. Vernal pool indicator species include fairy shrimp (small crustaceans), wood frog, spotted salamander, and blue-spotted and Jefferson salamanders. Smaller organisms such as bacteria, fungi, zooplankton (e.g., daphnia), caddisfly and other insect larvae, crustaceans and insects are all food for the larger vertebrates within these vernal pools.

Vernal pools embedded within the forested landscape are important “stepping stones” for many wildlife species as they move about in search of food and breeding sites. Foraging turtles (including wood and Blanding’s), raccoon, mink, deer and other mammals, herons, and other wildlife also use vernal pools. Wood frogs and spotted salamanders travel to vernal pools in the spring to breed, and then spend the rest of the year (11+ months) in the uplands, typically within 1,000 feet of the pool. Juvenile wood frogs may travel farther. A researcher in Massachusetts found the biomass of vernal pool amphibians to be greater than the biomass of all the birds and mammals combined in the upland forest surrounding his study pool.<sup>4</sup> Clearly, these habitats and associated wildlife are key biological elements of the forested landscape. Maintaining suitable upland habitat conditions around vernal pools is as important as protecting the pools from disturbance. Canopy shade, deep leaf litter, and fallen trees and stumps are all important.

Graylag has several vernal pools of varying sizes and plant composition (Map 5). Highbush blueberry and winterberry are the common shrubs associated with the vernal pools. Spotted salamander and wood frog egg masses were observed in most of the vernal pools in Spring 2008. Carl has cleared by hand overstory trees around several of these wetlands to provide sunlight to highbush blueberry shrubs with a goal to increase berry production. Trails, driveways, or woods roads also run close to the edge of each of the vernal pools.

In the dry season vernal pools are often only noticeable in the forest as small depressions with compacted leaves or dark waterstains. Sometimes harvesting and recreational activities create depressions such as ruts, ditches, or borrow pits that fill with water. Amphibians may breed and lay eggs here, but usually these artificial pools dry up much sooner and are not comparable to natural vernal pools. The State of Maine developed a set of management guidelines for vernal pools that address the vernal pool depression, vernal pool protection zone (within 100 feet), and amphibian life zone (100-400 ft) (Calhoun and deMaynadier 2004). These recommendations are addressed in Chapter 4.

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<sup>2</sup> Kenney, L.P. and M.R. Burne. 2001. A field guide to the animals of vernal pools. Massachusetts Division of Fisheries and Wildlife, Westborough, Massachusetts.

<sup>3</sup> Tappan, A. 1997. Identification and documentation of vernal pools in New Hampshire. New Hampshire Fish and Game Department, Concord, New Hampshire.

<sup>4</sup> Calhoun, A.J.K. and P. deMaynadier. 2004. Forestry habitat management guidelines for vernal pool wildlife. MCA Technical Paper No. 6, Metropolitan Conservation Alliance, Wildlife Conservation Society, Bronx, New York.

## **Shinglemill Brook and Other Headwater Streams**

Graylag has 1,200 feet of frontage on both sides of Shinglemill Brook, a main tributary (inlet) to Wild Goose Pond. Shinglemill Brook enters onto the northern corner of the Property and roughly parallels the boundary before leaving the Property along its northeast boundary after which it flows into Wild Goose Pond (Map 5). The tornado swath crossed Shinglemill Brook and changed the riparian conditions in the northern section of the Property. The salvage logging should leave the riparian along, allowing natural processes over time to break down the debris left behind by the wind storm.

Several other perennial and intermittent streams flow through Graylag. A perennial stream flows out of the scrub-shrub wetland and flows northeast through the Property, flowing under the Graylag driveway and into Wild Goose Pond near the inlet. A smaller intermittent stream also flows northwest into Wild Goose Pond and is located in the southeast corner of Graylag (Map 5).

The health of larger rivers and streams is dependent on the health of these smaller streams and wetlands farther up in the headwaters of a watershed. These small headwater streams may make up 80 percent of the stream network in a region and include both seasonal and year-round streams. Headwater streams may begin as trickles, seeps, or depressions that overflow and are often not named or mapped. Yet, the quality and integrity of these headwater streams is critical to downstream habitats.

The upper reaches of the watershed store water, recharge groundwater, and reduce the intensity and frequency of floods. Small streams are a critical link between land and water. Not only are they linked to upstream and downstream portions of the watershed, but water flowing from the land into the stream carries insects, leaves, soil, branches, and other material that are the start of a food chain. This exchange between land and water occurs in a transition zone along the edges of stream channels, called a riparian area. Maintaining connectivity between stream channels, stream bottoms and banks, and the riparian area is important to protect water quality and aquatic habitats. Much of the cleansing action and nutrient cycling in a stream occurs in saturated sediments, at the interface between stream water and the channel bottom and stream bank.<sup>5</sup>

Herbaceous plants found along Shinglemill Brook and the other streams on the Property include false hellebore, New York fern, cinnamon fern, royal fern, marsh fern, sphagnum, and goldthread.

