2003 SUMMARY REPORT
of
TAYLOR LAKE

Lake County, Illinois

Prepared by the

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EXECUTIVE SUMMARY

Taylor Lake, located in the Lakewood Forest Preserve in Wauconda Township, is a man-made lake formed by excavation of a wetland. It is currently owned and maintained by the Lake County Forest Preserve District (LCFPD). The lake has a surface area of approximately 6 acres, a maximum depth of 17.0 feet and an estimated mean depth of 8.5 feet. It is located entirely within LCFPD property and is used by the public for fishing and aesthetics. A walking path surrounds the lake and picnickers can enjoy the view from tables nearby.

Water quality parameters, such as nutrients, suspended solids, oxygen, temperature and water clarity were measured and the plant community was assessed each month from May-September 2003. Taylor Lake had fair to poor water quality as compared to other lakes throughout Lake County. The water column was thermally stratified from May-September. Dissolved oxygen concentrations were adequate for most aquatic life from the surface down to an average of only five feet deep for the majority of the season. A substantial amount of plant material was noted to be decaying beginning in July, which could explain why oxygen concentrations were adequate only within the top five feet of the water column during some of the sampling season. The decomposition of plants may have reduced dissolved oxygen in the water column. The average seasonal concentrations of phosphorus, nitrogen and total suspended solid concentrations in Taylor Lake were higher than Lake County medians. High phosphorus concentrations gave the lake a TSIp value of 68.3, ranking it 79th out of 130 lakes studied in Lake County since 1999. The water clarity was rather poor, with an average of 3.16 feet deep during 2003, and was the result of a high concentration of total suspended solids.

Coontail dominated the plant community in 2003, with a total of ten aquatic plant species identified in the lake. Eurasian watermilfoil (EWM), a nuisance exotic plant, was growing at 8% of the sampling sites. This is in contrast to a 1999 fisheries survey conducted by the Illinois Department of Natural Resources that noted a dominance of EWM in the lake. Efforts to reduce the EWM population began in 1992 when the Forest Preserve District stocked 64 triploid grass carp and applied Aquashade, a product containing a bluish dye that reduces sunlight penetration in order to inhibit plant growth.

Approximately 58% of the shoreline surrounding Taylor Lake is developed, which was typified by buffer and lawn. The remainder of the shoreline is undeveloped, classified as wetland. No shoreline erosion was documented. Exotic species (buckthorn, purple loosestrife and common reed) were present along approximately 88% of the shoreline. These are exotic plant species that out-compete native vegetation and provide poor habitat for wildlife. A good mix of waterfowl and songbird species were observed on and around the lake throughout the summer. According to fisheries surveys in May of 2002, a winterkill in 2000-2001 severely impacted the largemouth bass population, as only two were collected during their survey. As a result, surviving bluegill, pumpkinseed and green sunfish had spawned with little predation, creating an overabundance of these small fish.

LAKE IDENTIFICATION AND LOCATION

Lake Name: Taylor Lake

County: Lake

Nearest Municipality: Wauconda, Illinois

Location: T44N, R10E, Section 30

Watershed: Fox River

Sub-basin: Slocum Lake Drain

Major Tributaries: None

Receiving Body of Water: None

Surface Area: 6.17 acres

Shoreline Length: 0.59 miles

Maximum Depth: 17 feet

Mean Depth (estimated): 8.5 feet

Volume (estimated): 52.4 acre-feet

Lake Type: Manmade

Taylor Lake, located in the Lakewood Forest Preserve in Wauconda Township, is a man-made lake formed by excavation of a wetland. It is currently owned and maintained by the LCFPD. It is located entirely within LCFPD property and is used by the public for fishing and aesthetics. A walking path surrounds the lake and picnickers can enjoy the view from tables nearby.

LIMNOLOGICAL DATA - WATER QUALITY

Water samples were collected each month, from May through September 2003, at the deepest location (see Figure 1). Samples were collected near the surface (3 feet) and within the hypolimnion (11-14 feet). The extensive plant growth in August hampered depth-finding capabilities, so the deep water sample was only 11 feet that month. However, since the lake was thermally stratified, the sample was still taken within the hypolimnetic zone. All samples were analyzed for a variety of parameters. The water quality data can be found in Table 1, Appendix A. See Appendix B for water quality sampling and laboratory methods.

