



## **Town of Ipswich Open Space Program**

### **Turkey Hill Conservation Area Natural Resource Inventory and Narrative Fall 2009**

This report was prepared by Mike Simmons, Open Space Program Intern, and includes supplementary information generated by Beth O'Connor, Open Space Stewardship Coordinator Town of Ipswich, Franz Ingelfinger, Regional Ecologist for the Trustees of Reservations, Jim Berry, local ornithologist and Open Space Committee member, and Wayne Castonguay, Trustees of Reservations Appleton Farms Manager and Open Space Committee member. This report is NOT a Forest Management Plan in any way, shape, or form. For specific forestry advice a licensed forester should be contacted.

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## **Introduction**

Turkey Hill Conservation Area (THCA) is located at 31 Pineswamp Road in Ipswich, Massachusetts and comprises +/- 23 acres of upland forest. THCA can be accessed by a trail easement that runs approximately 1000' in the westerly direction from a parking area on Pineswamp Road. Demarcation of this parking area has yet to be completed. (See aerial photo, Appendix A).

THCA is relatively unique in that it is one of the last remaining undeveloped hilltops in Ipswich. This unique landscape feature, as well as the natural resource communities present, makes the THCA a beneficial parcel in the Town of Ipswich Open Space portfolio.

This report summarizes the general plant and wildlife resources noted on the property. Also included are probable past uses of the land based on field observations and general historical knowledge. Additionally, a section devoted to land management recommendations is included.

## **Property Boundaries**

The boundaries of the property are relatively well marked.

Aside from a section in the NE corner approximately 100' long, the northern boundary line is marked with a stonewall.

A stonewall clearly delineates the western boundary.

Sporadic stonewalls run along the southern boundary; painted blazes and a trail also run along the southern boundary, assisting location of the boundary in the field.

The eastern boundary follows a northwesterly bearing of N 25° W.

For specific boundary information, see Plan of Land, Appendix B.

A walking trail meanders along the property boundaries as well as accesses the hilltop of the property.

## **Natural Resource Summary**

The THCA is a forested hill composed of mature mixed hardwoods with scattered inclusions of eastern white pine. The hillsides and slopes are predominately red maple with occasional stems of red/black oak. Moving upslope to the top of the hill ridge, the species composition transitions to mainly mixed upland oaks (red/black/white). For a complete listing of tree and shrub species noted, see Appendix C.

Based on observations made by Jim Berry and Wayne Castonguay, the general soil component of Turkey Hill is unusual in that it is a well-drained sand and gravel, not the clay-dominated soils typical to drumlins in the area (see Appendix C for Site Visit summary). Mixed upland oaks are typical of the sandy soil found within the THCA.

The understory/intermediate layer contains a mix of native tree, shrub and vine species as well as non-native/invasive shrubs and vines.

The forest floor comprises a diverse mixture of native and exotic shrub/sub-shrub species, tree species, arching canes (raspberries and rose spp.), and woodland flowers and ferns. The fern component is worth special noting, as various species of woodland ferns (primarily hay scented fern) blanket many portions of the forest floor. This lush forest floor, when taken in combination with stately mature red oak trees, presents a truly majestic, primeval view. However, as noted by Franz Ingelfinger, the fern component, although picturesque, is indicative of an over-population of deer and may be masking further ecological problems (see Field Notes in Appendix D for further details). An over-population of deer typically leads to heavy deer browsing on native tree and shrub species; deer's preference for native species can, in turn, lead to a promulgation of nonnative/invasive trees and shrubs.

The mature forest of THCA offers wildlife habitat somewhat unique to the area. During a site visit, we came upon a deer faun bedding down in a thicket in the southwest portion of the property. Additional wildlife observed include a myriad of bird species. The most significant bird observation, as noted by Jim Berry, was several Eastern Towhees. The presence of the Eastern Towhees at THCA marks the first confirmed occurrence of this species in Atlas Block Ipswich 8 and is significant in that Eastern Towhees have been declining from local forests (Jim Berry Fauna Report, Appendix C).