## ***Upland Forests and Blueberry Barrens***

Charlie Moreno prepared a forest management plan (FMP) for Graylag in 2002, which at the time encompassed 77 acres (see Appendix D for a copy of the FMP). As noted in the FMP, the tree species diversity on Graylag is relatively low. The dominant species being hemlock, red maple, white pine with some red oak, American beech, white ash, and a small mix of other species including white and black birch. In most areas the understory vegetation and ground cover is also quite sparse. The upland areas with the greatest diversity are those within riparian areas around the wetlands and water bodies.

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<sup>5</sup> American Rivers and the Sierra Club. 2007. Where Rivers are Born: The Scientific Imperative for Defending Small Streams and Watersheds.

## **Hemlock-Hardwood-Pine Forest**

The major forest type on Graylag is hemlock-hardwood-white pine. Within this broad forest type are variations depending on the proportion of softwoods and hardwoods as described by Moreno (2002). The forest stands dominated by hemlock or white pine support low plant diversity in the understory and on the forest floor. Plants associated with these stands include witch hazel, winterberry, and wild sarsaparilla. Stands with a mix of hemlock and hardwoods or hemlock-hardwood-white pine support a greater diversity of understory and ground flora as well as associated wildlife species.

Hardwood dominated stands on Graylag support the following wildlife species: overbird, red-eyed vireo, scarlet tanager, mourning dove, Eastern wood pewee, tufted titmouse, black-and-white warbler, white-breasted nuthatch, great-crested flycatcher, blue jay, black-capped chickadee, black-throated-blue warbler, and Eastern chipmunk. Mixed forest stands (a balance of hardwoods and softwoods) support these wildlife species: pine warbler, veery, hermit thrush, blue-headed vireo, red-breasted nuthatch, yellow-bellied sapsucker, black-throated-green warbler, brown creeper, pileated woodpecker. The immature red-eft stage of the red-spotted newt is abundant in the moist understory of the Property's mixed wood and softwood stands (see Appendix E for a list of species observed on Graylag).

The understory and forest floor vegetation in the upland forests varies depending on soils, slope, and disturbance and in places includes highbush blueberry, lowbush blueberry, hay-scented and New York ferns, Canada mayflower, winterberry, starflower, partridgeberry, among other species.

## **Early Successional Habitat**

Early successional habitats--grasslands, shrublands, young forests--are declining in the northeast, a result of forest maturation, lack of natural disturbance, and loss of habitat to development. The region experienced a surge of early successional habitat and associated wildlife species following the clearing and then abandonment of farmland in the 1800s and early 1900s. So, the decline of wildlife species dependent on early successional habitat is not surprising as forests reclaim the landscape. However, there is concern that controls on natural disturbance (such as fire and beaver) and major land use changes from development are leading to a decline of early successional habitat below what may have existed historically. Hence, retaining and creating patches of early successional habitat within the forested landscape is seen as important to maintaining the range of biological diversity native to this region.

The Tornado of 2008 presents an opportunity to create a swatch of early successional habitat on Graylag. Through salvage logging a large are of young forest will be created; through natural succession this forest will mature over time. An approximately  $\frac{3}{4}$ -acre clearing will likely be created as a log landing for the salvage operation. This clearing can be maintained as a permanent opening in the forest.

## **Lowbush Blueberry Barrens and Borrow Pit**

Carl Wallman is particularly keen on releasing highbush and lowbush blueberries to enhance berry production for wildlife and humans. His actions have been particularly successful around the borrow pit along the gravel access road in the southern region of the Property. Carl slowly expands the area released to the blueberries by cutting overstory trees using a chainsaw or other hand tools. This slow, methodical process may be the most effective. A larger scale release of lowbush blueberries using a brontosaurus or other timber harvesting equipment may create conditions suitable for beech regeneration rather than blueberries.

Patches of lowbush blueberry are growing in the understory within the vicinity of the borrow pit. The conditions seem ideally suited here to continue to release of lowbush blueberries.

### ***Wildlife Habitat Features***

Wildlife need food, water, cover, and space to live and reproduce--collectively known as their *habitat*. Each species has unique habitat requirements, and the presence of a given species in an area varies depending on the availability of the habitat features that they depend on. Wildlife food resources include aquatic and upland plants, fruits, seeds and nuts, insects and other animals, and nectar. All wildlife require water, almost daily, yet aquatic organisms clearly depend on it more than upland species. Graylag has no shortage of water resources for wildlife. Cover provides protection from weather and predators and sites for nesting, resting, travel, and other activities. The juxtaposition of food, water, and cover determines the wildlife community that occurs in a given area.

A growing recognition of the importance of pollinators in nature and in maintaining agricultural crops and concern that there are widespread population declines among native pollinators such as bees, butterflies, moths, and hummingbirds. Maintaining a diversity of grasses, flowers, and shrubs that bloom at different times provides foraging habitat for native pollinators. The wetlands, wet meadow, early successional habitats, blueberry barren, and roadsides, and trails provide these features.