Taylor Lake was thermally stratified throughout the sampling season during 2003. Thermal stratification occurs when a lake divides into an upper, warm water layer (epilimnion) and a lower, cold-water layer (hypolimnion). When stratified, the epilimnetic and hypolimnetic waters do not mix, and the hypolimnion typically becomes anoxic (dissolved oxygen = 0 mg/l) by mid-summer in nutrient-enriched lakes. This is typical of deep lakes. A dissolved oxygen (DO) concentration of 5.0 mg/L is considered adequate to support a warm water fishery, since many desirable warm water fish suffer from oxygen stress below this amount. Taylor Lake had at least 5.0 mg/L of DO from the surface to a depth of six feet in May, 2003. During the remainder of the season however, adequate DO concentrations were recorded only from the surface to a depth of four feet. One of the reasons this was occurring could be the extensive coontail beds in the lake. Heavy coontail growth was present for much of the season, and beginning in July, the water was littered with plant detritus. The depletion of oxygen during the decomposition of this biomass is one possible reason that the DO concentrations were low during these later months. Because there is no recent bathymetric map with volume calculations for Taylor Lake, it is not possible to determine the percentage of water volume with adequate DO concentrations during the summer of 2003.

The concentration of total suspended solids (TSS) increased as the plant biomass was decomposing. TSS is composed of nonvolatile suspended solids (NVSS) such as non-organic clay or sediment materials, and volatile suspended solids (VSS) such as algae and other organic matter. Water clarity is a direct result of the amount of TSS concentration in the water column, and is usually the first thing people notice about a lake, as it typifies the overall lake quality. High TSS values are typically correlated with poor water clarity and can be detrimental to many aspects of the lake ecosystem, including the plant and fish communities. The Lake County median clarity for 130 lakes throughout Lake County is 3.41 feet. The readings in Taylor Lake were slightly lower, with a seasonal average of 3.16 feet for the 2003 season. The seasonal TSS average of 8.4 mg/L in Taylor Lake is higher than the 7.5 mg/L median for Lake County lakes. The TSS values in Taylor Lake resulted in low water clarity, as evidenced by lower than average Secchi depth measurements that negatively correlated with higher TSS concentrations (Figure 2). The algae present in the lake was the filamentous variety, which can form in localized regions of the lake without substantially decreasing water clarity, unlike the planktonic algae, which can cause low water clarity readings. The TSS concentrations in the hypolimnion were very high, and increased overall throughout the summer from 21 mg/L

Insert figure 1

INSERT FIGURE 2, SECCHI/TSS

to 58 mg/L. In August, however, the TSS concentration was less than the July and September concentrations. Because of the heavy coontail growth across the bottom of the lake, it was extremely difficult to find the deep hole, which is very small. As a result, we sampled at 11 feet instead of 14 feet. It's possible that if we were able to find the deepest location in August and sample at 14 feet, the TSS concentrations would have complemented the increasing trend over the season.

Two important nutrients for algae growth, nitrogen and phosphorus, were in high concentrations in Taylor Lake. Total phosphorus (TP) in the epilimnion averaged 0.085 mg/L during 2003, which is 1.5 times higher than the Lake County TP median of 0.059 mg/L. Generally, nuisance algae blooms can occur with TP concentrations of 0.05 mg/L or more. However, the high plant density in Taylor Lake, which competes with algae for resources such as light and carbon dioxide, prevented lake wide planktonic algal blooms. TP concentrations decreased as the summer progressed, indicating its use from the filamentous algae growth in the lake. Soluble reactive phosphorus (SRP), is normally used up very quickly within the epilimnion and is usually only detected in the hypolimnion under anoxic conditions. In Taylor Lake, SRP was detected in the epilimnion each month except June. The decomposing plant biomass may have been one source for SRP in the epilimnion during these later months.

