INTRODUCTION

The Niedzialkowski wetland is a 3-acre shallow marsh located in the drainage of the Otego Creek in Hartwick, NY. The owners, John and Carol Niedzialkowski intend to construct recreational cabins to the west of this area, and in the summer of 2009 were seeking an exemption permit from the Army Corps of Engineers to convert a portion of the wetland into a set of fishing ponds. The three of us named on this report agreed to delineate the wetland on their behalf, with the understanding that our classes or other conservation professionals may view the process and return for monitoring over the next few years. We were assisted by two student interns from the SUNY Oneonta Biological Field Station in Cooperstown: Maribeth Rubenstein and Carter Bailey.

The source water for the wetland is a perennial stream that enters the property at the North from a heavily wooded area, meanders southward, then turns sharply west, and the southern edge of the wetland becomes a small creek bordered by agricultural and recreational land and turning left (southwesterly) before entering the Otego Creek (Figure 1). The water flow was constant during the months of July and August, and despite the high rainfall of 2009, the stream was never observed to exceed its banks.

The area covered by this report includes the wetlands that border the stream from the treeline at the north end, to the region where the waterflow turns west at the southern end. The area lies in a shallow depression of the Red Hook silt loam (shown as Re on Figure 2), which is reported to have a seasonal water table to 0.5 to 1.5 ft during the spring season. To the east of Red Hook soils is a section of Howard soil on the slope where a spring originates and feeds into the wetland. To the west are Valois soils on steep (> 30%) slopes with large incursions of shales and cobble beds typical of glacial outwash. At the southern end is a baseball field on leveled soil.

METHODS

The delineation process

The three criteria to delineate a point as at the wetland border are 1) vegetation, 2) soils and 3) hydrology according to the laws of both federal (Sipple 1988) and state

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1 Otsego County Soil and Water Conservation District.
2 SUNY Oneonta.
Figure 1. Aerial map of the Niedzialkowski wetland and surrounding region from a 1937 Aerial map (compiled by Otsego County Soil and Water Conservation District). Note that the southern border has already been altered by the time of this photo.
Figure 2. Soil Map that includes the Niedzialkowski wetland. The region marked Re are Redhook soils and include the wetland in its borders. This soil type is indicative of poorly drained soils overlaying shale deposits. (taken from: www.fws.gov/nwi/maps.htm)
Figure 3. The Niedzialkowski wetland delineated by 185 waypoints. Total area within the waypoints is 2.4 acres.
(Browne et al. 1995) legislation. We used Tiner’s (1993) PIMET method of relying heavily on the primary indicators of wetland condition to guide our delineations, but also documented conditions of all three criteria at each established point. The original data sheets recorded in the field were given to Mr. Niedzialkowski, with copies retained by J.C. and D.V.

Fieldwork began on 2 July 2009 at the SE corner. Flags were placed beginning at the SE edge of the wetland and proceeding westward along the southern border at 5 M intervals. Our method was to arbitrarily place a blue flag at the likely wetland edge 5M from a previous flag. The initial placement was guided by vegetation. The list of Facultative (FAC), Facultative Wet (FACW) and wetland Obligate (OBL) designations (U.S. F.W.S. 1996) was used to determine if more than 50% of the dominants were at least FAC and the point indicated wetland vegetation. A pair of additional (orange) flags were placed flanking the edge flag; one that was 2M towards the wetland (which we designated with a W), and the other 2 M to the upland side (designated by a U). At the center delineation flag we used the wetland criteria (see Data at Each Point, below) to determine if the flagged spot qualified as wetland. If the original waypoint did not reveal convincing wetland indicators on one or more of the criteria of vegetation, hydrology, or soils, then we selected a point 2M towards the wetland for a second plot. For example at waypoint 107 we completed three datasheets, one for waypoint 107 which was field marked with a blue flag, as well as points 107W and 107U but those flags were subsequently removed. At other waypoints, we may have completed only one additional reference point (Wetland or Upland side), depending on the clarity of the point established at the original waypoint.

Soil pits (8-12” deep, as needed) were dug at one or two of these flag sites, and sometimes at all three. Based on the Army Corps of Engineers criteria listed on the datasheet (Environmental Technical Services 1987), the central delineation flag might be moved inward or outward of its original placing based on the findings at all three flag sites. The central flag locations marked the point where, in our best estimations, the characteristics of vegetation, soil and hydrology changed from wetland to non-wetland. With few exceptions (and noted on datasheets) we used all three criteria for wetland status to place the flag. Typically when only two criteria were used it was related to rocky, or disturbed, soil conditions. A GPS unit was used to mark waypoints at the flags. Thus if, after a delineation process, we decided to relocate the central flag a bit away from the original placement, the GPS waypoint indicates the final position of the determined wetland edge, not necessarily the originally estimated point. A total of 85 waypoints were marked used to generate the map and formed the perimeter of the delineated wetland (Figure 3).