An area with many different kinds of food, water, and cover typically supports a greater diversity of wildlife. This reflects *habitat structure*, an important concept in understanding the distribution and abundance of wildlife. The components of habitat structure and their presence or lack therefore on Graylag are discussed below.

- **Horizontal vegetation diversity**

This refers to the horizontal arrangement of different plant communities (including type and age) in a given area. Areas with aquatic habitats and non-forest habitats such as grassy openings as well as forest are more horizontally diverse than an area that is just forested. For instance, a 100-acre mature hardwood forest has less horizontal vegetation diversity than another 100-acre habitat that supports a mix of emergent wetland, shrubs, and upland mixed forest. Likewise, a 100-acre forest that has a mix of tree ages that includes a grassy opening, young forest, saplings, and mature, old trees is more diverse than a 100-acre forest with just sapling/pole-sized trees. A wetland that has concentric rings of open water, emergent marsh, shrub thicket, and tall trees is more horizontally diverse than an open water pond with a sandy shore that extends to lawn.

Looking at the Wallman Property in its entirety, the horizontal vegetation diversity offers a variety of different habitat conditions that include:

- Mature hemlock-hardwood-pine forest
- Early successional-young forest (as a result of the tornado)
- Blueberry barren
- Diverse wetlands that include Wild Goose Pond (open water-emergent marsh), wet meadow, scrub shrub marsh, vernal pools
- Headwater streams

Habitat management can change and enhance horizontal diversity through diversifying the age, size, and structure of the forest habitats. The salvage logging will create a new large area of early successional habitat and the associated log landing that is established can be retained as a permanent clearing in the

forest. This adds to the horizontal diversity of the Property. Natural disturbances, including beaver, are also important drivers of horizontal diversity. Wetland communities are often naturally diverse and often retain this diversity if left alone. Much of our forests in New England lack old growth or forests with old growth characteristics and a component of horizontal diversity that will only accumulate overtime in areas left undisturbed.

- **Vertical vegetation diversity**

Vertical diversity refers to the extent of layering within a forest or other habitat. Layering within a forest includes the arrangement of ground cover (lichens, moss, ferns, herbaceous plants), vines and shrubs, and trees (including sizes and ages). More vertical layers create a greater diversity of habitat, which typically supports more wildlife diversity. These layers provide cover from predators, nest and den sites, foraging surfaces, food sources, shade, and more. Vertebrate wildlife typically respond more to vegetation structure than to the presence of specific plant species. Vertical and horizontal structure that is varied, lush, and “messy” is a boon to wildlife. Forests with little ground cover, dead wood, shrubs, and understory have fewer wildlife species.

Graylag, like most forests in New England, is still recovering from the period of intense agriculture and natural reforestation. In addition, much of Graylag has been heavily logged in the past 100 years. In time, perhaps hundreds of years, a natural disturbance pattern will create a richer vertical diversity that was thought to have been present in pre-settlement forests. Natural disturbances will continue yet not as extensively as in historic times, since humans have eliminated (fire), restricted (beaver), or otherwise altered natural disturbance patterns. The recent tornado offers an opportunity to observe changes in vertical diversity over time within a large disturbed area compared to other less disturbed forested areas on Graylag.

- **Food Resources**

The availability of food resources for wildlife is a key component of their habitat needs, and often varies seasonally. Breeding birds depend on a flush of insects to feed their young nestlings, while later in summer and into fall and winter they switch to berries, nuts, and seeds. Deer, moose, and other browsers rely on herbaceous vegetation during the growing season and woody growth in winter. Larger mammals such as coyote, fox, and fisher prey on other animals as well as eating fruits when available. Seeds are favorites of squirrels, nuthatches, pine siskins, mice, and voles.

Fruits, nuts, and seeds from woody plants that are food for wildlife are collectively known as “mast.” Hard mast includes the array of nuts and seeds, which are typically high in fat, carbohydrates, and protein, a food source that is both high in energy content and available into the winter. Soft mast includes fruits and berries such as cherries, dogwoods, blueberries, winterberry, grapes, and the fleshy fruits of other trees, shrubs, and vines. Soft mast is more perishable and is often high in sugar, vitamins, and carbohydrates. These fruits are a source of moisture for wildlife during drought years, and are a crucial energy source for some migrating songbirds.

A diversity of hard and soft mast producing trees, shrubs, and vines is important. Different mast species are available at different times of year, which is critical to wildlife. Also, some species, such as oak only produce heavy acorn crops every 2 to 10 years, and this varies among oak species. Peak acorn production occurs when red oak are 19-22 inches in diameter at breast height (dbh); white oak at 24-30 inches dbh. White oak acorns have less tannin and hence are more palatable to wildlife than red or black oak acorns. Birches, maples, and ashes, are also used by seed-eating wildlife.<sup>6</sup>

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<sup>6</sup> New Hampshire Forest Sustainability Standards Work Team. 1997. Good forestry in the Granite State: recommended voluntary forest management practices for New Hampshire. Concord, New Hampshire.