TP concentrations followed the same pattern in the hypolimnion as the TSS concentrations. When stratification occurred in Taylor Lake, oxygen was depleted in the hypolimnion, triggering chemical reactions at the sediment surface. These reactions, which commonly occur in most stratified lakes, result in the release of nutrients such as phosphorus and nitrogen from the sediment interface into the water column, and are known as internal loading. Typically, the hypolimnion is thermally isolated from the epilimnion during the summer, and nutrients build up in the bottom waters. These nutrients normally reach the surface waters of the epilimnion during fall turnover. Because Taylor Lake was strongly stratified during the season, the result was the hypolimnetic TP concentrations in Taylor Lake averaged 5 times higher than the Lake County TP median for hypolimnetic samples. SRP also increased for the same reason in the hypolimnion, increasing steadily throughout the season until September. Another type of internal loading is from the decomposing plant detritus, which will also release nutrients into the water column.

TP concentrations are used to determine the trophic state index (TSI), which classifies lakes according to the overall level of nutrient enrichment. Using the total phosphorus concentration, the TSI score can be calculated. The score falls within the range of one of four categories: oligotrophic, mesotrophic, eutrophic and hypereutrophic. Mesotrophic and oligotrophic lakes are those with low and poor nutrient levels, respectively. These are very clear lakes, with little or no plant and/or algae growth. Most lakes in Lake County are classified as eutrophic or nutrient rich, and are productive lakes in terms of aquatic plants and/or algae and fish. Hypereutrophic lakes are those that have excessive nutrients, with nuisance algae growth reminiscent of "pea soup" and have a TSI score greater than 70. The TSI classification of Taylor Lake in terms of its phosphorus concentrations during 2003 was eutrophic, with a score of 68.2. Sources of phosphorus

for this lake include internal loading which releases nutrients, and phosphorus attached to goose droppings. Canada geese were constantly present in large numbers during every visit we made over the season. It does not help that forest preserve visitors continue to feed the geese in spite of signage requesting that this practice not occur.

The other nutrient critical for algae growth is nitrogen. Total Kjeldahl nitrogen (TKN) is a measure of organic nitrogen, and is typically bound up in algal and plant cells. In Taylor Lake, TKN concentrations in the epilimnion were 25% higher than the Lake County TKN median. TKN concentrations were very high in the hypolimnion, with the seasonal average nearly five times higher than the Lake County median. Like the seasonal TP average in the hypolimnion, the concentration of TKN was high due to strong stratification and resulting internal nutrient loading from the sediment/water interface. The deep hole appears to be very small, which may also been a factor in the high hypolimnetic TKN concentrations due to a small volume.

The ratio of total nitrogen to total phosphorus (TN:TP) indicates if the amount of phosphorus or nitrogen would limit algae and/or plant growth in the lake. Lakes with TN:TP ratios of more than 15:1 are usually limited by phosphorus. Those with ratios less than 10:1 are usually limited by nitrogen. The TN:TP ratio for Taylor Lake was 18:1, indicating that the lake is limited by phosphorus. In 2003, Taylor Lake ranked 79th out of 130 Lake County lakes based on average total phosphorus concentrations (See Table 2 in Appendix A).

The Illinois Environmental Protection Agency (IEPA) has indices to classify Illinois lakes for their ability to support aquatic life, swimming, or recreational uses. The guidelines consider several aspects, such as phosphorus concentrations, water clarity and aquatic plant coverage. Taylor Lake fully supports aquatic life according to these guidelines. If the lake were used for swimming, it would also be classified as partially impaired because of the low water clarity and high phosphorus concentrations. The low water clarity and high NVSS concentrations placed the lake in the partial support category for in-lake recreational uses. The overall use support category for Taylor Lake is that of partial support.

Conductivity is a measurement of water's ability to conduct electricity via total dissolved solids (TDS), which are dissolved minerals (i.e., chlorides) or salts in the water column. Because of the use of road salts, lakes with residential and/or urban land uses are often noted to have higher conductivity readings and higher total dissolved solids concentrations than lakes that are not surrounded by development. Stormwater runoff from impervious surfaces such as asphalt and concrete can deliver high concentrations of these salts to nearby lakes and ponds. The Lake County average conductivity reading of water near the surface is 0.7907 mS/cm. During 2003, the conductivity readings in Taylor Lake were lower, averaging 0.4681 mS/cm near the surface. Concentrations of TDS in samples collected during 2003 in the epilimnion averaged 267 mg/L, which was also lower than the Lake County median of 451 mg/L. Although the lake does receive runoff from some of the parking lot to the north, it does not appear to receive much salt-laden runoff from the nearby impervious surfaces.

