

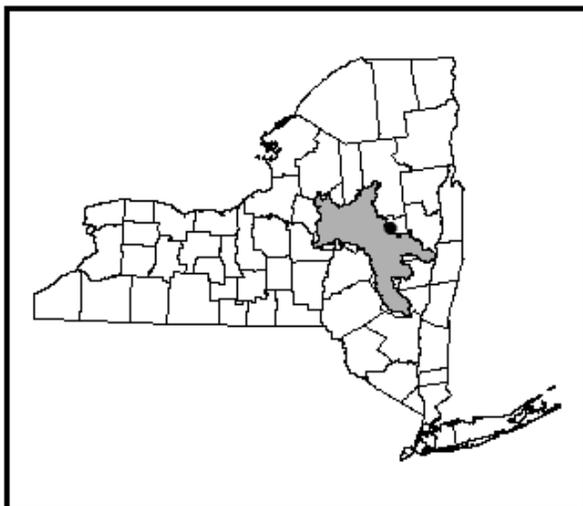
LCI Lake Water Quality Summary

General Information

Lake Name:	Hinds (Hines) Pond
Location:	Town of Bleecker, Fulton County, NY
Basin:	Mohawk River Basin
Size:	10.4 hectares (25.69 acres)
Lake Origins:	man-made
Major Tributaries:	none
Lake Tributary to?:	Peck Lake via Vandenburg Pond
Water Quality Classification:	C (best intended use: secondary contact recreation)
Sounding Depth:	1.8 meters (6 feet)
Sampling Coordinates:	43.1085, -74.35334
Sampling Access Point:	Private land (Boy Scouts of America)
Monitoring Program:	Lake Classification and Inventory (LCI) Survey
Sampling Date:	August 26, 2010
Samplers:	Scott Kishbaugh, NYSDEC Division of Water, Albany Pieter Bridge, NYSDEC Division of Water, Albany
Contact Information:	David Newman, NYSDEC Division of Water djnewman@gw.dec.state.ny.us ; 518-402-8201

Lake Map

(sampling location marked with a circle)



Background and Lake Assessment

Hinds Pond is a 25 acre pond on land owned by Wordworth Lake Boy Scout Reservation, in the town of Bleecker in Fulton County. A dam was located at the pond's outlet, but the property manager indicated that the dam broke several years ago and that the water level is down seven to eight feet since the dam failure. The property manager also indicated there was an active beaver population on the pond. Both the near shore and greater watershed are almost entirely forested, with the access road to the Boy Scout Reservation being the only development in the watershed. The pond is used occasionally by the Boy Scouts for boating (non-motorized) and fishing. There is no public access to the pond.

Hinds Pond was included in the Lake Classification and Inventory (LCI) screening (single sampling event) of the Mohawk River basin due to a lack of water quality data in the Division of Water's database. The only stressor found during sampling was a low pH, which is commonly seen in waterbodies throughout the Adirondacks. In the absence of other indicators of water quality issues, the pond is not a candidate for more intensive monitoring during the summer of 2011.

Hinds Pond can be characterized as *mesoeutrophic* or moderately to highly productive. The water clarity reading taken in late August (TSI = 52, typical of *eutrophic* waterbodies) was expected given the chlorophyll *a* reading (TSI = 51, typical of *eutrophic* waterbodies), but was lower than expected given the total phosphorus reading (TSI = 43, typical of *mesotrophic* waterbodies). These data indicated that baseline nutrient levels do not support persistent algal blooms, although chlorophyll *a* (algae) levels may become elevated during the summer months.

In late August the lake had a slight brown color and a water clarity reading of less than 2 meters. Due to the shallow nature of the pond, the water clarity may have been higher than recorded as the water clarity readings was only slightly less (0.1 meters) than the water depth. Four native aquatic plant species were observed to be growing in the pond. This included two floating leaf plants (yellow waterlily and white waterlily) and two submergent plants (slender naiad and Farwell's water-milfoil). Farwell's water-milfoil (*Myriophyllum farwellii*) is state listed as *threatened* due to rarity. The New York Natural Heritage Program only has eight locations state-wide where the plant has been confirmed, with the closest two being within West Canada Lake Wilderness and Black River Wild Forest. A more thorough plant specific survey may yield additional plant species, but it is unlikely that there are exotic invasive species in the pond, due to the limited access and use of the pond.