Graylag has some large acorn producing oaks and nut producing beeches. Some of these large mast producers unfortunately were lost during the tornado. Soft mast species on the Property include highbush and lowbush blueberries, raspberry, winterberry, and other wetland shrubs. Some raspberries are found along the edges of access roads and trails. Graylag has a healthy supply of white pine and hemlock, a source of seeds for birds and mammals. Enhancing a maintaining a diversity of native tree species (e.g., birches, maples, ash, and aspen) will increase seed crops for wildlife).

- **Cavity trees, live and dead and dying**

Nearly two-dozen birds and mammals depend on tree cavities for nesting, roosting, or denning. One species, the brown creeper nests under the loose bark on standing trees. These species require a range of cavity tree size classes and rely on a mix of dead or partially dead standing trees (called “snags”) as well as live trees with cavities. Woodpeckers, chickadees, and nuthatches are primary excavators (i.e., they make the holes), while others use existing holes.

Graylag has cavity trees scattered throughout, although the number of such trees is limited in some areas, particularly the large sizes. Some of the wildlife species found on Graylag and their required tree cavity sizes (diameter at breast height) include:

|   |  |   |
|---|--|---|
| <p><u>&lt;8”</u><br/>black-capped chickadee<br/>downy woodpecker<br/>tufted titmouse</p>                  | <p><u>6-12”</u><br/>hairy woodpecker<br/>red-breasted nuthatch<br/>white-breasted nuthatch<br/>brown creeper</p> | <p><u>12-18”</u><br/>great-crested flycatcher</p> |
| <p><u>&gt;18”</u><br/>pileated woodpecker<br/>gray squirrel<br/>fisher<br/>red squirrel<br/>porcupine</p> | <p><u>&gt;24”</u><br/>raccoon</p>  |   |

Some species require large trees for nesting. These include broad-winged hawk and northern goshawk, which could nest on the Property. Typically these large woodland hawks require large trees with three-pronged branching where they can build a large stick nest. Yellow birch and other hardwoods often support this branching pattern.

- **Dead and down woody debris**

Dead and down woody debris (often called “coarse woody debris”) on the forest floor is important for many reasons. Woody debris in various stages of decay includes logs, stumps, branches, upturned roots, and tree falls. These features provide wildlife habitat, serve as nurse logs for regeneration plants, and contribute to nutrient cycling. As with cavity trees, the larger the fallen log or stump the greater the biodiversity value. Decaying wood supports many insects and other invertebrates, which are food sources for shrews, woodpeckers, and black bears. Snakes, fisher, and weasels hunt among the woody debris. Many species including mice, voles, salamanders, snakes, chipmunks, red squirrels, weasels, and black bear use coarse woody debris for cover, den sites, or escape areas. The winter wren nests in upturned tree roots. Mosses, fungi, and lichen are often associated with decaying wood. Fallen logs and other woody

debris are also important in aquatic environments. Turtles, mink, otter, and waterfowl bask on this wood and fish find cover in woody debris.<sup>7</sup>

Graylag has a healthy supply of coarse woody debris, including large sizes. The size of coarse woody debris is related to past land use since large trees and dying trees are often removed before they reach the stage of decaying on the ground. The amount and size of woody debris is naturally increasing as New Hampshire forests are maturing, assuming not all is removed during harvests.

- **Inclusions**

Inclusions are small patches of trees that are different from the majority of the surrounding forest. For example, a patch of hemlock in a primarily hardwood stand, or a few oaks in a primarily softwood stand are inclusions. These inclusions increase the habitat diversity in what could be an otherwise homogenous habitat type, and therefore often support more wildlife. A black-capped chickadee finds cover on a cold winter day in a hemlock nestled among a stand of hardwoods. A few hemlock in a hardwood stand may be enough to support a blue-headed vireo, which typically occurs in a more conifer-dominated stand. Inclusions are by nature small in scale, and should be considered during forest management planning and implementation. The salvage logging in the tornado-impacted area should consider leaving pockets of healthy standing trees, which will be “inclusions” of more mature forest in the surrounding regenerating forest.

The types and sizes of vegetation and other structural features determine the wildlife that occurs in a given habitat. Graylag supports several different habitat types that support a unique set of wildlife species. The presence or abundance of a given wildlife species often depends on the availability of the structural features described above. A spreadsheet of plant and animal species documented on Graylag is in the Appendix F. Many other wildlife species are likely present, but are either difficult to detect or are active at other times of year than when these data were gathered. Also, no systematic survey of invertebrates or plants has been conducted. This species list can be augmented over time by observations of the landowner and others.