LIMNOLOGICAL DATA – AQUATIC PLANT ASSESSMENT

We randomly sampled locations in Taylor Lake each month for aquatic plants, and identified ten species (Table 3). We also identified one macroalgae (*Chara*) and recorded plant species present along the shoreline. Table 4 in Appendix A lists the plant species and the frequency with which they were found. The most commonly found aquatic plant was coontail, which was in 84% of the samples throughout the season. The other two plants found most often were slender naiad (21% of all sample locations) and sago pondweed (13% of all sample locations). Other species were found only in a few locations. One positive observation was that the lake did not harbor a large population of Eurasian water milfoil (EWM), an aggressive, exotic species. It was present, but only in small pockets. This plant should be monitored in the lake in order to ensure that its population does not overtake the native plants species present. Although the aquatic plants did not reach the surface across the entire lake, plants were growing across 100% of the lake bottom. To support a healthy fishery, coverage of approximately 30% to 40% of the lake bottom is best.

According to a 1977 IDNR fisheries report, aquatic vegetation was described as "scattered filamentous algae and *Ceratophyllum spp*. No other plants were listed. The report also mentions that Taylor Lake was treated annually with an "endotholsilvex application." No amounts, or product names were specified. Prior to 1992 (no exact year given), the Forest Preserve staff attempted to curtail the plant population in Taylor Lake by adding Aquashade, a product that limits sunlight penetration through the water column, potentially reducing plant growth. According to an IDNR fisheries report during that same year, the aquatic plant community in Taylor Lake was dominated by Eurasian water milfoil. This was not successful in effectively reducing the plant population, so the District stocked 64 10" triploid grass carp in 1992. These fish have been used to control plant populations, but have frequently been overstocked, which has resulted in the decimation of entire plant populations within a lake. Assuming that the plant coverage in 1992 was 100%, the number of grass carp stocked in Taylor Lake should have been 61 10-inch fish per acre, or 366 fish.[1] Because only 64 fish were stocked, they caused only a slight decline in the plant population, which was noted in a 1999 fisheries report. Subsequent stocking may have been warranted in 1999, but a winterkill that occurred in 2000 most likely would have claimed them. It is doubtful that grass carp still exist in the lake.

Taylor Lake may not have experienced a notable decline in plant biomass over the years by stocking grass carp, but it appears that it did experience a species shift from an EWM dominated lake to one dominated by coontail. The LCFPD could try using grass carp again at the recommended rate of 61 fish per vegetated acre, or they may want to try a different aquatic plant control for the coontail, such as the use of 2,4-D or Sonar™, two aquatic herbicides. However, the use of aquatic herbicides may have a negative response from the public since this is a highly popular location.

[1] Wiley, M.J., P.P. Tazik, and S.T. Sobaski. 1987.

Table 3. Aquatic and shoreline plants on Taylor Lake, May – September 2003.