Data at each point

Over 200 datasheets were completed, marking 85 waypoints around the perimeter of the wetland as well as many associated flanking point towards (W flags) or upland from (U flags) the wetland. At each of these points, dominant vegetation was identified.
to species, and quantified to the nearest percentage in a 1 M² plot surrounding a flagged point. Dominant vegetation (plant species with cover +20% of the area) were used to determine wetland vegetation status. Any plot with 50% or more of wetland dominants (including FAC, FACW and OBL species) was considered having wetland vegetation. If there were fewer than 5 species of dominants, we included subdominants (those with at least 10% cover). The soil criteria most easily used in these ferrisols was mottling, which when evident were often quite striking. Soil color was established using a Munsell’s Soil Guide (Munsell Color Company 2000). Most soil color designations of these soils were found within the 7.5 YR color range. Gleyed soil characters were not as evident, and absent in disturbed areas. No sample areas had any appreciable muck soil layer, although muck soil conditions were evident in the center of the marsh. Saturation of the soil to within a foot of the surface was easy to quantify near the larger test pits, but in several areas the shale layer prevented us from digging deeper holes.

**SUMMARY FINDINGS**

The area of wetland from the treeline at the north, downstream to the baseball field at the south encompassed a total area of 2.4 acres and is maintained by a perennial stream that ultimately reaches the Otego Creek (Figure 3). The wetland community type is best described as a Shallow Emergent Marsh by the standards of the Communities of New York (Edinger et al. 2002). The vegetation of the major portion of the marsh is a sedge (*Carex* spp.) meadow with Sensitive Fern (*Oneoclea sensibilis*), Bullrushes (*Scirpus atrovirens*), Woolgrass (*S.cyperus*), and Rough Goldenrod (*Solidago rugosa*) in the wetter areas grading into pasture grasses and forbs, Tall Goldenrod (*Solidago canadensis*), and Mollugo Bedstraw (*Galium mollugo*) in the upland (non-wetland) regions. A few Hawthorne (*Crataegus*) and Nanny Haw (*Virburnum nudum*) trees line the stream, but largely this is an herbaceous open canopy wetland. No rare species of plants were discovered.

The wetland delineated in this project is bounded by wet pasture species upslope. A broad pasture zone in the northwest might be operating as an occasional (10 year) flood zone, but currently shows insufficient wetland soil or vegetation characteristics to be included within the wetland border; thus we excluded it from the delineation. The wetland soils are consistent with the designation of a Red Hook silt loam and included several large shale and cobble stone outcrops. The month of July when this delineation was conducted was extremely wet and likely the soils were observed in a more saturated state than would be typical of mid-summer condition. Soils at the delineation points, although frequently saturated, were largely mineral-trophic with limited accumulation of peat and little evidence of gleying. The majority of the region within the delineated region is listed on the National Wetland Inventory (www.nwi.fws.gov). On the eastern side a broad area showed hydrological evidence of sheet flow from the field upslope but very uniform soils that suggest this was the result of past plowing upslope from the Howard soils and down to the Red Hook soils to cover over a small channel. We saw no indication of tile or subsurface drains and would consider the possibility of these to be remote.
The Niedzialkowski wetland has had several types of disturbances and modifications over the past 50 years. The southern edge had been modified by plowing and likely by earthmoving that directed the stream to a westerly direction since at least the 1937 aerial map (Figure 1). Currently this is an edge of a baseball field that extends into the marsh to a minor degree. The soils here were unusually uniform with no clear horizons developed within 12 inches, suggesting a mixed soil profile characteristic of a plow line. On an extensive region on the east (of approximately 12 meters, or about 37 ft), there were several large partially buried dumpsites. These dumpsites contained very old construction debris as revealed in several soil pits that we dug, including: old asphalt shingles, glass bottles, unburnt coal, charcoal/burnt wood, and bricks. This waste zone is typical of many old farms of the region, with household (e.g., glass), rock piles and construction debris (e.g., bricks) periodically deposited into areas of marginal agricultural use; i.e., wet spots. Thus, some of the hydrology may have been obscured along this east side, with the original soils buried under 3-5ft. of debris. Throughout the proposed pond site are several larger soil pit excavations made by a recent engineering crew that clearly defines the level of water saturation in the lowest areas. Some of these pits revealed the shale layers that may be responsible for maintaining the water table of this wetland but these test pits did not alter the present hydrology.

A small (< 20 individuals) infestation of Marsh Thistle (*Cirsium palustre*) was present in the southern edge of the wetland and could potentially spread beyond this wetland if not controlled. If the area is to be inundated to form ponds, this may exterminate the population, but construction may provide opportunities for further spread by the construction equipment. We recommend that this site and the surrounding watershed be monitored for several years for this species.

At the eastern edge one active spring extended the wetland edge upslope with a highly diverse community of sedges and rushes, including Soft Rush (*Juncus effesus*), Spikerushes (*Eleocharis*) and Woolgrass (*Scirpus cyperus*). Other taxa included Smartweeds (*Polygonum*) and Mannagrass (*Glyceria*). The seep originates on the northeast side upslope from the main marsh, and is evident even in the 1937 aerial photo (Figure 1). This spring feeds an extremely diverse rush and sedge plant community that is distinct from the main body of the wetland. Although this spring zone is a separate feature from the main wetland we included in as part of the overall wetland area that was delineated. Should the main portion of the adjacent marsh be inundated we would advocate preservation of this smaller and more upland site both for the plant diversity it contains, but also for its hydrologic value.
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The authors thank John and Carol Niedzialkowski for providing this experience. Those who wish to visit the delineated area in the future are advised to contact John and Carol Niedzialkowski on Rt. 205, Hartwick, NY.

REFERENCES