The presence of the abovementioned invasive plants is a significant problem and may pose a threat to the conservation values of THCA. While these invasives can be noted at some level throughout the property, there are specific areas of concern.

An opening, whether through timber harvesting or natural factors, in the southwestern portion of the property has become infested with invasive species. Tangled thickets of Asiatic bittersweet (combined with native greenbrier) carpet the forest floor and have climbed into the overstory trees. The girdling effect of these vines are causing significant tree decline. Furthermore, the thicket of invasives has prohibited the establishment of other (native) plant species in the understory. Unless this area is addressed, these invasive species will most likely out-compete all other tree and shrub growth.

In addition to the bittersweet infestation, glossy buckthorn has taken a strong foothold in the understory throughout the majority of the forest and is the most abundant plant species noted; however, the occurrence of glossy buckthorn on THCA tends to lessen its grip slightly with an increase of elevation/slope.

Refer to Appendix C and D, for further observations and specific recommendations regarding the invasive species situation.

### **Land Use History**

Gaining knowledge of historical land use can be an important tool in future management strategies. Furthermore, land use history can offer insight into past conservation successes.

Generally, forests of New England have undergone dramatic changes throughout history. Upon arrival, European settlers began clearing land for subsistence farming. This land settlement led to an increase in agricultural uses and markets to the point that by the mid-1800s, the majority of New England's landscape was cleared for agriculture.

Subsequently, the second half of the 19<sup>th</sup> century experienced a large-scale abandonment of farmland and agriculture. With this abrupt change in land use, fields slowly reverted back to forests through natural forest succession.

Hillsides and other lands not suitable as cropland were typically utilized as pasture land. These areas remained as pasture later into the 19<sup>th</sup> century than most agricultural cropland.

Historical evidence noted on the THCA includes stonewalls typical of late 19<sup>th</sup> century pastureland. It is likely that Turkey Hill was utilized as sheep pasture to supply wool for the thriving textile industry in nearby Lowell, MA.

Historical land use could be a possible explanation for the aforementioned soil enigma. Extensive grazing associated with sheep farming oftentimes led to conditions that facilitate soil erosion. Perhaps the drought prone sand and gravel soils found on Turkey Hill are the result of years of soil depleting pasture farming.

Turkey Hill Conservation Area highlights a tangible conservation success in New England; the fauna list developed by Jim Berry indicates two wild turkeys utilizing the property (see Fauna list, Appendix C). Wild turkeys were virtually extirpated from Massachusetts in the 1850s (Commonwealth of MA, 2005); however, through the culmination of reintroduction efforts by state agencies and natural forest succession, New England, including Turkey Hill, is supporting thriving populations of wild turkey.

### **Land Management Recommendations**

It is critical to establish concrete goals in order to successfully implement a land management regime. Turkey Hill Conservation Area offers a moderately large expanse of undeveloped forestland. This forested hilltop is unique to Ipswich and should be highlighted for its natural and educational resources.

In order to avoid potential boundary issues, property corners and boundary lines should be clearly marked with Town of Ipswich Conservation Land signs.

Turkey Hill is quite scenic and offers the potential for various passive recreational activities. The further establishment of recreational trails could enhance visitor experience. A trail network/loop within Turkey Hill would offer a moderate and relatively short hiking experience; efforts to procure trail connections with adjacent lands should be explored, with, perhaps, the ultimate goal of a link to Willowdale State Forest to southwest.

In addition to recreational activities, Turkey Hill Conservation Area offers a wide breadth of educational opportunities. The plant species mix and forested setting allows for natural resource tours and Tree ID workshops. Educational outreach could also highlight the presence of, and problems associated with, exotic/invasive plant species. Furthermore, the overpopulation of deer can be incorporated into an educational program.