Aquatic Plants	
Coontail	*Ceratophyllum demersum*
Duckweed	*Lemna minor*
Eurasian Water Milfoil[#]	*Myriophyllum spicatum*
Slender Naiad	*Najas flexilis*
American Pondweed	*Potamogeton americanus*
Curlyleaf Pondweed[#]	*Potamogeton crispus*
Leafy Pondweed	*Potamogeton foliosus*
Small Pondweed	*Potamogeton pusillus*
Flatstem Pondweed	*Potamogeton zosteriformis*
Giant Duckweed	*Spirodela polyrhiza*
Sago Pondweed	*Stuckenia pectinatus*
Shoreline Plants	
Bottlebrush Sedge	*Carex comosa*
Blue Flag Iris	*Iris* sp.
Broadleaved Arrowhead	*Sagittaria latifolia*
Bull Thistle[#]	*Cirsium vulgare*
Burdock	*Arctium minus*
Canada Thistle[#]	*Cirsium arvense*
Cattail	*Typha* spp.
Common Arrowhead	*Sagittaria latifolia*
Common Cinquefoil	*Potentilla simplex*
Common Plantain[#]	*Plantago major*
Common Reed[#]	*Phragmites australis*
Daisy Fleabane	*Erigeron annuus*
English Plantain[#]	*Plantago lanceolata*
Hedge Bindweed	*Convolvulus sepium*
Jewelweed	*Impatiens pallida*
Oxeye Daisy	*Chrysanthemum leucanthemum*
Purple Loosestrife[#]	*Lythrum salicaria*
Queen Anne's Lace[#]	*Daucus carota*
Softstem bulrush	*Scirpus validus*
Spikerush	*Eleocharis* spp.
Water Smartweed	*Polygonum amphibium*
White Sweet Clover	*Melilotus alba*
Wild Grape	*Vitis* sp.
Yarrow[#]	*Achillea millefolium*
Yellow Sweet Clover	*Melilotus officinalis*
Trees/Shrubs	
Box Elder	*Acer negundo*

Buckthorn[#]	*Rhamnus* sp.
Red Osier Dogwood	*Cornus sericea*

Table 3. Aquatic and shoreline plants on Taylor Lake, May – September 2003, cont'd.

Trees/Shrubs	
Red Mulberry	*Morus rubra*
Silver Maple	*Acer saccharinum*
Willow	*Salix* spp.

Exotic plant or tree species

Floristic quality index is a rapid assessment tool designed to evaluate the closeness of the flora (plants species) of an area to that with undisturbed conditions. It can be used to: 1) identify natural areas, 2) compare the quality of different sites or different locations within a single site, 3) monitor long term floristic trends, and 4) monitor habitat restoration efforts. Each floating and submersed aquatic plant in a lake is assigned a number between 1 and 10 (10 indicating the plant species most sensitive to disturbance). These numbers are then used to calculate the floristic quality index (FQI). A high FQI number indicates that there are a large number of sensitive, high quality plant species present in the lake, and better plant diversity. Nonnative species are included in the FQI calculations for Lake County lakes. The FQI of 118 lakes measured between 2000 and 2003 ranges from 0 to 37.2, with an average of 14. Taylor Lake has a FQI of 15.8, indicating a lake slightly above the average plant diversity of Lake County lakes.

Of the 31 species of shoreland plants we recorded around Taylor Lake, 10 are exotic. In particular, purple loosestrife, buckthorn and common reed are noted to be aggressively invasive, and do not offer ideal wildlife habitat. Since these invasive plants are not in large populations, their control now would be easier than if they were allowed to spread and reach heavy infestation.

LIMNOLOGICAL DATA – SHORELINE ASSESSMENT

The shoreline was assessed at Taylor Lake on July 16, 2003 for a variety of criteria (See Appendix B for methods). Based on these assessments, several important observations could be made. Approximately 58% of the shoreline is developed, with the shoreline type as either lawn or buffer (Figure 3). The remainder of the shoreline is classified as wetland. Wetland is one of the most desirable shoreline types, providing wildlife habitat and, typically, protecting the shore from excessive erosion. About 84% of the shoreline is classified as wetland or buffer. As a result, no erosion was documented in these

INSERT Fig. 3, shoreline types

locations. Although shorelines with lawn are normally eroding, lawn areas along Taylor Lake were not. Some of the shoreline had been eroding in the past, but was now supporting lawn. The Forest Preserve keeps the north shore of the lake mowed to provide easy access for shoreline fishing. This area should be monitored in case erosion begins to occur again. Invasive plant species, including, buckthorn, common reed and purple loosestrife were scattered along approximately 88% of the shoreline (Figure 4). These plants can exclude native plants from the areas they inhabit. Buckthorn provides very poor shoreline stabilization and may lead to increasing erosion problems in the future. Common reed and purple loosestrife inhabit mostly wet areas and can easily outcompete native plants. Purple loosestrife was not in large populations, but scattered along the shoreline. Their removal now, when their numbers are small, would be easier than trying to control them once the population expands. Steps to eliminate these plants should be carried out as soon as possible in order to prevent further spread of these species and to preserve the quality its surrounding shoreline.