## **Rare Plants, Exemplary Plant Communities, and Threatened and Endangered Wildlife**

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The New Hampshire Natural Heritage Bureau (NHNHB) finds, tracks, and facilitates the protection of rare plants and exemplary natural communities. They also maintain information on rare wildlife in cooperation with the NH Fish and Game Department. The NHNHB defines a natural community as “recurring assemblages of plants and animals found in particular physical environments.” Each type of natural community has a unique set of environmental conditions that support certain species adapted to those conditions. Exemplary natural communities include nearly all examples of rare types and high-quality examples of common types (Sperduto and Nichols 2004).

Given the past human disturbances (e.g., logging, basketball camp) there are currently no known rare plant species or exemplary plant communities on Graylag, although no formal inventory has been conducted here by the NHNHB. A more thorough plant inventory of the wet meadow, Shinglemill Brook inlet, and scrub shrub wetland would be useful given the high plant diversity in these communities.

There are no known threatened or endangered wildlife species on Graylag. However a few wildlife species, including veery, documented to occur on the Property are considered “species of greatest

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<sup>7</sup> New Hampshire Forest Sustainability Standards Work Team. 1997. Good forestry in the Granite State: recommended voluntary forest management practices for New Hampshire. Concord, New Hampshire.

conservation concern” by NHFG as described in the NH Wildlife Action Plan. The NHFG has proposed changes to the list of threatened and endangered species in New Hampshire, which includes listing the Blanding’s turtle as an endangered species. This species is not documented for Graylag but is found in the Towns of Pittsfield and Strafford, and may occur here.

## **Invasive Species and Other Pests**

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Many factors affect forest health including air pollution, water pollution, introduced insects and diseases, invasive plants, and climate change. The global economy, with world-wide trade and transport, has brought greater numbers of introduced insects, diseases, and plants to the U.S. Non-native invasive plants have generated great concern, such that the NH Legislative passed an Invasive Species Act (RSA 430: 51-57) that says “No person shall knowingly collect, transport, sell, distribute, propagate, or transplant any living or any viable portion of a listed prohibited species including all the cultivars, varieties, and specified hybrids.”

Non-native invasive plant species thrive in disturbed areas. Disturbance is also essential to some natural communities including river shores and floodplain forests, making these habitats particularly vulnerable to invasive species. Exposed soils offer prime sites for invasive species to colonize and spread. Upland habitats suffer as well, a result of past land clearing, trails and edges, or dispersal by animals and wind. The effects of invasive plants on natural communities include displacing one or more native species, eliminating an entire vegetation stratum (e.g., ground flora, seedlings), or altering ecological processes (e.g., changes in hydrology or intensity of fire). Invasive species are one of the major threats to the integrity of natural communities, second only to direct habitat loss. Invasive species are also causing damage to agricultural and forest crops.

The concern about non-native invasive plants are the traits that allow them to out-compete native species. These traits include high productivity, aggressive root systems, thrive on disturbance, habitat generalists, and a lack of predators.

The New Hampshire Invasive Species Act in 2000 includes the following list of prohibited plant species (NH Invasive Species Committee 2005).

|                                 |                      |
|---------------------------------|----------------------|
| <i>Acer platanoides</i>         | Norway Maple         |
| <i>Ailanthus altissima</i>      | Tree of Heaven       |
| <i>Alliaria petiolata</i>       | Garlic Mustard       |
| <i>Berberis thunbergii</i>      | Japanese Barberry    |
| <i>Berberis vulgaris</i>        | European Barberry    |
| <i>Butomous umbellate</i>       | Flowering Rush       |
| <i>Cabomba caroliniana</i>      | Fanwort              |
| <i>Celastrus orbiculatus</i>    | Oriental Bittersweet |
| <i>Cynanchum nigrum</i>         | Black Swallow-wort   |
| <i>Cynanchum rossicum</i>       | Pale Swallow-wort    |
| <i>Egeria densa</i>             | Brazilian elodea     |
| <i>Elaeagnus umbellata</i>      | Autumn Olive         |
| <i>Euonymus alatus</i>          | Burning Bush         |
| <i>Heracleum mantegazzianum</i> | Giant Hogweed        |
| <i>Hydrilla verticillata</i>    | Hydrilla             |
| <i>Hydrocharis morsus-ranae</i> | European Frogbit     |
| <i>Iris pseudacorus</i>         | Water-flag           |

|                                   |                        |
|-----------------------------------|------------------------|
| <i>Ligustrum obtusifolium</i>     | Blunt-leaved Privet    |
| <i>Lonicera x bella</i>           | Showy Bush Honeysuckle |
| <i>Lonicera japonica</i>          | Japanese Honeysuckle   |
| <i>Lonicera morrowii</i>          | Morrow's Honeysuckle   |
| <i>Lonicera tatarica</i>          | Tartarian Honeysuckle  |
| <i>Lythrum salicaria</i>          | Purple loosestrife     |
| <i>Myriophyllum aquaticum</i>     | Parrot Feather         |
| <i>Myriophyllum heterophyllum</i> | Variable Milfoil       |
| <i>Myriophyllum spicatum</i>      | European Water-Milfoil |
| <i>Najas minor</i>                | European Naiad         |
| <i>Nymphoides peltata</i>         | Yellow Floating Heart  |
| <i>Phragmites australis</i>       | Common Reed            |
| <i>Polygonum cuspidatum</i>       | Japanese Knotweed      |
| <i>Potamogeton crispus</i>        | Curly-leaf Pondweed    |
| <i>Rhamnus cathartica</i>         | Common Buckthorn       |
| <i>Rhamnus frangula</i>           | Glossy Buckthorn       |
| <i>Rosa multiflora</i>            | Multiflora Rose        |
| <i>Trapa nutans</i>               | Water Chestnut         |