With the establishment of a parking area and the installation of recreational trails, access to Turkey Hill Conservation Area could be quite conducive to periodic educational events. Additionally, an informational sign kiosk highlighting Turkey Hill and the Ipswich Open Space Program should be installed in the parking area.

The establishment of invasive species within the Turkey Hill property presents a significant management challenge. As previously stated, the southwest infestation of bittersweet has led to tree decline in the forest canopy; if not addressed, this infestation could spread throughout the property. However, as noted by Franz Ingelfinger (Appendix D), invasive species at Turkey Hill, as well as in surrounding properties, may be too well established for management actions to be practical and resource effective. In order to effectively reduce the abundance of invasive plant species, several treatments (cutting/mowing) per year are necessary. If this level of treatment cannot be maintained, the buckthorn and bittersweet will most likely sprout vigorously and perpetuate their hold on the property. With that, the most applicable management strategy may be no action. If any control actions are undertaken, efforts should be focused on decreasing the spread of bittersweet from the southwest corner.

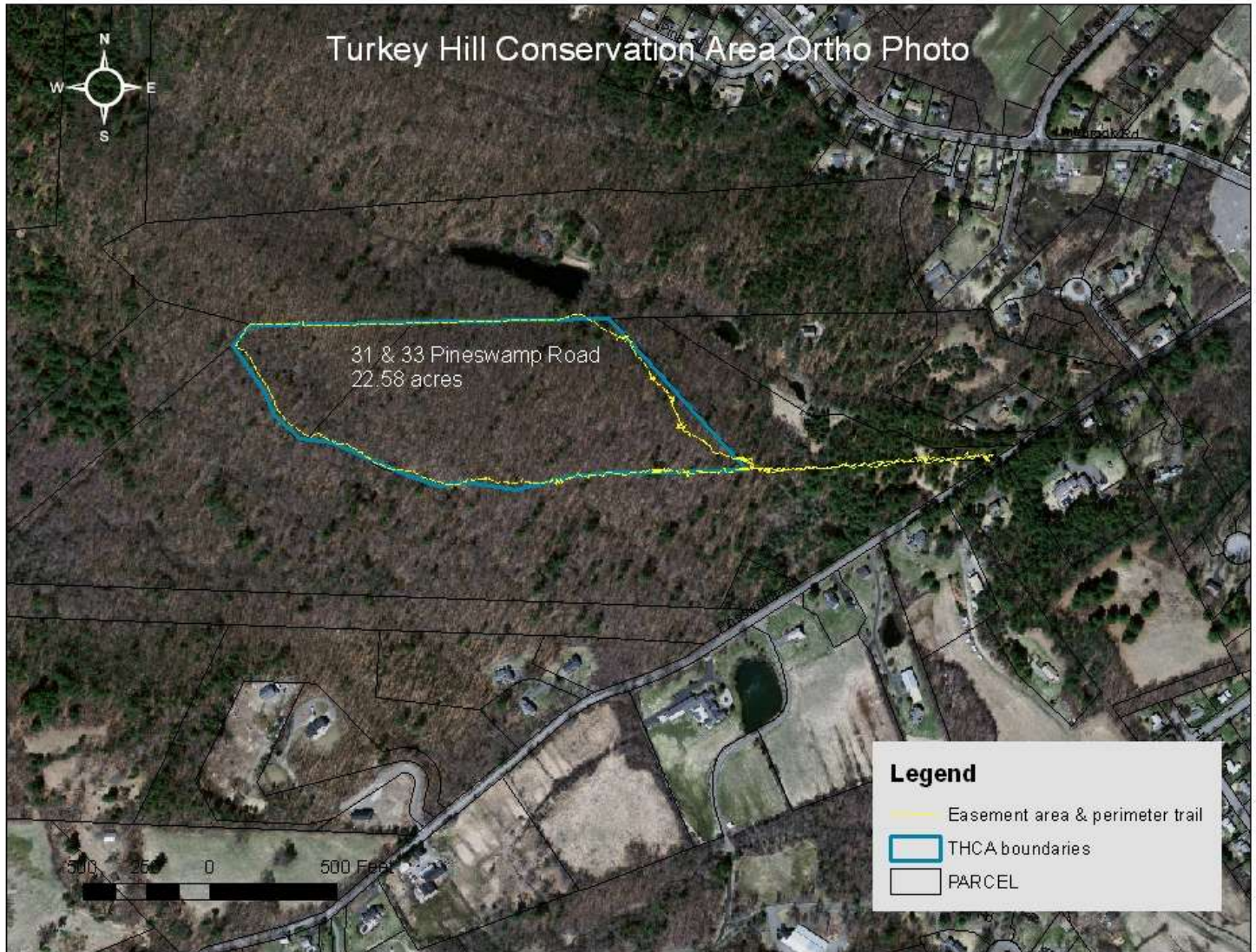
The overpopulation of deer has led to a reduction of native plant species and a monoculture of hay-scented fern in the understory. In addition to a reduction of plant species diversity, the overall health of the deer population may decline as it approaches its carrying capacity. With that, the possibility of opening Turkey Hill to hunting should be explored.