LIMNOLOGICAL DATA – WILDLIFE ASSESSMENT

Wildlife observations were made on a monthly basis during water quality and plant sampling activities (See Appendix B for methodology). As a result of the trees and wetland areas adjacent to Taylor Lake, a good mix of wetland birds and waterfowl, as well as several species of songbirds were observed (Table 5). It is important that the shoreline around the lake be maintained as is (minus the invasive shoreline plant species) in order to provide the appropriate habitat for birds and other animals that can be enjoyed by lake users for many years to come. Of note was the constant presence of Canada geese during each field visit. Although signs are posted discouraging people from feeding the geese, we still saw visitors doing so. Their feces are highly concentrated with phosphorus, which add to the nutrient load in the lake.

The Illinois Department of Natural Resources (IDNR) has assessed the fishery in Taylor Lake during 1977, 1987, 1989, 1991, 1996, 1999, 2002, and 2003. Past management of the lake has included the use of Fintrol, a fish toxicant, in order to remove overabundant fish (1982), the introduction of 64 grass carp with the intent to control aquatic plants (1992) and annual stocking of channel catfish. Populations and conditions of largemouth bass and bluegill have fluctuated over the past 25 years. After the lake experienced a winterkill in 2000-2001, the largemouth bass population was severely impacted. Only two bass were collected during the 2003 survey. Because of the loss of these predators, the bluegill, green sunfish and pumpkinseed sunfish that survived the winterkill spawned, with very low young-of-the-year predation. These small fish are now overpopulated in Taylor Lake. Recommendations from the 2003 fisheries survey include the continuation of the annual channel catfish stocking, reducing the aquatic plant growth, and Canada goose management. The next assessment is suggested by IDNR to occur in 2005.

INSERT FIG. 4, INVASIVE

Table 5. Wildlife species observed on Taylor Lake, May – September 2003.

Birds	
Double-crested Cormorant	*Phalacrocorax auritus*
Mute Swan	*Cygnus olor*
Canada Goose	*Branta canadensis*
Mallard	*Anas platyrhnchos*
Bufflehead	*Bucephala albeola*
Great Egret	*Casmerodius albus*
Great Blue Heron	*Ardea herodias*
Green Heron	*Butorides striatus*
Spotted Sandpiper	*Actitis macularia*
Red-tailed Hawk	*Buteo jamaicensis*
Turkey Vulture	*Cathartes aura*
Belted Kingfisher	*Megaceryle alcyon*
Red-headed Woodpecker	*Melanerpes erythrocephalus*
Common Flicker	*Colaptes auratus*
Eastern Kingbird	*Tyrannus tyrannus*
Barn Swallow	*Hirundo rustica*
American Crow	*Corvus brachyrhynchos*
Blue Jay	*Cyanocitta cristata*
Catbird	*Dumetella carolinensis*
Eastern Bluebird	*Sialia sialis*
American Robin	*Turdus migratorius*
Cedar Waxwing	*Bombycilla cedrorum*
Red-eyed Vireo	*Vireo olivaceus*
Yellow Warbler	*Dendroica petechia*
Red-winged Blackbird	*Agelaius phoeniceus*
Common Grackle	*Quiscalus quiscula*
Starling	*Sturnus vulgaris*
Northern Oriole	*Icterus galbula*
House Sparrow	*Passer domesticus*
Northern Cardinal	*Cardinalis cardinalis*
American Goldfinch	*Carduelis tristis*
Chipping Sparrow	*Spizella passerina*
Song Sparrow	*Melospiza melodia*
Mammals	
Muskrat	*Ondatra zibethicu*s
Reptiles	
Painted Turtle	*Chrysemys picta*

EXISTING LAKE QUALITY PROBLEMS AND MANAGEMENT SUGGESTIONS

Highpoints of the lake:

A. Wetland plants and buffer surround nearly 87% of the shoreline
B. No erosion present along the shoreline
C. Small population of Eurasian water milfoil

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- *Lack of a Quality Bathymetric Map*

  A bathymetric (depth contour) map is an essential tool in effective lake management since it provides information on the morphometric features of the lake, such as depth, surface area, volume, etc. The knowledge of this morphometric information would be necessary if lake management practices such as aquatic herbicide use or fish stocking were part of the overall lake management plan. Taylor Lake does not have a current bathymetric map with volume calculations. Maps can be created by the Lake County Health Department – Lakes Management Unit or other agencies for costs that vary from $3,000-$10,000, depending on lake size.