Like most shallow waterbodies, Hinds Pond does not exhibit thermal stratification, in which depth zones (warm water on top, cold water on the bottom during the summer) are established. Temperature and dissolved oxygen readings were comparable throughout the water column. The pH reading at the surface was below 6.5 (the state's water quality standard) indicating there may be some impacts to aquatic life. Adirondack lakes are commonly acidic due to naturally low alkalinity (buffering capacity to acidic inputs) and atmospheric deposition (acid rain). Conductivity readings indicate soft water (low ionic strength), typical for lakes in the Adirondacks due to underlying soil type.

Hinds Pond appears to be typical of shallow acidic Adirondack lakes. Other lakes with similar water quality characteristics often support warmwater fisheries, although fisheries habitat cannot be fully evaluated through this monitoring program. Cold water fish species, if present, would be limited to small springs or coldwater channels in the lake. The Adirondack Lake Survey Corporation (ALSC) surveyed both Woodworth Lake and Vandenburg Pond in the late 1980s, and found that both waterbodies to have several warm water fish species. Hinds Pond, at least before the dam broke, probably had a similar fish community. The shallow nature of the pond and the low pH may be impacting fish populations. None of the other parameters evaluated through the LCI indicate impacts to water quality, with all the parameters except pH being below the state's water quality standards and guidance values.

Evaluation of Lake Condition Impacts to Lake Uses

Potable Water (Drinking Water)

Hinds Pond is not classified to be used for potable water. LCI data are not sufficient to evaluate potable use; pH was the only parameter analyzed that would impact the use of the pond for a potable water source.

Contact Recreation (Swimming)

Hinds Pond is not classified for primary contact recreation including swimming and bathing, and the lake presently does not support this use. Bacteria data are needed to evaluate the safety of Hinds Pond for swimming, bacteria data is not collected through the LCI. The data collected through the LCI indicate the swimming should be supported by the existing water quality conditions, at least from an aesthetics perspective.

Non-Contact Recreation (Boating and Fishing)

Hinds Pond is classified for non-contact recreational use including boating and fishing, and it is likely that the pond supports some non-powered boating. These data did not indicate any impacts to boating or fishing.

Aquatic Life

The low pH readings found in the pond may be stressing aquatic life in the pond. Additional biological studies would need to be conducted to evaluate aquatic life impacts from low pH levels.

Aesthetics

These data indicate that aesthetics should be fully supported, due to a lack of excessive algal and plant growth.

Additional Comments

- Periodic surveillance for invasive exotic plant species may help to prevent the establishment and spread of any new invaders, given the escalating problems with exotic aquatic weeds. Not allowing outside boats to be brought to the pond would help limit any inadvertent introductions.
- Efforts are underway on a national level to address problems caused by acid rain by reducing pollutant emissions, as required by the Clean Air Act. New York State (and other northeastern states) have taken legal action against USEPA to accelerate implementation of controls. Monitoring of these waters will continue, in order to assess changes in water quality resulting from implementation of the Clean Air Act. However, these changes are expected to occur only slowly over time.

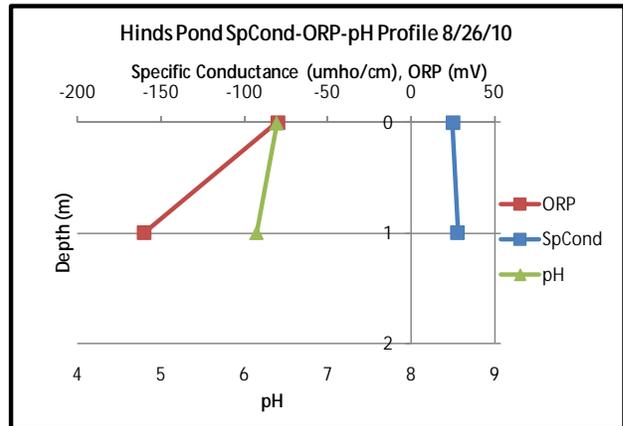
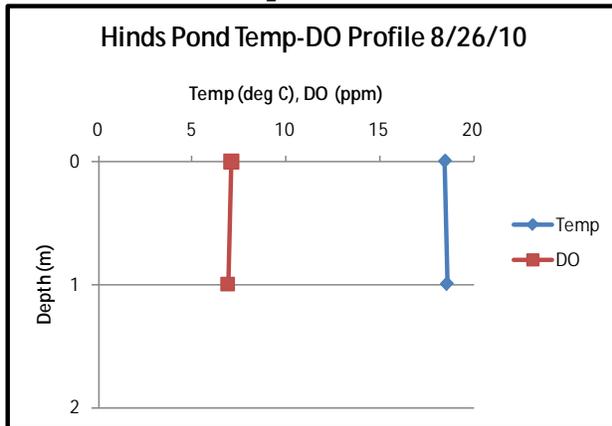
Aquatic Plant IDs