In all, THCA offers a diversity of management options and should be highlighted for its conservation values and its role in the landscape of Ipswich. THCA is a mature forest that offers habitat to a range of wildlife species, public access for recreational activities, and opportunities for educational programs.

### **References:**

Commonwealth of Massachusetts: 2005 Massachusetts Comprehensive Wildlife Conservation Strategy. MA Div. of Fisheries and Wildlife, MA Dept. of Fish and Game, Executive Office of Environmental Affairs. Revised September 2006. On-Line. Available from Internet, <http://www.mass.gov>. Last accessed, October 4, 2009.

**Appendix A: Aerial Photo**



**Appendix B: Survey / Plan of Land**

## **Appendix C: Jim Berry/Wayne Castonguay Site Visit Summary**

### Turkey Hill Conservation Area Site Walk Notes

On July 11, 2009, Jim Berry and Wayne Castonguay conducted a 2-hour site walk of the recently acquired parcel. The visit was conducted at the request of Beth O'Connor to make observations to inform the Management Plan being developed for the area. The walk was NOT in any way a comprehensive survey or inventory. Observational data on vegetation and birds was gathered and submitted in a separate report. The walk commenced on Pine Swamp Road and followed the existing cleared trail along the stone walls on the South, west and North boundaries. In the vicinity of the pond on the adjacent Merrimack Valley parcel, the route followed the approximate eastern property boundary in the vicinity of the summit of the hill back to the starting point at the western end of the access easement. This route follows the potential trail previously marked by the planning office as shown on the ortho photo plan.

In general, the plant community consists of the mixed Hardwood-pine forest typical of our region dominated by oaks and white pine. There was very little change in the vegetation community on the south vs. north facing slope sides which is somewhat unusual in our area for hillsides. These observations indicate the soil is better drained and droughty than is typical of our many clay-dominated drumlins. This is confirmed by the exposed sands and gravel deposits observed throughout the area and by an old gravel pit on the south boundary and wherever soils have been exposed on the site. There was one area of wetland observed along the southern property line about  $\frac{3}{4}$  of the way to the southwest corner. This wetlands is due to a combination of a groundwater seep and barrier created by the stonewall and old cart path.