- *Invasive Shoreline Plant Species*

  We observed purple loosestrife, buckthorn and common reed around Taylor Lake, all of which are exotic, invasive species. Purple loosestrife was not in large populations, but scattered along the shoreline. Their removal now, when their numbers are small, would be easier than trying to control them once the population expands. Steps to eliminate these plants should be carried out as soon as possible in order to prevent further spread of these species and to preserve the quality its surrounding shoreline. Hand removal might be the best option at this time since other options are geared more to larger infestations.

- *Excessive Aquatic Vegetation*

  One key to a healthy lake is a healthy aquatic plant community. Although the aquatic plants did not reach the surface across the entire lake, plants were growing across 100% of the lake bottom, the dominant species being coontail. To support a healthy fishery, coverage of approximately 30% to 40% of the lake bottom is best. The initial stocking of 64 grass carp in 1992 was below recommended rates. Assuming that the plant coverage in 1992 was 100%, the number of grass carp stocked in Taylor Lake should have been 61 10-inch fish per vegetated acre, or 366 fish. Because just 64 fish were stocked, they caused only a slight decline in the plant population. The LCFPD could try using grass carp again at the

recommended rate, or the LCFPD may want to try a different aquatic plant control for the coontail, such as the use of 2,4-D, an aquatic herbicide. However, the use of aquatic herbicides may have a negative response from the public since this is a very popular location. If this method were followed, all of the lake would not need to be treated, only enough to bring densities down to 30-40% surface area coverage. This could be accomplished using 2,4-D. This could be applied in either liquid form or slow release pellet form (SRP). To reduce coontail densities to 30% surface coverage (treat approximately 4 acres), approximate cost would be $1400– $1700. Treatment should not be done all at once and should occur in the spring. This can cause severe D.O. depletions. Instead treatment should be divided up into two parts with the treatments about two to three weeks apart. Application of herbicides will not eliminate the coontail problem. Treatment will have to be made each year possibly multiple times in a year depending on regrowth.

Eurasian watermilfoil (EWM) was found in only 8% of the sites in 2003, but it has been noted to be the dominant plant in previous years. The EWM should be monitored closely in order to intervene if necessary to reduce the plant's density. In case EWM density does increase, one method of reduction would be to introduce the milfoil weevil (*Euhrychiopsis lecontei*) in the lake. When present in large enough numbers, these weevils can cause significant damage to milfoil beds. Best results are achieved in lakes that have EWM infestations in shallow areas where it is undisturbed by recreational and management actives. Weevils need proper overwintering habitat such as leaf litter and mud, which are typically found on naturalized shorelines or shores with good buffer strips. Taylor Lake fits these criteria.

The weevils can be obtained from:

EnviroScience, Inc.
3781 Darrow Road
Stow, Ohio 44224
1(800) 940-4025

- *Canada Geese*

Canada Geese were noted in large numbers on each site visit. Although signs are posted discouraging people from feeding them, people were doing so anyway. Since the geese are a source of phosphorus through their feces, Taylor Lake would benefit from a goose management program. Techniques may not completely eliminate geese from using the lake, but they can lessen their numbers. The mowed grass offers the geese easy access to Taylor Lake, but taller native plants in a buffer strip around the shoreline can discourage them. The LCFPD could leave a few trails through the buffer strip for anglers to access the shoreline. In addition, since the geese are becoming used to people feeding them, the

LCFPD may want to consider installing additional signage stating that people feeding the geese may be issued a ticket.

Literature cited:

Wiley, M.J., P.P. Tazik, and S.T. Sobaski. 1987. Controlling aquatic vegetation with triploid grass carp. Circular 57. Illinois Natural History Survey, Champaign. 16p.