Graylag appears to be free of any of these invasive species, however regular monitoring for these species is recommended. Steps should also be taken to ensure that plant materials that carry other insect pests are not introduced to the Property, and where possible use only native species for plantings. Carl Wallman has already documented the presence of the Viburnum leaf beetle (*Pyrrhalta virburni*), which is defoliating a stand of Viburnum bushes around his residence. This pest likely arrived on introduced plant material from a nursery.

## **Chapter 3 Cabins, Trails, and Other Recreational Activities**

### **Graylag Cabins and Wallman Residence**

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Graylag is the site of Graylag Cabins. Three cabins are available for rental from May through September (?). The camps are all located along the main driveway into Wild Goose Pond and are within walking distance to the Pond. A beach and dock provide launch sites for canoes, kayaks, and small sailboats and space for swimming. The owner has minimized the developed area of the shoreline for these activities to maximize protection of the water quality of the pond while still allowing enjoyment of this beautiful setting.

Wild Goose Pond currently has little development along its shores. The Storer Scout Camp across the Pond owns a lot of pond frontage and has cleared an area for their boating activities. Other cabins or houses on the Pond are not highly visible from the Wallman beachfront. The Wallman residence and cabins are constructed of materials that blend into the landscape and are therefore less visible to others using the Pond.

Graylag Cabins uses environmentally friendly soaps and shampoos in its cabins. This is important in helping maintain water quality in Wild Goose Pond. Landowners around Wild Goose Pond should work together to ensure that everyone is using environmentally friendly materials, is not allowing runoff into the Pond and is maintaining their septic systems. Shorefront owners may also want to initiate a water quality monitoring of the Pond to ensure that the Pond stays healthy.

### **Driveways and Access Roads**

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Graylag has several driveways or access roads that lead into the cabins, main residence, and other homes. The main gravel driveway from Clough Road extends 3,500 feet down to the cabins and Carl's residence at Wild Goose Pond. Carl has cut firewood about 20 feet on either side of this driveway to create a viewshed of large trees. Some of these are now "tree sculptures" to be left as a monument to the power of wind from the 2008 Tornado.

A shorter gravel driveway leads from Clough Road past a vernal pool to a rental property owned by Carl Wallman. This residence was untouched during by the tornado, however most of the trees surrounding the house were flattened, snapped, or twisted.

A 3,500-foot, gravel access road extends into the southern portion of Graylag from Clough Road. In addition to providing access for management of the Property, this access road is used by two private landowners with houses on Wild Goose Pond just beyond the Graylag Property. Carl allows them to use the road.

## **Trails**

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A network of inter-connected color-coded walking trails is an integral part of Graylag. Most of the trails are narrow footpaths that lead through the forested uplands and along or near vernal pools and other wetlands. The orange trail located north of the main driveway follows a woods road for a portion of its length and also runs through the section of Graylag hit hard by the tornado. The north section of the Property, which was acquired more recently, does not yet have a trail network, however the boy scouts have extended one of their trails (marked in red paint) onto Graylag, extending all the way to the bridge near the wet meadow. A few trails follow narrowly along Wild Goose Pond (yellow trail) and close to a vernal pool (green trail) and therefore need to be monitored for potential erosion. Although not specifically stated, these trails are for pedestrian traffic only (walking, snowshoeing, cross-country skiing).

## **“Forest Gardening”**

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Carl Wallman has planted many cultivated woodland perennials around his residence. A mix of shrubs including several species of Viburnums were released or transplanted around the residence and along a woods road above the house. The Viburnum leaf beetle has defoliated some of these shrubs. In other areas of the Property native understory plants have been released by removing overtopping trees. Specifically, Carl has released highbush blueberry bushes around vernal pools, lowbush blueberries in and near the borrow pit, and wildflowers around the cabins. He transplanted some wetland species, including pitcher plant, to a wetland area near the shore of Wild Goose Pond.

As discussed above under Invasive Species, care is needed when introducing, transplanting, or otherwise changing the native vegetation that grows on a particular site. In many situations new plantings have minimal effect on the natural surroundings and provide aesthetic diversity to a home and yard. However, some plants including some perennials from nurseries either expand beyond the intended space or move into the surrounding forest.