In general, the forest is second growth and appears to be approximately 80 years old. There is evidence of fairly recent ongoing selective logging of the larger trees throughout the property. It is likely that the property was open pasture until the 1900's which is typical of most of the hills in our area. The stone walls which form the boundaries on the S, W and N sides are clearly indicative of pasture land use (in addition to serving as the property lines). However, at some point, the land use history of this parcel changed relative to the surrounding parcels. The adjacent parcels on the south, west and north sides were clearly in agriculture for a longer period than this parcel was as indicated by the younger forests across the walls and the remnants of fence posts and barbed wire found on the outside of the stone walls. This can be determined since such fences were always put on the inside of stone walls to keep the livestock in a paddock. The 1950's photo of Hillside Lake and Turkey Hill in Town Hall also confirms this history. The photo shows that much of the area around the parcel still in its early successional state after being recently abandoned for agriculture. The barbed wire is particularly noteworthy. It was a very early type which was forged from steel and not made of wire. This type pre-dates the invention of wire and was not manufactured after the mid to late 1800's. This is somewhat paradoxical as iron such as this should not survive that long in the elements before disintegrating. Perhaps a farmer had a large inventory of old wire which was deployed relatively recently or that some unique environmental conditions allowed it to survive this long? A sample was provided to the Planning Office.

Unfortunately, the entire parcel is significantly impacted by invasive plant species, primarily Glossy Buckthorn. Approximately 70% of the understory was buckthorn. This is somewhat surprising for a large interior forest such as this since buckthorn usually needs disturbance, forest openings and an adjacent seed source spread by birds to dominate like this. The selective logging and the fact that the hillside is a popular bird roosting area for birds feeding on buckthorn berries in the vicinity around the hill likely accounts for this observation. There is likely nothing that can be done about the buckthorn since it is so ubiquitous on the site. There is also a large area of Oriental Bittersweet infestation on the western slope near the southwest corner. The patch, which is thriving in the high light conditions of the western slope is about 2 acres in size and is starting to take down the tree canopy. Due to favorable conditions, this infestation will continue to expand and has the potential of covering the entire western and southern slope. Intervention should occur soon to stop the continued expansion of bittersweet in this area.



There was evidence of a considerable amount of deer browsing on the parcel. Unfortunately, they prefer the native plants over the exotics which is further exacerbating the invasives problem. In terms of general ecological value, the parcel is providing significant interior woodland habitat values. Since this habitat type requires relatively large areas to function ecologically, its function is dependent on the surrounding areas remaining in their present forested state. Protection of the surrounding parcels is critical to maintain this functionality. Natural succession should be allowed to continue and management should prioritize the evolution towards an old growth forest. A second ecological highlight was the large wetland and pond (Hilltop Lake) complex on the adjacent Merrimack Valley parcel. The pond and wetlands provide significant breeding and feeding opportunities for both wetland dependent and upland wildlife on the town's parcel and adds significantly to the habitat diversity and function of the area. A large wetland complex such as this near a hilltop is unusual. The juxtaposition of a dry hilltop forest with wetlands and pond habitat is unusual and noteworthy. This juxtaposition significantly adds to the visitor experience of the area, especially in the spring and summer due to the loud chorus of amphibians.

In terms of public access, the parcel provides a nice woodland hike experience which can encompass the summit of Turkey Hill, the second highest (and only undeveloped) hill top in Ipswich. The proposed trail is the ideal trail location and already exists on the ground for about 75% of its length. Unfortunately, the parcel is small and will unlikely become a destination hike unless trails could be expanded onto adjacent parcels. The visitor experience is heavily dependent on the adjacent parcels remaining undeveloped. Without protection of the adjacent parcels, an "isolated" Turkey Hill Conservation Area will be of minimal public benefit.