Exotic Plants: none observed

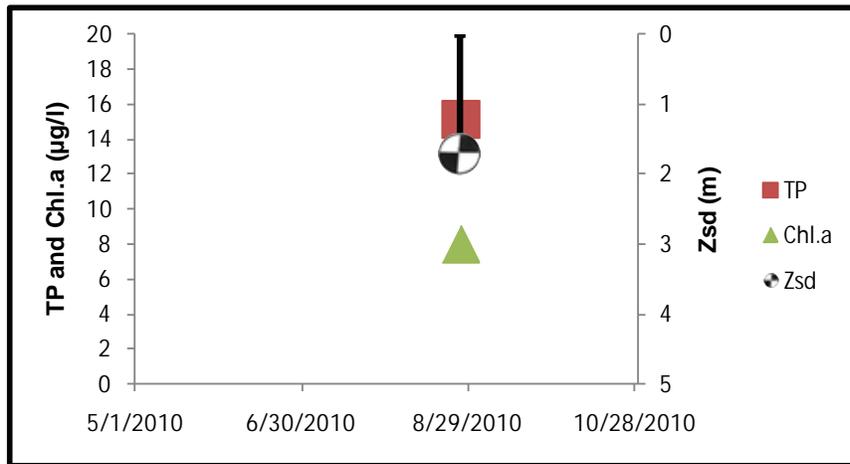
Native Plants: *Nuphar sp.* (yellow waterlily)
Nymphaea sp. (white waterlily)
Najas flexilis (slender naiad)

Native Threatened Plants: *Myriophyllum farwellii* (Farwell's Water-milfoil)

Time Series: Depth Profiles



Time Series: Trophic Indicators



WQ Sampling Results

Surface Samples

	UNITS	Reading	Scientific Classification	Regulatory Comments
SECCHI	meters	1.7	Eutrophic	Readings does not violate DOH guidance value
TSI-Secchi		52.4	Eutrophic	No pertinent water quality standards
TP	mg/l	0.0151	Mesotrophic	Reading does not violate DEC guidance values
TSI-TP		43.3	Mesotrophic	No pertinent water quality standards
TSP	mg/l	0.0069	High % soluble Phosphorus	No pertinent water quality standards
NOx	mg/l	0.0044	Low nitrate	Reading does not violate guidance
NH4	mg/l	0.149	Potentially high ammonia	Reading does not violate guidance
TKN	mg/l	0.59	Intermediate organic nitrogen	No pertinent water quality standards
TN/TP	mg/l	86.60	Phosphorus Limited	No pertinent water quality standards
CHLA	ug/l	8	Mesotrophic	No pertinent water quality standards
TSI-CHLA		51.0	Eutrophic	No pertinent water quality standards
Alkalinity	mg/l	4.1	Poorly Buffered	No pertinent water quality standards
TCOLOR	ptu	100	Highly Colored	No pertinent water quality standards
TOC	mg/l	13.8		No pertinent water quality standards
Ca	mg/l	2.55	Does Not Support Zebra Mussels	No pertinent water quality standards
Fe	mg/l	0.126		Reading does not violate water quality standards
Mn	mg/l	0.0064		Reading does not violate water quality standards
Mg	mg/l	0.745		Reading does not violate water quality standards
K	mg/l	0.361		No pertinent water quality standards
Na	mg/l	0.788		Reading does not violate water quality standards
Cl	mg/l	ND	Little impact from road salt	Reading does not violate water quality standards
SO4	mg/l	2.5		Reading does not violate water quality standards

Lake Perception

	UNITS	Reading	Scientific Classification	Regulatory Comments
WQ Assessment	1-5, 1 best	3	Definite Algal Greenness	No pertinent water quality standards
Weed Assessment	1-5, 1 best	3	Plants Grow to Lake Surface	No pertinent water quality standards
Recreational Assessment	1-5, 1 best	2	Excellent for Most Uses	No pertinent water quality standards