In addition to avoiding the introduction of any of the invasive species that are now prohibited in the State (see pages 19-20), it is important to monitor the condition and movement of other plants introduced to Graylag as they may exhibit invasive qualities. One example may be the Anemone growing in a dense patch along the woods road above the residence.

## Chapter 4 General Management Recommendations

The purpose of this Stewardship Plan was to assess and describe the current condition of Graylag. This information can then guide the development of more detailed management recommendations based on landowner objectives and site capability. A forest management plan, prepared by a licensed forester, is needed to guide the timing, location, and extent of any timber harvests.

Here are some general recommendations based on this initial assessment of Graylag which can be refined, changed, or updated in future plans.

### Natural Areas

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Graylag supports unique and diverse wetland communities including Wild Goose Pond and associated wet meadow-emergent marsh and the scrub-shrub wetland along the southern boundary. The uplands around these wetlands have been disturbed in the past and the wetlands may be susceptible to degradation through erosion, runoff or other disturbances. To protect these areas consider reserving a few places on Graylag as natural areas to be left “unmanaged” with no additional trails and no active management. Wheeled vehicles (motorized or otherwise) should not be used in these areas and storage of vehicles, firewood, brush, and other items should not be placed or stored in these areas.

Suggested natural areas (shown on Map 5) include:

- Wet Meadow and associated scrub-shrub wetland bordering Wild Goose Pond; this extends to the edge of the remaining basketball courts
- Steep upland area along Wild Goose Pond and encompassing much of the yellow trail
- Area south of the gravel access road, extending from Clough Road to the borrow pit, encompassing the scrub-shrub wetland and associated upland
- Riparian area along Shinglemill Brook

### Forest/Habitat Management

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- Remove remaining two basketball courts and restore to natural vegetation.

***Consider the following management practices in and around vernal pools, wetlands, and headwater streams where possible (exceptions will occur in salvage area)***

(for references see Calhoun and deMaynadier, 2004, Tarr and Babbitt 2008, and UNH Cooperative Extension *Habitat Stewardship Series: Vernal Pools*, 2007):

- Leave vernal pools undisturbed year-round. Avoid harvesting, heavy equipment operation, skidding, trails, or any activity that causes soil compaction in the pool. Keep the pool free of sediment, slash, and treetops from forestry or other activity. Leave slash or other woody debris that accidentally falls into the pool. Exception may be during the current salvage operation.

- Avoid any activities that change water flow into the pool or changes to the water table
- Avoid any runoff carrying pollutants or sediment into the pool
- Within 100-feet of a vernal pool or wetland, where possible, avoid disturbing fallen logs, avoid use of chemicals, leave a supply of older or dying trees to serve as recruitment for coarse woody debris, avoid road or landing construction
- Conduct any forestry operations only during completely frozen or completely dry soil conditions. Do not create ruts and minimize soil disturbance and compaction
- Where possible keep skid trails 100-feet away from pool
- Within a 100-foot zone around the vernal pool maintain deep litter and woody debris and a shaded (at least 75% canopy cover) forest
- Within 100-300 foot zone around the vernal pool maintain a minimum average of >50% canopy cover, uniformly distributed and avoid canopy openings greater than 1 acre in size
- Whenever possible, avoid the use of heavy machinery within 100-foot zone by using manual crews, directional felling, or cable winching for any forestry activity
  - Where possible, within a 100-foot zone along streams and wetlands:
    - maintain at least 75% canopy cover if present; exception to this is in specifically identified areas for management such as salvage logging
    - avoid any new roads or landings (stream crossings will occur and need to be built using best management practices)
    - leave trees with cavities, standing dead trees, and downed logs
  - Monitor Graylag for any other invasive species, particularly in around wetlands, along trails and driveways. For more information on identifying invasive plant species in New Hampshire see the following publications and resources at <http://extension.unh.edu/forestry/Docs/invasive.pdf>; <http://www.nashuarpc.org/envplanning/documents/SoRLAC/invasiveplants.pdf>, and <http://nbii-nin.ciesin.columbia.edu/ipane/index.htm>
  - Maintain or enhance conditions for the array of native wildlife found here by implementing forest management that:
    - maintains or creates, where appropriate, a well-developed woody herbaceous and shrub layer beneath a well-developed but broken canopy (essentially an uneven-aged forest) in areas other than the early successional habitat to be created by salvage logging
    - maintains large trees with three-pronged forks for nesting raptors
    - retains live trees with cavities and some standing dead trees
    - manages oaks on a long rotation (100-125 years and 20-26" diameter at breast height)
    - leaves cull material from harvested trees in the woods, not at landing, where feasible
  - Any log landings that are created as part of a forestry operation can also be maintained as early successional habitat. Once a log landing has been established and then the forestry operation is completed, the log landing can be left to re-vegetate naturally if erosion is not an issue. If erosion is a concern, then seeding the log landing with a conservation seed mix is appropriate. To maintain the

log landings for future use they should be mowed every few years in the fall to prevent the establishment of woody growth.