#### Recommendations (prioritized):

1. Prioritize the protection of the 3 adjoining parcels along the south, west and north boundaries. Without protection of these parcels, the Turkey Hill Conservation area will be of little habitat and visitor experience value.
2. Immediately tackle the bittersweet infestation in the southwest corner of the parcel in order to avoid its spread further into the tree canopy.
3. Develop the trail in the currently recommended layout. Construction of the parking lot is a lower priority as the roadside should be sufficient on an interim basis for the likely low level of use.
4. Create an interpretive brochure, sign and/or on-line resource on the values of the parcel (interior woodland, unique juxtaposition of wetland/hilltop lake, land use history, old growth potential, landscape position, 2<sup>nd</sup> highest hill, etc.) as a means to build public support about the uniqueness of the area and the critical need to protect the adjacent land in order to maintain these values. Promote interest in the local schools and trails organizations to utilize the area.
5. Using the parcel as "a beachhead or anchor", work with local conservation organizations to highlight the value of the greater Turkey Hill area and to develop a land conservation strategy for the adjacent parcels and ultimate connection to nearby Willowdale State Forest.
6. Manage the property to advance the development of old growth forest characteristics.
7. Develop a small parking area

#### Attachments:

- A. Breeding bird inventory
- B. Partial plant list

## A. Fauna List by Jim Berry

This can be considered a close to comprehensive list of breeding birds on the site as it was done early in the morning during breeding season

-----Original Message-----

From: Jim Berry [mailto:jim.berry3@verizon.net]  
Sent: Monday, July 13, 2009 9:09 PM  
To: massbird  
Subject: Fw: eBird Report - Turkey Hill, Ipswich , 7/13/09

> Location: Turkey Hill, Ipswich  
> Observation date: 7/13/09  
> Notes: Visit to Turkey Hill Conservation Area, a relatively new town  
> parcel being surveyed for flora and fauna. Atlas block Ipswich 8. In a  
> hillside forest, the towhees were the most significant species and a  
> new confirmation for the block; they have declined in other local  
> forests in recent years. There were two families of crested  
> flycatchers, each with 4 or 5 birds and each typically very noisy.  
> Probably every species on this list is breeding in this and/or  
> adjacent parcels on Turkey Hill except possibly the grackles.

> Number of species: 23  
>  
> Wild Turkey 2 jakes that hardly got out of my way  
> Mourning Dove 6  
> Downy Woodpecker 2  
> Hairy Woodpecker 1  
> Northern Flicker 1  
> Eastern Wood-Pewee 5 singing males  
> Great Crested Flycatcher 8-10 two family groups (FL)  
> Red-eyed Vireo 3m  
> Blue Jay 4  
> American Crow 4  
> Black-capped Chickadee 17  
> Tufted Titmouse 10  
> White-breasted Nuthatch 15 (fledglings seen--FL)  
> Wood Thrush 5  
> American Robin 10 FL and a nest with 4 cold eggs found  
> Gray Catbird 3  
> Pine Warbler 1m  
> Scarlet Tanager 3m  
> Eastern Towhee 6 FL; these birds are in a fairly mature forest on  
> a hillside, very unlike their coastal habitats  
> Chipping Sparrow 2 FL  
> Northern Cardinal 2  
> Common Grackle 2 flyovers  
> American Goldfinch 4

> This report was generated automatically by eBird v2(<http://ebird.org>)

Jim Berry

Ipswich, Mass. [jim.berry3@verizon.net](mailto:jim.berry3@verizon.net)

## **B. Tree and Shrub List**

The following is a list of the trees and shrubs trees noted on the property:

### Overstory Trees:

Red Maple	<i>Acer rubrum</i>
Sugar Maple	<i>A. saccharum</i>
Red Oak	<i>Quercus rubra</i>
Black Oak	<i>Q. velutina</i>
White Oak	<i>Q. alba</i>
American Elm	<i>Ulmus americana</i>
Black Cherry	<i>Prunus serotina</i>
Pin Cherry	<i>P. pennsylvanica</i>
American Beech	<i>Fagus grandifolia</i>
White Pine	<i>Pinus strobus</i>
Pitch Pine	<i>P. rigida</i>
White Ash	<i>Fraxinus americana</i>
Eastern Red Cedar	<i>Juniperus virginiana</i>

### Native trees noted in the understory include:

Black Cherry	<i>Prunus serotina</i>
White Pine	<i>Pinus strobus</i>
Red Maple	<i>Acer rubrum</i>