Legend Information

General Legend Information

Surface Samples	= integrated sample collected in the first 2 meters of surface water
Bottom Samples	= grab sample collected from a depth of approximately 1 meter from the lake bottom
SECCHI	= Secchi disk water transparency or clarity - measured in meters (m)
TSI-SECCHI	= Trophic State Index calculated from Secchi, = $60 - 14.41 * \ln(\text{Secchi})$

Laboratory Parameters

ND	= Non-Detect, the level of the analyte in question is at or below the laboratory's detection limit
TP	= total phosphorus- milligrams per liter (mg/l) Detection limit = 0.003 mg/l; NYS Guidance Value = 0.020 mg/l
TSI-TP	= Trophic State Index calculated from TP, = $14.42 * \ln(\text{TP} * 1000) + 4.15$
TSP	= total soluble phosphorus, mg/l Detection limit = 0.003 mg/l; no NYS standard or guidance value
NOx	= nitrate + nitrite nitrogen, mg/l Detection limit = 0.01 mg/l; NYS WQ standard = 10 mg/l
NH4	= total ammonia, mg/l Detection limit = 0.01 mg/l; NYS WQ standard = 2 mg/l
TKN	= total Kjeldahl nitrogen (= organic nitrogen + ammonia), mg/l Detection limit = 0.01 mg/l; no NYS standard or guidance value
TN/TP	= Nitrogen to Phosphorus ratio (molar ratio), = $(\text{TKN} + \text{NOx}) * 2.2 / \text{TP}$ > 30 suggests phosphorus limitation, < 10 suggests nitrogen limitation
CHLA	= chlorophyll <i>a</i> , micrograms per liter ($\mu\text{g/l}$) or parts per billion (ppb) Detection limit = 2 $\mu\text{g/l}$; no NYS standard or guidance value
TSI-CHLA	= Trophic State Index calculated from CHLA, = $9.81 * \ln(\text{CHLA}) + 30.6$
ALKALINITY	= total alkalinity in mg/l as calcium carbonate Detection limit = 10 mg/l; no NYS standard or guidance value
TCOLOR	= true (filtered or centrifuged) color, platinum color units (ptu) Detection limit = 5 ptu; no NYS standard or guidance value
TOC	= total organic carbon, mg/l Detection limit = 1 mg/l; no NYS standard or guidance value
Ca	= calcium, mg/l Detection limit = 1 mg/l; no NYS standard or guidance value
Fe	= iron, mg/l Detection limit = 0.1 mg/l; NYS standard = 0.3 mg/l
Mn	= manganese, mg/l

Mg	Detection limit = 0.01 mg/l; NYS standard = 0.3 mg/l = magnesium, mg/l
K	Detection limit = 2 mg/l; NYS standard = 35 mg/l = potassium, mg/l
Na	Detection limit = 2 mg/l; no NYS standard or guidance value = sodium, mg/l
Cl	Detection limit = 2 mg/l; NYS standard = 20 mg/l = chloride, mg/l
SO4	Detection limit = 2 mg/l; NYS standard = 250 mg/l = sulfate, mg/l

Field Parameters

Depth	= water depth, meters
Temp	= water temperature, degrees Celsius
D.O.	= dissolved oxygen, in milligrams per liter (mg/l) or parts per million (ppm) NYS standard = 4 mg/l; 5 mg/l for salmonids
pH	= powers of hydrogen, standard pH units (S.U.) Detection limit = 1 S.U.; NYS standard = 6.5 and 8.5
SpCond	= specific conductance, corrected to 25°C, micromho per centimeter ($\mu\text{mho/cm}$) Detection limit = 1 $\mu\text{mho/cm}$; no NYS standard or guidance value
ORP	= Oxygen Reduction Potential, millivolts (MV) Detection limit = -250 mV; no NYS standard or guidance value

Lake Assessment

WQ Assessment	= water quality assessment , 5 point scale, 1= crystal clear, 2 = not quite crystal clear, 3 = definite algae greenness, 4 = high algae levels, 5 = severely high algae levels
Weed Assessment	= weed coverage/density assessment , 5 point scale, 1 = no plants visible, 2 = plants below surface, 3 = plants at surface, 4 = plants dense at surface, 5 = plants cover surface
Recreational Assessment	= swimming/aesthetic assessment , 5 point scale; 1 = could not be nicer, 2 = excellent, 3= slightly impaired, 4 = substantially impaired, 5 = lake not usable