- Limit or prohibit timber harvesting during mud season when roads and skid trails are especially susceptible to damage; conduct timber harvesting only on frozen ground or during dry conditions.
- Avoid skidding on recreational trails when possible.
- Designate “bumper trees” along skid trails and on sharp turns to minimize damage to residual trees.

## **Blueberries and Other Gardening**

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- Avoid introducing any non-native species onto the Property when possible. Several local or regional sources of native plants are available if plantings are needed for any future restoration. Consult the New Hampshire State Forest Nursery (<http://www.dred.state.nh.us/nhnursery/>), New England Wildflower Society (<http://www.newfs.org/>), New England Wetland Plants Inc (<http://www.newp.com/>), or other sources of native plants.
- Continue to release lowbush blueberries manually in area identified around borrow pit and across the gravel access road.

## **Trails**

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- Monitor use of footpaths and trails during mud season to determine if seasonal trail closures are needed to prevent erosion and rutting.
- Avoid any new trails through proposed natural areas.

## **Boundary Marking and Related Maintenance**

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- Work with neighbors to survey (if needed) and mark property boundaries
- Follow standard procedures for painting and blazing the boundaries. Refer to UNH Cooperative Extension publication, *Woodlot Boundary Line Marking* available at <http://extension.unh.edu/forestry/Docs/boundary.pdf>.
- Avoid using de-icing materials or allowing runoff during maintenance of driveways and access roads.
- Store any materials, including equipment, firewood and brush, away from wetlands and out of wet soils.

## **Beyond Boundaries**

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- Collaborate with interested abutters and neighbors on ideas and activities that you can work together on including the following:
  - Boundary maintenance
  - Water quality monitoring and protection of Wild Goose Pond
  - Land conservation (ultimately the most effective way to protect habitats and water quality)
  - Forest management (if owners have similar timings and goals for harvests)
  - Trail networks

## References

- American Rivers and the Sierra Club. 2007. Where Rivers are Born: The Scientific Imperative for Defending Small Streams and Watersheds.
- Calhoun, A.J.K. and P. deMaynadier. 2004. Forestry habitat management guidelines for vernal pool wildlife. MCA Technical Paper No. 6, Metropolitan Conservation Alliance, Wildlife Conservation Society, Bronx, New York.
- Kenney, L.P. and M.R. Burne. 2001. A field guide to the animals of vernal pools. Massachusetts Division of Fisheries and Wildlife, Westborough, Massachusetts.
- Moreno, C. 2002. Forest management plan for Graylag, Pittsfield, New Hampshire. Moreno Forestry, Center Strafford, New Hampshire.
- Nashua Conservation Commission. 2004. New Hampshire Invasive Species Fact Sheets. Nashua, New Hampshire. <http://www.nashuarpc.org/envplanning/documents/SoRLAC/invasiveplants.pdf>
- New Hampshire Department of Agriculture. 2005. Guide to Invasive Upland Plant Species in New Hampshire. New Hampshire Department of Agriculture and New Hampshire Invasive Species Committee, Concord, New Hampshire. <http://extension.unh.edu/forestry/Docs/invasive.pdf>
- New Hampshire Fish and Game Department. 2005. New Hampshire Wildlife Action Plan. Concord, New Hampshire. <http://www.wildlife.state.nh.us/Wildlife/wildlife.htm>
- New Hampshire Forest Sustainability Standards Work Team. 1997. Good forestry in the Granite State: recommended voluntary forest management practices for New Hampshire. Concord, New Hampshire.
- New Hampshire Invasive Species Committee. 2005. Guide to invasive upland plant species in New Hampshire. New Hampshire Department of Agriculture Markets and Food, Plant Industry Division, Concord, New Hampshire.
- Sperduto, D.D., and W.F. Nichols. 2004. Natural Communities of New Hampshire. New Hampshire Natural Heritage Bureau, Division of Forests and Lands, Department of Resources and Economic Development, Concord, New Hampshire.
- Tarr, M and K.J. Babbitt. 2008. The Importance of Hydroperiod in Wetland Assessment. UNH Cooperative Extension, Durham, New Hampshire. <http://extension.unh.edu/Forestry/Docs/Hydroperiod.pdf>
- Tappan, A. 1997. Identification and documentation of vernal pools in New Hampshire. New Hampshire Fish and Game Department, Concord, New Hampshire.
- Taylor, J., T. D. Thomas, and L. F. McCarthy. 1996. New Hampshire's living legacy: the biodiversity of the granite state. New Hampshire Fish and Game Department, Concord, New Hampshire.
- UNH Cooperative Extension. 2007. Habitat Stewardship Series: Vernal Pools. Durham, New Hampshire. <http://extension.unh.edu/Forestry/Docs/VernalPools.pdf>

Wood, S. A. and K. Bennett. Woodlot Boundary Line Marking. UNH Cooperative Extension, Durham, New Hampshire. <http://extension.unh.edu/forestry/Docs/boundary.pdf>