### Native shrub and vine species noted in the understory include:

Greenbrier	<i>Smilax spp</i>
Winterberry Holly	<i>Ilex verticillata</i>
Highbush Blueberry	<i>Vaccinium corymbosum</i>
Spicebush	<i>Lindera benzoin</i>
Raspberry	<i>Rubus spp</i>
Arrowwood	<i>Viburnum dentatum</i>
Virginia Creeper	<i>Parthenocissus quinquefolia</i>
Grape	<i>Vitis spp</i>

### Non-native/invasive plant species noted include:

Glossy Buckthorn	<i>Rhamnus frangula</i>
Common Buckthorn	<i>Rhamnus cathartica</i>
Asiatic Bittersweet	<i>Celastrus orbiculatus</i>
Common Privet	<i>Ligustrum vulgare</i>
Japanese Barberry	<i>Beberis thunbergii</i>
Multiflora Rose	<i>Rosa multiflora</i>

**Appendix F: Field Notes Prepared by Beth O'Connor, Open Space Stewardship Coordinator**  
**Summary of Site Walk with Franz Ingelfinger, Regional Ecologist for TTOR**  
**At Turkey Hill Conservation Area August 26, 2009**

With the understanding that the 22 acre Turkey Hill Conservation Area, a predominantly wooded hilltop drumlin, has a significant invasive exotic plant infestation, including glossy buckthorn, oriental bittersweet, Japanese barberry, multiflora rose, privet, etc. Franz Ingelfinger, Regional Ecologist for the Trustees of Reservations accompanied Beth O'Connor, Open Space Stewardship Coordinator, on a property site walk on August 26, 2009. The purpose of the walk was specifically to observe the bittersweet infestation in the area of southwest boundary of the property, which was noted as an area of concern and requiring attention, in the Site Walk Notes from July 11, 2009 prepared by Wayne Castonguay, Open Space Committee co-chair, in conjunction with Jim Berry, local ornithologist.

One of the first things that was apparent was the impact deer were having on the property—understory plants were heavily browsed to the extent that native species had been excluded from the forest understory, non-native species typically considered less-palatable were being heavily browsed, the woodland had an open, “park-like” feel, and colonies of hay scented fern were forming large monocultures. Forest understory domination by hay scented fern, a species unpalatable to deer, can be a sign of persistent and heavy deer browse and these monocultures are common in areas where deer are over-abundant. Native species, such as northern arrow-wood were absent because they had been browsed out by deer.

As we walked to the area in the southwest area of the property, it was evident that the invasive plants had taken a stronghold on much of the landscape, not only on the Turkey Hill property, but also across the property line to the west, which is also undeveloped land, privately owned. In the area where the most significant infestation of bittersweet has taken hold, we stopped to discuss the conditions. Franz made the point, through his many years of experience in dealing with invasive exotics, including bittersweet, his professional opinion is summed up by the following;... “Of primary importance is choosing battles wisely—clear goals, sound rationale, and sustainable (management).” He outlined details of some of the techniques he’s known success (and failure) with including grazing (livestock), herbicide treatment (including foliar applications with backpack sprayers and gas powered mist blowers), and biological control (insects), emphasizing the understanding that, the ecological landscape is continually changing due to both natural and man-made conditions, and that in many cases trying to alter the landscape to a more “natural” condition (native species vs. exotic species) is often a costly, labor intensive endeavor, with limited desired results. It is Franz’s opinion that ...“Unfortunately on some properties, like Turkey Hill, where invasives are well established and the area is surrounded, control is not practical”. He did offer some general suggestions about the idea of perhaps in time, as the forest thins as a result of the effects of invasives, considering returning the property to a forested meadow type of landscape. All of the information exchanged and suggested by Franz is based solely on a brief site visit, with limited viewing of the parcel in its entirety, and on his experience with properties under his purview for TTOR.